

▶ TEST EQUIPMENT

▶ AMATEUR EQUIPMENT

▶ HI-FI EQUIPMENT

▶ MARINE EQUIPMENT

HEATH COMPANY • BENTON HARBOR, MICH.



HEATHKITS FOR 1959

WORLD'S FINEST *electronic equipment in kit form*

 a subsidiary of Dapstrom, Inc.

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# Do-it-Yourself

*simple, easy-to-understand  
instructions with each Heathkit tell  
you all you need to know . . .  
guarantee your success!*



### TIME PAYMENTS AVAILABLE

Easy on your budget, the new Heath Time Payment Plan allows you to pay for any purchase of \$55 or more in small monthly installments. See order blank for complete details.

### ORDER DIRECT BY MAIL

*... or shop at one  
of the conveniently  
located . . .*

## Heathkit Dealers

# Coming soon!

## Full Stereo Conversion for TR-1A



***enjoy monaural  
recording/playback now...***

***expand to stereo later  
with easy conversion***



Complete stereo conversion for the TR-1A will be available soon! Ideally suited to such changes, the time proven mechanical assembly of this unit offers complete flexibility and protection against obsolescence.

The basic monaural version of the TR-1A consists of a deck, a TE-1 Tape Preamp and a head array for monaural recording and playback functions. The conversion will consist of a new head array containing the necessary stereo heads, and an additional TE-1 along with instructions, wire and whatever parts are necessary to hook all of the equipment together. The finished conversion will record and play stereo or monaural tape at  $7\frac{1}{2}$  IPS or  $3\frac{3}{4}$  IPS. Specifications will be the same for each channel as they are for the monaural machine.

The stereo recording feature of this conversion will allow you to make your own stereo recordings at home or from nationwide stereo broadcasts on FM and TV. Versatile Heathkit components allow you to expand your hi-fi system at any time to include the latest advancements in high fidelity listening pleasure.

why not *Really* enjoy your monaural records?

*Replace your present pickup with the MF-1 and prepare yourself for the finest reproduction imaginable!*



**Diamond Stylus High Fidelity Pickup Cartridge**

**\$26<sup>95</sup>**  
HEATHKIT MF-1

Stereophonic records, along with a broadside of advertising claims, have made the purchase of pickup cartridges a confusing dilemma to the average hi-fi enthusiast. The fact of the matter is, there is no substitute for a high quality monaural pickup cartridge for full fidelity reproduction of monaural LP records. The MF-1 meets this requirement in every respect and has been carefully tailored to overcome the problems long associated with phonograph reproduction. Among its many features, the MF-1 is a low mass moving-magnet type cartridge with high compliance that will greatly increase the life of your records. It provides wide range resonance-free frequency response that is nominally flat from 20 to 20,000 CPS.

In contrast to "compatible-stereo" cartridges which must be operated at critical stylus pressure to avoid inefficiency or record damage, the MF-1 may be operated safely at up to 8 grams pressure, assuring superb reproduction with no danger of record wear. Vertical compliance in this cartridge is also very high, in fact equal to that found in a number of stereo pickups in commercial use ( $1 \times 10^{-6}$  CM/dyne.) Although the stylus is free to move vertically, the electrical design is such that no output from the cartridge

will be obtained when the motion is in this direction. This is a very important feature for proper monaural reproduction since dust, dirt and chips naturally tend to collect at the bottom of the record grooves and the stylus must eventually plow through or climb over this foreign matter in a vertical fashion, causing noise and hiss and making the record prematurely useless for high fidelity listening. Despite claims that stereophonic pickup cartridges will give you high fidelity reproduction from monaural records, scientific tests prove otherwise. By nature of their design, stereo cartridges must be responsive to vertical motion, since a good deal of the stereo material on the stereo records results in vertical motion of the grooves. When used on a monaural record this vertical motion reproduces vertical rumble as well as scratch and hiss from foreign material at the bottom of the grooves. These facts further emphasize the need for a good monaural LP cartridge that will definitely provide superior performance on a standard LP record.

Replace your present pickup with the MF-1 now and enjoy the highest quality high fidelity reproduction your library of LP's has to offer. Shpg. Wt. 1 lb.



**Now ... the world's most advanced hi-fi changer with your choice of top quality pick-ups!**

The Heathkit RP-3, one of the most outstanding record changers on the market today, is now available with the Heathkit MF-1 diamond stylus hi-fi cartridge or GE-VR11 cartridge as optional equipment.

HEATHKIT MODEL RP-3LP (with MF-1 cartridge)..... **\$74.95**  
HEATHKIT MODEL RP-3 (with GE-VR11 cartridge)..... **\$64.95**

with easy-to-build

**HEATHKITS®**



Prompt, efficient service is a by-word at Heath. Your order is shipped the day it is received. Trained Engineering Consultants are ready to assist you with any problem. Standing behind every kit sold is a modern, efficient Service Department ready to serve you.



As you unpack your kit you'll see for yourself that none but the highest quality parts and components are used in Heathkits. Over the years Heathkits have earned a reputation for being second to none in overall quality and performance.



You'll be amazed at how simple Heathkits are to assemble. A step at a time you follow the manual which is written in plain, everyday language. Large pictorial diagrams show you exactly where each part goes. The manual tells you everything you need to know about your kit and serves as a handy reference guide for servicing or replacing parts.



You'll find an enjoyable hobby in building your Heathkit. Fun-filled hours working with your hands are in store, and you'll learn a lot, too. You will gain knowledge of electronics as you build and acquire a more thorough understanding of the functions and capabilities of your equipment.



You can always depend on your Heathkit for years of trouble-free service and performance. Whether you have assembled a test instrument, hi-fi system, marine or ham kit, you are confident of the Heath quality and reliability behind every kit.



You are rewarded in many ways when you complete your Heathkit. You save up to one-half the cost of ready-made equipment, you have the fun of building the kit and, finally, the self satisfaction and pride of personal accomplishment. Clean, modern styling make Heathkits a handsome addition to your home or workshop.

**NEW . . . HEATHKIT DEALERS**

In answer to repeated customer requests . . . and as a means of serving you faster and more efficiently . . . Heath Company has recently franchised a selected group of dealers to handle our complete line of Heathkits. In no way does this new dealer organization affect your continued privilege to buy directly from Heath Company at the same low prices you have been accustomed to in

the past. We're sure you will agree that the increased price you pay when buying locally is justified . . . as your dealer pays all transportation charges, makes your kit immediately available, provides demonstration facilities, offers you a reliable source for parts and fast service . . . and stands ready to counsel or advise you on any problem that might arise.

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1348 Boylston Street  
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820 West Olympic Boulevard  
Los Angeles, California

VALLEY SOUND CORPORATION  
18841 Ventura Boulevard  
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1422 Market Street  
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ZACK RADIO SUPPLY COMPANY  
654 High Street  
Palo Alto, California

# Stereo Equipment Cabinet KIT



AVAILABLE IN THE FOLLOWING MODELS:

**Model SE-1B**  
Stereo Equipment Cabinet (birch)

**\$149<sup>95</sup>**

**Model SE-1M**  
Stereo Equipment Cabinet (mahogany)

EACH  
Shpg. Wt. 162 lbs.

**Model SC-1BR**  
Stereo Wing Speaker Enclosure (birch—right end)

**Model SC-1BL**  
Stereo Wing Speaker Enclosure (birch—left end)

**\$39<sup>95</sup>**

**Model SC-1MR**  
Stereo Wing Speaker Enclosure (mahogany—right end)

EACH  
Shpg. Wt. 42 lbs.

**Model SC-1ML**  
Stereo Wing Speaker Enclosure (mahogany—left end)

## DIMENSIONS

Maximum overall (all 3 pieces):

82 $\frac{1}{2}$ " W x 36 $\frac{1}{2}$ " H x 20" D

Center Cabinet:

47 $\frac{1}{2}$ " W x 36 $\frac{1}{2}$ " H x 20" D

Tape deck and preamplifier area:

22 $\frac{3}{4}$ " W x 11" H x 17 $\frac{3}{4}$ " D

Record Changer area:

22" W x 10 $\frac{1}{2}$ " H x 17" D

(3 $\frac{3}{4}$ " below 7" above mounting board)

Record Storage Area (6 sections available):

22 $\frac{3}{4}$ " W x 14 $\frac{1}{2}$ " H x 12 $\frac{1}{2}$ " D

AM-FM Tuner area:

20 $\frac{1}{2}$ " W x 5 $\frac{1}{2}$ " H x 13 $\frac{1}{2}$ " D

Amplifier (2 areas available):

15 $\frac{1}{2}$ " W x 10 $\frac{1}{2}$ " H x 13" D

Individual speaker wings (overall):

17 $\frac{1}{2}$ " W x 35 $\frac{1}{2}$ " H x 17 $\frac{1}{2}$ " D

Inside wing area (maximum):

16" W x 29 $\frac{1}{2}$ " H x 14 $\frac{1}{2}$ " D

Inside wing area (minimum):

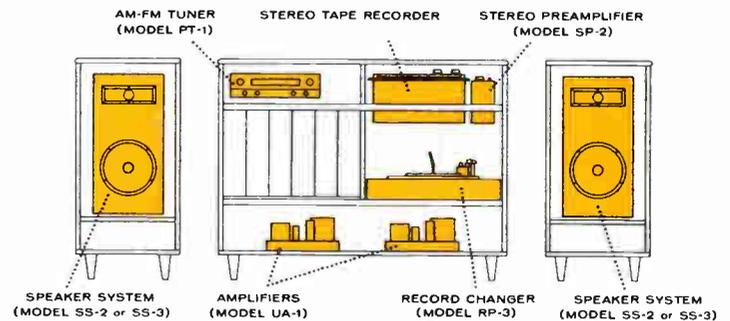
16" W x 23 $\frac{1}{2}$ " H x 14 $\frac{1}{2}$ " D

Wing Shelf Height: adjustable from

1 $\frac{1}{2}$ " to 6" high. Shelf can be eliminated

to gain 1 $\frac{1}{2}$ " more space.

This superbly styled cabinet ensemble is designed to hold your complete home stereo hi-fi system. Consisting of a "Stereo Equipment Center" flanked by two individual "Stereo Wing Speaker Enclosures", the unit has room for all the components required for stereo sound. Although designed to hold Heathkit stereo components, it is not frozen to this arrangement. The kit is supplied with mounting panels pre-cut to accommodate Heathkits, but interchangeable blank panels are also furnished so you can mount any equipment you may already have. The pre-cut panels accommodate the Heathkit AM-FM tuner (PT-1), stereo preamplifier (SP-1 and 2), and record changer (RP-3). Adequate space is provided for record storage and a pair of matching Heathkit power amplifiers (from 12 to 70 watts). The stereo wing speaker enclosures are open-backed, cloth-grilled cabinets designed to hold the Heathkit SS-2 or similar speaker systems. The cabinets are available in beautifully grained  $\frac{3}{4}$ " solid core Philippine mahogany or select birch plywood suitable for the finish of your choice. The matched grain sliding tape deck access door on top pops-up flush when closed. Entire top features a shaped edge. Hardware and trim are of brushed brass and gold finish. Rich toned grille cloth is flecked in gold and black.



The drawing above shows the Stereo Equipment Cabinet Kit with typical Heathkit components installed. The unit represents a complete home hi-fi stereo system costing less than half of what you would pay for any comparable manufactured product.

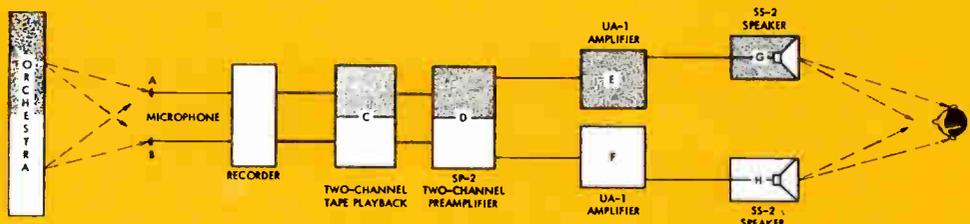
## BUY YOUR COMPLETE STEREO SYSTEM NOW!

Heath's convenient time payment plan allows you to buy and enjoy your own Stereo hi-fi system now—and pay for it in easy installments. See order blank for complete details.

## WHAT IS STEREO?

Compare stereophonic sound (stereo) with 3-D stereo pictures and you will have the answer . . . **DEPTH AND DIRECTION**. Since we have two ears, just as we have two eyes, sound is heard to the left and right as well as from straight ahead. This is simulated when two microphones are used in recording. The sounds heard by each microphone are sepa-

rately recorded and played back through two identical sound channels. When the speakers are also separated, it has the same effect as placing you in the front row or conductor's position during a performance adding startling realism to recorded sound. The following chart further illustrates this process:



Sound picked up by microphones (A) and (B) is recorded on separate sections of tape in the tape recorder. The two sound strips are then played back simultaneously (by C) into the stereo preamplifier (D). Then each sound

track is amplified individually in amplifiers (E) and (F) and in turn fed through separate speakers (G) and (H) thus reproducing the original depth and direction of the recorded sound with remarkable effect.

## HIGH FIDELITY

## Record Changer KIT

*Completely Automatic—  
with Turntable Quality!*

Automatic Speed and Record Size Selection

Less Than 0.18% RMS Flutter and Wow

Unique Turntable Pause Prevents Record Damage

4 Speeds: 16, 33½, 45, and 78 RPM

For those of you looking for a record changer capable of obtaining full fidelity from your hi-fi records, yet handling them with the care they must have, the RP-3 furnishes the ideal answer. This unique changer provides the automatic convenience of a record changer with the outstanding quality normally expected only from a turntable. Flutter and wow, a major problem with automatic changers, is held to less than 0.18% RMS in the RP-3 through unique design and efficiency of the changer mechanism.

One of the many features of the RP-3 is the turntable pause during the change cycle accomplished by automatically disengaging the turntable drive. This eliminates the grinding action caused by records dropping on a moving turntable or disc. The change mechanism disengages during play, and both turntable drive and change mechanism are disengaged when the changer is shut off, preventing flat spots from developing on the idler wheels when not in use. Turntable action resumes when the stylus comes to rest in the next record groove and a smooth start is assured by a friction clutch on the turntable drive. Record groove and stylus wear are also practically eliminated through proper weight distribution and low pivot point friction of the tone arm, minimizing arm resonance and tracking error. Stylus pressure does not vary more than 0.9 grams between the first and last record. An automatic speed selector position allows intermixing 33½ and 45 RPM records regardless of their sequence. Other features include an RC filter across the power switch preventing "pop" when turned off, and a muting switch to prevent noise on automatic or manual change cycle.

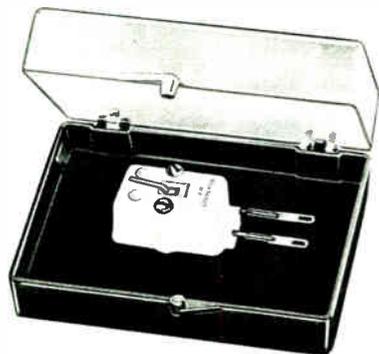
Extremely easy to assemble, you simply mount a few mechanical components and connect the motor, switches and pickup leads. The changer is supplied complete with GE-VR-II cartridge with diamond LP and sapphire 78 stylus, changer base, stylus pressure gauge and 45 RPM spindle. Dimensions are 13½" W. x 12" D. Mounting space requires 5" above changer and 3" below mounting board. Shpg. Wt. 19 lbs.



MODEL RP-3 **\$64.95**

### Specifications

Operates from.....	105-130 volts 60 cycles
Wow and Flutter.....	Less than 0.18% peak at 33½ RPM
Turntable Speed.....	Accurate within ±2%
Change Cycle.....	Completed in 9 seconds
Dimensions.....	13½" wide x 12" deep 5" above and 3" below mounting board
Motor Type.....	4 Pole hum shielded
Type of Drive.....	Friction
Type of Cartridge.....	General Electric VR-II Variable Reluctance
Record Speeds.....	4 speeds Automatic and manual—33½, 45, 78 RPM Manual only—16 RPM
<b>Variations in Tracking</b>	
Force.....	Less than 0.9 gram from first record to tenth record
<b>Controls.....</b>	
	"ON-OFF" switch. Manual Reject
	"Speedminder" (automatic speed selection and indexing)
	Manual speed selector (4 speed)
Finish.....	Midnight Gray
Base.....	Maple (unfinished)
Mounting Board.....	Birch (unfinished)



MODEL MF-1

### DIAMOND STYLUS HI-FI REPLACEMENT

## Pickup Cartridge

Protect your valuable records and obtain true high fidelity reproduction with this superb quality diamond stylus pickup cartridge. It is a low mass moving magnet-type cartridge that will fit all standard changer and tone arms. Its weight is 10 grams. Impedance is approximately 5,000 ohms. Output at 5 cm-per-second recorded velocity is 7 mv at 1 kc ±1½ db. Vertical tracking force is between 2 and 6 grams depending on quality of the tone arm. It will track velocities at up to 30 cm-per-second at maximum of 4½ grams tracking pressure. The cartridge is nominally flat from 20 to 20,000 CPS. Vertical compliance is  $1 \times 10^{-6}$  cm/dyne making it compatible for use on stereo discs. Lateral compliance is between  $2.2 \times 10^{-6}$  and  $3.1 \times 10^{-6}$  cm/dyne depending on the tracking force applied. Recommended load resistance is 47 k ohms. Your hi-fi records deserve the protection the MF-1 offers. Shpg. Wt. 1 lb. **\$26.95**

## 4 Tape Recorder

**HEATHKIT** by Daystrom



**MODEL TR-1A** **\$99.95**

Includes tape deck, tape recorder electronics, mike and roll of blank tape.

### Specifications

Tape Speeds	7.5 in/sec, 3.75 in/sec
Frequency Response	±2 db from 50 CPS to 10,000 CPS @ 7.5 in/sec ±2 db from 50 CPS to 6500 CPS @ 3.75 in/sec
Flutter and Wow	less than .35% (rms) for both speeds
Maximum Reel Size	7 inches
Fast Forward Time	5 minutes for 1200 foot reel
Rewind Time	90 seconds for 1200 foot reel
Signal-to-noise Ratio	.45 db (or better) below rated output (1.25 volts)
Output Impedance	Approximately 600 ohms from a cathode follower
Oscillator Frequency	60 kc (from a push-pull oscillator)
Motor Type	4 pole induction
Dimensions	Tape Deck: 15½" W x 9½" H x 4" below Panel Electronics Package: 12½" W x 4" H x 8" D

### HIGH FIDELITY

## Tape Recorder KIT

*Make Your Own Home Recordings*

Complete Mechanical and Electronics Package

7½ and 3¾ IPS Speeds Available

Vertical or Horizontal Mounting

With this high quality, low cost tape deck kit you can have the fun of making your own recordings and enjoy high fidelity playback with fast forward and rewind functions. Two heads are incorporated—"erase" and combination "record/playback". Two speeds, 7½ and 3¾ IPS, are selected by changing the belt drive.

The mechanical part of the tape deck is extremely simple to assemble yet allows a substantial savings over ready-built units. Precision bearings are used throughout the rugged mechanism assuring long and faithful service. One control lever selects all functions on the deck, greatly simplifying operation. The unit can also be used in a vertical or horizontal position, lending itself to panel mounting. The model TE-1 tape recorder electronics kit, supplied with the mechanical assembly, provides NARTB playback equalization. A record interlock is provided to prevent accidental erasure of tape by locking in "play" position until record interlock is depressed. Recording level is indicated by a 6E5 "magic eye" tube. Bias/erase frequency is provided by a 60 kc push-pull oscillator for low noise and distortion. A two-position input selector switch provides for mike or line input. Separate record and playback gain controls are featured. Filament balance control allows adjustment for minimum hum level. Two circuit boards are employed for ease of assembly. Templates and instructions are provided to cut out panels for mounting. Tape mechanism not sold separately. Shpg. Wt. 22 lbs.



**MODEL TE-1**

### TAPE RECORDER ELECTRONICS KIT

The TE-1 Electronics Package may be purchased separately to replace the electronics in your present tape recorder, or used in addition to it for stereo playback of pre-recorded tapes where a second playback channel is required.

Provides playback function for almost any head type you may presently own. Although designed primarily for record/playback operation with the Heathkit TR-1A, it will record with heads of the following characteristics: Record/play head; impedance @ 1 kc—1800 ohms, impedance @ 60 kc—25,000 ohms, bias current @ 60 kc—.6 ma, record current—.06 ma. Erase Head; impedance @ 60 kc—8.5 k, Erase current—12 to 14 ma. Circuit may be readily modified for future head types. Shpg. Wt. 9 lbs.

**\$39.95**

## Speedwinder KIT

The SW-1 is a valuable accessory for both professional and "audio-ophile" tape users. An invaluable aid to movie projectionists, it will accommodate up to 800' reels of 8 and 16 millimeter film.

The SW-1 rewinds tape at the rate of 1200' in 40 seconds leaving your tape recorder free for operation. Because the rewinding process is divorced from the tape deck, wear to guides and heads from common rewinding methods is eliminated. Using the speed winder the tape contacts only a soft neoprene idler wheel, virtually eliminating wear to the tape. Storing tape in the play position (unrewound) a smoothly stacked wind with uniform tension is assured as it has been spooled evenly at the slower playing speed of the tape deck. By utilizing the SW-1 to rewind this tape immediately before playing, the convenience of a ready-to-play reel is combined with the storage benefits of non-rewound tape. Handles up to 10½" tape reels. An automatic shutoff prevents whipping of tape or film at end of the rewind cycle. A manual shutoff is also provided. Shpg. Wt. 12 lbs.

**\$24.95**



**MODEL SW-1**

**BROADBAND HIGH FIDELITY**

# AM Tuner KIT

*Enjoy True Hi-Fi  
Radio Listening*

The Heathkit Model BC-1A AM Tuner Kit brings you hi-fidelity AM broadcast reception with performance quite comparable to FM. Careful layout and circuit design as well as specially selected components contribute to this result.

The Tuner features a special detector using crystal diodes and broad band-width IF circuits for low signal distortion. Audio response is  $\pm 1$  db from 20 CPS to 9 kc, with 5 db of pre-emphasis at 10 kc to compensate for station rolloff. Sensitivity and selectivity are outstanding and the tuner covers the complete broadcast band from 550 to 1600 kc. Prealigned RF and IF coils eliminate the need for special alignment equipment. Also included are automatic volume control and a built-in power supply.

Two outputs are provided, one at fixed level which is not affected by the volume control on the tuner and the other at the same maximum level which is controllable. Thus the tuner can be used with hi-fidelity systems which have a level set control on the input, such as the Heathkit pre-amplifier Model WA-P2, or with any amplifier by using the high level controllable output on the tuner.

An edge-lighted slide rule dial is employed for easy tuning. The BC-1A is designed as a companion piece to the Heathkit FM Tuner (FM-3A) and the two tuners together match harmoniously whether used in the Heathkit chairside enclosure or mounted in a bookshelf. Concise, step by step instructions, along with large pictorial diagrams make this kit easy to build—even if you have had no electronic or kit building experience.

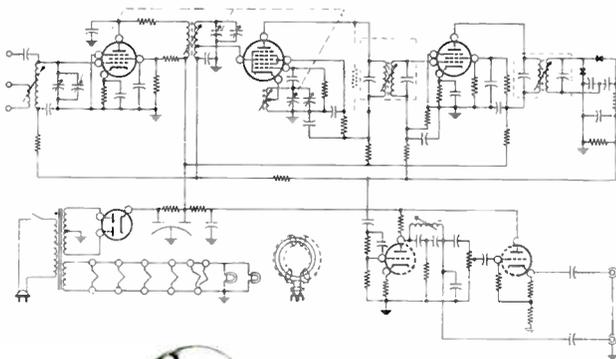
At this conservative price, the BC-1A represents a truly unusual value in a hi-fi tuner. Shpg. Wt. 9 lbs.



**MODEL BC-1A \$26<sup>95</sup>**

## Specifications

- Tuning Range ..... 550-1600 kc.
- IF Frequency ..... 455 kc.
- Antennae ..... Low impedance electrostatically shielded loop or conventional straight wire
- Outputs ..... Two outputs are provided, one at medium impedance fixed level, the other at low impedance from a cathode follower with variable level control
- Output Voltage ..... 1 volt rms with 3 microvolt input up to 11 volts maximum with .1 volt input
- 400 Cycle Distortion (measured with 100 uvolts signal) ..... At 70% modulation measured as 2.6% with 1.6% measured from the generator
- Hum and Noise ..... 40 db below 100 uvolts 30% modulated at 400 cps
- Sensitivity for 1 volt output ..... Better than 3 uvolts across entire band measured from source impedances of 50 ohms or less
- Signal to Noise Ratio ..... Better than 12 db across entire band at rated sensitivity
- Adjacent Channel Selectivity ..... 27 db with broad response, 29 db narrow band response
- Tube Complement ..... 1—6X4 rectifier, 1—6BA6 RF amplifier, 1—6BE6 oscillator mixer, 1—6BA6 IF amplifier, 1—12AU7 audio amplifier-whistle filter-cathode follower output, 2 germanium diodes voltage-doubler detector
- Power Requirements ..... 105-125 volts 50-60 cycles AC 26 watts
- Dimensions Overall ..... 12<sup>3/8</sup>" long x 3<sup>3/8</sup>" high x 5<sup>7/8</sup>" deep



**MODEL 401-6**

## 12" Utility Speaker

If you have been looking for a low cost, good quality auxiliary speaker—this Heathkit 12 inch utility speaker is your answer. The Model 401-6 will handle up to 12 watts with a frequency response of  $\pm 5$  db from 50 to 9000 CPS. Speaker impedance is 8 ohms and a 6.8 ounce magnet is employed. Hams, servicemen and hi-fidelity enthusiasts will find a variety of applications for this handy unit. Ideal for use in hi-fi or PA systems to pipe sound into other rooms. Also useful in replacing inferior TV or radio speakers, or as an auxiliary speaker for testing purposes. Shpg. Wt. 7 lbs. **\$7<sup>50</sup>**



**MODEL SP-2** \$5695  
(stereo) Shpg. Wt. 15 lbs.

**MODEL SP-1**  
(monaural)

\$3795  
Shpg. Wt. 13 lbs.



**MODEL C-SP-1** \$2195 Shpg. Wt. 5 lbs.  
(converts SP-1 to SP-2)  
(Not shown)

## Specifications

Inputs.....	Six inputs contained in each channel as follows: Tape head (for play back direct from tape transport mechanism), Magnetic phono, microphone, Aux. 1, Aux. 2, Aux. 3
Input Sensitivity (for 2.5 volts RMS output)	Tape head—.002 volts at 1 KC Microphone—.015 volts Magnetic phono—.002 volts at 1 KC (level control at max.) Auxiliary 1, 2, 3—.25 volts
Outputs.....	Two outputs in each channel, Output to Power Amplifier, Tape Recorder Output
Frequency Response.....	±1.0 db from 20 cps to 30,000 cps ±1.5 db from 15 cps to 35,000 cps
Hum and Noise.....	2.5 mv at "Tape Head" input. .50 db or better below 2.5 volts RMS 6.0 mv at "Magnetic Phono". .65 db below 2.5 volts RMS Input level control set for 6 mv sensitivity, selector switch at RIAA position 20 mv at "Microphone" input. .65 db below 2.5 volts RMS .1 volt at "Auxiliary" inputs. .75 db below 2.5 volts RMS
Tone Controls.....	Separate bass and treble tone controls. Bass control provides approximately 18 db boost and 12 db cut at 50 cps. Treble control provides approximately 15 db boost and 20 db cut at 15,000 cps
Loudness Control.....	Very closely reproduces the Fletcher-Munson frequency response for any setting of the level control. Loudness control may be by-passed if set in the "off" position
Scratch Filter.....	Low pass filter designed to cut off very sharply (24 db octave) at 5 or 7000 cps
Power Supply.....	Built-in DC power supply with five AC receptacles are provided within the power supply to facilitate complete control of the High Fidelity system from the preamplifier control center
Power Requirements.....	117 volts 60 cps
Tube Complement.....	2-EF86, 2-12AX7, 2-12AU7 Controls in each channel are completely separate for independent control in each channel
Dimensions.....	Front panel 4 1/2" x 15"; Mounting area 3/4"; Depth 8" including knobs

## MONAURAL-STEREO—(Two-channel mixer)

# Preamplifier KIT

*Control Both Stereo Channels  
Simply and Conveniently*

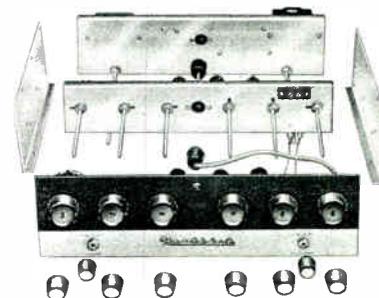
Fast Plug-in Conversion to Stereo

Printed Circuit Boards for Easier Construction

Remote Balance Control for Stereo Use

The unique building block design of this stereo preamplifier allows you to purchase it as a two-channel preamplifier or buy the high quality monaural version and add the second channel later on if desired. The SP-1 Monaural Preamplifier features six separate inputs with 4 input level controls. Inputs consist of: "tape-head" (for play-back direct from transport of deck), "magnetic phono", "microphone" and three separate high level inputs. A level control on the magnetic phono input allows use of the lowest and highest level output cartridges and features sensitivity of 2.5 millivolts. Level controls are also provided on all three high level inputs to allow switching without changing the sound level. Selection can be made of NARTB equalization for the tape head input and RIAA, LP, or 78 record compensation for the magnetic phono input. Separate "level" and "loudness" controls provide excellent sound reproduction regardless of listening level. A scratch filter with frequency cut-off positions at 5 kc and 7 kc allows you to play worn records without loss of tone quality. Two separate 117 V "on-off" line switches are provided. One controls the preamplifier power and three AC receptacles while the other controls one AC receptacle on the back. These two switches allow you to control the AC power of your entire hi-fi system from the preamplifier control center. An additional AC receptacle is located on the back for the record changer power. The two "outputs" consist of a cathode follower output to the power amplifier with level control, and a tape recorder output. A neon pilot light is located on the front panel. The built-in power supply provides for versatile use with any power amplifier. An ingenious "building block" design allows you to convert the Monaural SP-1 to the Stereo Preamplifier (SP-2) by merely plugging-in the other channel (C-SP-1). No rewiring is required on the already existing channel. The new (B) channel is identical with the (A) channel with the following exceptions: a function selector switch is provided instead of another scratch filter. This outstanding feature provides *two-channel mixing* as well as (A) channel monaural, (B) channel monaural, (A) and (B) channel monaural and stereo; a remote balance control with 20' of cable allows balancing the stereo system from listening position. Only a few minutes are required to plug the (B) channel into the preamp. The control shafts plug directly through the (A) channel control knobs allowing the smaller (B) channel control knobs to operate concentrically with the (A) channel knobs. EF86 tubes used in the input stages along with the individual hum balance controls on each channel assure low hum and noise. Construction is greatly simplified through the use of two printed circuit boards (one in each channel) and encapsulated printed circuits. The handsome vinyl-clad steel cover has leather texture in black with inlaid gold design.

*Unique "building block" design allows you to convert the monaural (SP-1) to the stereo preamplifier (SP-2) by merely plugging-in the other channel (C-SP-1).*



MONAURAL-STEREO

# AM-FM Tuner KIT

*Printed Circuit Boards  
Assure Ease of Construction*

Specially Designed 16-Tube Circuit  
Automatic Frequency Control on FM  
Individual Flywheel Tuning

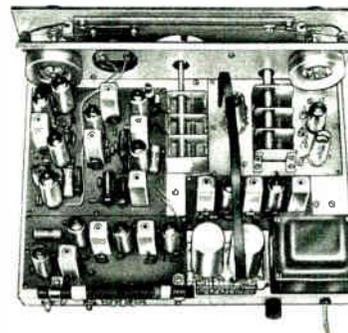
Brand new in every respect, this 16-tube deluxe AM-FM combination tuner offers you outstanding AM, FM or stereo AM/FM performance. The 10-tube FM circuit features the latest developments in FM radio reception. For ease of construction the shielded, 3-tube front end is prewired and prealigned. The IF strip consists of two printed circuit boards, and the IF's are prealigned to individual standards. Featured in the FM circuit is AFC (automatic frequency control) which "locks-on" to any tuned station and automatically holds it in perfect tune. You are assured of fade-free and flutter-free reception at all times by automatic selection of proper limiting action. The combined action of limiters and AGC provides constant audio output throughout the limiting range. A broad-band FM discriminator and broad-band, steep-slope IF band width provide single response tuning and outstanding selectivity. Circuit has built-in FM antenna.

The specially designed AM circuit features prealigned IF and RF coils. The only adjustment necessary after construction is slight alignment of trimmers on the tuning gang by peaking to a station of known frequency using the tuning meter as an alignment indicator. No other instruments required. The entire AM circuit is on one printed circuit board. Variable bandwidth control (14 kc on "narrow" and 20 kc on "broad" at 6 db down points) provides excellent station selectivity and selection of audio frequency response. A built-in AM rod antenna is incorporated with provision for an external antenna if desired. Extremely low distortion is assured through the use of a balanced push-pull germanium diode detector. Delayed amplified AVC utilizing two additional stages provides constant audio output with varying signal strength. A specially designed cathode follower circuit features a 10 kc whistle filter.

The PT-1 features individual flywheel tuning on AM and FM—mechanically designed for ease of construction and dial stringing. Tuning takes place on an easy-to-read, edge-lighted, plastic slide rule dial. The accurate tuning meter operates on both AM and FM. A 3-position selector switch selects meter functions without disturbing stereo or monaural listening. Controls on the front panel consist of: AM tuning, FM tuning, AC "on-off", AFC, AM bandwidth, and function selector switch. Outputs include monaural AM and monaural/stereo FM jack, AM stereo jack, and multiplex jack. Provision is also made for both AM and FM external antenna. Separate cathode follower outputs with individual level controls for AM and FM are provided. The tuner uses a built-in electrostatically shielded transformer, operating a silicon diode power supply. Tube line-up: 6-6AU6, 2-12AU7, 1-6AL5, 3-6BA6, 1-6BE6, 1-6BS8, 1-6AB4, 1-12AT7. The PT-1 meets every requirement of a professional quality tuner and will provide you with unparalleled entertainment. Shpg. Wt. 20 lbs.



MODEL PT-1 **\$89.95**



*Unique design features a completely prewired and prealigned 3-tube front end for ease of construction. Note the heavy duty individual tuning flywheels.*

## Specifications FM

Tuning Range	..... 88 mc to 108 mc
IF Frequency	..... 10.7 mc
Antenna	..... 300 ohm balanced
Output Impedance	..... Variable to 4000 ohms
Output Voltage	..... Nominal .6 volts (with 2 uv 30% modulation in)
Quieting Sensitivity	..... 2 uv for 20 db of quieting 3 uv for 30 db of quieting 20 uv for full quieting (50 db)
Maximum Deviation Sensitivity	..... 3 uv (400 cycle 100% modulation)
Deviation Sensitivity	..... 17 KC (1100 uv in)
Harmonic Distortion	..... Less than 1% (1100 uv 400 cycle 100% modulation)
Image Ratio	..... 25 db
Capture Ratio	..... 12 db
AFC Correction Factor	..... 12 db
Amplitude Modulation	
Suppression	..... 25 db
Hum and Noise	..... 50 db below 30% modulation (20 uv in)

## Specifications AM

Sensitivity, Narrow Position	..... 1400 KC 4.5 uv
(At antenna terminals through standard IRE dummy antenna)	} 1000 KC 5 uv 600 KC 5.5 uv
(Reference Output .1 volt RMS)	
Sensitivity Change, Narrow to Broad Position	..... -5 db
IF Band Width, Narrow	..... 14 KC, 6 db down
Broad	..... 20 KC, 6 db down
Image Ratio	..... 1400 KC 55 db 600 KC 80 db
Harmonic Distortion	..... Less than 1% (.5%)
Hum and Noise	..... 30 db below 30% modulation (1000 KC unmodulated with 100 uv in)
IF Rejection Ratio	..... 1400 KC 42 db 600 KC 30 db
Power Supply	..... transformer operated 50-60 cycle 100 watts
Tube Complement	..... six 6AU6 tubes, three 6BA6 tubes, one 6BS8 tube, one 6AB4 tube, one 12AT7 tube, one 6AL5, one 6BE6 and two 12AU7 tubes.
Dimensions	..... Front panel 4 1/2" H x 15" W. Mounting area 3 1/4" Depth 12 1/2" excluding knobs

**BUY YOUR COMPLETE STEREO SYSTEM NOW!**

Heath's convenient Time Payment Plan allows you to buy and enjoy your own Stereo Hi-Fi System now and pay for it in easy installments. See order blank for complete details.



Traditional Model CE-1 Mahogany



Contemporary Model CE-1B Birch Model CE-1M Mahogany

**MODEL CE-1**  
**\$4395**  
each

# Chairside Enclosure KIT

*Centralize Your Hi-Fi System*

No Woodworking Experience Needed for Construction

All Parts Precut and Predrilled

Beautiful Styling

Relax, and enjoy your home hi-fi while controlling the entire system right from your easychair. The enclosure is intended to house the Heathkit AM and FM tuners (BC-1A and FM-3A) and the WA-P2 preamplifier, along with the RP-3 or most any other record changer you may presently own.

Adequate space is provided in the rear of the unit to house any of the Heathkit amplifiers designed to operate with the WA-P2. Good ventilation is achieved through appropriately placed slots on the bottom and back of the enclosure. Although designed for two tuners and a preamplifier, it is not frozen to specific locations for these components. If one tuner and a preamplifier are used, the two units can be installed in the tilt-out drawer, or, if it is more convenient, either unit can be placed in the space provided in the front of the record player compartment. The tilt-out shelf can be installed on either right or left side as desired during construction. The lift-top lid in front can also be reversed so that the cabinet can be placed on either side of an easychair or sofa.

The enclosure is constructed of beautifully grained veneer surfaced furniture grade plywood suitable for the finish of your choice. All parts are precut and predrilled for easy assembly. The Contemporary cabinet is available in either mahogany or birch and the Traditional cabinet is available in mahogany. Specify on order. Shpg. Wt. 46 lbs.

## Specifications

Dimensions:  
Overall ..... 18" wide x 24" high x 35½" deep  
Changer Area ..... 16" wide x 9¾" high x 14" deep  
Changer Area:  
(No preamp. or tuner) ..... 16" wide x 9¾" high x 17¾" deep  
Amplifier Area ..... 16" wide x 9¾" high x 14" deep  
Area in Tuner Door ..... 12¾" wide x 7¼" high x 5¾" deep  
Enclosure includes universal changer mounting.

## HERE'S HOW TO PLAN AND SELECT YOUR HI-FI SYSTEM!

At least one unit of each category shown below is required for a basic hi-fi system. Complete flexibility of Heathkits allows expansion to more elaborate systems at any time to fit any budget!

PROGRAM SOURCE		AMPLIFIER		SPEAKER SYSTEM	
		Preamp.-Amplifier Comb.			
		EA-2 12 watt	\$28 <sup>95</sup>		
		A-9C 20 watt	\$35 <sup>50</sup>	401-6	\$7 <sup>50</sup>
FM-3A	FM TUNER				
BC-1A	AM TUNER				
PT-1	AM-FM TUNER				
TR-1A	TAPE DECK				
RP-3	RECORD PLAYER				
MICROPHONE					
OTHER					
		Basic Amplifier			
		W-7M 55 watt	\$54 <sup>95</sup>	SS-2	\$39 <sup>95</sup>
		W-6M 70 watt	\$109 <sup>95</sup>		
		W-5M 25 watt	\$59 <sup>75</sup>	SS-2 SS-1B combination	\$139 <sup>90</sup>
		W-4AM 20 watt	\$39 <sup>75</sup>		
		W-3AM 20 watt	\$49 <sup>75</sup>	HH-1 LEGATO	\$299 <sup>95</sup>
		UA-1 12 watt	\$21 <sup>95</sup>		
		Preamplifiers			
		WA-P2 \$19 <sup>75</sup>			
		SP-1 \$37 <sup>95</sup>			
		SP-2 \$56 <sup>95</sup>			

“BASIC RANGE” HI-FI

# Speaker System KIT

*Build It In One Evening*

Woofer and Compression type tweeter by Jensen

High Frequency Level Control

Built-in crossover network

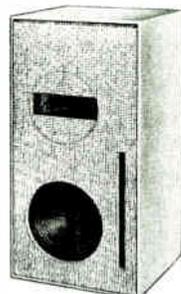
True high fidelity performance at modest cost make this basic speaker system a spectacular buy for any hi-fi enthusiast. The SS-2 is practically identical to the now discontinued Heathkit SS-1 Speaker System. A new feature incorporated in the SS-2 allows the flared tweeter horn to rotate so that the speaker may be used in either an upright or horizontal position while the horn maintains its proper horizontal plane. This makes the speaker ideal for use in stereo applications such as in the Heathkit stereo equipment cabinet speaker wings (Models SC-1).

The total frequency range is from 50 to 12,000 cycles per second. An 8-inch mid range woofer covers from 50 to 1600 CPS while a compression type tweeter with flared horn covers from 1600 to 12,000 CPS. Both speakers are by Jensen. A variable balance control allows level adjustment of the high frequency speaker. Cabinet is of 1/2" veneer surface plywood suitable for light or dark finish of your choice. All wood parts are precut and predrilled for simple, quick assembly. The SS-2 may be combined with the SS-1B “range extending” speaker system later on if desired to extend the frequency range at the high and low ends of the audio range. Build it in just one evening. Shpg. Wt. 26 lbs.

ATTRACTIVE BRASS TIP ACCESSORY LEGS convert the SS-2 into handsome console. Fourteen-inch legs screw into brackets provided. All hardware included. Shpg. Wt. 3 lbs. No. 91-26 \$4.95

**BASIC FIR MODEL**

The Model SS-3 is acoustically the same as the SS-2 Speaker System. The difference occurs only in that the SS-3 is designed for use out of sight (such as in the Heathkit stereo speaker wings) and is constructed of non-premium 1/2" veneer fir plywood without trim or grill cloth. A coarse fabric screen protects the front of speaker enclosure. Shpg. Wt. 26 lbs.



**MODEL SS-3**  
**\$3495**



OPTIONAL LEGS  
EXTRA

**MODEL SS-2 \$3995**



**NOW...TWO POSITIONS**

The new SS-2 incorporates a rotating tweeter horn—allowing the speaker to be used in either an upright or horizontal position. This makes the SS-2 ideal for use in stereo applications.

## Specifications

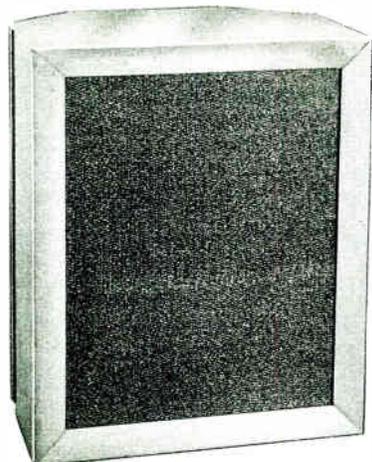
- Frequency Response... ±5 db, 50 to 12,000 cps
- Crossover Frequency... 1600 cps
- Power Rating:
  - Program Material... 25 watts
  - Single Frequency:
    - (near mid-range)... 15 watts
  - Nominal Impedance... 16 ohms
- Cabinet:
  - Type... Ducted-port Bass Reflex
  - Mounting... Vertical or Horizontal position
  - Dimensions... 11 1/2" high x 23" wide x 11 1/4" deep
  - Material... Furniture grade plywood, suitable for light or dark finish 1/2" thick
- Speakers:
  - Low Frequency... 8" Jensen (special design), 6.8 oz. Alnico 5
  - High Frequency... Jensen compression driver with exponential horn (special design), 4.7 oz. Alnico 5
  - L-Pad... Balance control for high frequency driver

“RANGE EXTENDING” HI-FI

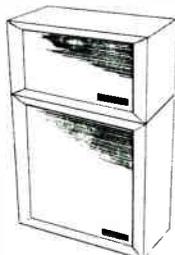
# Speaker System KIT

The SS-1B combined with the basic SS-2 Speaker System provides you with breath-taking tone reproduction covering an over-all response of ± 5 db from 35 to 16,000 CPS. Not a complete speaker system in itself, it is designed only to extend the range of the SS-2. The kit employs a 15-inch woofer and a small super tweeter to supply the very high and the very low frequencies. The SS-2 and SS-1B when used together form an integrated four speaker system and are designed to combine into a single piece of attractive furniture. The kit includes circuit crossovers at 600, 1600 and 4000 CPS. Impedance is 16 ohms and power rating is 35 watts. A control is also supplied to limit the output of the super tweeter. The handsome cabinet measures 29" H by 23" W by 17 1/2" D and is constructed of beautiful 3/4" veneer surface plywood suitable for the light or dark finish of your choice.

All parts are precut and predrilled requiring no woodworking skill or previous experience on your part. Kit is complete including all screws and hardware. Shipped express only. Shpg. Wt. 80 lbs.



**MODEL SS-1B**  
**\$9995**





**"LEGATO" HIGH FIDELITY  
Speaker System KIT**

*The Same Superior Performance  
at a New Low Price!*

- Theatre-Type Altec-Lansing Speakers and "C-P" (Critical phasing)
- Superb Balance of High and Low Frequencies
- Simple To Assemble—No Woodworking Experience Needed

**MODEL HH-1-B** Imported White Birch  
**HH-1-M** African Mahogany

**\$299.95** each

*Specifications*

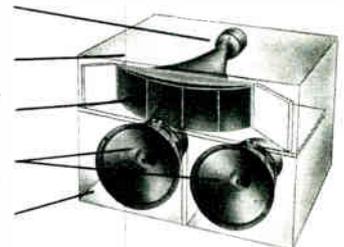
- Frequency Response . . . ± 5 db, 25 to 20,000 cps.
- Cross-over Frequencies . . . 500 cps.
- Power Rating . . . . . 50 watts program material
- Nominal Impedance . . . . . 16 ohms
- Cabinet Type . . . . . Modified infinite baffle
- Cabinet Dimensions . . . . . 41" long x 22 3/4" deep x 34" high
- Speakers . . . . . 2—15" Altec low frequency drivers,  
1—Altec high frequency driver with special horn
- Magnet Weights . . . . . Low frequency drivers—2.4 pounds each  
High frequency driver—1.2 pounds
- Divider Network . . . . . M derived (M = .6)—Parallel filter type

Heath Company teamed with Altec-Lansing Engineers to tackle the job of designing a speaker system capable of bringing you sound reproduction as real and life-like as it is possible to attain. The result of this effort was the creation of the Legato. Utilizing every known advance in audio-acoustical science, the Legato turned in a performance under test that amazed even the project engineers.

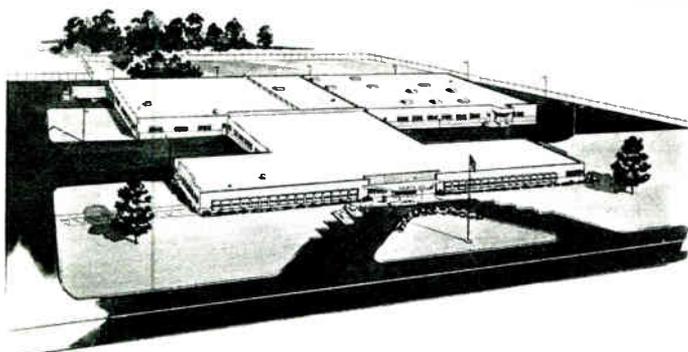
The excellence of the Legato speaker system is not the result of "revolutionary" principles or design, but rather a skillful blending of superb balance, phasing, driver design and acoustical engineering. The cabinet is a modified infinite baffle using two 15 inch Altec-Lansing low frequency drivers to cover frequencies from 25 to 500 CPS and a specially designed sectoral exponential horn with high frequency driver to cover frequencies from 500 to 20,000 CPS. Perfect balance is accomplished by proper phasing of the high and low frequency drivers and using a carefully computed crossover network. Internal reflections are absorbed by a splayed back panel and a three inch layer of fiberglass lining.

Words cannot express the thrill you will experience listening to the Legato for the first time. You've got to hear it to believe it. If you truly want a "queen" among speaker systems, the Legato is for you. Shpg. Wt. 195 lbs.

- Altec Lansing HF Driver
- Veneer-Surfaced Plywood Cabinet, 3/4" Thick
- Special Sectoral Exponential Horn
- Altec Lansing 15" Theatre-Type Speakers
- 3" Fiberglass Insulation Inside



**BENTON HARBOR . . . KIT CAPITAL OF THE WORLD**



1958 marked the completion of the new Heath Company Plant near Benton Harbor, Michigan. Formerly, the company's operations were diversified throughout seven separate buildings in the Benton Harbor area. Today, with the entire Heathkit operation consolidated under the one roof of this 140,000 sq. ft. building, the plant becomes the largest in the world specializing in direct mail selling of electronic kits. The new modern facilities spell out advantages to Heathkit buyers everywhere. More new kits, faster delivery, better service facilities, and more for your purchasing dollar through increased efficiency and lower handling costs. More efficient processing of orders as well as a smooth flow of materials through the production lines will aid us in expediting your orders. The new engineering facilities will speed the development of new kits in all lines, keeping you abreast of the changing times.

"EXTRA PERFORMANCE" HI-FI

# 55 Watt Amplifier KIT

*More Features for the Price Than  
Any Amplifier on the Market*

Famous "Bas-Bal" Circuit  
Push-Pull EL-34 Output Tubes  
Silicon Diode Power Supply

Enjoy the superior performance of this top quality amplifier containing features unexpected in this low price range. Power output at maximum damping is conservatively rated at 55 watts from 20 CPS to 20 kc with less than 2% total harmonic distortion throughout this entire range. Among the features to be found in this amplifier is switch damping, providing maximum or unity damping for any 4, 8, or 16 ohm speaker, with an individually optimized output for each of these impedances. Each output has a separate current feedback circuit for unity damping so that there will be no compromise in performance when any one of the impedances is used. This current feedback circuitry is entirely shorted out when not in use to obtain the highest possible damping factor.

Another feature is a separate 70 volt line output which is independent of the damping control. This allows the amplifier to be used for PA work, or wired music systems for industry and commercial establishments.

The W-7M uses a silicon diode power supply for better regulation and long life. A unique tube and power supply protection device is incorporated to lengthen tube life and lower the current surge in the power supply. This device limits current in the power transformer primary until all tubes have had adequate time to warm up, and all filter capacitors have a chance to become charged gradually.

The well known Heathkit "bas-bal" balance circuit is employed for accurate balancing of the EL-34 output tubes with practically any kind of meter. A pilot light is provided on the front of the chassis.

The handsome case measures 6" H x 15" W x 8½" D. Its compact size allows for unobtrusive installation anywhere in the home.

The amazing low price of the W-7M deserves a note of explanation. There has been absolutely no sacrifice of quality or performance in this fine amplifier. Rather, economics have been realized from careful planning, taking advantage of new developments in components which provide better quality at lower prices; use of modern tubes permitting equal performance with fewer components; and unique designing of the transformer, power supply and circuitry. Shpg. Wt. 28 lbs.

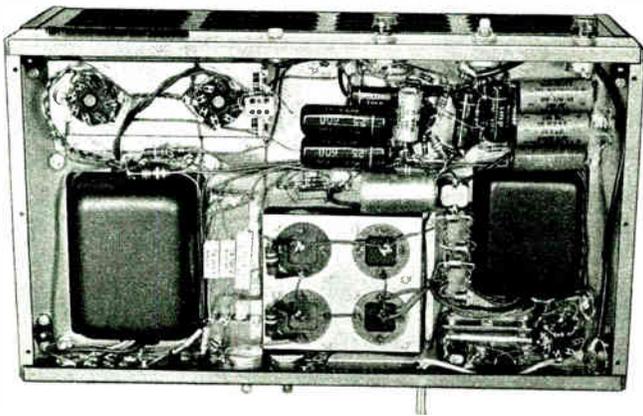


**MODEL W-7M \$54.95**

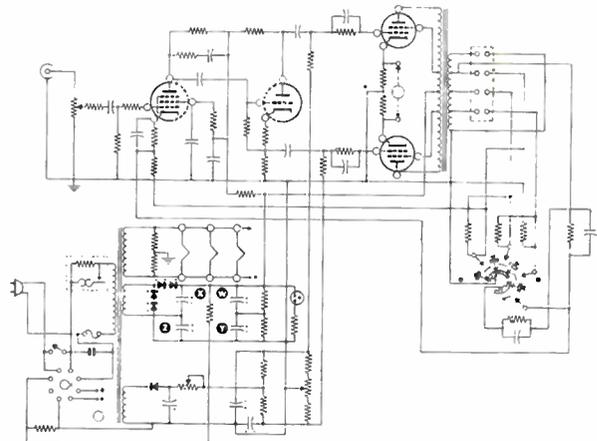
**MODEL W7:** Consists of W-7M Kit plus Model WA-P2 Preamplifier. Express only. Shpg. Wt. 35 lbs. \$74.70

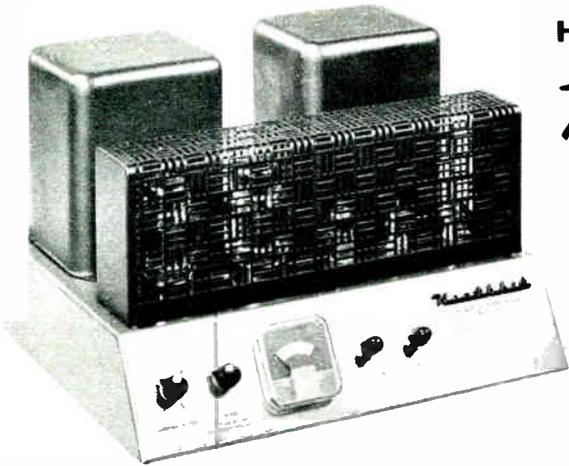
## Specifications

Power Output	..... 55 watts
Frequency Response at Full 55 Watt Output	..... ± 0.5 db from 20 to 20,000 CPS
Harmonic Distortion at Full 55 Watts	..... Less than 2%, 20—20,000 CPS
IM Distortion	..... Less than 1% (4:1 ratio, 60 and 6,000 CPS)
Hum and Noise	..... 80 db below 55 watts, unweighted
Input Sensitivity for 55 Watts Output	..... 2.0 volts
Damping Factor	..... Switch selected for either maximum (20) or unity (1) on 4, 8 and 16 ohm taps. Switch located on front panel
Tube Complement	..... 1—6AN8, 2—EL-34
Rectifier	..... Four 500 ma silicon rectifiers in a full-wave voltage doubler circuit
Power Requirements	..... 117 volts, 50-60 cycles, 90-160 watts
Dimensions	..... 8½" D x 6⅞" H x 15" W



Wide-open layout and circuit design make the W-7M easy to assemble.





## HIGH FIDELITY

# 70 Watt Amplifier KIT

*Enjoy Power-Packed  
Performance*

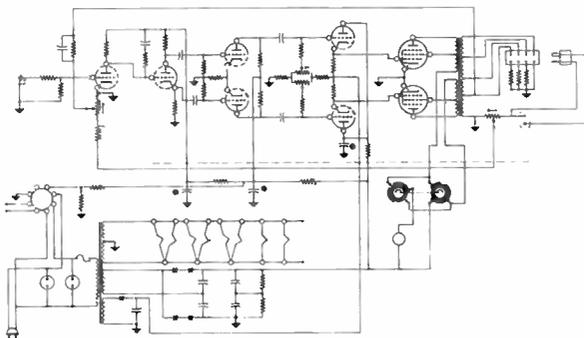
- Outstanding Stability and Power Supply Regulation
- Metered Balance Circuit-Variable Damping
- Silicon-Diode Rectifiers

**MODEL W-6M \$10995**

**MODEL W-6:** Consists of W-6M kit, plus WA-P2 preamplifier. Express only. Shpg. Wt. 59 lbs. **\$12970**

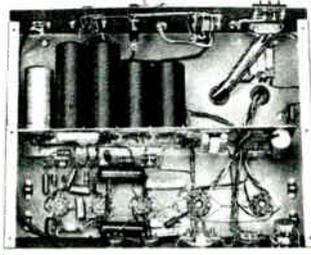
### Specifications

Power Output .....	70 Watts
Frequency Response at 1 Watt .....	$\pm 1$ db 5CPS—80 KC with controlled rolloff above 100 KC.
Harmonic Distortion at 70 Watts .....	Below .25% at 1 KC. Below 2%, 20 to 20,000 CPS.
Intermodulation Distortion at 70 Watts .....	Below 1%, 60 and 6,000 CPS.
Hum and Noise Level .....	88 db below full output
Damping Factor .....	Variable—0.5 to -10
Input Voltage for 70 Watts Output .....	.1 volt
Tube Complement .....	1—12AU7, 1—12AX7, 1—12BH7, 2—6550
Output Transformer .....	Peerless—special design. Output taps at 4, 8 and 16 ohms, and 70 volts
Dimensions .....	11 $\frac{1}{8}$ " D. x 9 $\frac{1}{8}$ " H. x 14 $\frac{1}{4}$ " W.



### CLEAN CHASSIS LAYOUT

Note the accessibility of the sub-chassis type construction. Rugged, well rated components are easy to install and wire, cutting assembly time to a minimum.



Why 70 watts? This is a question asked by many hi-fi enthusiasts. Serious audiophiles have felt the need for such an amplifier, and the Heathkit W-6M 70-watt amplifier is designed to fulfill that need. As the audio art progresses, so have the requirements of hi-fi components. Loud speaker systems, for example, have vastly improved in bass response, necessarily decreasing their efficiency. Therefore, more amplifier power is required for the same acoustic output from the speaker. The ever-increasing dynamic range of LP records and pre-recorded tapes, approaching concert hall realism, points up another need for more undistorted amplifier power. Even though the full rated power output may be demanded only on the loudest musical passages and transients, it is extremely important that the amplifier be capable of supplying a reserve power with negligible harmonic and intermodulation distortion.

The design objectives behind the Heathkit W-6M were to provide a high power amplifier of the highest quality, at a price well within the range of the average audiophile. The high degree of performance achieved, through the use of advanced up-to-the-minute design techniques is more than sufficient to satisfy the most critical audio connoisseur.

Silicon-diode rectifiers are used in the W-6M because of their compactness and long life. They have no filament to burn out or cause unnecessary heat. A heavy-duty transformer, coupled with the rectifiers, provides extremely good power supply regulation. The output circuit employs 6550 tubes with a specially designed Peerless output transformer for maximum stability at all power levels, and a variable damping control for optimum performance with any speaker system. A quick change plug selects 4, 8, and 16 ohm or 70 volt output and the correct feedback resistance. A built-in meter indicates when output tubes are in proper balance, eliminating the need for an external meter. The meter also provides a means of spot-checking performance and condition of output tubes. The handsomely styled metal shield prevents tube breakage and accidental burns. Thoughtful chassis layout assures ease of assembly by eliminating difficult, cramped working areas. Frequency response at 1 watt is within  $\pm 1$  db from 5 CPS to 80 kc with controlled rolloff above 100 kc. Harmonic distortion is below 2%—20 to 20,000 CPS and IM distortion is below 1%—60 to 6,000 CPS at full output, assuring quiet performance. Components used in the W-6M have generous safety margins so they are operating well below the maximum rating to assure you of years of dependable trouble free operation.

You will not only thrill to the superb performance of the W-6M, but will take great pleasure in displaying the attractive styling and rugged construction of this top quality instrument. Shipped express only. Shpg. Wt. 52 lbs.

### ENJOY IT NOW . . . PAY LATER

Heath's convenient time payment plan allows you to enjoy your own hi-fi now—and pay for it in easy installments. See order blank for complete details.

## HIGH FIDELITY

## 25 Watt Amplifier KIT

Own One of the Finest

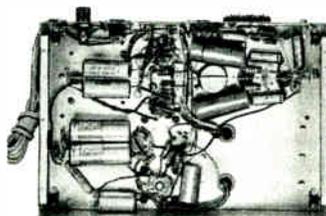
Specially Designed Peerless Output Transformer

Balance circuit requires only voltmeter for adjustment

Full 25 watt output with KT 66 tubes

Still a favorite in its power class, the W-5M represents one of the most outstanding high fidelity amplifiers available today at any price. It employs a specially designed Peerless output transformer and KT66 tubes to prevent loss of frequency response particularly 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. Also featured is a "tweeter saver" which suppresses high frequency oscillation, and an easy-to-adjust balancing circuit to obtain "dynamic" balance between output tubes. In order to reduce harmonic distortion at low frequencies it is essential that the plate current of the output tubes be balanced. The exclusive balancing circuit in the W-5M makes this balancing operation easier and much more accurate. Precision balanced resistors are connected in the cathode circuits of the power output tubes. When the current in each tube is balanced, the voltage drop across each precision resistor will be the same as the resultant potential will be if measured at both cathodes at the same time. A great advantage is gained, since the current in both tubes is measured simultaneously instead of one at a time and only a voltmeter is required. A load limiting device is built into the amplifier to provide high frequency and transient stability. Rising impedance affects of speaker systems at higher frequencies will frequently cause oscillation in a feedback type amplifier, since the amplifier fails to match the load at these frequencies. To counteract this, a resistor and condenser have been installed in series across the output transformer secondary. The condenser is chosen to prevent loading of the amplifier throughout the audible portion of the spectrum and still provide loading above these frequencies. Results of this unique circuit arrangement add up to improved phase shift characteristics, reduced IM and harmonic distortion and improved frequency response with complete stability under all dynamic operating conditions.

All connectors and terminals are conveniently located on one side of the chassis apron. The circuit is fused, and two AC outlets are provided for accessory equipment. One outlet is switch-operated and can be used to automatically turn off record player motor when amplifier is turned off. Provision is made for matching 4, 8 or 16 ohm speakers at a terminal strip on the chassis. An attractive cover protects against tube breakage and accidental burns. The bottom plate has large rubber feet to prevent marring of furniture. Featuring stylish gold and black color harmony, the amplifier is suitable for built-in locations or as a bookshelf model. Conservatively rated, high quality components are used throughout to insure years of trouble-free performance. Easy to build and a thrill to use. Shipped express only. Shpg. Wt. 31 lbs.

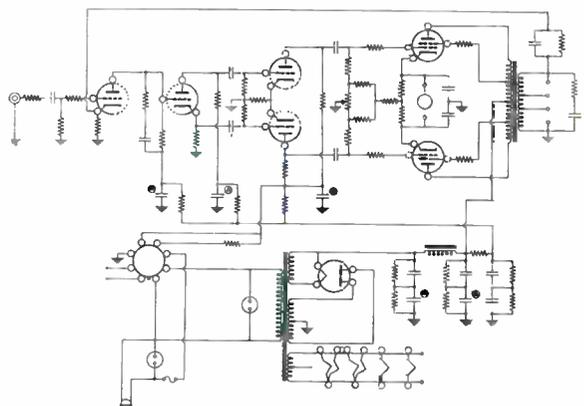


MODEL W-5M \$5975

MODEL W-5: Consists of W-5M kit plus model WA-P2 preamplifier. Express only. Shpg. Wt. 38 lbs. \$7950

## Specifications

Power output.....	25 Watts
Frequency Response.....	$\pm 1$ 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.....	13 $\frac{1}{8}$ " wide x 6 $\frac{1}{2}$ " deep x 8 $\frac{1}{4}$ " high





**MODEL W4-AM \$3975**

MODEL W-4A: Consists of W4-AM kit plus model WA-P2 Preamplifier. Express only. Shpg. Wt. 35 lbs. **\$5950**

*Specifications*

- Power Output ..... 20 watts
- Frequency Response .....  $\pm 1$  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 30 watt output ..... 2 volts
- Tube Complement ..... 2—6SN7G<sup>-</sup>, 2—5881, 1—5V4G
- Output Transformer ..... Chicago Standard, Special Design
- Power Requirements ..... 105-125 volts, 50/60 cycles, 115 watts
- Dimensions ..... 15 $\frac{1}{4}$ " by 8 $\frac{3}{4}$ " shelf space, 7" high (allow 1 $\frac{1}{2}$ " by 15 $\frac{1}{2}$ " additional shelf space for cables and connections)

**SINGLE-CHASSIS HI-FI**

**20 Watt Amplifier KIT**

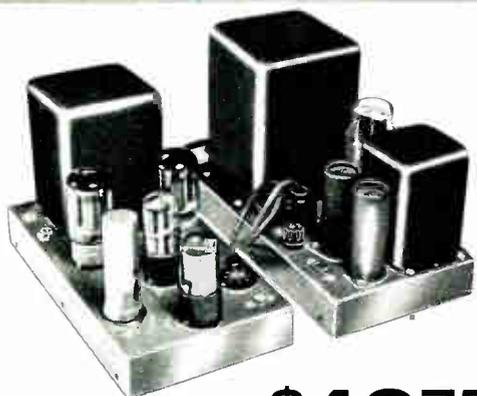
Offering you all of the advantages of the incomparable "Williamson" amplifier circuits, the Heathkit W4-AM stands out as a remarkable dollar value.

Now, ten years after the advent of the Williamson circuit the design still accounts for by far the greater percentage of all high fidelity power amplifiers in use today.

In recent years, literally thousands of people have built and used Heathkit Williamson-type amplifiers. They represent a large majority of the units of this type now in use throughout the audio conscious world. The W4-AM amplifier incorporates all the worthwhile improvements and modifications resulting from this unequalled background.

Employing 5881 push-pull output tubes and a specially designed Chicago Standard output transformer, the W4-AM provides you with a full fidelity amplifier featuring extended frequency response, low distortion and low hum level. Frequency response extending from 10 CPS to 100,000 CPS within  $\pm 1$  db at 1 watt assures you of full coverage of the entire audio range, and clean clear sound amplification takes place in circuits that hold harmonic distortion at 1.5% and IM distortion below 2.7% at full 20 watt output. Hum and noise are 95 db below full output. Taps on the output transformer are at 4, 8 or 16 ohms to match the speaker system of your choice. Used with the Heathkit WA-P2 Preamplifier, the W4-AM can be installed in an equipment cabinet or other suitable location and be controlled remotely.

Hours and hours of relaxation and enjoyment are yours with a high fidelity system in your home. Assemble the W4-AM in just a few hours and use it with the Heathkit WA-P2 Preamplifier for outstanding hi-fi entertainment. Shipped express only. Shpg. Wt. 28 lbs.



**MODEL W3-AM \$4975**

MODEL W3-A: Consists of W3-AM kit plus model WA-P2 Preamplifier. Express only. Shpg. Wt. 37 lbs. **\$6950**

*Specifications*

- Power Output ..... 20 watts
- Frequency Response .....  $\pm 1.5$  db from 20 to 80 kc at 1 watt
- Harmonic Distortion ..... 1% at 20 watts
- Intermodulation Distortion ..... 1.2% at 20 watts (60 and 6000 cps, 4:1)
- Hum ..... 85 db below 20 watts
- Damping Factor ..... 14:1
- Input Voltage for 20 watt output ..... 0.85 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 5 $\frac{1}{2}$ " wide by 11" long

**DUAL-CHASSIS HI-FI**

**20 Watt Amplifier KIT**

The model W3-AM offers you the superior performance of the Williamson-type amplifier circuit along with the additional convenience of flexible custom installation. The power supply and amplifier stages of this fine amplifier are located on separate chassis, connected with a cable. The two units can be mounted side by side or one above the other as desired. This flexibility proves a great advantage when installing the instrument in custom made cabinets or enclosures where space may be at a premium.

Employing the Williamson-type high fidelity circuit the W3-AM features the famous Acrosound TO-300 "ultralinear" output transformer and 5881 tubes for broad frequency response, low distortion and low hum level. The result is exceptionally fine overall tone quality. The output transformer has taps at 4, 8 or 16 ohms to match the speaker system of your choice.

You need absolutely no technical or electronic background to assemble this high fidelity amplifier. The concise step-by-step instructions furnished with this, and all other Heathkits, make assembly an enjoyable activity. Large, clearly illustrated pictorial diagrams enable you to identify all parts and components.

You can also be confident of the faithful performance and long life of this instrument as none but the highest quality materials are used.

Get started now on the way to real hi-fi enjoyment with this outstanding power amplifier. Teamed with the Heathkit WA-P2 Preamplifier, a program source and speaker system, you will join the thousands who are thrilling to the excitement and pleasure of home hi-fi reproduction. Shipped express only. Shpg. Wt. 29 lbs.

## PARCEL POST RATE TABLE

**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.

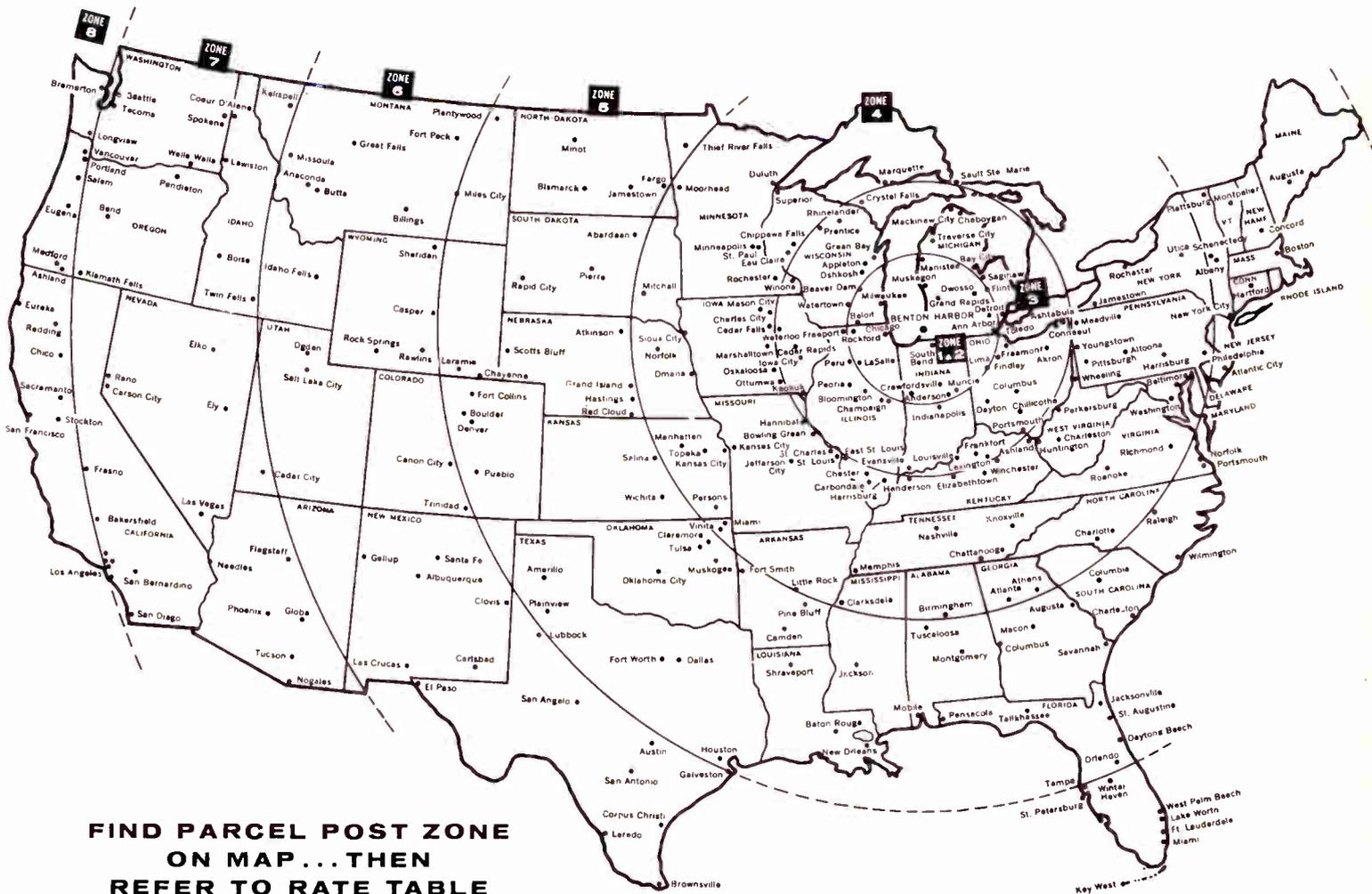
Ship. Wt.	Local	Zone 1 & 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
1 lb.	\$.18	\$.23	\$.24	\$.26	\$.28	\$.30	\$.32	
2 lbs.	.20	.27	.29	.31	.36	.40	.46	.51
3 lbs.	.21	.31	.34	.38	.45	.52	.61	.69
4 lbs.	.23	.35	.39	.45	.54	.64	.76	.87
5 lbs.	.24	.39	.44	.52	.63	.76	.91	1.05
6 lbs.	.26	.43	.49	.59	.73	.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

### IMPORTANT:

Any parcel post rate changes enacted since August 1958 are not reflected in this table. If such changes have taken place, check with your Postmaster, and send enough postage to cover new rate.

### DISTANCE FROM BENTON HARBOR

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



**FIND PARCEL POST ZONE ON MAP... THEN REFER TO RATE TABLE**

at left 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 83c. If you do not know your postal zone, ask your postmaster.

**USE THIS HANDY ENVELOPE  
WHEN ORDERING**

Fold, enclose order blank with remittance  
seal, stamp and mail.

FOLD 1

**BEFORE SEALING...**

*Have you:*

- a) Filled out order blank completely?
- b) Included postage with remittance on cash order?
- c) Completed credit form for time payment order?
- d) Given us your correct **post office address** where this may not be the same as the name of your suburb?

FOLD 3

**HEATH COMPANY**  
**BENTON HARBOR, MICHIGAN**

PLACE  
STAMP  
HERE

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY & STATE \_\_\_\_\_

FOLD 4

FOLD 2

**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.

**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.

## PARCEL POST RATE TABLE

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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

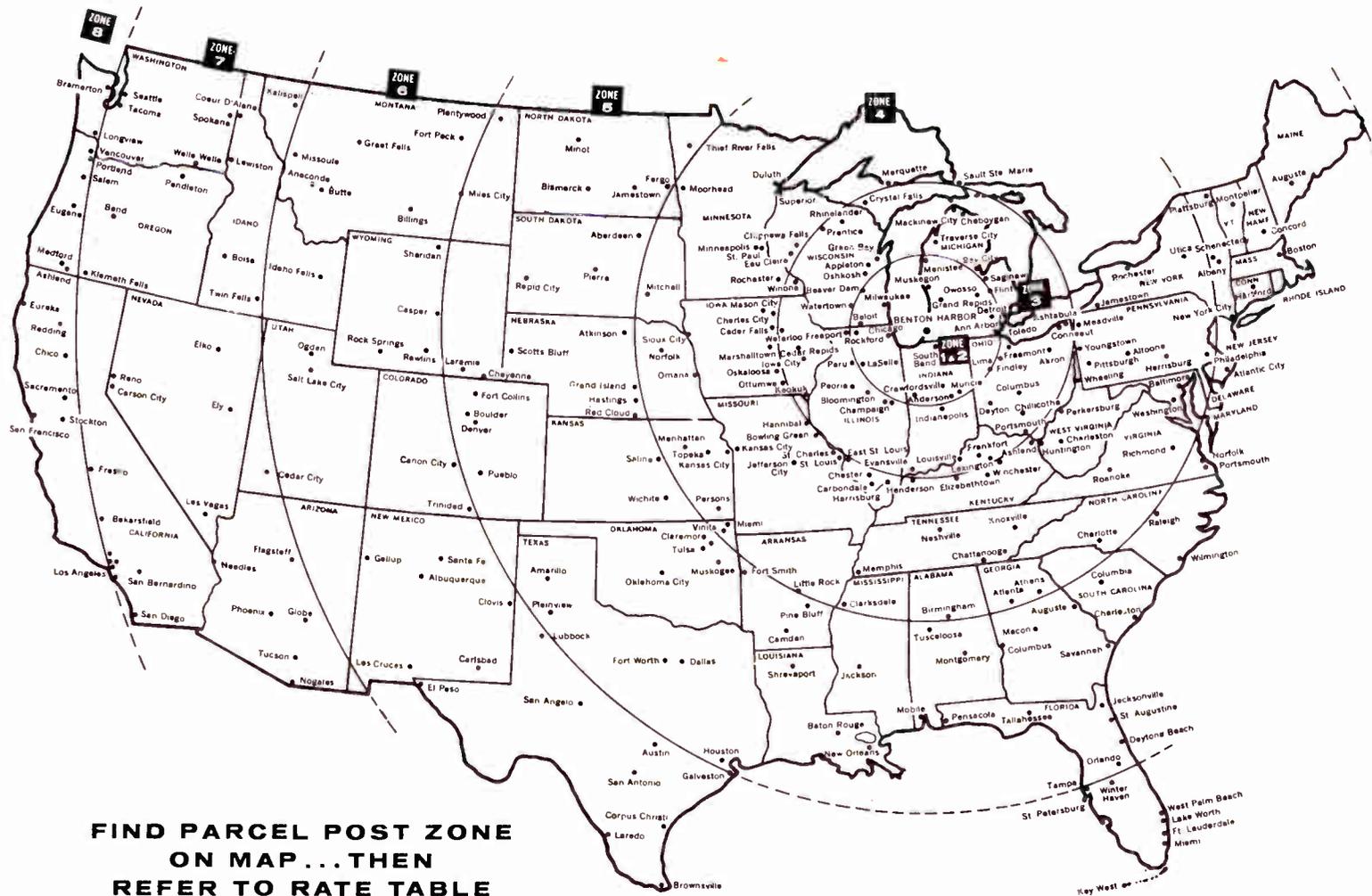
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Zone 4... 301 to 600 mi.  
Zone 5... 601 to 1000 mi.  
Zone 6... 1001 to 1400 mi.  
Zone 7... 1401 to 1800 mi.  
Zone 8... Over 1800 mi.

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at left 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 83c. If you do not know your postal zone, ask your postmaster.



**USE THIS HANDY ENVELOPE  
WHEN ORDERING**

Fold, enclose order blank with remittance  
seal, stamp and mail.

FOLD 1

**BEFORE SEALING...**

*Have you:*

- a) Filled out order blank completely?
- b) Included postage with remittance on cash order?
- c) Completed credit form for time payment order?
- d) Given us your correct **post office address** where this may not be the same as the name of your suburb?

FOLD 3

**HEATH COMPANY**  
**BENTON HARBOR, MICHIGAN**

PLACE  
STAMP  
HERE

NAME

ADDRESS

CITY & STATE

FOLD 4

FOLD 2

**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.

**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.

# "MASTER CONTROL" HI-FI Preamplifier KIT

*Complete Control of Your Hi-Fi System*

5 Switch-Selected Inputs, Each With Its Own Level Control

Equalization for LP, RIAA, AES and early 78's

Separate Bass and Treble Controls, Special Hum Control



**MODEL WA-P2 \$1975**

## Specifications

Inputs .....	Three high-level and two low-level inputs; individual level controls for each. High-level inputs, 1, 2 and TUNER, for 0.1 volts or higher; 0.5 megohm input impedance Low-level inputs, PHONO and MIC, for 0.1 volts or lower; phono input impedance normally 22 K ohm for magnetic phono pickup; microphone input impedance 2.2 megohms
Frequency Response .....	1.0 db from 25 cps to 30,000 cps. 1.5 db from 15 cps to 35,000 cps.
Hum and Noise .....	0.5 volt at TUNER input; 72 db below 2.5 volts RMS. 6 mv at PHONO input; 62 db below 2.5 volts RMS. 15 mv at MIC input; 70 db below 2.5 volts RMS.
Tone Control .....	Separate bass and treble tone controls. Bass control provides approximately 18 db boost and 12 db cut at 50 cps. Treble control provides approximately 15 db boost and 20 db cut at 15,000 cps.
Power Supply .....	Requires power from external source, as follows: 6.3 v AC at 1.0 amp.—300 v DC at 10 ma.
Dimensions .....	Cabinet only: 12-9/16" long, 3 3/8" high, 4 1/4" deep Overall: 12-9/16" long, 3 3/8" high, 5 1/4" deep
Weight .....	Net weight: 3 1/2 pounds Shipping weight: 7 pounds

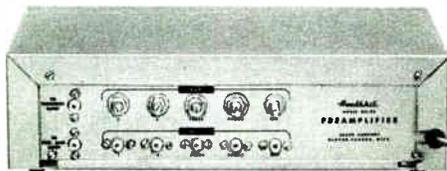
Designed to operate with the complete line of Heathkit Williamson-type amplifiers or their equivalent, the WA-P2 provides you with a versatile hi-fi control center of the highest quality. At your fingertips are almost infinite combinations of equalization and compensation, with separate bass and treble cut and boost tone controls.

Five switch-selected inputs are provided, each with its own level control to eliminate blasting or fading while switching through the various inputs. The inputs will accommodate a record player, tape recorder, AM-FM tuner, TV receiver, or microphone, etc. Provision is also made for a tape recorder output that is not affected by the volume or tone controls so that the program material being recorded can be monitored without affecting the recording. A special hum control is provided for absolute minimum hum level. The low impedance cathode-follower output circuit allows complete installation flexibility, making the WA-P2 ideally suited for "remote" installations as output lead length is not critical.

Equalization is provided for records through separate turnover and rolloff switches for LP, RIAA, AES and early 78's. The turnover switch produces the rising low-frequency characteristics required for proper equalization since record manufacturers deliberately limit the low frequency intensity to avoid cutting into adjacent grooves. The rolloff control de-emphasizes the high frequencies, removing much of the noise and scratch through four positions of compensation (8, 12, 16 and 1 flat position). Separate tone controls provide 18 db boost and 12 db cut at 50 CPS on bass and 15 db boost and 20 db cut at 15,000 CPS on treble. Power requirements for the WA-P2 are 6.3 volts AC at 1 ampere, and 300 volts DC at 10 ma from the basic amplifier with which it is used.

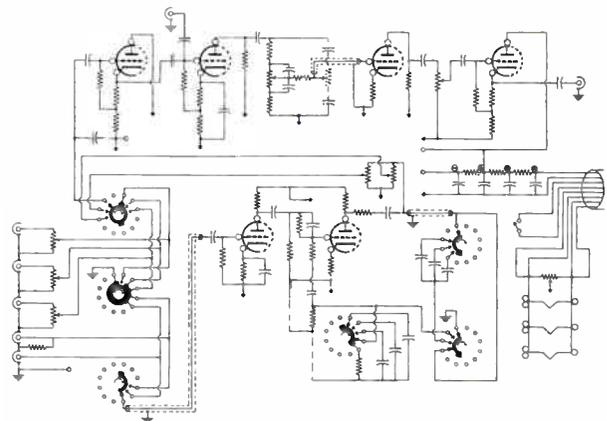
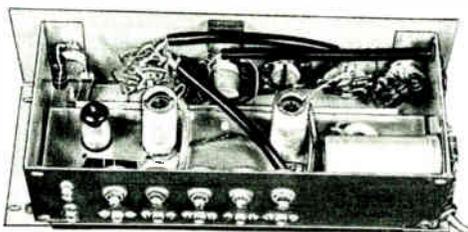
Additional features of the preamplifier include tube shielding, plastic sealed capacitors, smooth acting controls, good filtering and excellent decoupling, low hum and noise level and an all-steel cabinet. All components used in the instrument were carefully selected for their high quality to assure you of years of trouble-free operation.

The clean lines of the gold colored case highlighted by the feather gray control knobs with gold inserts makes the WA-P2 a showpiece anywhere in the home. Successful construction is assured through the use of easy-to-follow instructions and pictorial diagrams. Shpg. Wt. 7 lbs.



Five switch selected inputs with individual level controls will accommodate a record changer or player, tape recorder, AM-FM tuner, TV receiver, or microphone, etc.

Convenient sub-chassis design and open circuit layout make the WA-P2 Preamplifier easy to assemble.

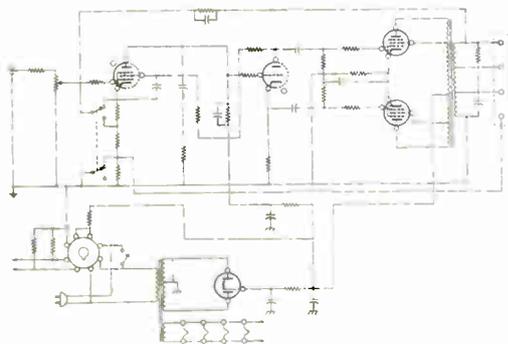




MODEL UA-1 **\$2195**

*Specifications*

Power Output	12 watts
Frequency Response	± 1 db from 20 to 20,000 cycles at 12 watts output
Hum and Noise	73 db below 12 watts 63 db below 1 watt
Output Impedances	4, 8, and 16 ohm
Damping Factor	Switched for unity or maximum. Maximum damping ratio = 15.66
Tube Complement	1—6AN8 1—EZ81 (6CA4) 2—EL84 (6BQ5)
Input and Output Terminations	Input—standard (phono) jack. Output—4-screw terminal strip
Power Requirements	117 volts 50-60 cycles, 75 watts
Dimensions	10" wide x 6½" deep x 4¼" high



**Electronic Cross-Over KIT**

This versatile instrument is designed to operate with a two-way speaker system where separate power amplifiers are used for the high and low frequencies (see block diagram). Since the crossover unit operates ahead of the main amplifiers instead of between the amplifier and speakers, no output power is lost in the crossover unit itself. Also, it is possible to vary crossover frequencies over a wide range, in contrast to conventional, limited mechanical crossovers. The XO-1 contains two independent electronic filters, one high-pass and one low-pass, each with a rotary switch for selecting cutoff frequency. Because high and low frequencies are amplified separately, IM distortion problems are virtually eliminated. Each channel has its own separate level control. Crossover frequencies are 100, 200, 400, 700, 1200, 2000 and 3500 CPS. Attenuation is 12 db per octave with sharp "Knee" at the cutoff frequency. Shpg. Wt. 6 lbs. **\$1895**

**"UNIVERSAL" HI-FI  
12 Watt Amplifier KIT**

*Ideally Suited  
for Stereo Applications*

- Less than 2% Harmonic Distortion Throughout Entire Range
- Unity or Maximum Damping on 16 ohm Tap
- "On-Off" Switch located on Chassis

Because of its economical price, compact size, and variety of uses, the UA-1 has been aptly titled a "universal" amplifier, providing you with a remarkable all around hi-fi amplifier. With the exception of its lower power output it has been designed to offer the same high fidelity performance as the famous Heathkit Williamson-type amplifier line. The UA-1 provides an ideal, low cost foundation for building a more advanced hi-fi system in the future.

As the name implies, the "universal" amplifier has a wide range of applications, and it is quite likely that other uses not mentioned here will eventually be found. Primarily the unit is designed for conventional operation, monaurally with any standard preamplifier such as the Heathkit WA-P2 or the more elaborate SP-1 and SP-2 models.

Another ideal application of the UA-1 is to use it in conjunction with an electronic crossover, such as the Heathkit XO-1, as either a high channel or low channel amplifier or both. This amplifier delivers adequate power to drive any conventional speaker.

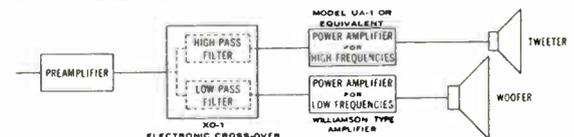
Perhaps one of the more common uses of the UA-1 will be in stereo applications since it lends itself to low cost, high quality stereo reproduction.

Other uses include: small wired music systems for the home, or as a line bridging amplifier for unbalanced lines. These, and many other uses are aided by provision for switching the amplifier on and off either on the chassis or in remote locations such as on the WA-P2.

The "on-off" switch is located right on the chassis and an octal plug is provided to connect the preamplifier for remote control operation. Taps are provided for 4, 8, or 16 ohm speakers. The 16 ohm tap features switch damping for unity or maximum. An input level control makes the UA-1 adaptable for use with wired music systems where a preamplifier is not required. Top quality components are used throughout. Easy-to-follow instructions, along with clearly illustrated diagrams assure ease of assembly. A truly remarkable amplifier for the price. Shpg. Wt. 13 lbs.



MODEL XO-1



“BOOKSHELF” HI-FI

# 12 Watt Amplifier KIT

*Combines Utility  
Style and Quality*

Less than 2% distortion at full output over entire audio range.

Built-in Preamplifier—3 switch-selected inputs—RIAA Equalization.

Push-Pull EL 84 output tubes—specially designed output Transformer.

Combining a top quality amplifier and preamplifier in a single attractive package makes this Heathkit a most outstanding buy. A true high fidelity instrument, it has been designed to fulfill the requirements of the most critical audiophile at the lowest possible cost. The strikingly handsome case and compact size of the unit make it ideal for use in the open on a bookcase or end table.

Taking advantage of the most recent developments in audio science, the EA-2 uses miniature tubes throughout, including EL84 output tubes in a push-pull tapped-screen output circuit employing a specially designed output transformer. The output transformer is tapped at 4, 8, and 16 ohms to match almost any speaker system. The preamplifier section features three separate inputs; mag phono, crystal phono and tuner. RIAA equalization is featured on the mag phono input and the crystal phono input impedance is 2.2 megohms as recommended by most cartridge manufacturers. Boost and cut action are provided by separate bass and treble tone controls. Quiet operation is assured by the use of a special hum balance control.

Full range frequency response is achieved from 20 to 20,000 CPS within  $\pm 1$  db. Harmonic distortion is less than 2% at full 12 watt output over the entire range (20-20,000 CPS). Intermodulation distortion is less than 2% at 12 watts, with low hum and noise.

The handsome case is of vinyl-coated steel in leather-like texture of black with tiny flecks of inlaid gold. Brushed-gold trim adorns the front panel while control knobs are buff with gold inserts. In the top center of the front panel a neon pilot lamp tells you when the amplifier is on. The vinyl plastic bonded to steel is practically indestructible, resisting scuffing, wear, abrasion, chemicals, heat or flame. Wipes clean in seconds with damp cloth.

If desired, the EA-2 may be mounted in an equipment cabinet. A full size template is supplied. Construction is simplified through the flat chassis layout eliminating cramped working areas. Large pictorial diagrams and step-by-step instructions assure ease of assembly. Shpg. Wt. 15 lbs.



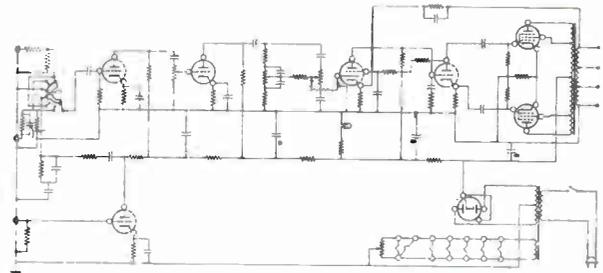
MODEL EA-2 **\$2895**

## Specifications

Power Output ..... 12 watts  
 Overall Frequency Response  
 at 12 Watts .....  $\pm 1$  db 20 to 20 kc.  
 Harmonic Distortion at  
 12 Watts ..... 2% or less @ 12 watts 20-20 kc.  
 Intermodulation Distortion  
 at 12 Watts ..... 2% (4:1 ratio 60 & 6,000 CPS)  
 Hum and Noise Level ..... 47 db below 12 watts, MAG phono  
 63 db below 12 watts, AUX inputs

Input Sensitivity for  
 12 Watts out:  
 Mag Phono ..... .006 volts at 1,000 CPS  
 Crystal Phono ..... .30 volts  
 Tuner ..... .25 volts

Tone Controls:  
 Bass (at 30 CPS) ..... 15 db boost 17 db cut  
 Treble (at 15 kc) ..... 12 db boost 20 db cut  
 Tube Complement ..... 1-12AX7, 1-6C4, 1-6AN8, 2-EL84, 1-EZ81  
 Power Supply ..... Transformer operated  
 Power Requirements ..... 117V, 60 cycle AC, 100 watts  
 Dimensions ..... 12 $\frac{1}{2}$ " W. x 8 $\frac{1}{4}$ " D. x 4 $\frac{3}{8}$ " H.  
 Shipping Weight ..... 15 pounds



MODEL A-9C

## 20 Watt Amplifier KIT

Offering you performance, flexibility and utility at budget cost, the A9-C contains features unusual in instruments in this price range. The preamplifier, main amplifier and power supply are all on one chassis, thus fulfilling the need for a good all-around amplifier with a minimum cash investment. Ideal for home hi-fi installations, the A9-C is also capable of handling public address requirements. It has excellent gain characteristics and 6L6 push-pull tubes provide full 20 watt output. Four separate inputs are provided in the preamplifier section, each properly compensated and selected by a panel-mounted selector switch. Separate bass and treble tone controls offer 15 db boost and cut. Twin-triode miniature tubes in pre-amplifier, tone control and phase splitter stage are employed for low hum and low noise levels. 4, 8, 16 and 500 ohm taps are provided on the output transformer to match most all speaker systems. The shielded power transformer is of the heavy-duty “potted” type. The front plate of the A9-C is detachable so the unit can be panel-mounted if desired. Shpg. Wt. 23 lbs. **\$3550**



**MODEL FM-3A \$2695**

*Specifications*

- Tuning Range ..... 88-108mc
- 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 Requirement ..... 105-125 volts 50-60 cycles AC 35 watts
- Dimensions Overall ..... 12 $\frac{1}{2}$ " long x 3 $\frac{3}{8}$ " high x 5 $\frac{7}{8}$ " deep

**HIGH FIDELITY**  
**FM Tuner KIT**

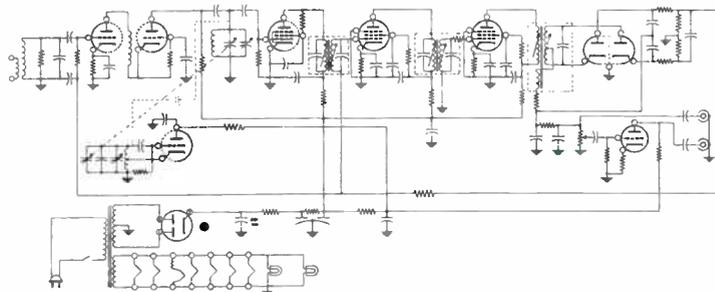
*Your Lowest Cost Way to Hi-Fi Enjoyment*

Among the many marvelous sources to choose from, FM programming still remains your most inexpensive means to hi-fidelity entertainment. The Heathkit Model FM-3A Tuner is a time proven kit that offers sensitivity, selectivity and stability unusual at this low price.

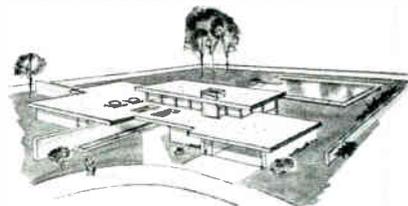
The specially designed, efficient circuit employs seven miniature tubes to provide you with better than ten microvolts sensitivity for 20 db of quieting. A fixed output and a variable output are incorporated allowing the output to be controlled from either the amplifier or the Tuner.

An outstanding feature of the Tuner is the "Ratio detector" type output transformer which has the advantage of being self-AM-limiting, eliminating the need for two limiter stages. As a result, the limiting threshold, encountered with ordinary discriminator type transformers, does not have to be overcome thus allowing many more stations to be tuned without interference and distortion. For this reason the FM-3A, although rated at 10 microvolt sensitivity, will outperform 2 and 3 microvolt tuners.

Automatic gain control and special temperature-compensated condensers provide positive lock-in characteristics and steady, no-drift operation after initial warm up. A built in power supply is also featured. The transformers are prealigned and the front end unit partially pre-assembled and prealigned for ease of assembly. Tuning takes place on an edge lighted slide-rule dial. Handsome case makes attractive table top tuner—or install it panel-mounted if desired. A truly worthwhile investment. Shpg. Wt. 8 lbs.



**RESEARCH HOUSE FEATURES HEATHKIT HIGH FIDELITY**



Research House 1958-59 is the 5th in a continuing annual series of field test laboratory houses which are planned, built, equipped, furnished and displayed by "Architectural Products," the National News Magazine for Architects, and "House and Patio," the Southern California Magazine of Homes. Designed by William M. Bray AIA, Research House 1958-59 is now under construction and will be on display beginning September 1st. It will be located on a half acre site in San Fernando Valley, a few miles out of metropolitan Los Angeles. It is expected, based on past experience with the project, that 250,000 building professionals and consumers will be attracted to the site. Heath Company is indeed proud to have its own equipment chosen to represent the latest development in hi-fidelity listening pleasure for America's foremost demonstration house.

*Finally . . .  
a Practical  
Down-to-Earth  
Book about Hi-Fi  
for your Home!*



"The How and Why of Hi-Fidelity" by Milton Sleeper, publisher of Hi-Fi Music at Home Magazine, is a liberally-illustrated, 48-page booklet which not only answers your questions about the nature of hi-fidelity—but spells out fundamental principles for sensible hi-fi system planning. In language the layman can understand, Mr. Sleeper tells the complete hi-fidelity story and illustrates typical Heathkit components used in building hi-fi systems from the simplest to the most complex. You can order your copy now by sending 25¢ for each book desired with your name and address directly to the Heath Company, Benton Harbor, Michigan.

**ELECTRONIC**

# Analog Computer KIT

- One Standard Reference Supply for Amplifier DC Voltages
- A Nulling Meter for Accurate Setting of Computer Voltages
- A Unique Patch-board Panel Which Enables the Operator to "See" His Computer Block Layout
- 30 Coefficient Potentiometers—2-10 Turn Precision Auxiliary Potentiometers



MODEL ES-400  
CABINET

**FULL COMPUTER GROUP C \$945<sup>00</sup>**

Complete

Write for further information

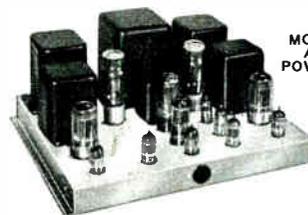
**TYPICAL GROUP**

**FULL COMPUTER KIT—GROUP C \$945**  
CONSISTS OF:

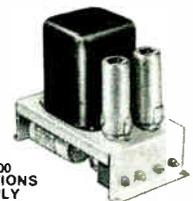
- |         |        |   |
|---------|--------|---|
| One     | ES 2   | Amplifier power supply kit              |
| One     | ES 50  | Reference power supply kit              |
| Three   | ES 100 | Initial condition power supply kits     |
| One     | ES 151 | Relay power supply kit                  |
| 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               |

**OTHER GROUPS AVAILABLE:**

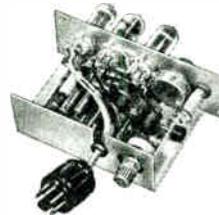
- BASIC COMPUTER KIT—GROUP A \$520.00**
- MEDIUM COMPUTER KIT—GROUP B \$760.00**



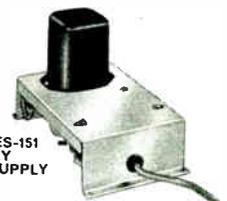
MODEL ES-2  
AMPLIFIER  
POWER SUPPLY



MODEL ES-100  
INITIAL CONDITIONS  
POWER SUPPLY



MODEL ES-201  
AMPLIFIER



MODEL ES-151  
RELAY  
POWER SUPPLY



MODEL ES-505  
REPETITIVE  
OSCILLATOR

**ES-600 FUNCTION GENERATOR KIT**

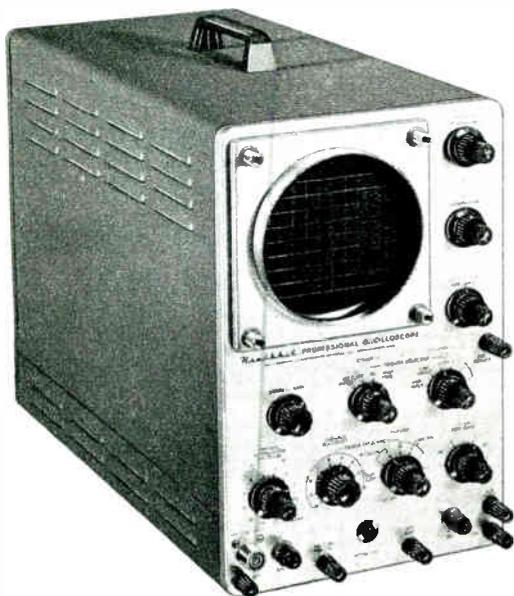


The model ES-600 Function Generator is designed to be used with the Heath Analog Computer. The unit approximates curves or functions by straight line segments, five in the plus X direction and five in the minus X direction. The break voltage and slope of the segments are set

by controls on the front panel. Power requirements are: +250 V at 16 MA; -250 V at 16 MA; 117 V AC at 100 MA.

**FREE FOLDER:**

Complete details concerning the Heathkit Electronic Analog Computer Kit are available free on request. This folder explains exactly what each computer group consists of, and explains the function of each element in the group. Send for your free copy now and get the complete computer story.



# "PROFESSIONAL" 5" DC Oscilloscope KIT

*Here's the Scope  
You've Been Waiting For!*

Calibrated Driven Sweep With Built-in Triggering Circuits  
DC Coupled Vertical Amplifier, Calibrated in Volts-per-CM  
Uses 5ADP2 Flat Face C. R. Tube—Edge-Lighted Grid-Screen

**MODEL OP-1 \$179<sup>95</sup>**

## Specifications

### VERTICAL CHANNEL

Frequency Response ..... Within 1 db—D. C. to 2.2 megacycles  
   Within 3 db—D. C. to 3.6 megacycles  
   Within 6 db—D. C. to 4.5 megacycles

Rise Time ..... Less than .1 usec

Input Impedance ..... 2.6 megohm shunted by 28 mmf.

Sensitivity ..... D. C. coupled: .1 V peak-to-peak for  
   1 cm deflection  
   A. C. coupled: .01 V peak-to-peak for  
   1 cm deflection. (Using built-in preamp.)

Coupling ..... AC or DC—switch selected

### HORIZONTAL CHANNEL

Frequency Response ..... Within 1 db from D. C.—450 kc.  
   Within 3 db from D. C.—600 kc.

Input Impedance ..... 1 megohm shunted by 37 mmf.

Sensitivity ..... 0.2 V peak-to-peak for 1 cm deflection

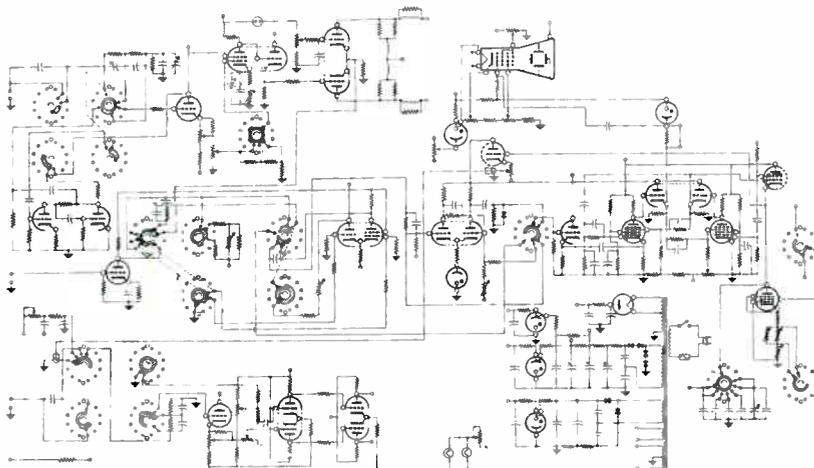
Dimensions ..... 8½" wide x 14¼" high x 19" deep

Power Requirements ..... 105-125 V AC, 50/60 cycles, 250 watts  
   max.

The model OP-1 Professional Oscilloscope is one of the finest instruments ever designed for kit-form construction. Not until now . . . could you get the complete versatility and many features designed into this instrument at such a tremendous price saving.

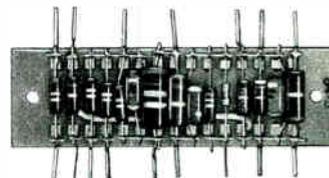
Perfect for all general as well as specialized applications the OP-1 features DC coupled amplifiers and also DC coupled CR tube unblanking. The triggered sweep circuit will operate on either internal or external signals and may be either AC or DC coupled. The polarity of the triggering signal may also be selected and any point on the waveform may be selected for the start of the sweep by using the "triggering level" control. The sweep frequencies are provided by switch-selected base rates of 2 and .2 milliseconds-per-CM, and 20, 2 and 1 microseconds-per-CM, in conjunction with the continuously variable 10-to-1 multiplier. Sweep frequencies are calibrated to within 10% at all control settings, and the sweep frequency may be reduced by adding capacity to the "EXT. CAP." binding post on the front panel. Vertical rise time is less than 0.1 microseconds. The 12-position vertical attenuator is calibrated in volts-per-CM and the horizontal sweep is calibrated in time-per-CM. Vertical coupling may be either AC or DC switch-selected. A 5ADP2 flat face CR tube is used for accurate readings on an edge-lighted grid screen. A high quality conetic-fernetic CR tube shield by Perfection Mica Company prevents trace distortion by stray AC fields.

The power supply is transformer operated utilizing silicon diode rectifiers and is fused for protection. All critical voltages are regulated with gas-filled voltage regulator tubes. A 150 V DC test voltage is available on the front panel for vertical channel calibration. Construction of the scope is greatly simplified through the use of prewired terminal boards, which provide rapid, easy assembly of all critical circuits. The attractive styling of this instrument is further enhanced by the silver anodized front panel with red and black lettering and matching knobs. The handsome louvered cabinet provides adequate ventilation for cooling. More than one year in development, the OP-1 promises outstanding results in any application requiring the use of an oscilloscope. Shpg. Wt. 34 lbs.



### STRIP PAC'S

This photo shows the five prewired terminal boards used in the construction of the OP-1. All parts are mounted and soldered with color-coded leads allowing neat and professional wiring of critical circuits.



"EXTRA DUTY"

# 5" Oscilloscope KIT

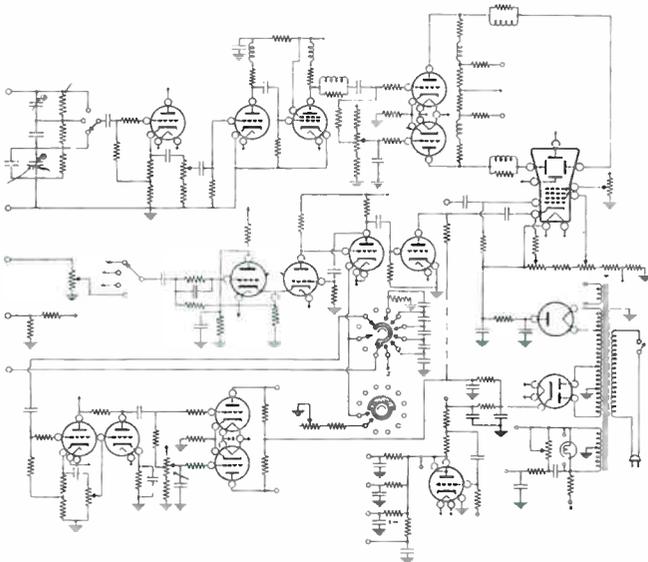
Laboratory Performance at Less Than Utility Scope Price!

Top quality features at half the cost of ordinary equipment sum up the advantages of this popular kit. Critical observations in your laboratory or shop are handled easily, with clear, sharp pattern displays in every application. It features wide band amplifiers which are essential in color TV servicing, and for specialized applications as well as general circuit investigation. Vertical frequency response extends from 3 CPS to 5 MC +1.5 db without extra switching. The response is down only 2.2 db at 3.58 MC. The sweep circuit functions effectively from 10 CPS to better than 500 kc in five steps, utilizing the Heath patented sweep circuit, which gives you five times the usual sweep obtained in other scopes. Excellent linearity and lock-in characteristics enables viewing a single wave, even at upper frequency limits. Both vertical and horizontal output amplifiers are push-pull and the scope incorporates a peak-to-peak calibrating source. The input to the vertical amplifier has a three-step frequency compensated input attenuator.

The 11-tube circuit features a 5UP1 cathode ray tube, and provision is made for Z-axis input for intensity modulation of the beam. The extremely short retrace time and efficient blanking action provides "picture book" display of essential TV waveforms. Positive trace position controls prevent bounce or overshoot.

Construction is simplified through the use of two etched metal circuit boards, and precut, cabled wiring harness which imparts a professional appearance to the oscilloscope wiring. In addition, the use of etched circuits reduces assembly time, eliminates wiring errors and permits stability levels difficult to obtain in conventionally wired circuits. Stray capacities and RF fields are safely controlled to eliminate undesirable effects.

The construction manual features schematics and pictorial diagrams and complete step-by-step instructions. In addition to being an outstanding performer, the model O-12 is the kind of professional looking instrument you will be proud to display on your work bench. 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. Shpg. Wt. 22 lbs.



MODEL O-12 \$65<sup>95</sup>

## Specifications

### Vertical Channel:

Sensitivity ..... 0.025 volts (RMS) per inch at 1 kc.  
 Frequency Response ..... Flat within  $\pm 1$  db from 8 cps, to 2.5 mc.  
 Flat, + 1.5 to -5 db; 3 cps to 5 mc.  
 Response at 3.58 mc, -2.2 db.  
 (All response measurements referred to 1 kc)  
 Rise Time ..... 0.08 microseconds or less  
 Overshoot ..... 10% or less  
 Input Impedance ..... In X1 attenuator position, 2.9 megohms  
 shunted by 21 uuf. (1 kc impedance,  
 2.7 megohms)  
 In X10 and X100 positions, 3.4 megohms  
 shunted by 12 uuf. (1 kc impedance,  
 3.3 megohms)

### Horizontal Channel:

Sensitivity ..... 0.3 volts (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 ..... 30 megohms shunted by 31 uuf.  
 (1 kc impedance, 4.9 megohms)

### Sweep Generator:

Range ..... 10 cps to 500 kc in five steps 10 to 100  
 cps, 100 to 1000 cps 1 to 10 kc, 10 to  
 100 kc, 100 to 500 kc.

Synchronizing ..... Automatic lock-in circuit using self-  
 limiting synchronizing cathode fol-  
 lower. Holds sweep speed essentially  
 independent of vertical gain settings.  
 Selector switch permits synchronizing  
 with either positive or negative signal  
 pulses internally, with external source  
 through panel terminal or with line  
 frequency.

Power Requirements ..... 105-125 volts 50-60 cycles AC at 80 watts;  
 fused

Dimensions ..... 8 $\frac{5}{8}$ " wide x 14 $\frac{1}{8}$ " high x 16" deep



NO. 342



NO. 337-C

### LOW CAPACITY PROBE KIT

This low capacity probe prevents loss of gain, circuit loading or distortion by providing correct instrument impedance matching in oscilloscope investigation of electronic circuits. Ratio of attenuation may also be varied with the variable trimmer condenser incorporated. Shpg. Wt. 1 lb.

### ETCHED CIRCUIT SCOPE DEMODULATOR PROBE KIT

Extends the usefulness of your oscilloscope by observing modulation envelope of RF or IF carriers in TV and radio receivers. Functions like AM detector to pass only modulation of signal and not signal itself. Voltage limits are 30 V. RMS and 500 V. DC. Shpg. Wt. 1 lb.



**MODEL OM-3 \$3995**

*Specifications*

- Vertical:
- Rise Time ..... 0.25 microseconds
  - Frequency Response .....  $\pm 3$  DB 4 cps to 1.2 megacycles  
 $\pm 6$  DB 3 cps to 2 megacycles
  - Sensitivity ..... 0.09 RMS volts per inch at 1 kc
  - Input Impedance at 1 kc. 2.6 megohms at X1  
 3.3 megohms at X10 and X100
- Horizontal:
- Frequency Response .....  $\pm 3$  DB 2 cps to 425 kc  
 $\pm 6$  DB 1 cps to 650 kc
  - Sensitivity ..... 0.275 RMS volts per inch at 1 kc
  - Input Impedance ..... 25 uufd shunting 10 megohms
  - Sweep Generator ..... Multivibrator 20 cps to over 150 kc
  - Astigmatism (Spot Shape) Control on chassis
  - Tube Complement ..... One 5BP1 cathode ray tube  
 Two 12AU7 horizontal cathode follower and amplifier. Horizontal deflection amplifier. One 12BH7 vertical deflection amplifier. One 6BA8 vertical cathode follower and amplifier. One 12AX7 sweep multivibrator. One 1V2 high voltage rectifier
- Power Requirements ..... 105-125 volts AC, 50/60 cycles, 65 watts
- Dimensions ..... 8 $\frac{1}{2}$ " wide x 14 $\frac{1}{2}$ " high x 18" deep

**"GENERAL PURPOSE"**

**5" Oscilloscope KIT**

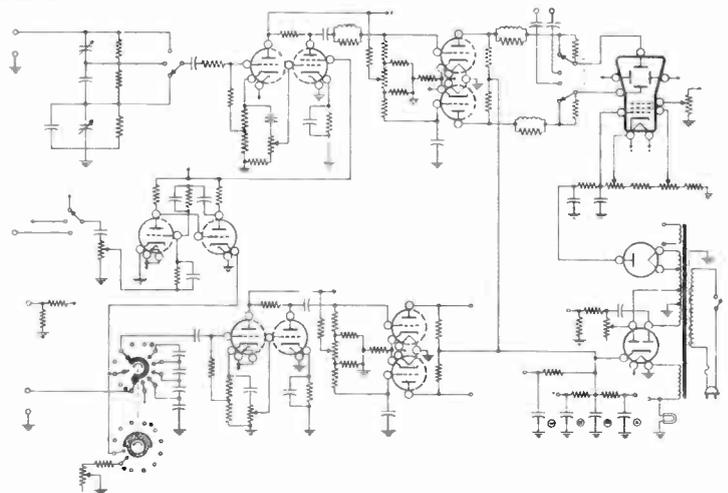
*A Scope You Will be Proud to Own*

This fine scope is a favorite with service technicians everywhere for servicing and routine laboratory work. It incorporates many "extras" not expected at this low price. Features include wide vertical amplifier frequency response, extended sweep generator operation, and improved frequency stability. Frequency response of the vertical amplifier is within  $\pm 3$  db from 4 cps to 1.2 mc with a sensitivity of 0.09 volts rms per-inch at 1 kc. The sweep generator functions reliably from 20 cps to over 150 kc.

Construction of the scope is greatly simplified through the use of a modern etched circuit board which provides a firm mounting for all standard components and permits high circuit stability. Parts locations are clearly screened on each board, preventing wiring errors.

Both vertical and horizontal amplifiers are push-pull types. A 5BP1 CR tube is employed and provision is made for external or internal sweep and sync. Other features include a built-in 1V peak-to-peak reference voltage, a calibrated grid screen, an adjustable "spot shape" control to insure a sharp trace and a step attenuated, frequency compensated vertical input circuit.

The OM-3 is an extremely versatile instrument and has a multitude of practical uses in electronic testing fields. Equip your shop with an oscilloscope now and enjoy the advantage of actually seeing the performance of the circuit under test. Shpg. Wt. 22 lbs.



**Electronic Switch KIT**



**MODEL S-3 \$2195**

This fine unit permits simultaneous observation of two different signals on your oscilloscope screen. Both signals are produced alternately at any one of four switching rates provided. A position control is provided so that the traces may be separated or superimposed on each other. Separate gain controls are provided for each channel, with sync output to lock oscilloscope sweep or time base to signal frequency. Functions at signal levels as low as 0.1 volt. Frequency response is  $\pm 1$  db, from 0 to 100 kc. Measures 9 $\frac{1}{2}$ " W by 6 $\frac{1}{2}$ " H by 5" D. Operates on 105-125 volts, AC 50-60 cycles. Shpg. Wt. 8 lbs.

**Voltage Calibrator KIT**



**MODEL VC-3 \$1250**

This calibrator is an excellent companion for your oscilloscope and is finding many applications in television trouble-shooting to locate operational faults quickly. Unknown signal levels can be measured by comparing them with the near-perfect square wave signals of known amplitude produced by the VC-3. Precision 1% attenuator resistors assure accurate output amplitude. Output frequency is approximately 1000 cps. Fixed outputs selected by panel switch are: 0.03, 0.1, 0.3, 1.0, 3.0, 10, 30 and 100 volts peak-to-peak. A signal feed-through position is provided. Measures 4 $\frac{3}{4}$ " H. by 7 $\frac{3}{8}$ " W. by 4 $\frac{1}{8}$ " D. Shpg. Wt. 4 lbs.

# COLOR BAR AND DOT Generator KIT

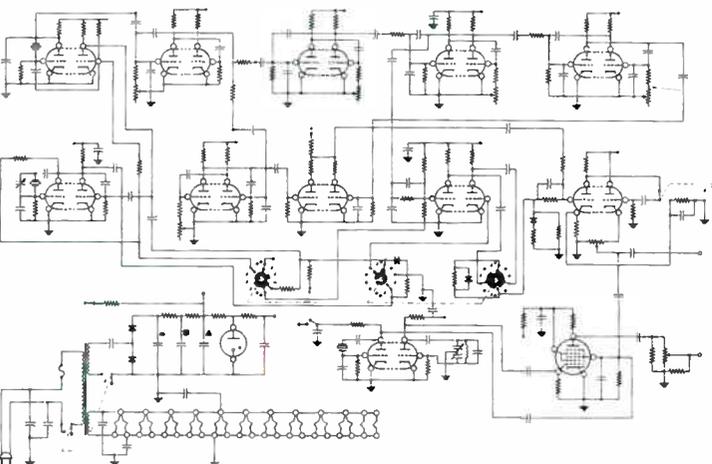
*Your Best Buy in a Color  
TV Service Instrument!*

- Crystal controlled accuracy (no external sync leads required)
- Choice of six different patterns (channels 2 through 6)
- Complete instructions on use in adjusting color receivers

The CD-1 combines two basic units, the color bar generator and white dot generator in one versatile portable instrument, capable of producing a white dot pattern, cross hatch, horizontal or vertical bar pattern, 10 color bars and a shading bar pattern. Ten vertical color bars are produced using the crystal controlled, off-set carrier method. Using these bars, a.f.c., phase and matrix alignment may be performed. A white leading edge and black trailing edge are provided on the color bars to check color fit. A new type of pattern, called shading bars, is provided for the adjustment of screen and background controls to obtain proper gray-scale tracking.

Horizontal and vertical sync pulses are crystal controlled to the same "frame" rate as a TV station. These pulses provide the necessary blanking and lock the various patterns firmly on the screen, without jitter or crawl. Self-contained sync pulses also eliminate the need for any bothersome external sync leads, and any one of the six available patterns may be selected with one switch, without any further adjustment to the generator or receiver. Dots are small sized and sharply defined, and are fixed as to size and number. The cross-hatch pattern may be used for linearity checks on either color or black-and-white receivers. The height and width of the raster may be determined by counting the fixed number of bars. Horizontal and vertical bar patterns are also available for convergence adjustments.

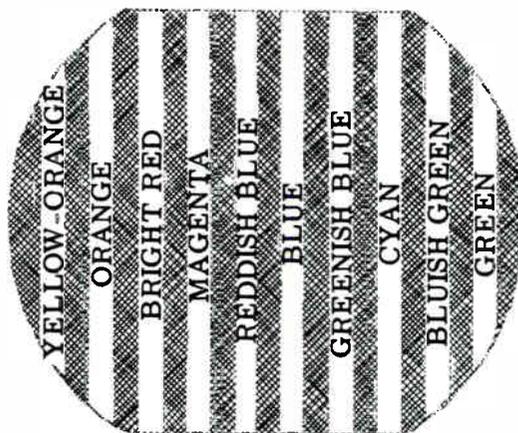
The CD-1 is compact, light in weight, and has smooth control action. The 13 tube circuit has been carefully laid out to allow ease of assembly. Easy-to-follow calibration instructions are furnished with actual oscilloscope patterns to aid in alignment. This kit is complete in every respect including three crystals and test lead. The power supply features voltage regulation and uses long-life silicon diode rectifiers. Compare with other generators on the market and you will realize what a tremendous dollar value it represents. Shipping Wt. 13 lbs.



**MODEL CD-1 \$59.95**

## Specifications

- RF Output
- Frequency Range..... TV channels 2 through 6. Output voltage variable from 100 to 100,000 microvolts
- Sound Carrier..... Crystal controlled unmodulated. 4.5 MC away from picture carrier. Off-on switch provided
- Video Output..... Positive or negative output variable from 0-10 volts peak-to-peak open circuit. Source impedance approx. 1,000 ohms
- Modulation..... White dot pattern, crosshatch pattern, horizontal bars, vertical bars, 10 vertical color bars, shading bar pattern
- Tube Complement..... 6—12AT7, 4—12AU7, 1—6BQ7, 1—6CS6, 1—OB2
- Power Requirements..... 117 volts AC, 50-60 cycles, 70 watts
- Dimensions..... 13" W. x 8½" H. x 7" D.



**COLOR BARS** Above are shown the color bars produced by the CD-1 when the hue control of the color set is in the center of its range. A white leading edge and black trailing edge are provided on the color bars to check color fit.



## TV ALIGNMENT

# Generator KIT

*For Fast, Easy Alignment  
of TV Sets*

- All-Electronic Sweep Circuit
- Built-in Crystal and Variable Marker Oscillators
- Complete FM and TV Coverage

**MODEL TS-4A \$49.50**

### Specifications

Band	Frequency (MC)	Output V (RMS)	Flat Within
"A"	3.6 to 10	0.23	± 1/2 db
"B"	10 to 26	0.22	± 1/2 db
"C"	30 to 80	0.11	± 1/2 db
"D"	80 to 220	0.08	± 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 0-4 mc lowest max. deviation 0-42 mc 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

6BO7A 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 cycles, 50 watts

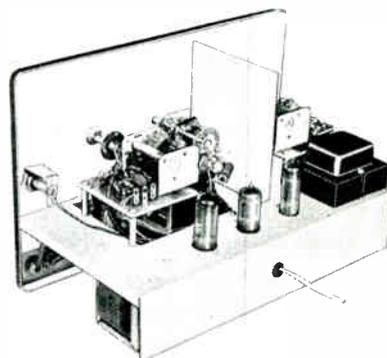
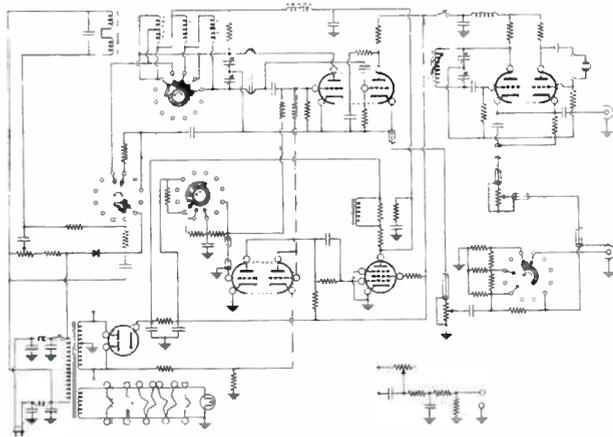
#### Dimensions

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

Many special design features have been built into this sweep generator to make it flexible, easy to operate and reliable. It provides the essential facilities required for alignment of FM, monochrome TV or color TV sets.

The all-electronic sweep circuit employs a controllable inductor, which varies frequency by magnetic means. Not only is this device trouble-free and consistent in performance, it also requires very little power to provide wide range sweeps with excellent linearity. The sweep circuit operates on fundamentals covering the range of 3.6 mc, to 220 mc in 4 bands. Sweep deviation is smoothly controllable from 0 up to as high as 42 mc, depending on frequency. Fundamentals are used throughout the entire range, eliminating spurious beats and parasitics that are so often troublesome in beat frequency type sweep generators. The use of fundamentals provides more RF output (well over .1 volt) at all frequencies, allowing cold alignment of tuned circuits, filters and traps, etc. Smooth control of signal output allows alignment of high gain stages without danger of overloading.

Crystal marker and variable marker oscillators are built-in. The crystal (included with kit) provides output at 4.5 mc and multiples thereof. The variable marker provides output from 19 to 60 mc on fundamentals and from 57 to 180 mc on harmonics. Marker accuracy is assured since it is calibrated against the 4.5 mc crystal supplied. Effective 2-way blanking eliminates the return trace and a phasing control is also provided. The many operational features in the TS-4A make it unique in the service field. The built-in crystal and variable markers afford a degree of flexibility rarely obtainable in any instrument designed specifically for servicemen. Many outstanding features at a tremendous price saving. Shpg. Wt. 16 lbs.



Sweep oscillator and marker sub-assemblies are well isolated through use of shielding and laminated phenolic sub-chassis, minimizing leakage, hum, and internal interference for uniform circuit performance.

# CATHODE RAY Tube Checker KIT

Here is the ideal tool for checking TV picture tubes. This handy instrument can be carried on service calls to demonstrate the quality of a customer's picture tube right in his own home.

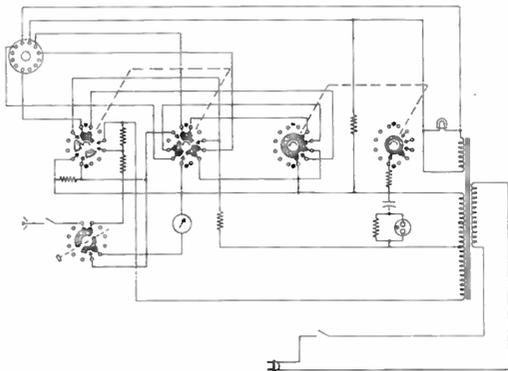
The CC-1 checks all electromagnetic deflection-type tubes using the duo-decal (12 pin) base. No worry about the type of focusing, electron gun or screen. Provision is made for testing for shorts, leakage and emission capabilities with a separate test for beam current. Picture tubes can be tested right in the receiver or carton without removing. No ion trap is required. Special provision is made 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 is required; it's all contained in the CC-1. The projected spot of light will show the customer the relative quality of the tubes fluorescent coating and light-giving quality of screen phosphor. The CC-1 is AC power transformer operated and supplies all operating voltages to the cathode ray tube. It is designed to last a lifetime—no tubes to burn out or replace. A permanent test cable with CRT socket and anode connector is included. Quality indications are read on a large 4½" three color meter scale and shorts on a neon leakage indicator. The CC-1 is housed in an attractive luggage-type portable cabinet with removable cover and can be operated in any position. The handy tube set-up chart fits neatly in the front cover for quick reference to any test. Shpg. Wt. 10 lbs.



**MODEL CC-1 \$24.95**

## 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 cycles, 15 watts
- Dimensions** ..... 7½" high, 6¾" deep, 12¼" wide



### A VALUABLE REFERENCE . . .

Your Heathkit construction manual not only is your key to simple and successful kit building, but also a constant source of valuable reference material. Your manual shows you clearly and concisely how your instrument works and in the event of difficulty, provides an excellent reference for repair or parts replacement. Also, it has many useful tips on the various applications of your kit.



### MODEL DC-1 DECADE CONDENSER KIT

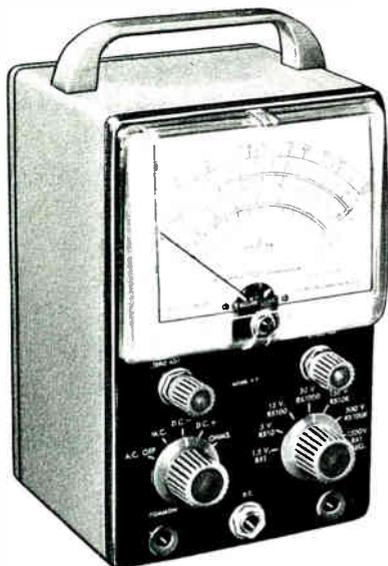
This kit provides capacity values from 100 mmf to 0.11 mfd in 100 mmf steps. Employs 1% silver-mica capacitors and high quality ceramic wafer rotary switches for minimum loss and feature smooth action and positive detent. Valuable in all types of design and development work. Shpg. Wt. 3 lbs. **\$1650**

### MODEL DR-1 DECADE RESISTANCE KIT

The Model DR-1 incorporates 20 1% precision resistors arranged so that 5 rotary switches will select any value from 1 ohm to 99,999 ohms in 1-ohm steps. Switches are labeled "Units", "Tens", Hundreds, Thousands, and Ten Thousands. An unusually low price for a real precision device. Shpg. Wt. 4 lbs. **\$1950**

### BUILD YOURSELF A FUTURE!

Heathkits make it possible for you to equip your own lab or service shop with precision test instruments at tremendous savings. The Heath time payment plan allows you to put your equipment to work for you now, while the cost is spread over easy installments. Your Heathkit will pay for itself over and over again!



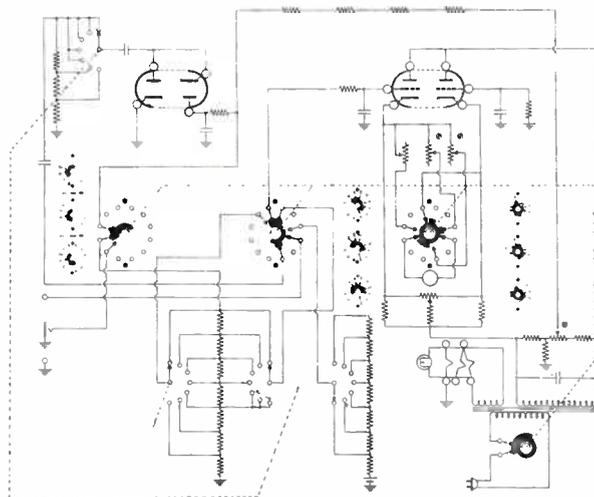
**MODEL V-7A \$2595**

## Specifications

- Electronic D.C. Voltmeter:**  
 7 Ranges ..... 0-1.5, 5, 15, 50, 150, 500, 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 .....  $\pm 3\%$  full scale
- Electronic A.C. Voltmeter:**  
 7 R.M.S. Ranges ..... 0-1.5, 5, 15, 50, 150, 500, 1500 scales reading R. M. S. (.353 of peak to peak)  
 Accuracy .....  $\pm 5\%$  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, X1MEG. Measures .1 ohm to 1000 megohms with internal battery
- Meter** .....  $4\frac{1}{2}$ " 200 ua movement, Polystyrene case  
**Multipliers** ..... 1% precision type  
**Circuit board** ..... Printed circuit, etched metal process  $\frac{3}{16}$ " XXXP laminated phenolic .00135 copper foil
- Tubes** ..... 1—12AU7, twin triode meter bridge  
 1—6AL5, twin diode full wave AC rectifier
- Battery** .....  $1\frac{1}{2}$  volt flashlight cell  
**Cabinet Size** .....  $7\frac{3}{8}$ " high x  $4\frac{3}{4}$ " wide x  $4\frac{1}{8}$ " deep charcoal grey panel, leather grey cabinet
- Power Requirements** ..... 105-125 volt 50-60 cycle AC 10 watts

## ETCHED CIRCUIT VTVM KIT

Time proven for dependability, accuracy and overall quality the V-7A is one of the wisest investments you can make for your electronic workshop or lab. Its multitude of uses will make it one of the most often used instruments in your possession. Use it to measure all operating voltages and potentials such as b+ and AC-DC, or straight AC power supplies, filament voltage, bias voltage, AVC voltage, line voltage, etc. Ideal for measurements in all types of AM, FM and TV circuits. A large  $4\frac{1}{2}$ " panel meter is used for indication, with clear, sharp calibrations for all ranges. Front panel controls consist of a rotary function switch and a rotary range selector switch, zero-adjust and ohms-adjust controls. Precision 1% resistors are used in the voltage divider circuit for high accuracy and an etched circuit board is employed for most of the circuitry. Etched circuit boards not only simplify assembly and cut construction time in half, but also permit levels of circuit stability not possible with ordinary conventional wiring methods. They also cut down the possibility of wiring errors. This multi-function VTVM will measure AC voltage (RMS), AC voltage (peak-to-peak), DC voltage and resistance. A zero-center scale db range is also provided. The high 11-megohm input impedance of the V-7A prevents "loading" of the circuit under test resulting in much more accurate readings than would be obtained with other types of volt meters. The charcoal grey, drawn aluminum panel with high definition white lettering provides excellent readability in addition to making an attractive appearance on your workbench. Shpg. Wt. 7 lbs.



**HEATHKIT 30,000 VOLT  
DC HIGH VOLTAGE  
Probe KIT**  
 NO. 336  
**\$450**

Provides a multiplication factor of 100 on DC ranges of Heathkit 11-megohm VTVM to measure high voltages. Multiplier mounted inside plastic probe body. Safe insulation for highest TV potentials. Shpg. Wt. 2 lbs.

**HEATHKIT ETCHED  
CIRCUIT RF  
Probe KIT**  
 NO. 309-C  
**\$350**

Extends frequency response of any 11-megohm VTVM to measure RF voltage up to 250 mc. Use with Heathkit Model V-7A or similar VTVMs. Employs etched-metal circuit board for easy assembly. Shpg. Wt. 1 lb.

**HEATHKIT ETCHED  
CIRCUIT PEAK-TO-PEAK  
Probe KIT**  
 NO. 338-C  
**\$550**

Use to read peak-to-peak voltage on DC scale of any 11-megohm VTVM without calculations. Frequency range is 5 kc to 5 mc. Very useful in TV work. Note: Not required for Heathkit V-7A VTVM. Shpg. Wt. 2 lbs.

20,000 OHMS/VOLT

# VOM KIT

*High Accuracy  
in a Portable Meter*

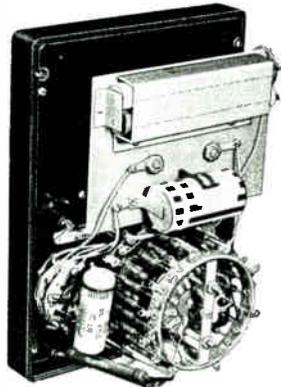
- All 1% Precision Multiplier Resistors
- Sensitive 50 Microampere 4½" Meter
- Modern Cabinet Styling—Attractive Appearance

**MODEL MM-1**  
**\$2995**



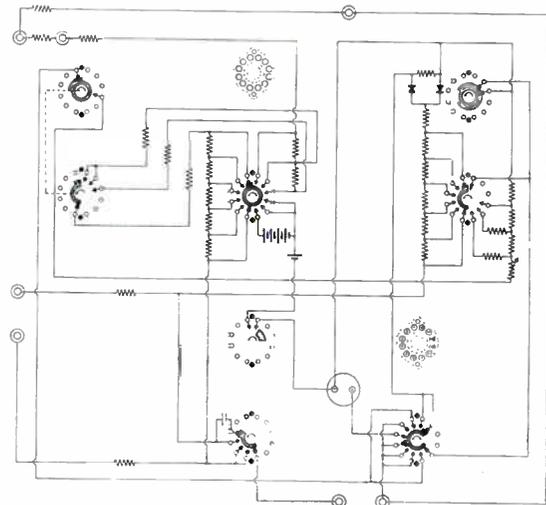
The Heathkit VOM provides wide voltage, current, resistance and db ranges to cover hundreds of possible applications. Sensitivity is 20,000 ohms-per-volt DC and 5000 ohms-per-volt AC. Function and range switches provide full scale settings of 0-1.5, 5, 50, 150, 500, 1500 and 5000 volts for both AC and DC. Current ranges are 0-150 ua, 15 ma, 150 ma, 500 ma and 15 a. Resistance ranges are Rx1 (15 ohms center scale), Rx100 (1500 ohms center scale), and Rx10 K (150,000 ohms center scale). Measures resistance from as low as .2 ohms to as high as 20 megohms. Db coverage is -10 db to +65 db. Maximum accuracy is assured on all ranges by the use of 1% voltage divider resistors. The Model MM-1 is insensitive to RF fields and may be used in transmitter work as well as other types of electronic service, both at home and in the field. Each part used in the Heathkit VOM was chosen for both quality and ease of construction. The large 4½" 50 microampere meter has more than enough sensitivity for even the lowest voltages on the 1.5 volt scale. Actually a single volt on the lowest range will cause a deflection of 2¼" for accurate low level indications. A polarity reversing switch is provided right on the front of the instrument eliminating transferring of test leads when alternately measuring plus and minus voltages. The sleek bakelite case not only keeps out dust and protects internal components but makes the instrument most attractive. Requiring no external source of power, the MM-1 uses standard commercial batteries that are easily replaced when necessary. Shpg. Wt. 6 lbs.

*This inside photograph illustrates the open, simplified construction of the MM-1. Complete instrument assembly is made to the cover of the two-piece bakelite cabinet. Note the easy accessibility of all components and the ease with which battery replacement can be made.*



## 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% precis on 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"



**MODEL M-1**

# Handitester KIT

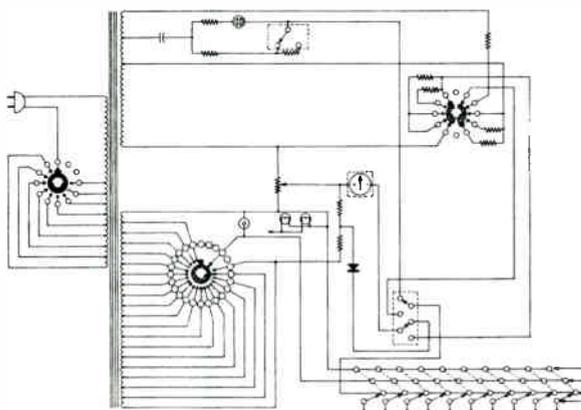
The small size and rugged construction of this tester makes it perfect for any portable application. The combination function-range switch simplifies operation. Measures AC or DC voltage at 0-10, 30, 300, 1000 and 5000 volts. Direct current ranges are 0-10 ma and 0-100 ma. Ohmmeter ranges are 0-3000 (30 ohm center scale) and 0-300,000 (3000 ohm center scale). Very popular with home experimenters, electricians, and appliance repairmen. Slips easily into your toolbox, glove compartment, coat pocket or desk drawer. Ideal for use as an "extra" instrument in the service shop, when the main instruments are occupied. Top quality precision components are used throughout for long and faithful service. Measures 3" W x 6" H x 2⅝" D. Test leads and **\$1795** 1½ volt size C battery included with kit. Shpg. Wt. 3 lbs.



**MODEL TC-3 \$39<sup>95</sup>**

*Specifications*

- Power Requirement . . . . .95-135 volts 50/60 cycle AC
- Dimensions . . . . .5½" x 8½" x 13"
- Element Test Voltages . . .30, 100, 250 V AC
- Filament Voltages . . . . .0.3, 1.4, 2, 2.35, 2.5, 3.15, 4.2, 4.7, 5, 6.3, 7.5, 9.45, 12.6, 19.6, 25, 32, 50, 70, 110 volts AC
- Roll Chart Mechanism . . .Constant tension, free rolling, thumb-wheel operation, illuminated
- Line Voltage Adjustment . .Step type (5 volt steps)
- Meter . . . . .1 ma. full scale deflection BAD—GOOD SCALE—illuminated
- Socket Accommodations . .4-pin, 5-pin, 6-pin, 7-pin large & pilot light, 7-pin miniature, 7-pin subminiature, octal, loctal, 9-pin miniature, blank
- Available Tests . . . . .Emission, short, leakage, open element, filament continuity



**BUILD YOURSELF A FUTURE!**

Heathkits make it possible for you to equip your own lab or service shop with precision test instruments at tremendous savings. The Heath time payment plan allows you to put your equipment to work for you now, while the cost is spread over easy installments. Your Heathkit will pay for itself over and over again!

# Tube Checker KIT

*Eliminate Guesswork . . .*

*Check Tubes Fast!*

Specially Designed Roll Chart Assembly for Easy Operation and Reading

Thumb Wheel Drive Knobs on Both Sides of Panel

Blank Socket for Future Tube Types

Brand new in every respect, the TC-3 is designed to furnish the professional service technician as well as the amateur with a tube checker of outstanding performance and ease of operation. The instrument is designed for checking tubes encountered in every day radio and TV service work, but is not specifically limited to these types. It will check satisfactorily any tube that may be accommodated in the tube sockets if the data provided by the tube manufacturer is available.

Sockets are provided for 4-pin, 5-pin, 6-pin, 7-pin large, 7-pin miniature, 7-pin sub-miniature, octal, loctal, and 9-pin miniature tubes. Protection against obsolescence is provided by a blank socket to facilitate modification for checking newly added tube types. Flexibility of operation is made possible by the use of multiple filament voltages, adjustable cathode current, variable meter sensitivity and individual element switching. A 10-lever switch makes it possible to connect any element to any other element regardless of the pin numbers involved.

Tube condition is indicated on an easy-to-read 3½" meter with multi-colored "good-?-bad" scale. A neon bulb indicator shows filament circuit continuity and leakage or shorts between elements.

A specially designed roll chart mechanism permits the roll chart to run freely throughout its entire length without binding. The chart rollers are spring loaded to keep the chart taut at all times, presenting a smooth viewing surface. Thumb wheel drive knobs are provided on both sides of the panel to eliminate "crossover" problems and to accommodate the left handed operator. The roll chart contains necessary data for the checking of currently used tubes. Uncommon tubes not listed on the chart may be found in the roll chart supplement. Announcement of revised roll chart availability will be announced in subsequent Heathkit flyers.

Compact and small in size, the TC-3 is ideally suited for portable applications. Both the roll chart and the meter are illuminated to facilitate use in darkened areas such as behind TV receivers, etc.

Assembly is facilitated by easy to follow step-by-step instructions and pictorial diagrams. The modest cost of this top quality instrument makes it an outstanding dollar value. Shpg. Wt. 12 lbs.

## TV PICTURE TUBE TEST ADAPTER

The Heathkit TV Picture Tube Test Adapter is designed to be used with the model TC-3 Tube Checker, or the earlier model TC-2 Tube Checker. Test for emission, shorts, etc. in TV picture tubes and thereby determine tube quality. The unit consists of a 12-pin TV tube socket, 4' cable, octal connector and useful technical data. Not a kit but a ready-assembled device. Shpg. Wt. 1 lb.



**MODEL 355 \$450**

## VISUAL-AURAL

## Signal Tracer KIT

*Modern in Every Respect*

Unique "Noise Locator" Circuit

Convenient RF-Audio Probe With Built-in Switch

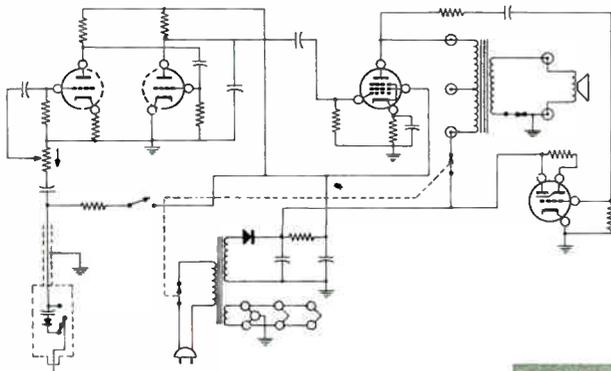
Doubles as Utility Amplifier Test Speaker or Substitute Transformer

A valuable addition to any modern service shop, the all-new T-4 employs the latest circuit design and modern tubes to assure dependability and long life. This high-gain signal tracer is ideal for tracing RF, IF and audio signals in AM and FM receiver circuits and for checking the new transistor type radios which can be damaged through ordinary testing procedures. The compact instrument contains a unique "noise locator" circuit that permits the technician to locate noisy and intermittent components in various circuits. The RF and audio inputs are combined into one handy probe. A switch mounted on the probe permits fast, easy selection of either RF or audio. Signal strength is indicated both orally and visually by a  $3\frac{1}{2}$ " PM speaker and an electron beam "eye" tube. This convenient kit doubles as a utility amplifier when servicing record changers, tuners, microphones, musical instrument pickups, etc.

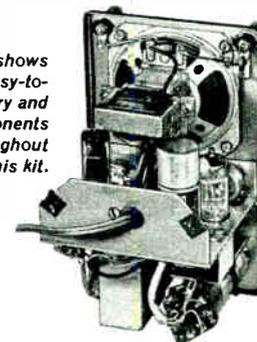
The front panel slide switch disconnects the speaker from the output transformer allowing the T-4 to be used as a test speaker. This is particularly useful when checking radio or TV chassis where speakers have been left in the cabinet. The output transformer may also be used as the substitution transformer if desired. The manual contains useful information on the applications of the kit. Its economical price and outstanding versatility make this unusual Heathkit a truly worthwhile investment. Shpg. Wt. 5 lbs.

MODEL T-4 **\$19.95***Specifications*

Power Supply	Transformer operated
Power Requirements	117 volts: AC 50-60 cycle 25 watts
Tube Complement	V1 12AX7 high gain dual triode, input cascade amplifier V2 12CA5 beam power output tube V3 1629 electron beam visual indicator
Speaker	$3\frac{1}{2}$ " permanent magnet
Probe and Test Leads	.4" input lead for RF and audio w/switch in probe body Two 3' panel test leads with alligator clips
Dimensions	$4\frac{1}{2}$ " wide x $7\frac{1}{2}$ " high x 4" deep



Inside view shows compact easy-to-assemble circuitry and rugged components used throughout this kit.



## HEATHKIT RESISTANCE

## Substitution Box KIT

MODEL RS-1  
**\$5.50**

Radio and TV technicians will find a multitude of uses for this handy kit. Ideal for experimentally determining desirable resistance values and for altering circuit operating characteristics quickly and easily. The RS-1 provides convenient switch selection of any one of 36 RTMA 1-watt standard 10% resistors ranging from 15 ohms to 10 megohms. The attractive bakelite cabinet measures  $5\frac{3}{8}$ " L. x  $3\frac{1}{8}$ " W. x 3" H. Kit is priced lower than retail value of resistors alone. Shpg. Wt. 2 lbs.

## HEATHKIT CONDENSER

## Substitution Box KIT

MODEL CS-1  
**\$5.50**

Using silver-mica and plastic molded tubular type condensers, the CS-1 provides convenient selection of individual substitution values. 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. Measures  $5\frac{3}{8}$ " L. x  $3\frac{1}{8}$ " W. x 3" H. Flexible 18" leads with alligator clips furnished. Shpg. Wt. 2 lbs.



**MODEL SG-8 \$1950**

## Specifications

### Frequency Range:

- Band A ..... 160 kc to 500 kc
- Band B ..... 500 kc to 1650 kc
- Band C ..... 1.65 mc to 6.5 mc
- Band D ..... 6.5 mc to 25 mc
- Band E ..... 25 mc to 110 mc

Calibrated Harmonics ..... 110 mc to 220 mc

Radio Frequency Output... In excess of 100,000 microvolts

Modulation Frequency ..... Approximately 400 cycles

Audio Output ..... 2 to 3 volts

Audio Frequency Input ..... Approximately 5 v across 1 megohm

### Tubes

- 12AU7 ..... RF Oscillator-Buffer
- 6C4 ..... Audio Oscillator or Audio Amplifier

Power Requirements ..... 105-125 v, 50/60 cycles

Cabinet Size ..... 9 1/2" wide x 6 1/2" high x 5" deep

## RF SIGNAL

# Generator KIT

*Align Radios  
Quickly and Easily!*

Easy to Build—Prewound and Calibrated Coils

Wide Frequency Range 160 kc to 220 mc

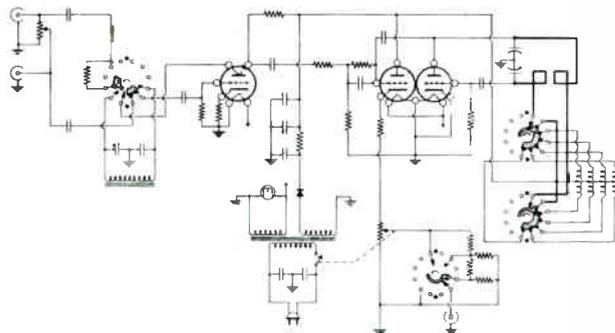
3 Outputs: Unmodulated RF—Modulated RF—400 CPS Audio

Separate Oscillator Sub-Chassis for Uniform Circuit Characteristics

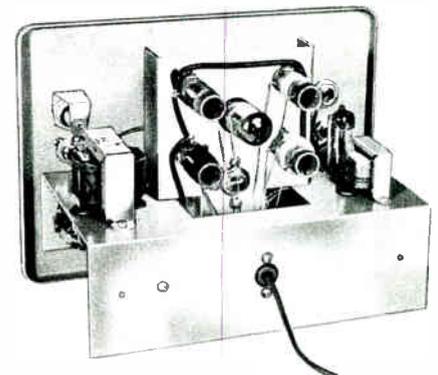
Engineered to fill the requirements for a reliable service instrument at moderate cost, the SG-8 provides extended frequency coverage in five bands from 160 kc to 110 mc on fundamentals and on up to 220 mc on calibrated harmonics of the fundamental frequencies. Prewound and pre-calibrated coils make calibration unnecessary for service applications. Construction is simple and straight-forward, and a comprehensive construction book with step-by-step assembly procedure assures success. All parts are included in the kit, ready for assembly. Build your own generator and save! A reliable signal generator should be among the first test instruments purchased by the part-time service man or beginning service shop operator. Any radio and TV service shop without a good reliable signal generator is seriously handicapped. The SG-8 provides a good means of alignment in RF, IF and tuned circuits of all kinds saving time and meaning more profit for you. Use it as a signal source for signal tracing in faulty RF, IF or audio circuits to quickly locate the defective stage in the receiver under test.

This low cost signal generator provides a stable, modulated or unmodulated output of at least 100,000 microvolts which can be controlled by both the continuously variable attenuator and a fixed step-attenuator. Internal modulation is at a frequency of 400 cycles, or the unit can be externally modulated at other frequencies. The 400 CPS signal can also be used separately for audio tests if desired. AF output of 2-3 volts is available for audio testing. The modern circuitry utilizes a dual purpose 12AU7 as a Colpitts oscillator and cathode follower for stable, isolated, low impedance output, and a type 6C4 tube for the 400 cycle AF oscillator. The power supply is transformer operated for safety and efficiency. A special sub-chassis is provided for the installation of the entire oscillator circuit, thus keeping control over all variables that would affect frequency.

The SG-8 has excellent stability due to the use of a cathode follower buffer stage between the RF oscillator and the output circuits. Its low impedance is another desirable characteristic. Overall efficiency is assured by the use of top quality components throughout. The kit is complete including output cable, alligator clips, and comprehensive construction manual. Accuracy of calibration is well within the limits normally required for service work. Shpg. Wt. 8 lbs.



*Convenient and functional chassis layout provides for easy assembly. The special sub-chassis allows neat and logical placement of components for high circuit efficiency!*



**LABORATORY RF**

# Generator KIT

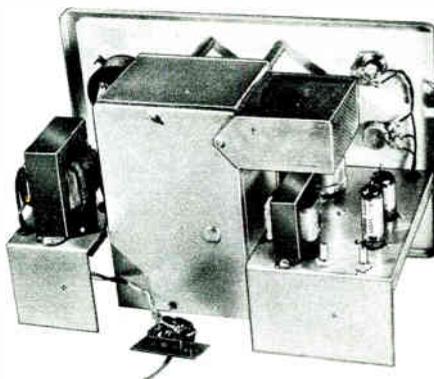
*Many Extras  
for Precision Alignment*

- Panel meter calibrated in output voltage and % modulation
- Double shielding of oscillator circuits
- Operation on pure fundamental frequencies in five ranges
- Voltage regulated B plus supply—transformer operated

The model LG-1 Laboratory Generator was designed for the professional service shop or laboratory establishing a new standard of performance for kit instruments. Suitable for use in design and development work as well as in servicing it covers the frequency range of 100 KC to 30 MC—all on fundamentals, which are divided into five easy-to-read calibrated bands. Ideal for checking RF and IF stage gain, overall circuit sensitivity, demodulator performance, or selectivity, which are possible because of the accurately calibrated 200 microamere panel meter which will read output voltage in microvolts or percent of modulation. Either function is selected with the meter switch provided.

The metered output is in excess of 100,000 microvolts, and both fixed step and variable output attenuation are possible. Circuit operation is stabilized by copper-plated double shielding, plus voltage regulation in the power supply. A flexible instrument, the LG-1 has provisions for internal modulation or external modulation, and uses a Colpitts RF oscillator followed by an amplifier which is grid modulated by the Colpitts AF oscillator and cathode follower circuit. DC is fed through the meter switch from the fine attenuator control for RF level from the AF cathode follower for modulation percentage. The output is obtained at a coaxial cable terminating in a plastic "pod" provided with two binding posts for convenient connection right at the circuit under test. The terminating resistance is enclosed in the pod, and can be changed if desired. Modulation depth is variable from 0 to 50%, and is at a frequency of 400 cycles internally, or can be modulated externally at frequencies between 60 CPS and 10,000 CPS. The power supply is transformer operated for safety and high efficiency and incorporates a line filter, Selenium rectifier, a 3-section electrolytic filter condenser, filter choke and OB-2 voltage regulator for stable performance.

This generator is supplied 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 panel makes the LG-1 an instrument that you can be proud to own. Invest a little time and money now and be rewarded with many years of dependable service. The model LG-1 is a top-notch instrument all the way through. Shpg. Wt. 16 lbs.



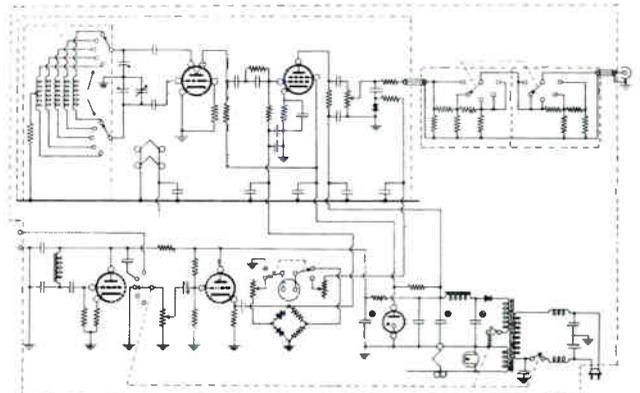
*Note the extensive shielding used in the LG-1 to assure output only on pure fundamental frequencies. A line filter is also incorporated to prevent radiation through the line cord.*



**MODEL LG-1 \$4895**

## Specifications

<b>Frequency Range</b>	
Band A .....	100-290 kc
Band B .....	250-1000 kc
Band C .....	0.95-3.1 mc
Band D .....	2.9-9.5 mc
Band E .....	9-31 mc
<b>Output</b>	
Impedance .....	50 ohms
Voltage .....	100,000 microvolts maximum
<b>Attenuator</b>	
Step .....	10:1 per step, 5 steps
Fine .....	10:1 continuous, indicated on meter
Amplitude Modulation .....	CW, internal 400 cycles or external audio frequencies
Modulation Depth .....	Variable, meter indicates to 50%
<b>Tube Complement</b>	
	6AF4 Oscillator
	6AV5 Grid Modulated Amplifier
	12AU7 Audio Oscillator and Modulator
	OB2 Voltage Regulator
Power Requirements .....	105-125 volts 50/60 cycles
Dimensions .....	13" wide x 8½" high x 7" deep





**MODEL TO-1**  
**\$1695**

# Test Oscillator KIT

*Save Time Aligning Radios!*

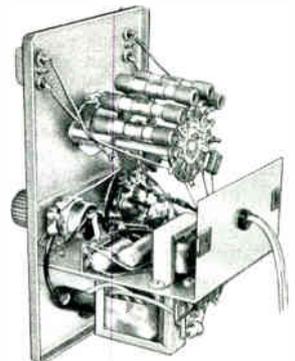
- Five Fixed-Tuned Frequencies, Switch-Selected
- Prewired and Aligned Coil/Switch Assembly
- Compact, Easy to Build and Operate

The model TO-1 Test Oscillator was designed to provide the test frequencies most often used by servicemen in the repair and alignment of all modern types of superheterodyne broadcast receivers.

Five fixed-tuned frequencies (262 kc, 455 kc, 465 kc, 600 kc and 1400 kc) are quickly selected for troubleshooting or alignment of the IF frequency and high and low end of the broadcast band for proper tracking. Two crystal sockets are also provided (switch-selected) for use with crystals of your choice (crystals are not supplied with this kit). The crystal sockets allow the use of any particular frequency which you may have occasion to use. The RF output of the TO-1 may be either unmodulated, modulated, or the audio can be used separately. The modulation frequency and also the audio frequency is approximately 400 cycles-per-second. Output level is adjusted by means of a continuously variable control.

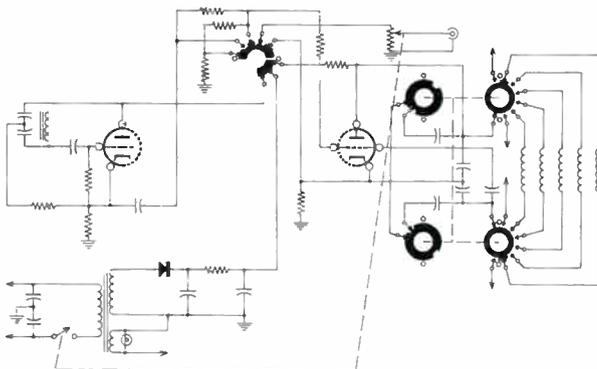
Construction of the TO-1 is greatly simplified through the use of a pre-assembled and aligned frequency selector switch. All coils are mounted on the switch, soldered and tuned requiring only mounting of the switch and connecting a few leads. The balance of the circuit is easily wired through complete step-by-step instructions and pictorial diagrams supplied. In addition, the construction manual has a section devoted to the use of the instrument and describes how to quickly isolate the defective stage of a receiver under test. This signal injection technique may also be used for servicing audio amplifiers by using the AF position of the function switch.

Highly accurate and dependable, the TO-1 will greatly speed up service operations and its low cost represents a minimum cash outlay for the test frequencies most often used. Ideal for the beginner in electronics as well as for production line use where hundreds of receivers are aligned daily. Shpg. Wt. 4 lbs.



## Specifications

- Fixed-tuned Radio Frequencies..... 262 kc, 455 kc, 465 kc, 600 kc, 1400 kc, switch selected
- Accuracy..... ±0.5% or 2 kc
- Crystal Provisions..... Two front panel sockets, switch selected
- Accuracy..... Dependent upon crystals
- Audio Frequency..... 400 cycle, sine wave
- Modulation..... 400 cycle internal, approximately 30%
- Outputs Available..... AF, modulated RF, or RF only, switch selected
- Output Control..... Continuously variable
- AF..... At least 10 volts rms, maximum
- RF (mod. or unmod.)..... More than 0.1 volt, rms, maximum
- Tube Complement..... 1—12AU7 dual triode
- Power Supply..... Transformer, selenium rectifier
- Power Requirements..... 105-125 volts, 50/60 cycle AC 10 watts
- Dimensions..... 7 3/8" H. x 4 3/4" W. x 4 3/4" D.



# Grid Dip Meter KIT

A very handy instrument to have around the service shop or lab, the GD-1B can be used either as an oscillator or absorption wave meter. Use it in the ham shack to locate parasitics, spurious oscillations, neutralizing and to determine the various circuit resonance frequencies. Align IF stages, traps and filters and use it in coil winding applications. A phone jack is provided for listening to "zero-beat" against another oscillator to determine its frequency. A complete set of prewound plug-in coils are provided for continuous frequency coverage from 2 mc to 250 mc. A 500 ua panel meter is used for indication and a variable sensitivity control is also provided. The compact size of this kit allows one hand operation leaving the other hand free for making circuit adjustments. Measures 7" L. x 2 1/2" W. x 3 1/4" D. Shpg. Wt. 4 lbs.

**\$2195**

### ADDITIONAL PLUG-IN COILS . . .

Two extra plug-in coils are available for the GD-1B to extend the frequency coverage down to 350 kc. Dial correlation curves are included. Shpg. Wt. 1 lb. No. 341-A. **\$3.00.**

**MODEL GD-1B**



VARIABLE VOLTAGE REGULATED

# Power Supply KIT

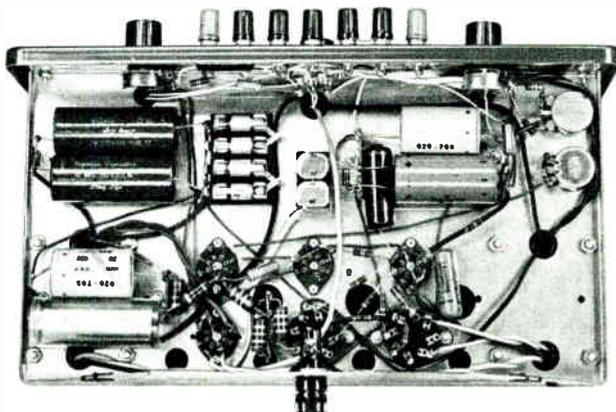
Experimenters and electronic engineers involved in the design of electronic equipment, or new circuits, will find the PS-4 invaluable in their work. This unit eliminates the need for building up a separate power supply for each new circuit tried. The PS-4 supplies a convenient source of variable regulated B+, variable bias voltage, and filament voltage for laboratories and work shops. The regulated B+ output is continuously variable from 0 to 400 volts DC at up to 100 ma (125 ma maximum) depending upon the setting of the voltage control on the front panel. The bias voltage is variable from 0 to -100 volts DC at 1 ma. Filament voltage of 6.3 volts AC at 4 amps is also available. Voltage and current output are both continuously monitored by separate panel meters. Output terminals are separate and well insulated from chassis ground for use in AC-DC work. Voltage regulation is excellent, and a convenient off-standby-on switch is provided. The PS-4 has rugged, well-rated components throughout for long and reliable service. Separate filament and high voltage transformers are employed so that all high voltages can be switched off, leaving only filament voltage available while changes in circuitry are made. This eliminates the need for tube filament warmup time. The regulated high voltage is supplied from a silicon diode power supply feeding the paralleled 6L6 series regulators. The unit is also fused for protection against short circuits. The bias voltage output control has an audio taper for fine adjustment at low voltages. Built-in circuit protection prevents any effect to the B+ output or damage to the power supply should the bias voltage be accidentally shorted. A meter switch is provided to read bias voltage or B+ voltage as desired. For professional performance as well as appearance, you'll want a PS-4 for your work bench. Shpg. Wt. 16 lbs.



MODEL PS-4 **\$5495**

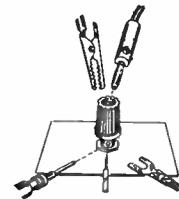
### Specifications

- Input..... 105 to 125 volts AC, 50/60 cycle, 150 watts max.
- Output..... 0 to 400 volts regulated DC at 0 to 100 ma, 125 ma max.  
0 to -100 volts DC at 1 ma. Variable bias voltage 6.3 volts AC at 4 amps. Filament voltage
- Regulation..... Output variation less than 0.5% from no load to full load  
Output variation less than ±0.5 volt for a ±10 volt change around the 117 volt AC input
- Ripple..... Less than 10 millivolts RMS, Ripple, jitter and noise
- Output Impedance... Less than 10 ohms from DC to 1 mc.
- Meters..... Voltmeter 0 to 400 V, and 0 to 150 V.  
Milliammeter 0 to 150 ma
- Tube and Diode  
Complement..... (2) 6L6 Series regulators  
(1) 6BH6 Control amplifier  
(1) 6X4 Bias rectifier  
(2) OA2 Bias voltage regulator  
(2) 50 ma. Selenium—screen voltage rectifier  
(4) 150 ma. Silicon—high voltage rectifier
- Dimensions..... 13" Wide, 8½" High, 7" Deep



### BINDING POST KIT

This sketch clearly shows the universal manner in which Heath binding posts will accommodate the alligator clip, banana plug, test lead pin, spade lug or wire. To accommodate customer requests, the 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. Shpg. Wt. 1 lb. Binding Post Kit No. 362-A. **\$400**



MODEL IT-1

### VARIABLE VOLTAGE

# Isolation Transformer KIT

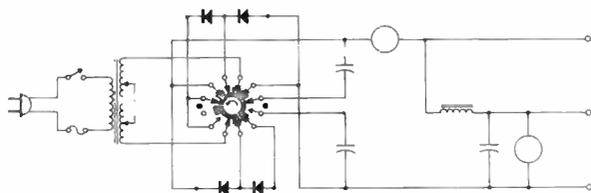
This isolation transformer has many uses in the service shop, home workshop or laboratory. It provides complete isolation from the power line since there is no direct connection between the primary of the transformer and the secondary. AC-DC sets may be plugged directly into the IT-1 without the chassis becoming "hot". The output voltage is variable from 90 volts to 130 volts allowing checks of equipment under adverse conditions such as low line voltage. Especially useful when checking AC-DC portable radios which fail to oscillate at low line voltage yet operate properly at the rated line voltage. It can also be used to isolate interference—radiating devices from the power line, and is useful in locating intermittents. By exceeding the line voltage a weak or defective part will "break down" completely making location easy. The transformer is rated at 100 watts continuously or 200 watts intermittently. An easy-to-read panel meter monitors the output voltage. The IT-1 is fused to protect house fuses or main fuses in the shop. Measures 8" H. x 4¾" W. x 4¼" D. Shpg. Wt. 9 lbs. **\$1650**



**MODEL BE-5** **\$39<sup>95</sup>**

### 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 ..... 13 1/4" wide x 7 1/2" deep x 7 1/4" high
- Power Requirements ..... 105-125 V, 50-60 cycles AC at 175 watts



### LOW RIPPLE

## Battery Eliminator KIT

*Smooth DC Output to Service All Car Radios*

- Continuously variable output on 6 or 12 volts
- Less than 0.3% AC ripple
- Panel meters monitor output voltage and current
- Ideal for work on transistor sets

Keeping pace with the rapid advances in radio technology, the Heathkit BE-5 battery eliminator provides you with an invaluable tool in servicing the latest model radios, including the new transistor car radios. It will power all of the newest transistor-type circuits requiring 0 to 12 volts DC, and also the new "hybrid" automobile radios using both transistors and vacuum tubes.

"Hybrid" car radios and other similar devices receiving power to the tubes and transistors directly from the car battery can tolerate a very small percentage of ripple. The BE-5 employs an exceptionally low-ripple filter circuit which holds AC ripple down to less than 0.3%. The special filter is built right in the unit, and the highly filtered 6 or 12 volt DC output is available at up to 5 amperes at a separate pair of output terminals. Another pair of output terminals is also provided for output with a normal amount of filtering for use as a battery eliminator on conventional type auto radios and other equipment. These outputs supply up to 15 amperes on a 6-volt range or up to 7 amperes on a 12-volt range. The output voltage is variable on both ranges from 0 to 8 volts, or from 0 to 16 volts. The BE-5 doubles as a battery charger, and is often used as a marine converter for small pleasure boats. It will also supply voltage for small DC motors such as electric trains, etc. Two meters on the front panel constantly monitor output voltage and output current. The handsome modern case with carrying handle adds to the overall appearance of this fine kit.

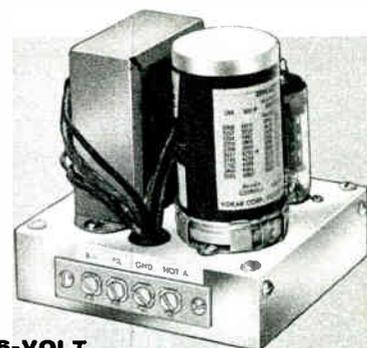
None but the highest quality parts and materials are used in the BE-5 for rugged service and long life. Wide open circuit arrangement and convenience of chassis design make this kit easy and fun to build. The construction manual provided contains step-by-step instructions as well as large pictorial diagrams to aid you in assembly. The manual also provides you with much useful information on the operation and various applications of the instrument. A BE-5 in your shop will pay for itself many times over. Shpg. Wt. 21 lbs.

### 6-VOLT AND 12-VOLT

## Vibrator Power Supply KIT

Operate your radio directly from a 6 or 12 volt battery with one of these handy units. The VP-1-6 and the VP-1-12 were designed to replace the power supplies of receivers, small public address systems, or even miniature transmitters, so that they can be used with conventional 6 or 12 volt batteries. They are ideal for use in boats, automobiles, light aircraft or in many field applications. Each unit provides 260 volts DC output at up to 60 milliamperes. More than one power supply of the same model may be connected in parallel for increased current capacity at the same output voltage. Vibrator frequency is approximately 115 CPS, and each power supply measures only 4 1/2" H x 4" W x 3 1/8" D. Everything is provided, including vibrator transformer, vibrator, tubes and filters. Concise, clearly illustrated, non-technical instructions furnished with the kit make it easy to build in just a few hours. Shpg. Wt. 4 lbs.

**\$7<sup>95</sup>**  
each



**6-VOLT MODEL VP-1-6**  
**12-VOLT MODEL VP-1-12**

**6-12 VOLT****Battery Eliminator KIT**

6 and 12 volt operation

Continuously variable voltage output

Doubles as battery charger

Do away with keeping storage batteries in your shop for servicing car radios. This high quality battery eliminator supplies 6 or 12 volt output at a flick of the panel switch. Voltage is continuously variable in the two output ranges from 0 to 8 volts DC at 10 amperes and 0 to 16 volts DC at 5 amperes. It will deliver up to 15 amperes at 6 volts, or up to 7 amperes at 12 volts. The transformer is fused-protected and a self-resetting automatic relay is used in the DC output circuit. Rugged cabinet is well ventilated. Binding posts will accommodate heaviest duty wire. The BE-4 doubles as a convenient battery charger for boats, autos or service shops. Smooth DC output is assured through the use of two 10,000 microfarad filter capacitors while two panel meters indicate voltage and current output simultaneously. Measures 7 $\frac{1}{4}$ " H x 13 $\frac{1}{4}$ " W x 7 $\frac{1}{2}$ " D. Shpg. Wt. 17 lbs.

**\$3150****MODEL BE-4****Ripple Filter KIT**

Functions on 6 or 12 volts

Ideal for use with Heathkit BE-4

5 amps continuous—7.5 amps intermittent current capacity

Designed for use in conjunction with the Heathkit BE-4 battery eliminator or comparable instruments, the BF-1 provides extra ripple filtering to the output of battery eliminators or power supplies for servicing transistor or "hybrid" car radios. The circuit consists of a choke and capacitor which connect to form an L-section filter. It will function at 6 or 12 volts at up to 5 amperes maximum current. Maximum current capacity is 5 amperes continuously or 7.5 amperes intermittently. The instruction manual provided contains complete step by step instructions for assembly plus information on the use of the kit. A copper wire table is also provided in the manual giving full particulars on safe current handling capacities of various sizes of wire. Easy to build and easy to use, the BF-1 is a valuable accessory for any BE-4 owner. The cabinet measures 7 $\frac{3}{8}$ " H x 4 $\frac{3}{4}$ " W x 4 $\frac{1}{8}$ " D. Shpg. Wt. 8 lbs.

**\$1095****MODEL BF-1****6-VOLT****Vibrator Tester KIT**

A quick and easy test of vibrator condition

Providing a thorough and accurate test, the VT-1 tells you instantly the condition of the vibrator under test on an easy-to-read "bad-good" meter scale. The unit checks both interrupter and self-rectifier type vibrators. Six different sockets are provided for checking hundreds of vibrator types.

The VT-1 tester operates from any battery eliminator capable of delivering continuously variable voltage from 4 to 6 volts DC at 4 amperes. The Heathkit model BE-4 or BE-5 battery eliminator is an ideal companion piece for this tester. The kit is supplied complete, can be quickly assembled 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 are printed on front panel of the tester for convenient reference. The stylish cabinet measures 10" L x 7 $\frac{1}{8}$ " W x 3 $\frac{1}{2}$ " D. Only the highest quality parts and components used throughout the kit. Shpg. Wt. 6 lbs.

**\$1450****MODEL VT-1**



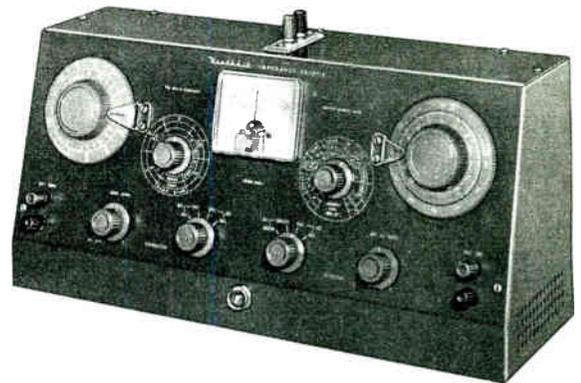
# Impedance Bridge KIT

*Enjoy Lab-Type Facilities*

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

The economical low price of this versatile test instrument puts it in easy reach of the service shop operator, the radio ham and even the home experimenter. The IB-2A employs a Wheatstone bridge, capacity comparison bridge, Maxwell bridge and a Hay bridge in one compact package. It is designed for rapid and accurate measurement of resistance, capacitance, inductance, dissipation factors of condensers, and storage factors of inductors. By use of switches the proper basic bridge circuit is selected for the test being made. A 100-0-100 microampere meter is used for determining balance. For protection the meter is shunted by a 2.2 ohm resistor which is switched out of the circuit for final balance. The built-in vacuum tube detector unit and meter rectifier allows use of the meter for AC measurements thus the usual headset or other devices for detection are not necessary. Provision is made for using an external detector when desired. The decade resistors employed are of ½% tolerance for high accuracy.

The IB-2A has its own built-in power supply, 1000 cycle phase shift generator, and a vacuum-tube detector. A special 2-section CRL dial is employed for convenient operation. Provision is also made for connecting an external generator for measurements at audio frequencies other than 1 kc. Battery-type tubes are used so that a warm-up period is not required and measurements can be made quickly. They also eliminate changes in operating characteristics due to thermal effects. The attractive sloping panel provides for easy reading of controls and meter. Shpg. Wt. 12 lbs.



**MODEL IB-2A \$59.50**

## 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	100 mmf to 100 mfd
Inductance	0.1 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
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 QM-1 \$44.50**

## 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 cycles, 30 watts
Dimensions	8" high, 17" wide, 6" deep

# "Q" Meter KIT

*Test Parts at Operating Frequency*

- Prewound RF coils—all sheet metal formed and punched.
- No special alignment equipment required—test coil furnished.

Take the guesswork out of electronic testing with this time and labor saving instrument. Once financially out of reach of small service shops, Heathkit "do-it-yourself" prices make it possible for any technician to own a high quality "Q" meter. The QM-1 tests components at frequencies at which they are normally used (150 kc to 18 mc). Wide range 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. A 12AT7 oscillator with pre-wound coils is used to obtain the full frequency range on four 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. The voltage regulated and transformer operated power supply utilizes a 6X5 full wave rectifier and an OD3 regulator tube. A special test coil is provided for calibration. All components are of the highest quality. 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 fine instrument. Shpg. Wt. 14 lbs.



**MODEL CT-1**  
**\$795**

# Capaci-Tester KIT

*Test Condensers  
Right in the Circuit*

- Electron Beam "Eye" Tube Indicator
- Detects Open, Shorted or Intermittent Condensers
- Easy to Operate, A Real Time Saver

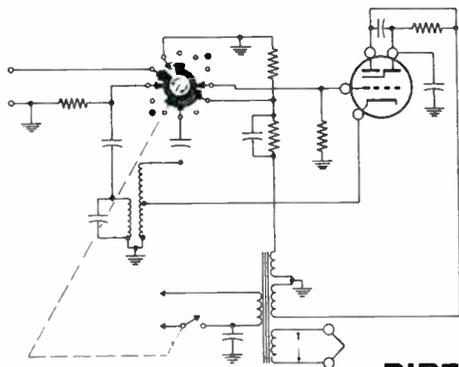
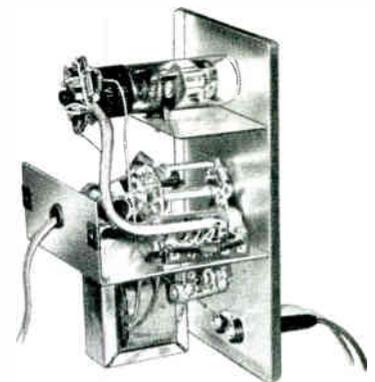
## Specifications

Range:	
Open Test	50 ufd to infinity (Shunted by more than: 2 K $\Omega$ at 50 ufd, 400 $\Omega$ at 100 ufd, 30 $\Omega$ at 350 ufd or more.)
Short Test	Up to 20 ufd. (Shunted by 10 $\Omega$ or more.)
Test Frequencies:	
Short Test	.60 cycles
Open Test	.19 megacycles
Power Requirements	105-125 volts, 50-60 cycles AC, 5 watts
Cabinet Size	7 $\frac{1}{8}$ " high, 4 $\frac{1}{8}$ " wide by 4 $\frac{1}{8}$ " deep

Anyone who has had the experience of hunting for a shorted or open condenser in a television receiver or radio will appreciate the time saving convenience offered by the CT-1 Capaci-Tester.

With the CT-1 it is no longer necessary to disconnect one of the capacitor leads to check the part. You can check most capacitors for "open" or "short" right in the circuit, saving a lot of valuable time. Compact, easy-to-build, and inexpensive, this capaci-tester detects open capacitors from about 50 mmf up providing it is not shunted by an excessively low resistance value. It will detect shorted capacitors up to 20 mfd not shunted by less than 10 ohms. Intermittent condensers are noted by a flickering of the electron beam "eye" tube indicator. Designed especially to indicate only open, shorted or intermittent capacitors, the CT-1 is not intended to indicate value, detect leakage, nor check electrolytic condensers.

A 5-position function switch is featured which controls the power to the instrument and selects the test being made. The circuitry also provides a continuous check on the operation of the tester itself. The front panel is attractively screened making the function of the switch self-explanatory. A picture of the "eye" tube is shown for each test so no other reference is required. Any deviation from the picture shown would indicate a defect in that part being tested. The circuit provides a 60-cycle frequency for the "short" test and a 19-megacycle frequency for the "open" test. The CT-1 is complete in every respect including test leads. An invaluable aid in locating the general run of capacitor troubles. It will check all bypass, blocking, and coupling capacitors of the paper, mica and ceramic types. At this low price you can hardly afford to be without a CT-1 on your work bench. Shpg. Wt. 5 lbs.



## DIRECT READING Capacity Meter KIT

A fast and accurate means of checking condensers on an assembly line, in quality control, or in the service shop, is provided by the CM-1. Extremely easy to operate, you simply connect the condenser to be checked to the terminals on the front panel, and select the proper range. The condenser value is read directly on the large 4 $\frac{1}{2}$ " 50 microampere panel meter, calibrated in mmf and mfd, making it especially handy in checking variable capacitors. Calibration is linear with four ranges provided, 0-100 mmf, 0-1,000 mmf, 0-.01 mfd and 0-.1 mfd. The CM-1 is not affected by hand capacity and the residual capacity is less than 1 mmf. Features a transformer operated power supply with voltage regulation for stability. Individual calibration potentiometers in conjunction with four precision capacity standards provided enable rapid full scale calibration in each range. Once accomplished, calibration will hold constant over extended periods of time. Standard calibrating capacitors are supplied with each instrument in the following values: 100 mmf  $\pm 1\%$ ; 1,000 mmf  $\pm 1\%$ ; 0.01 mfd  $\pm 2\%$ ; 0.1 mfd  $\pm 2\%$ . Simplicity of operation makes bridge accuracy of capacity measurements available. Ease of assembly is assured through thoughtful circuit design and chassis layout. The small size and fine appearance of this unit emphasizes quality throughout. Measures 7 $\frac{3}{8}$ " H. x 4 $\frac{3}{8}$ " W. x 4 $\frac{1}{8}$ " D. Shpg. Wt. 7 lbs.

**\$2950**

**MODEL  
CM-1**



# Audio Analyzer KIT

3 Audio Test Instruments in  
One Compact Unit

Substantial Savings Over Purchase of 3 Separate Instruments  
Large Easy-To-Read 4½" Panel Meter With 2-Color Scale  
Straightforward Construction and Simplified Operation

Almost a complete laboratory in itself, this audio analyzer combines the function of an AC VTVM, audio wattmeter and a complete Intermodulation distortion analyzer in one compact, versatile unit.

Careful design and thoughtful circuit layout provides for easy assembly and eliminates unnecessary duplication of parts resulting in "big" savings for you without sacrificing quality or performance.

Combining and consolidating functions of these three instruments allows making a very thorough analysis of audio equipment and also reduces the number of test leads and controls required for the same test. Power output, noise, gain, overload and intermodulation characteristics can be determined quickly and accurately using the two sets of test leads furnished and the flexible switching system incorporated in the analyzer. Non-inductive load impedances of 4, 8, 16 and 600 ohms are built-in and are switch-selected for the desired resistance. A high impedance position is also provided for stage-to-stage and other high impedance circuit analysis. The unique AC VTVM circuitry employs a cascode type input stage for high gain and low noise levels improving meter accuracy on all voltage readings. The VTVM circuit can be used 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. DBM scales are also provided so that the 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.

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. A glance at the specifications will quickly show the many functions and features available for use in the analysis of all types of audio circuits.

High quality components are used throughout and are clearly marked for easy identification. The instruction manual contains a complete circuit description plus information on its use and applications. The attractively styled cabinet has rich charcoal gray panel with "high contrast" white lettering for easy readability of all functions even under subdued lighting conditions.

An outstanding instrument for anyone active in the design or repair of audio equipment. Shpg. Wt. 13 lbs.

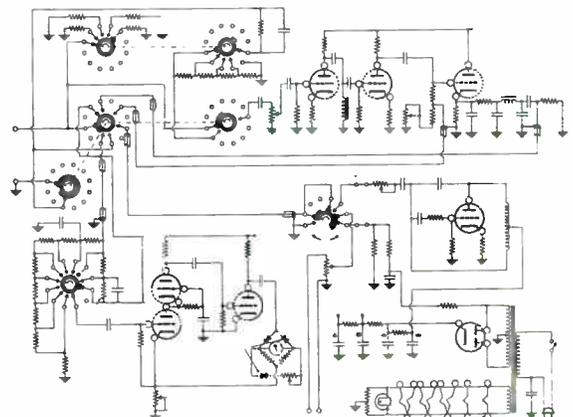
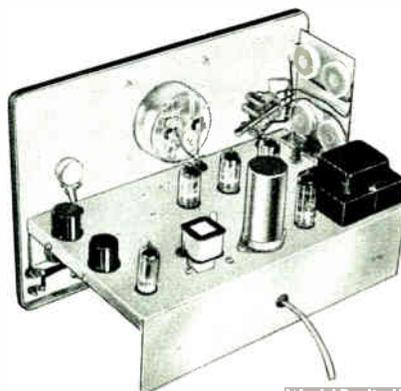


MODEL AA-1 **\$49.95**

## Specifications

<b>Frequency Response:</b>	
AC VTVM .....	10 cycles to 100 kc ± 1 db
Wattmeter .....	10 cycles to 50 kc ± 1 db
I.M. Analyzer High Pass Filter .....	2000 cps to 12000 cps.
I.M. Analyzer Low Pass Filter .....	10 cps to 600 cps.
<b>Range:</b>	
AC VTVM .....	.01, .03, .1, .3, 1, 3, 10, 30, 100, 300 volts RMS full scale
DBM .....	-40, -30, -20, -10, 0, +10, +20, +30, +40, +50 reads from -65 to +52 dbm
Wattmeter .....	0.15 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
I.M. Analyzer .....	1%, 3%, 10%, 30%, 100% full scale
<b>Input Impedance:</b>	
AC VTVM .....	1 megohm or 4, 8, 16 or 600 Ω, switch selected
I.M. Analyzer .....	1 megohm or 4, 8, 16 or 600 Ω, switch selected
Wattmeter .....	4, 8, 16 or 600 Ω internal load, 10,000 Ω across external load
<b>Outer Impedance:</b>	
<b>Low and High Frequency Output</b> .....	
	3000 Ω (600 Ω when shunted with 750 Ω resistor)
<b>Internal Generator Frequencies:</b>	
Low Frequency .....	60 cycles
High Frequency .....	Approximately 6 kc
<b>Accuracy:</b>	
AC VTVM and Wattmeter .....	Within 5% of full scale
I.M. Analyzer .....	Within 10% of full scale
Power Requirements .....	105-125 volts 50/60 cycles 20 watts
Dimensions .....	13" wide x 8½" high x 7" deep

Careful circuit design and clean chassis layout permit easy assembly. All metal parts are prepunched and preformed. Note the precision resistors and high-quality ceramic, wire wound load resistors.





MODEL AG-10 **\$49.95**

*Specifications*

- Sine Wave:**  
 Frequency Range.....20 cycles—1 MC  
 Output Volts (R.M.S.).....0-10 volts, 0-1 volt, 0-0.1 volt into a High Impedance Load  
 Source Impedance ( $\pm 10\%$ ).....10 volt range—0 to 3.5 k ohm; 1 V, .1 V, and .01 V range—600 ohm  
 Distortion.....less than .25% 20 to 20,000 cycles  
 Frequency Response..... $\pm 1.5$  db 20 cycles to 1 megacycle
- Square Wave:**  
 Frequency Range.....20 cycles—1 MC  
 Output Volts (P. to P.) $\pm 5\%$ .....0-10 volt, 0-1 volt, 0-0.1 volt, into a High Impedance Load  
 Source Impedance ( $\pm 10\%$ ).....10 volt range—0 to 220 ohm 1 V, and .1 V ranges—52 ohm  
 Rise Time.....less than .15 micro-second
- General:**  
 Frequency Accuracy..... $\pm 5\%$   
 Power Requirements.....105-125 V.A.C., 50-60 cycles 55 watts  
 Dimensions.....13" wide x 8½" high x 7" deep

**SINE-SQUARE**  
**Generator KIT**

*Wide Range Signals for  
 Audio or Lab Use!*

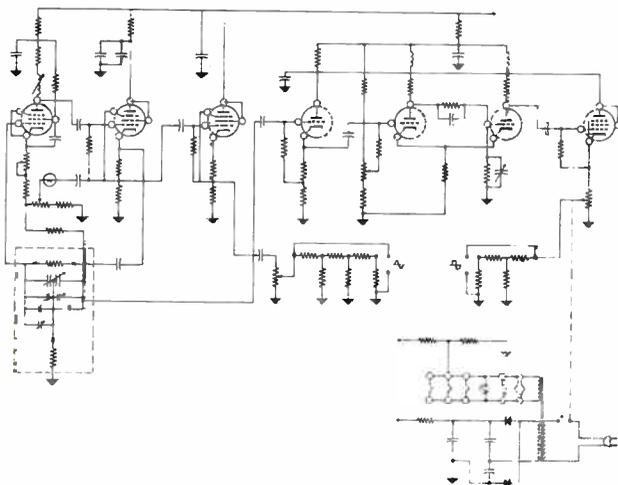
- Square wave rise time less than .15 usec
- Less than .25% sine wave distortion
- Sine and square wave output available simultaneously

The wide frequency range and high quality sine and square waves produced by the AG-10 promise outstanding results in great variety of applications.

Both sine and square wave outputs may be used at the same time without affecting either wave form. For example: In making stage-gain measurements, the sine wave output can be connected to the input of a stage to be measured and the square wave output connected to the external sync terminal of an oscilloscope. By using this method of sync, measurements can be made all the way through a number of amplifier stages without having to readjust the oscilloscope synchronizing controls.

The frequency response of the AG-10 is  $\pm 1.5$  db from 20 CPS to 1 mc on both sine and square waves with less than .25% sine wave distortion from 20 to 20,000 CPS. The sine wave output impedance is 600 ohms and the square wave output impedance is 50 ohms at all settings of the output controls except in the 10 volt range. Square wave rise time is less than .15 microseconds. Features include a 5-position bandswitch, continuously variable tuning, shielded oscillator circuit, separate step and variable output attenuators in ranges of 10, 1, and .1 volts for both sine and square wave with an extra range of .01 volt on sine wave. A special control is provided in the oscillator circuit to compensate for differences in tube characteristics assuring absolute minimum distortion. A new and more exact frequency calibrating system is employed to insure proper tracking across the dial. The well-filtered, power supply uses silicon-diode rectifiers and a husky power transformer. All functions of the controls are indicated on the attractively screened front panel.

The interior layout was designed for maximum efficiency and ease of construction. High quality components are used throughout for accuracy and dependability and are clearly marked for easy identification. Successful assembly is assured through complete instructions supplied in addition to information on the circuit description and use of the instrument itself. Extremely useful in general laboratory work as well as in audio, television, and high fidelity applications. Shpg. Wt. 12 lbs.



*A heavy-duty transformer, high filtering along with shielding both above and below the chassis assures purity of waveform output. All adjustments are conveniently made from top of chassis.*



# Heath's Easy Time Payment Plan

Time Payment Plan available only on orders having cash price of \$55.00 or more.  
Available in the Continental United States and the Hawaiian Islands only.

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

- 1 First fill out section "B" of the Order Blank on the reverse side of this sheet, designating the Heathkits you wish to buy. If your order totals \$55.00 or more, you may use the Time Payment Plan.
- 2 Insert the amount of your down payment in the Time Payment Agreement below (at least 10% of your total order). A larger down payment reduces carrying charge and monthly payment.
- 3 Refer to the amounts on the Easy Payment Chart which correspond to the unpaid balance on your order (total price of order less down payment). From this chart enter your monthly payments on the Time Payment Agreement.
- 4 Sign your Time Payment Agreement in ink with your usual signature, and fill in the credit statement completely.
- 5 Send this application and your down payment to Heath Company, Benton Harbor, Michigan.

EASY PAYMENT CHART					
Unpaid Balance	Carrying Charge	Up To 12 Monthly Payments*	Unpaid Balance	Carrying Charge	Up To 12 Monthly Payments*
less than \$40.00	\$ 4	\$ 5	\$170.01-180	\$18	\$17
\$ 40.01-50	5	5	180.01-190	19	18
50.01-60	6	6	190.01-200	20	19
60.01-70	7	7	200.01-210	21	20
70.01-80	8	8	210.01-220	22	21
80.01-90	9	9	220.01-230	23	22
90.01-100	10	10	230.01-240	24	22
100.01-110	11	11	240.01-250	25	23
110.01-120	12	11	250.01-260	26	24
120.01-130	13	12	260.01-270	27	25
130.01-140	14	13	270.01-280	28	26
140.01-150	15	14	280.01-290	29	27
150.01-160	16	15	290.01-300	30	28
160.01-170	17	16	Over \$300.00 write for details		

\*All monthly payments are for amount shown except for last payment which is for the odd amount remaining due.

WRITE FOR FURTHER INFORMATION IF YOU WISH TO ADD ON TO YOUR PRESENT ACCOUNT

## TIME PAYMENT AGREEMENT

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.

TO: HEATH COMPANY BENTON HARBOR, MICHIGAN

Enclosed is a deposit of \$ \_\_\_\_\_ on the Easy Payment cost of the equipment on the reverse side. I will pay \$ \_\_\_\_\_ each month to you at the above address starting 30 days after shipment, until the total time payment price is paid.

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 repossess the equipment. If you shall repossess, all payments made may be retained as rent for the use and depreciation of said equipment. The loss, injury or destruction of the equipment after I have received it shall not operate as payment or in any manner release me from any obligation hereunder.

If this order 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. 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 \_\_\_\_\_ (Print) Age \_\_\_\_\_ Military Serial No. \_\_\_\_\_ (if serviceman)

WIFE'S NAME \_\_\_\_\_ (Print) No. of Children and names \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ How Long \_\_\_\_\_

Own or Buying  Rent  Live with Parents No. of Rooms \_\_\_\_\_ Paid Monthly \$ \_\_\_\_\_ Phone No. \_\_\_\_\_

Landlords Name (If Owned) and Address (Mtg. Held By) \_\_\_\_\_

Previous Address \_\_\_\_\_ How Long \_\_\_\_\_ Previous Address \_\_\_\_\_ How Long \_\_\_\_\_ (If less than 3 years at present address)

Previous Landlord \_\_\_\_\_ Address \_\_\_\_\_

Employed by \_\_\_\_\_ Address \_\_\_\_\_ Business Phone No. \_\_\_\_\_

Position \_\_\_\_\_ How Long \_\_\_\_\_ Dept. or Badge No. \_\_\_\_\_ Salary \$ \_\_\_\_\_

Previous Employer \_\_\_\_\_ Address \_\_\_\_\_ How Long \_\_\_\_\_ (If less than 3 years at present employment)

Wife's Employer \_\_\_\_\_ Address \_\_\_\_\_ Phone \_\_\_\_\_

Position \_\_\_\_\_ How Long \_\_\_\_\_ Dept. or Badge No. \_\_\_\_\_ Salary \$ \_\_\_\_\_

Other Income— Give Details \_\_\_\_\_ Total Family Income \$ \_\_\_\_\_

CREDIT REFERENCE (Give Your Bank and 2 Merchants, Firms or Finance Companies with whom you do or have done business.)

Your Bank _____	Address _____	Type of Account _____
First Credit Reference _____	Address _____	Present Balance \$ _____ Monthly Payment \$ _____
Second Credit Reference _____	Address _____	Present Balance \$ _____ Monthly Payment \$ _____

Nearest Relative \_\_\_\_\_ (Do not list those with whom you are living) Address \_\_\_\_\_ (Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_) Relationship \_\_\_\_\_



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80.01-90	9	9	220.01-230	23	22
90.01-100	10	10	230.01-240	24	22
100.01-110	11	11	240.01-250	25	23
110.01-120	12	11	250.01-260	26	24
120.01-130	13	12	260.01-270	27	25
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Position \_\_\_\_\_ How Long \_\_\_\_\_ Dept. or Badge No. \_\_\_\_\_ Salary \$ \_\_\_\_\_

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First Credit Reference \_\_\_\_\_ Address \_\_\_\_\_ Present Balance \$ \_\_\_\_\_ Monthly Payment \$ \_\_\_\_\_

Second Credit Reference \_\_\_\_\_ Address \_\_\_\_\_ Present Balance \$ \_\_\_\_\_ Monthly Payment \$ \_\_\_\_\_

Nearest Relative \_\_\_\_\_ Address \_\_\_\_\_ (Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_) Relationship \_\_\_\_\_ (Do not list those with whom you are living)

AUDIO

# Generator KIT

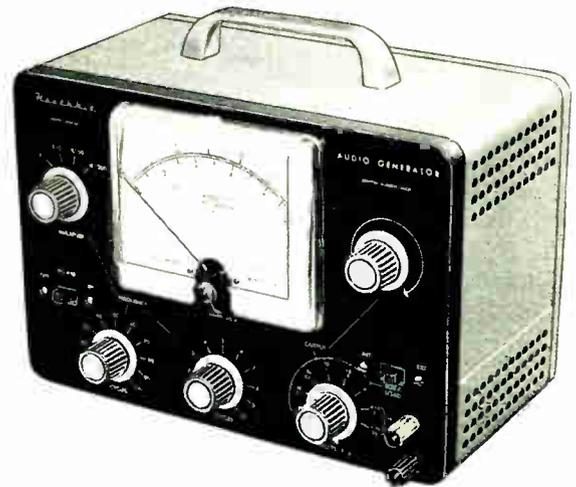
*Your Own Source of Hi-Fi  
Audio Signals*

- Frequencies switch selected—no chance of human error
- Output and frequency indicators accurate to within  $\pm 5\%$
- Switch selected, built-in 600 ohm load

This outstanding audio generator is small, compact, yet is easy to build through complete instructions supplied and well thought out circuit layout. Highest quality components are used throughout and the final result is an audio generator which will produce a near perfect sine wave with close frequency control and metered output voltage.

With the AG-9A 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. All frequencies within its range may be tuned well within  $\pm 5\%$  accuracy and distortion is actually less than .1 of 1% between 20 CPS and 20,000 CPS. Output is indicated on a large  $4\frac{1}{2}$ " panel meter calibrated in volts and decibels. Frequency selection is uniquely accomplished through the use of three rotary switches which select two significant figures and a multiplier to determine audio frequency. Frequency can be varied in steps of 1 CPS from 10 to 100 CPS and a 4-position multiplier switch increases this range in multiples of 10, thus providing an overall range of 10 to 100,000 CPS. An advantage of this feature is that it allows return to the exact frequency previously measured when making multiple frequency measurements. With continuously variable controls the human tuning error must be considered.

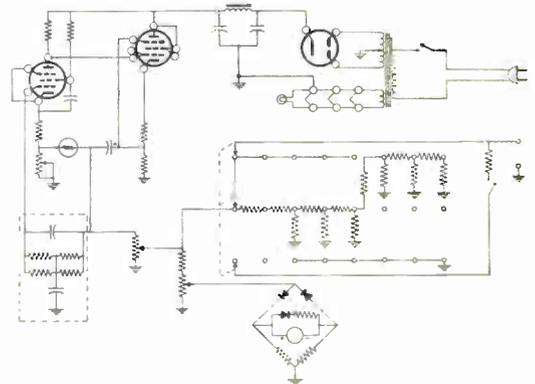
The attenuator system operates in steps of 10 db and is also calibrated in 8 full scale meter ranges of 0-.003, .01, .03, .1, .3, 1, 3 and 10 volts RMS. The load switch provided allows selection of the built-in 600 ohm load or an external load of higher impedance as desired. Metering voltage is taken from the output control and rectified in a half-bridge circuit consisting of 2 resistors and 2 germanium diodes. Non-linearity at low signal levels is compensated for 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. A wonderfully engineered kit you will enjoy using. Shpg. Wt. 10 lbs.



**MODEL AG-9A \$34.50**

## 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 tc +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 cycles, 40 watts
- Dimensions . . . . .  $9\frac{1}{2}$ " wide,  $6\frac{1}{2}$ " high, 5" deep



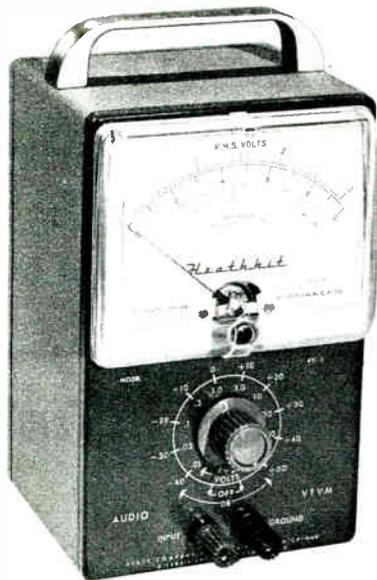
**MODEL HD-1**

## Harmonic Distortion Meter KIT

An extremely valuable instrument in the designing and servicing of audio circuits, the HD-1 will accurately measure harmonic distortion at any or all frequencies between 20 and 20,000 CPS. Distortion is read directly on the panel meter in ranges of 0-1, 3, 10, 30 and 100% full scale. Full scale voltage ranges of 0-1, 3, 10 and 30 volts are provided for the initial reference settings. Signal to-noise ratio measurements are also permitted through the use of a separate meter scale calibrated in db.

Testing complete amplifiers is the most common use for the 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 optimum values determined.

The HD-1 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. In spite of the lab type circuit involved, the Heathkit harmonic distortion meter is quite simple to construct and use, through complete instructions supplied. Measures  $13''$  W x  $8\frac{1}{2}''$  H x  $7''$  D. Ideal for use with the **Model AG-9A Audio Generator** described above. Shpg. Wt. 13 lbs. **\$49.50**



**MODEL AV-3 \$2995**

*Specifications*

- Frequency Response...  $\pm 1$  db, 10 cps to 400 kc, .01 volt through 100 volt ranges
- Sensitivity...  $\pm 2$  db from 10 cps to 40 kc, 300 volt range
- 10 millivolts full scale (lowest range)
- Range:
  - Volts... 0.01, 0.03, 0.1, 0.3, 1, 3, 10, 30, 100, 300 volts, RMS, full scale
  - Decibels... Total range  $-52$  db to  $+52$  db
  - Scale  $-12$  to  $+2$  db. (1 mw-600 ohm)
  - Ten switch selected ranges from  $-40$  to  $+50$  db
- Input Impedance... 1 megohm at 1 kc
- Accuracy... Within 5% of full scale
- Multipliers... 1% precision type
- Meter...  $4\frac{1}{2}$ " streamlined case with 200 microampere movement
- Tube Complement... Two 12AT7
- One 6C4
- Power Supply... Power transformer, selenium rectifier with resistance-capacitance filter
- Power Requirement... 105-125 volts AC, 50-60 cycles, 10 watts
- Dimensions...  $7\frac{7}{8}$ " high x  $4\frac{11}{16}$ " wide x  $4\frac{1}{8}$ " deep

# Audio VTVM KIT

*Measure Critical AC Voltages Accurately*

Wide Range Frequency Response

Large Easy-to-read  $4\frac{1}{2}$ " 200 ua meter

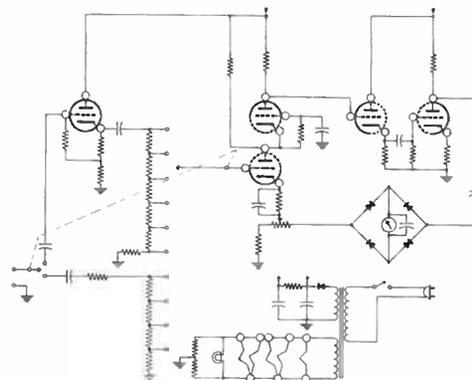
Precision 1% voltage divider resistors

This high quality AC vacuum tube voltmeter was designed especially for audio measurements, and for use in making low-level AC measurements in power supply filters, etc. Measures voltages as small as 1 millivolt to a maximum of 300 volts at high impedance.

Emphasizing stability, broad frequency response, and sensitivity, the AV-3 employs a tried and proven circuit featuring a cascode amplifier with cathode follower isolation between the input and the amplifier, and between the output stage and the preceding stages. An extremely stable circuit with high input impedance (1 megohm at 1,000 CPS). The frequency response of the model AV-3 is flat within  $\pm 1$  db from 10 CPS to 400 kc, except on the 300 volt range which is within  $\pm 2$  db from 10 CPS to 40 kc, and is usable for tests well beyond these frequency limits.

Features a large easy-to-read  $4\frac{1}{2}$ " 200 ua meter with increased damping in the meter circuit to stabilize the meter for low frequency tests. The meter full-wave bridge circuit utilizes four germanium diodes for extremely good linearity. Nylon insulating bushings on the input terminals reduce leakage and permit use of the convenient five-way Heath binding post.

The extremely wide voltage range covered by the AV-3 makes it especially valuable not only in high fidelity service, but also in experimental laboratories. 1% precision resistors are used for high accuracy and the neat, compact, circuit layout assures ease of assembly. The AV-3 is most attractive in appearance and is a pleasure to use with stable, reliable performance in all applications. Shpg. Wt. 6 lbs.



# Audio Wattmeter KIT

This audio wattmeter can be used in any application where audio power output is to be measured. External or internal load resistors are selected with a convenient front panel switch. Non-inductive load resistors are built in for 4, 8, 16 or 600 ohms impedance. Five power ranges cover 0-5 mw, 50 mw, 500 mw, 5 w and 50 w full scale. Input power rating 25 watts maximum continuous duty, 50 watts maximum intermittent duty. Five switch-selected db ranges cover  $-10$  db to  $+30$  db. All indications are read directly on a large  $4\frac{1}{2}$ " 200 microampere meter. Frequency response is  $\pm 1$  db from 10 CPS to 250 kc. Precision multiplier resistors are used for high accuracy, and a crystal diode bridge for wide range frequency response. Uses a 12UA7 voltage and current amplifier for the meter, and is operated from a transformer-type power supply. A fine meter to help supply the answers to your audio operating or power output problems. Features modern physical styling and convenient functional front panel design. Measures  $7\frac{3}{8}$ " H. x  $4\frac{3}{4}$ " W. x  $4\frac{1}{8}$ " D. Operates from 105-125 V AC, 50-60 cycle power. Shpg. Wt. 7 lbs.

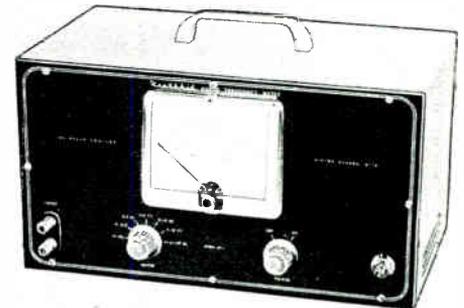
**\$2950**



**MODEL AW-1**

## Audio Frequency Meter KIT

The model AF-1 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. 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. 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 unknown frequencies into the instrument and read the frequency directly on the meter. The power supply is transformer operated with voltage regulation for stability. This kit is supplied complete with all tubes and necessary components in addition to the detailed construction manual with step-by-step assembly instructions. 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. Measures 12½" L. x 7" H. x 7½" D. Operates on 105-125 V. AC 50-60 cycles. Shpg. Wt. 12 lbs. **\$3450**



MODEL AF-1

## Audio Generator KIT

The low cost of this highly-efficient audio generator kit makes it ideal for use by service technicians and high fidelity fans alike. Its high output voltage and wide frequency range are mighty important when plotting audio response curves in evaluating and servicing audio amplifiers. This generator provides continuous frequency coverage from 20 CPS to 1 mc in five ranges. Tuning is greatly simplified by means of a 5-position range switch and vernier tuning knob. Output voltage is controlled by a step-attenuator and a continuously variable control. Overall distortion is less than 0.4 of 1% from 100 CPS through the audible range. Up to 10 volts of audio output is available under no-load conditions. No-load output is constant within ±1 db from 20 CPS to 400 kc. Precision resistors are used in the frequency determining network for high accuracy. This generator can be built in a few hours. Calibration is easily accomplished using only a VTVM or high impedance AC voltmeter. The 60 cycle AC line can be used as an accurate frequency source for calibration. A rugged versatile unit that will serve you for many years to come. Measure 7½" H. x 13¼" W. x 7½" D. Operates on 105-125 V. AC 50-60 cycles. Shpg. Wt. 11 lbs. **\$2950**



MODEL AG-8

## Audio Oscillator KIT

The model AO-1 Audio Oscillator is useful in a great variety of applications, providing either sine or square wave output from 20 CPS to 20,000 CPS in three ranges. Sine or square wave output is conveniently selected by a panel switch. 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. Thermistor regulation is also incorporated in the second amplifier stage to maintain essentially flat output through the entire frequency range. By means of a cathode coupled clipper good, clean square waves with a rise time of only 2 microseconds are produced which are especially valuable in checking amplifier frequency response. 1% precision resistors are used in the oscillator range multiplier circuit for high accuracy. Output voltage is 10 volts no-load ±1 db. Distortion is less than 0.6% from 100 CPS through the audible range. The low cost of this fine kit puts it well within the means of the hobbyist and experimenter. Cabinet measures 7½" H. x 13¼" W. x 7½" D. Operates on 105-125 volts 50-60 cycles AC. Shpg. Wt. 10 lbs. **\$2450**



MODEL AO-1

## Square Wave Generator KIT

A square wave generator is an extremely valuable piece of test equipment for both servicing and laboratory work, and is especially useful for audio engineering. Square wave testing is an excellent method for studying amplifier distortion, high and low frequency response, phase shift characteristics, and transient response. The model SQ-1 features wide frequency range, good square wave output and high output voltage at low impedance. Output frequency is variable from 10 CPS to 100 KC in four ranges, and the output voltage level is variable from 0 to 20 volts at low impedance. A cathode follower output is used for isolation. Front panel provision is also made for injecting a synchronizing signal to "lock" the square wave generator to a particular test frequency. This unit employs a type 6SL7 twin-triode tube as a two-stage multi-vibrator, a 6AC7 clipper stage, a 6V6 cathode follower output circuit, and a 6X5 rectifier in the full wave power supply. An outstanding dollar value the SQ-1 is designed for ease of assembly and years of reliable service. Panel is finished in charcoal gray with white lettering and handsome feather gray knobs and cabinet. Cabinet measures 12½" L. x 7" H. x 7½" D. Operates on 105-125 volts 50-60 cycle AC. Shpg. Wt. **\$2950** 10 lbs.



MODEL SQ-1



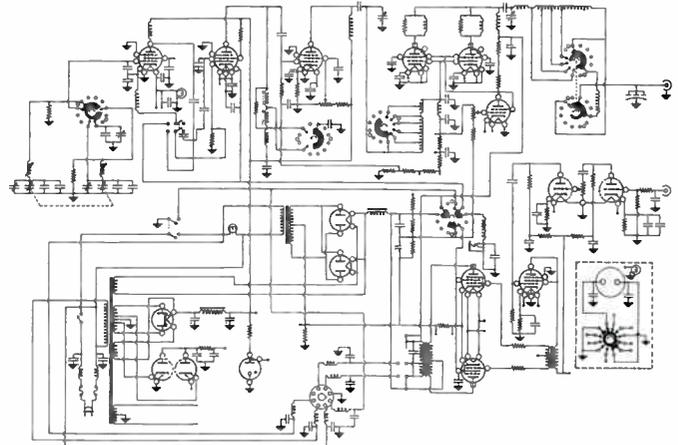
**MODEL DX-100-B \$189<sup>50</sup>**

## Specifications

- RF Power Output.....100-125 watts phone, 120-140 watts CW
- Output Impedance.....50-600 Ω (non-reactive)
- Output Coupling.....Pi network (coaxial)
- Operation.....Crystal-VFO, CW-Phone, Local-Remote
- Band Coverage.....160, 80, 40, 20, 15, 11, 10
- Audio Output.....85 watts at 300-3000 cycles
- Tube Complement:
  - Power Section.....6AL5 bias rectifier  
5V4 low voltage rectifier  
2—5R4GY high voltage rectifier  
OA2 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.....19½" wide x 11½" high x 16" deep

## DX-100-B PHONE AND CW Transmitter KIT

Take the time-proven, outstanding performance of the Heathkit model DX-100 transmitter, add new, modern styling and circuit improvements, and you have the Heathkit DX-100-B. Representing the complete transmitting complement of the amateur operator station, the only external requirements are an antenna, ground, and key or microphone. Panel controls allow VFO or crystal control, phone or CW operation on all amateur bands up to 30 mc. The new 1-piece formed cabinet features a convenient top-access hatch for changing crystals and making other adjustments. Other improvements have been made in the loading and crystal circuits for improved performance, and the chassis is punched to accept sideband adapter modifications. The transmitter also features a built-in VFO modulator and power supply, complete shielding to minimize TVI, and a pi network output coupling to match impedances from 50 to 72 ohms. RF output is in excess of 100 watts on phone and 120 watts on CW. Band coverage is from 160 through 10 meters. For operating convenience, single knob band-switching and illuminated VFO dial and meter face are provided. A pair of 6146 tubes in parallel are employed in the output stage, modulated by a pair of 1625's. The kit is designed for easy, step-by-step assembly, using only the highest quality components. Treat yourself to relaxing hours of operating fun with this unusually fine performer. Shpg. Wt. 107 lbs.



## Meet the Hams Who Serve You

Each of the licensed Hams pictured here plays an important part in the development and final delivery of your Heathkit Ham gear. These men are working for *you* as they go about their jobs at the Heath Co. bringing you the benefits of knowledge gained through actual "on-the-air" experience. Many of them you have already met on the air. Clockwise from front left are: Dar (K8ADS), George (W8TWS), Carl (W8UVK), Tom (K4HXA/8), Doug (K8GNA), Chuck (K8CJI), George (K8HYV), Rex (K8GND), Fred (K8GMY), Bill (K8INM), Wayne (W8YRW), Rog (Senior Ham Engineer-W8MWZ), Dick (K8INL), Bob (K8HYX), Norm (W8RTY), Glen (K8JGZ), Ernie (W8VPN), Al (W9UOC), Tony (K8KLQ), Dick (K9BMJ/8), Al (W8HTX), Bill (W8LUH), Reg (ex VE3AHL), Don (W8QBN). Not shown are: Al (K8BLL), Gerry (K8IXS), Matt (KN8JCX), Don (W8LTB), Don (K8IXT).



**"SENECA" VHF**

# Ham Transmitter KIT

- Built-in VFO, Modulator, and Dual Power Supply
- Switch Selection of 4 Crystal Positions
- Single Control Band Switching

Brand new in every respect, the VHF-1 is an ideal transmitter for General, Technician or Novice class hams wishing to extend transmission into the VHF region. The "Seneca" provides a completely self-contained 6 and 2 meter transmitter with outstanding quality and performance. The VHF-1 features up to 120 watts input on phone and 140 watts input on CW in the 6 meter band. In the 2 meter band, these ratings are reduced slightly to prolong amplifier tube life. Included are controlled carrier phone operation, built-in VFO for both 6 and 2 meters, and 4 switch-selected crystal positions. Panel controls allow VFO or crystal control, phone or CW operation on both amateur bands. Two power supplies, five radio frequency stages, and two dual-triode audio stages are provided. A pair of 6146 tubes are employed in the push-pull final amplifier stage. Complete RF shielding from the VFO circuit to the final amplifier is incorporated. Feed-through type by-pass capacitors are used in all leads entering the RF compartments for greater TVI protection and transmitter stability. A spotting push-button switch allows zero beating and tuning of the transmitter before switching on the final amplifier. The VFO slide rule type dial features edge-lighting and vernier tuning for ample bandsread and accurate frequency settings. The mike connector, output connector, key jack, and auxiliary socket are located on the rear chassis apron. The auxiliary socket provides for remote control of the transmitter such as with the Heathkit VX-1 Voice Control, remote operation of an antenna relay, and receiver muting. An ideal transmitter for the novice class ham who can only operate phone on the 2 meter band, and who may wish to operate phone on 6 meters after obtaining a Technician license.

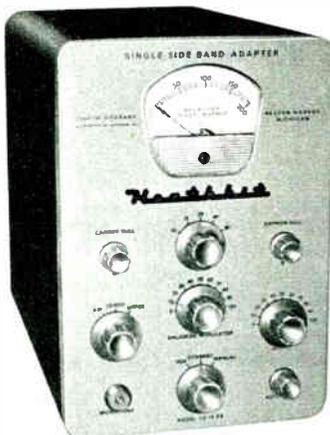


**MODEL VHF-1**

**PRICE TO BE ANNOUNCED**  
(Available after Oct. 30, 1958)

## Specifications

- Power Input ..... 6 meters 140 watts CW  
120 watts Phone (peak)  
2 meters—110 watts CW  
95 watts Phone (peak)
- Output Impedance ..... 50-72 ohm (non-reactive)
- Output Coupling ..... Link (coaxial)
- Operation ..... Crystal-VFO, CW-Phone
- Band Coverage ..... 50-54 MC, 144-148.3 MC
- Audio ..... Screen modulated, controlled carrier
- Tube Complement ..... 5R4GY HV rectifier  
5V4G LV rectifier  
OA2 Voltage regulator  
12AX7 speech amplifier  
6DE7 modulator, carrier control  
6AU6 VFO  
6AN8 crystal oscillator-multiplier  
2E26 driver  
2-6146 push-pull power amplifier  
6AQ5 clamp
- Power Requirements ..... 117 volts AC, 60 cycles  
Standby (phone, CW) .. 120 watts  
Full load (phone, CW) .. 400 watts (intermittent)
- Cabinet size ..... 16 $\frac{1}{2}$ " W. x 10 $\frac{1}{2}$ " H. x 10" D.
- Net Weight ..... 50 lbs.



**MODEL SB-10**  
**\$89.95**

# SSB Adapter KIT

*Switch to SSB for more talking power—less fade and interference*

## Specifications

- Power Output ..... 10 watts, P. E. P. (Peak Envelope Power)
- Power Input ..... Less than 5 watts of RF at the fundamental operating frequency required.
- Output ..... Pi network, low impedance, coaxial
- Input ..... Low impedance, coaxial
- Band Coverage ..... 80, 40, 20, 15, 10 meters
- Circuitry ..... Phasing method of SSB signal generation is employed with voice control and anti-trip action built into the audio circuit
- Power Requirements ..... 350 VDC, 85 ma.  
6.3 VAC, 3.5 a.
- Meter ..... 2 $\frac{1}{2}$ " , 200 ua movement, indicates carrier null and relative power output
- Cabinet Size ..... 10" high x 6 $\frac{3}{4}$ " wide x 13" deep

Designed as a compatible plug-in adapter unit for the TX-1 "Apache" transmitter to allow operation on single sideband, this adapter will also be of interest to hams now operating strictly AM or CW with other transmitters such as the Heathkit DX-100. By making a few simple circuit modifications, your present transmitter can be used, utilizing all existing RF circuitry. Extremely simple to operate and tune, the adapter employs the phasing method for generating a single-sideband signal, thus allowing operation entirely on fundamental frequencies. The critical audio phase shift network is supplied completely preassembled and wired in a sealed plug-in unit.

Features include single-knob band switching for operation on 80, 40, 20, 15 and 10 meters, and an easy-to-read panel meter that indicates relative power output to aid in tuning. Other features include built-in electronic voice control with anti-trip circuit which allows duplex operation but prevents receiver output from turning on the transmitter during listening periods. RF excitation from the transmitter is required for the adapter to provide an SSB signal which is then fed to the transmitter final for amplification. Enjoy the advantages of SSB operation by adding this fine kit to your ham shack now. Shpg. Wt. 14 lbs.



**MODEL TX-1 \$229.50**

*Specifications*

- Power Input ..... 150 w PHONE, 180 w CW
- Output Impedance..... 50-72 $\Omega$  (non-reactive)
- Output Coupling ..... Pi Network (coaxial)
- Operation..... Crystal-VFO, CW-SSB-PHONE (time sequence keying, SSB requires external adapter)
- Band Coverage..... 80, 40, 20, 15, 10 (11 M with crystal control)
- Audio Output..... 100 watts at 300-3000 cycle (Adjustable low-level speech clipping; 500 $\Omega$  output available)
- Tube Complement:
  - Power Section..... 2 selenium rectifiers  
5V4 low voltage rectifier  
2-5R4GY HV rectifier  
OA2 voltage regulator  
2-OB2 voltage regulators
  - Audio Section..... 12AX7 speech amplifier  
12AU7 clipper amplifier  
6AL5 clipper  
12BY7 audio driver  
2-6CA7/EL34 modulator
  - RF Section..... 6AU6 VFO  
6CL6 crystal oscillator-buffer  
5763 driver  
2-6146 parallel power amplifier  
6AQ5 clamp
- Power Requirements: 115 V AC, 50-60 cycles
  - Standby (AM, CW)..... 150 watts
  - Standby (SSB)..... 230 watts
  - CW..... 420 watts (intermittent)
  - Phone..... 500 watts (peak)
  - SSB..... 500 watts (peak)
- Cabinet Size..... 19 $\frac{1}{2}$ " W x 11 $\frac{1}{8}$ " H x 16" D.

**"APACHE"**

# Ham Transmitter KIT

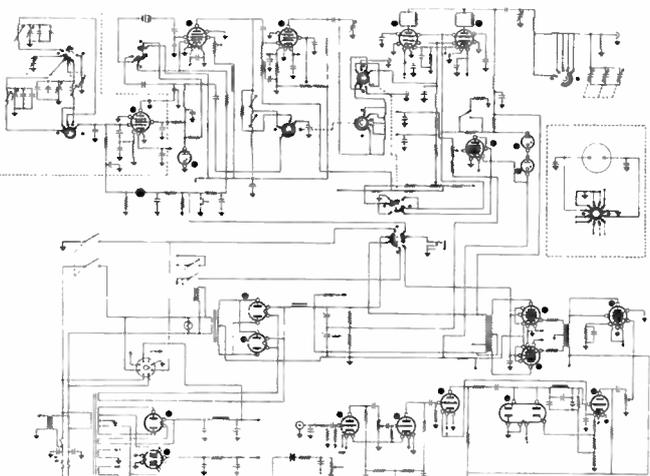
*You're On-The-Air  
in Style With  
This Outstanding Performer*

Rotating Slide Rule Dial with Vernier Tuning—Provision for SSB Adapter

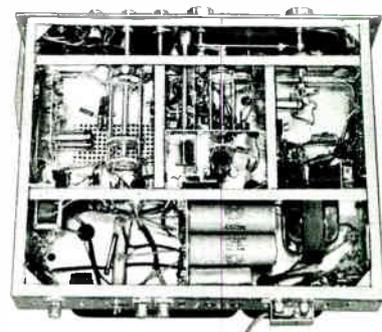
Time Sequence Keying—Adjustable Low-Level Speech Clipping

Frequency "Spotting" Push Button—Separate "Tune-Operate" Switch

The many fine features and modern styling of the "Apache" Ham Transmitter are sure to make a hit with ham operators everywhere. Emphasizing high quality this rig operates with a 150 watt phone input and 180 watt CW input. In addition to CW and phone operation, built-in switch selected circuitry provides for single-sideband transmission by automatically making proper RF connections to the adapter, and converting the final amplifier from class C to class AB-1 linear. Simply plug in the SB-10 adapter and switch to SSB on the "Apache". A completely redesigned and stable VFO provides low drift frequency control necessary for SSB transmission. A slide rule type illuminated rotating VFO dial with full gear drive vernier tuning provides ample band spread and precise frequency settings. The band switch allows quick selection of the amateur bands on 80, 40, 20, 15 and 10 meters. (11 m with crystal control.) This unit also has adjustable low-level speech clipping and a low distortion modulator stage employing two of the new 6CA7/EL34 tubes in push-pull class AB operation. Time sequence keying is provided for "chirpless" break-in CW operation. The final amplifier is completely shielded for greater TVI protection and transmitter stability. The formed one-piece cabinet with convenient access hatch provides accessibility to tubes and crystal sockets. Die-cast aluminum knobs and front panel escutcheons add to the attractive styling of the transmitter. The pi network output coupling matches impedances between 50 and 72 ohms. A "spotting" push button allows tuning of the transmitter before switching on the final amplifier. This feature also enables the operator to "zero-beat" an incoming frequency without placing the transmitter on the air. Equip your ham shack now for real transmitting enjoyment with this outstanding, dependable transmitter. Shpg. Wt. 110 lbs.



*This under-chassis view of the TX-1 shows the rugged chassis construction and high quality components used for long and faithful service. Easy step-by-step assembly instructions provided. This transmitter is real quality through and through.*



**BUY BOTH NOW! EASY TIME PAYMENTS**  
You can equip your ham shack with the "Mohawk" and "Apache" now and pay for them in monthly installments. Write for specific details on ordering this combination.

"MOHAWK"

# Ham Receiver KIT

*Reach Out and Get  
"The One that Got Away"  
With This Deluxe Ham Receiver*

Crystal Controlled Oscillators for Drift-Free Reception  
Ham Band Coverage Only for Maximum Stability and Accuracy  
Prewired and Aligned Bandswitch/Coil Assembly

Designed to conform with the highest standards set by the amateur fraternity, the Heathkit "Mohawk" ham band receiver answers the long felt needs for a communications receiver designed strictly for ham band operation. This receiver provides all the functions required for clear, rock-steady reception and is designed as a companion unit for the "Apache" transmitter. This 15-tube receiver features double conversion with IF's at 1682 kc and 50 kc and covers all of the amateur frequencies from 160 through 10 meters on 7 bands with an extra band calibrated to cover 6 and 2 meters using a converter. The "Mohawk" is specially designed for single-sideband reception using a product detector and crystal controlled oscillators for upper and lower sideband selection. A completely preassembled, wired and aligned front end coil assembly assures top performance of the finished unit. Other features include 5 selectivity positions from 5 kc to 500 CPS, a bridged T-notch filter for maximum heterodyne rejection and a built-in 100 kc crystal calibrator. The set provides a 10 db signal-to-noise ratio at less than 1 microvolt input. Designed for ham band operation only, each band is separately calibrated on the rotating slide rule dial to provide clear frequency settings with more than ample bandspread. Front panel features an S-meter, separate RF, IF and AF gain controls, T-notch tuning, T-notch depth, ANL, AVC, BFO, bandswitch tuning, antenna trimmer, calibrate set, calibrate on, CW-SSB-AM, receive-standby, upper-lower sideband, selectivity, phone jack and an illuminated gear driven vernier slide rule tuning dial. Attractively styled the "Mohawk" is housed in an all-steel pre-formed cabinet with access hatch to allow checking tubes without removing chassis from cabinet. Front panel control knobs and escutcheons are die-cast aluminum. Ruggedly constructed with well rated components throughout for years of dependable service. Shpg. Wt. 66 lbs.



MODEL RX-1 **\$274.95**

## Specifications

Fifteen Tube Double Conversion Superheterodyne Receiver with Selectable Sideband.

First IF Frequency 1682 KC      Second IF Frequency 50 KC  
Frequency Coverage . . . Band      Frequency

Band	Frequency
160 . . . . .	1.8-2.0 mc.
80 . . . . .	3.5-4.0 mc.
40 . . . . .	7.0-7.3 mc.
20 . . . . .	14.0-14.35 mc.
15 . . . . .	21.0-21.45
11 . . . . .	26.96-27.23
10 . . . . .	28.0-29.7
6 . . . . .	50-54 with converter
2 . . . . .	144-148 with converter

Selectivity Range . . . . . 5 kc, 3 kc, 2 kc, 1 kc, .5 kc.

Bridged T Notch Filter . . . . . 50 db rejection notch

Panel Controls . . . . . RF Gain . . . . . Tuning

IF Gain . . . . . Antenna Trimmer

AF Gain w/on-off Switch . . . . . Calibrate Set

T Notch . . . . . Tuning . . . . . Calibrate On

T Notch . . . . . Depth . . . . . CW-SSB-AM

ANL . . . . . Receive-Standby

AVC . . . . . Upper-Lower Sideband

BFO . . . . . Selectivity

Band . . . . . Phones

6BZ6 . . . . . RF Amplifier

6CS6 . . . . . First Mixer

12AT7 . . . . . Oscillator-cathode Follower

6BA6 . . . . . 1682 kc IF amplifier

6CS6 . . . . . Second Mixer

12AT7 . . . . . 1632-1732 kc crystal Oscillator

6BA6 . . . . . 50 kc IF amplifier

6BA6 . . . . . 50 kc IF amplifier

6BJ7 . . . . . DET-AVC-ANL

6CS6 . . . . . Product Detector

12AT7 . . . . . First Audio S Meter Amp.

6AQ5 . . . . . Audio Output

6BA6 . . . . . 100 kc Oscillator

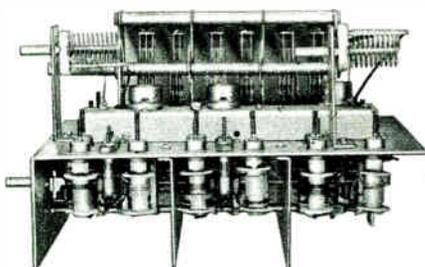
OA2 . . . . . Voltage Regulator

5V4 . . . . . Rectifier.

Signal to Noise Ratio . . . . . 10 db at less than 1 microvolt input

Power Required . . . . . 117 V AC 50/60 cycle

Cabinet Size . . . . . 19 1/2" W x 11 1/2" H x 16" D

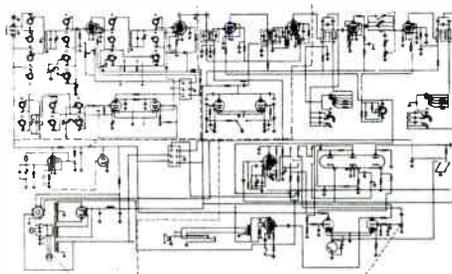


*Coil and bandswitch assembly comes to you prewired and aligned. Note the ceramic coil forms and bandswitch wafers used for hi Q.*

## ACCESSORY SPEAKER KIT

Heavy duty 8" speaker with 4.7 oz. magnet provides excellent tone quality. Housed in attractive 3/4" plywood cabinet with perforated metal grille. Color styled to match "Mohawk" receiver. Speaker impedance is 8 ohms. Shpg. Wt. 8 lbs.

MODEL AK-5  
**\$995**





**DX-40 PHONE AND CW**

# Transmitter KIT

*Phone and CW Facilities  
at Low Cost*

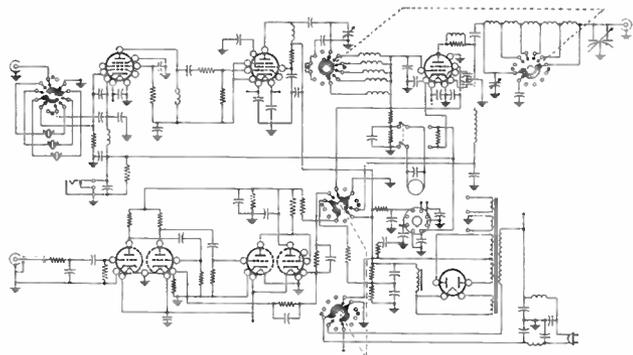
**MODEL DX-40 \$64<sup>95</sup>**

### Specifications

- Power Input.....75 watt CW, 60 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  
6DE7 Controlled Carrier, Modulator  
6CL6 Crystal Oscillator  
6CL6 Buffer  
6146 Final Amplifier
- Power Requirements...117 volts AC, 60 cycles, 175 watts
- Cabinet Size.....13" wide x 8½" high x 9" deep

An outstanding buy in its power class the DX-40 provides both phone and CW operation on 80, 40, 20, 15, 11 and 10 meters. A single 6146 tube is used in the final amplifier stage to provide full 75 watt plate power input on CW or controlled carrier modulation peaks up to 60 watts for phone operation. Modulator and power supplies are built in and single-knob band switching is combined with the pi network output circuit for complete operating convenience. A D'Arsonval movement panel meter indicates the final grid or plate current. A line filter and liberal shielding provides high stability and minimizes television interference. The 5-position function switch provides a "tune" position, allowing you to tune the oscillator without the final amplifier preventing damage to the final amplifier tube. Provision is made for three crystals easily accessible through a "trapdoor" in the back of the cabinet. A 4-position switch selects any of the three crystals or a jack for external VFO. The VFO (variable frequency oscillator) can be used in place of crystals. Power for the VFO is available on the rear apron of the chassis.

You can build this rig yourself and be proud to show it off to your fellow hams. Assembly proceeds smoothly from start to finish even for an individual who has never built electronic equipment before. Shpg. Wt. 25 lbs.



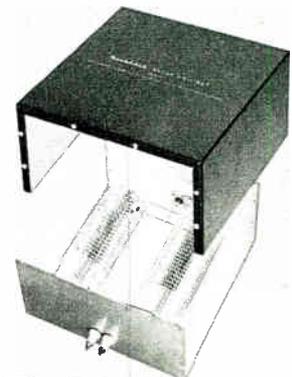
# Balun Coil KIT

Unbalanced coaxial lines used on most modern transmitters can be matched to balanced lines of either 75 or 300 ohms impedance with this convenient transmitter accessory. The design of the bifilar wound coils will enable transmitters with unbalanced output to operate into balance transmission lines such as used with dipoles, folded dipoles, or any balanced antenna system.

The Balun Coil set can be used with transmitters and receivers without adjustment, over the frequency range of 80 through 10 meters, and will handle power inputs of up to 200 watts.

Cabinet dimensions are 9" square x 5" deep and it may be located any distance from the transmitter or from the antenna wherever it is convenient. A protective cover is supplied with the balun coil set to prevent damage to components by weather or other causes in outdoor installations. Very easy to build, the B-1 kit can be put together in less than an hour, and is easy to connect with full instructions provided. Shpg. Wt. 4 lbs.

**\$8<sup>95</sup>**



**MODEL B-1**

**DX-20 CW**

# Transmitter KIT

*An Ideal  
Code Transmitter*

The DX-20 is an excellent performer designed exclusively for CW work, and features high operating efficiency at low cost. An ideal transmitter for the novice, as well as the advanced-class CW operator. The DX-20 features single-knob band switching and covers 80, 40, 20, 15, 11 and 10 meters using crystals or an external VFO (variable frequency oscillator). A pi network output circuit is used to match antenna impedances between 50 and 1000 ohms.

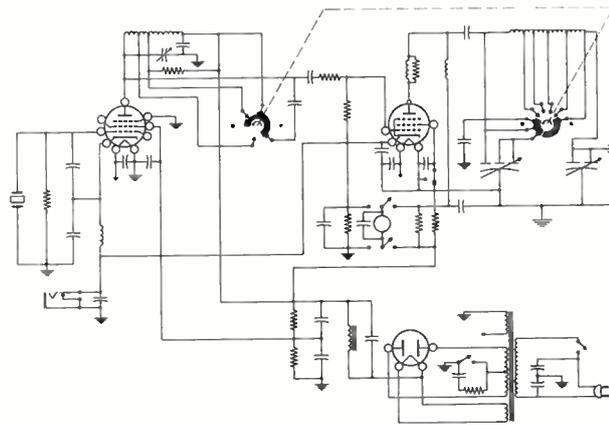
The efficient circuitry features a single 6DQ6A tube in the final amplifier stage for plate power input of 50 watts. A 6CL6 serves as the crystal oscillator. The husky power supply uses a heavy duty 5U4GB rectifier and top-quality "potted" transformer for long service life. It has also been given the full "TVI" treatment for minimum radiation interference. All controls are conveniently located for ease of operation and an easy-to-read panel meter indicates the final grid or plate current selected by a panel switch. Access into the cabinet for crystal changing is provided by a removable metal pull-out plug on the left end of the cabinet. Very easy to build, the novice or beginning ham will find the instructions easy to follow with large pictorial diagrams for reference all the way through construction. Shpg. Wt. 19 lbs.



**MODEL DX-20 \$35<sup>95</sup>**

## Specifications

- RF Power Input ..... 50 watts CW
- Output Impedance..... 50-1000 ohms
- Output Coupling ..... Pi network (coaxial)
- Operation..... Crystal—external VFO
- Band Coverage..... 80-40-20-15-11-10
- Tube Complement... 5U4GB rectifier  
6CL6 oscillator  
6DQ6A final amplifier
- Power Requirements... 115 volts AC, 60 cycles, 150 watts
- Cabinet Size..... 13" wide x 8½" high x 7" deep



# VFO KIT



**MODEL VF-1**

Enjoy the convenience and flexibility of VFO operation by gaining complete coverage of the ham bands. Covers 160, 80, 40, 20, 15, 11 and 10 meters with three basic oscillator frequencies. It provides better than 10 volt average RF output on fundamentals to drive the most modern transmitters. The illuminated tuning dial provides more than 2' of dial calibration with vernier reduction between the main tuning knob and the tuning condenser for smooth dial action. Features include voltage regulation for frequency stability, extensive shielding, ceramic coil forms, and other high quality parts throughout.

VFO operation allows you to move out from under interference and select a portion of the band you want to use without having to be tied down to only 2 or 3 frequencies through the use of crystals. You can "zero-in" on the other fellows' signal and return his CQ on his own frequency. The cost of the Heath VF-1 is far below that of crystals and will add more operating enjoyment to your ham activities. Measures 7" H x 6½" W x 7" D. Shpg. Wt. 7 lbs. **\$19<sup>50</sup>**



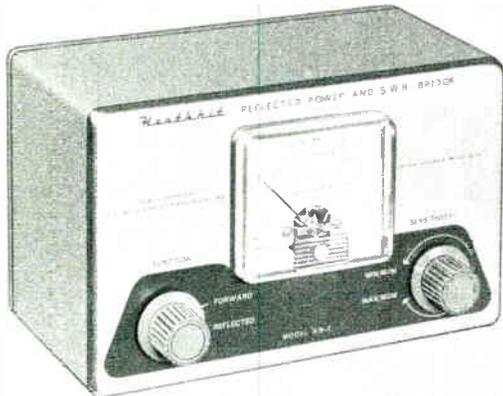
**MODEL VX-1**

**ELECTRONIC**

**Voice Control KIT**

*Do away with hand switching*

Switch from receiver to transmitter merely by talking into your microphone, giving you the advantage of "telephone-type conversation" with regular AM transmission. The unit is adjustable to all conditions by sensitivity controls provided. A variable time delay control changes the "hold" time to suit the requirements of the individual operator. The power supply is built-in for simplicity of operation. A terminal strip is provided on the rear chassis apron for receiver and speaker connections and also for a 117 volt antenna relay. A length of microphone cable is furnished to couple the output to the transmitter "mike" input connector, thus providing you with a 2-stage audio amplifier. Measures 4 5/8" H x 7 3/8" W x 4" D. Modernize your ham shack now and enjoy the convenience of automatic operation. Shpg. Wt. 5 lbs. **\$23<sup>95</sup>**



**MODEL AM-2**

**REFLECTED**

**Power Meter KIT**

*Measure standing wave ratio*

Know at all times the efficiency of your antenna system. The AM-2 checks the match of your antenna's transmission system by measuring the forward and reflected power or standing wave ratio. It is designed to handle a peak power of well over 1 kilowatt of energy and may be left in the antenna system feed line at all times. Band coverage is 160 meters through 6 meters. Input and output impedances provided for 50 or 75 ohm lines. No external power is required for operation. Meter indicates percentage forward or reflected power, and standing wave ratio from 1:1 to 6:1. Another convenient application of the AM-2 is in matching impedances between exciters or RF sources and grounded grid amplifiers. The stylish cabinet measures 4 5/8" H x 7 3/8" W x 4 1/8" D. Shpg. Wt. 3 lbs. **\$15<sup>95</sup>**



**MODEL AM-1**

**ANTENNA**

**Impedance Meter KIT**

*Match your complete antenna-receiver-transmitter system for maximum performance*

Use this handy kit to measure antenna impedance for line matching purposes, and adjustment of beam and mobile antennas. Used in conjunction with a signal source, such as the Heathkit model GD-1B grid dip meter, the AM-1 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 a SWR.

Doubles as a phone monitor or useful as a relative field strength meter. Features precision resistor, germanium diode and a 100 ua meter. Dial covers 0 to 600 ohms. Operates up to 150 megacycles. The AM-1 is housed in a shielded aluminum cabinet which measures 7" L x 2 1/2" W x 3 1/4" D. The kit is easy to build with step by step instructions provided and will prove to be a valuable instrument to have around the ham shack. Shpg. Wt. 3 lbs. **\$14<sup>50</sup>**

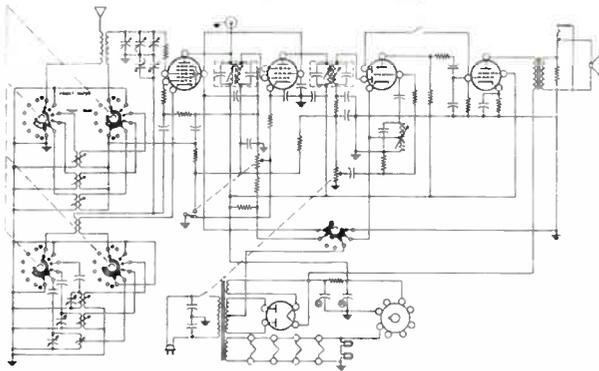
COMMUNICATIONS-TYPE

# All Band Receiver KIT

*Listen-in on Ham  
and Short Wave Frequencies*

Designed for high circuit efficiency and for convenience of construction, the AR-3 provides good sensitivity and selectivity with flexible overall operation. Frequency coverage is from 550 kc to 30 mc in four bands clearly marked on a slide-rule dial. The ham bands are also plainly marked. The power supply is transformer operated for safety and high efficiency. Features include: band switch, band spread tuning, phone-standby-CW switch, head phone jack, antenna trimmer, noise eliminator, RF gain control and AF control. Slug-tuned coils allow close tracking adjustments. No special antenna required. Antenna and oscillator coil layout permits easy alignment from above the chassis. High quality components used throughout for many years of fine performance. An accessory power socket is provided for using the Heathkit model QF-1 "Q" Multiplier. Shpg. Wt. 12 lbs.

**CABINET:** Plastic impregnated fabric covered cabinet with aluminum panel protects speaker and components. Measures 6 $\frac{3}{4}$ " H x 12 $\frac{1}{4}$ " W x 7 $\frac{3}{4}$ " D. Part No. 91-15A. Shpg. Wt. 5 lbs. \$4.95



## "AUTOMATIC" Conelrad Alarm KIT

The CA-1 works with any AC-DC transformer operated or battery powered radio so long as the receiver has AVC. When the monitored station goes off the air, the CA-1 automatically cuts the AC power to your transmitter and lights a red indicator. Featured in the kit are a heavy-duty 6 ampere relay, a thyratron tube, and a built-in power supply. A neon lamp shows that the alarm is working. Your transmitter plugs into an AC receptacle on the CA-1 and a cable connects to the AVC circuit of a nearby receiver. Built-in sensitivity control allows adjustment to various AVC levels. Shpg. Wt. 4 lbs. **\$1395**

## "Q" Multiplier KIT

Add selectivity and signal rejection to your communication receiver. You'll find this kit a tremendous help on crowded phone and CW bands. Use it with any AM receiver having an IF frequency between 450 and 460 kc that is not AC-DC type. Powered from the receiver with which it is used, it requires only 6.3 volts AC at 300 ma (or 12 volts AC at 150 ma) and 150 to 250 volts DC at 2 ma. Provides an effective Q of approximately 4000 for extremely sharp "peak" or "null". Tuned by means of a convenient tuning knob on the front panel. Attractive cabinet measures 4 $\frac{1}{16}$ " H x 7 $\frac{3}{8}$ " W x 4 $\frac{1}{8}$ " D. Shpg. Wt. 3 lbs. **\$995** (\$10.65 when ordered with AR-3)



**MODEL AR-3 \$2995** less cabinet

### 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 vol'ts AC 50/60 cycles 40 watts
- Dimensions . . . . . 11 $\frac{1}{2}$ " wide x 5 $\frac{3}{4}$ " high x 6 $\frac{3}{4}$ " deep
- Shipping Weight . . . . . 12 lbs.
- Amateur bands plainly marked on dial.

### Controls

- General Coverage Tuning
  - Band Spread Tuning
  - Headphone Jack
  - Antenna Trimmer
  - Band Switch
  - Noise Limiter On/Off
  - Phone—Standby—CW Switch
  - RF Gain Control/AVC On-Off
  - AC Or/Off—Audio Gain
  - Accessory Socket
- Sockets for connecting Heathkit Model QF-1 Q Multiplier on rear of chassis



**MODEL CA-1**



**MODEL QF-1**

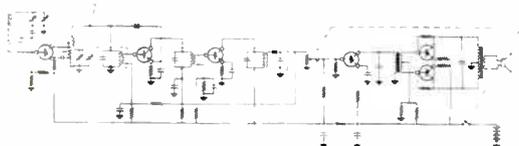


**MODEL XR-1L**  
**\$34.95**

**MODEL XR-1P** **\$29.95**

### Specifications

- Tuning Range.....538-1680 kilocycles;
- Sensitivity.....400-500 uv/m for 50 mw output
- Size (both).....9½" L x 7¼" H x 4" D
- Loudspeaker.....4" x 6", 1.47 oz. magnet
- Batteries.....6 size "D" flashlight cells (not included)
- Battery Life.....500-1000 hours average use
- Transistors.....6; 1-2N252      1-2N253      1-2N254  
   1-2N238      2-2N185      2 diodes
- Weight with Batteries: (both).....4¾ pounds



## TRANSISTOR

# Portable Radio KIT

*Enjoy Year Around  
Portable Entertainment*

- Built-in Rod-Type Antenna—Large 4" x 6" PM Speaker
- 6 Name Brand Transistors—Standard Flashlight Cell Power Supply

The entire family will enjoy using this 6-transistor portable radio, that is as much "at home" inside as it is outside. The handy power supply uses 6 standard size "D" flashlight batteries which are readily available in almost any store. They also afford extremely long battery life (between 500 and 1,000 hours).

The modern molded plastic case with pull-out carrying handle and fully enclosed back add beauty and convenience to this splendid kit. Cabinet is 2-toned blue with gold inlay. 6 Texas Instrument transistors are used for outstanding sensitivity and selectivity. Sparkling tone quality is achieved through the use of a large 4" x 6" PM speaker with heavy magnet. Use of this large speaker and roomy chassis make it unnecessary to crowd components adding greatly to the ease of construction. Transformers are prealigned so it is ready to operate as soon as construction is completed. An alignment tool is furnished with the kit in case you want to "peak up" on stations for maximum efficiency by following simple instructions in the manual. No other alignment equipment is required. These outstanding features make the XR-1P equal to the finest transistor portable you can buy, yet it costs far less than many of the novelty portables that provide only minimum performance. The carefully designed circuitry and use of standard flashlight batteries for power allow you to operate this portable as economically as your table radio operating from house current. Shpg. Wt. 6 lbs.

**MODEL XR-1L:** Identical to the XR-1P except supplied with leather case instead of plastic case. Leather carrying strap included. Shpg. Wt. 7 lbs.

**LEATHER CASE:** Can be purchased separately if desired. Fits all XR-1P as well as earlier XR-1 model chassis. No. 93-1. Shpg. Wt. 3 lbs. **\$6.95.**

## Complete Tool Set KIT

The pliers, diagonal sidecutters, two screwdrivers and soldering iron are all the basic tools you need for building any Heathkit. The pliers and diagonal sidecutters are equipped with insulated rubber handles and are of top quality case hardened steel for rugged duty and long life. The American Beauty soldering iron has a replaceable tip to facilitate cleaning. With these simple, inexpensive tools you need not be afraid to tackle the most elaborate kit. Shpg. Wt. 3 lbs. **\$9.95**



**MODEL TK-1**

## Crystal Radio KIT

Any youngster interested in radio or electronics will enjoy building and using this fine little crystal receiver. No external power is required for operation. Frequency coverage is from 540 to 1600 kc. A sealed germanium diode is used for detection—no critical "cats whisker" adjustment. The CR-1 has 2 high-Q tank circuits that employ ferrite core coils and conventional air tuned capacitors. Capacitors are tuned individually to the station. The manual explains the basic fundamentals of signal reception. An interesting "do-it-yourself" project for all ages. Headphones included. Measures 6" L. x 3" W. x 2½" D. Shpg. Wt. 3 lbs. **\$7.95**



**MODEL CR-1**

## Broadcast Band RADIO KIT

*Educational and Fun  
to Build*

Can Be Used As Receiver, Tuner, or Phono Amplifier  
Slide-Rule Dial— $5\frac{1}{2}$ " PM Speaker—Rod-Type Antenna

This table model radio is fun to build, and is a fine receiver for your home. Frequency coverage is from 550 to 1600 kc with excellent sensitivity and selectivity. The  $5\frac{1}{2}$ " PM speaker, hi-gain IF transformers, miniature tubes and a rod-type antenna, assure good reception in all locations. The power supply is transformer operated for safety and efficiency. It's easy to build, and the manual explains operational theory as work progresses and the receiver develops at your fingertips. This specially prepared manual represents a basic radio education course in itself and is of particular use to novices and students. Final alignment with the signal generator will produce best results. Measures  $11\frac{1}{2}$ " W. x  $5\frac{3}{4}$ " H. x  $6\frac{1}{4}$ " D.  
Shpg. Wt. 10 lbs.

**\$1895**

(less cabinet)

**CABINET:** This attractive plastic-impregnated fabric covered plywood cabinet is available complete with aluminum panel, flocked speaker grille, and protective rubber feet. Shpg. Wt. 5 lbs. Part No. 91-9A. **\$4.95.**

### PROFESSIONAL

## Radiation Counter KIT

The model RC-1 is a deluxe geiger counter priced far below comparable units. You save by "building it yourself". Assembly proceeds smoothly through complete and easy-to-follow step-by-step instructions and pictorial diagrams supplied. No previous electronic experience is required. Highly sensitive and reliable. Radiation level can be read on meter and heard on built-in speaker. Meter ranges are 0-100, 600, 6,000 and 60,000 counts-per-minute, and 0.02, .1, 1 and 10 MR/HR. Employs a type 6306 bismuth counter tube, sensitive to both beta/gamma radiation. 5 tubes and a transistor are used for stable, reliable operation. Kit includes batteries and safe radiation sample for calibration. Measures  $9\frac{1}{2}$ " H. x  $6\frac{1}{2}$ " W. x 5" D.  
Shpg. Wt. 8 lbs.

**\$7995**

## Battery Tester KIT

This tester is a special device designed to test batteries under "load" revealing their true condition. It is simple to operate and there are no complicated meter readings to interpret. Just set the voltage selector, connect the leads to the battery, and read the condition on the three-color scale. Tests all kinds of dry cell batteries within ranges of 0-15 volts and 0-180 volts. A slide switch provides either 10 ma or 100 ma load, depending on whether testing an A or B battery. Measures  $5\frac{7}{8}$ " L. x 3" W. x  $2\frac{3}{4}$ " H.  
Shpg. Wt. 2 lbs.

**\$850**

## Enlarger Timer KIT

Photographers can speed up enlarger operations by using the model ET-1. The all-electronic timing cycle insures accuracy and is calibrated in 5-second graduations from 0 to 1 minute. A front panel control provides for initial calibration. The built-in relay handles up to 350 watts at the two AC outlets provided for enlarger and safe light. Easy to operate, you simply set the timer dial to the desired number of seconds and switch the spring-return lever switch to print. To repeat timing cycle switch again to print. A focus position is also provided when you want the enlarger to remain "on". The entire unit is housed in a non-corrosive plastic case. Measures  $6\frac{1}{4}$ " L. x  $3\frac{3}{4}$ " W. x 2" D. Shpg. Wt. 3 lbs.

**\$1150**



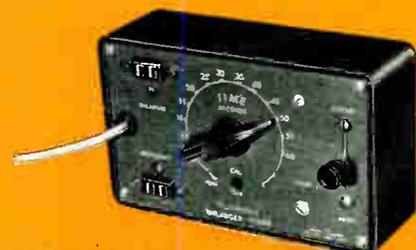
**MODEL BR-2**



**MODEL RC-1**



**MODEL BT-1**



**MODEL ET-1**



**MODEL IA-1 \$59.95**

## Specifications

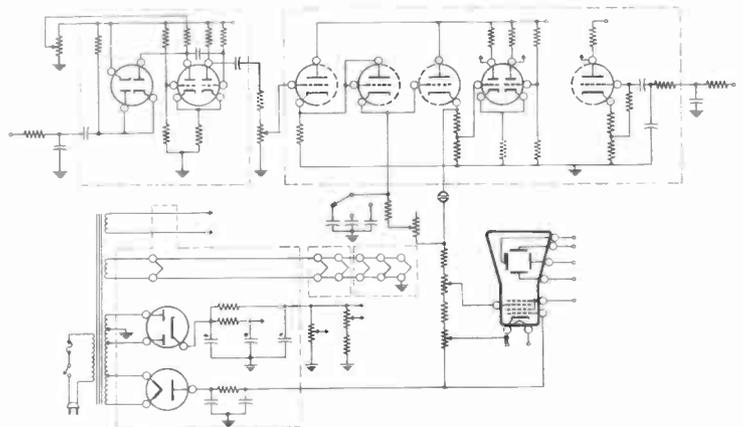
- RPM Range ..... 400-5000
- Display Shows:
  - Directly ..... Voltage across breaker points
  - Indirectly ..... Current in coil secondary
- Screen Size ..... 3" x 4"
- Standard Pattern Height:
  - 6-volt ..... 1" approximately
  - 12-volt ..... 1½" approximately
- Test Lead Lengths ..... 10 feet each to breaker points and to spark plug wire
- Controls ..... Vertical position, intensity, focus, trigger level, power and left edge position, coarse speed, fine speed
- Tube Complement ..... 5BP1, 1V2, 6X4, 6AL5, 12AX7, (3)—12AU7
- Power Requirement ..... 105-125 volts AC, 50/60 cycle, 35 watts
- Dimensions Overall ..... 6½" x 11" x 20"

## ELECTRONIC

# Ignition Analyzer KIT

*Locate Ignition System Faults Quickly*

Whether you are a mechanic, tune-up man or auto hobbyist, you'll find the IA-1 an invaluable aid in analyzing ignition systems. This remarkable instrument traces the dynamic action of voltage in ignition systems on a fluorescent cathode-ray-tube screen showing the condition of the coil, condenser, points, plugs, and ignition wiring. The analyzer will show the existence of such conditions as inequality of spark intensity, a poor spark plug, defective wiring—and will even identify the offending plug or wire. It will also detect breaker-point bounce, an open condenser, or will allow the setting of dwell-time percentage for the points. The IA-1 is simple to use, with a minimum of controls—yet is completely flexible for all types of internal combustion engines where breaker-points are accessible. Two test leads are supplied, each 10' long, which will enable you to reach either the breaker points or the spark plug wires. Use it on automobiles, boats, aircraft engines, etc. An important feature of this instrument is ability to check the dynamic performance of the ignition with the engine in operation (400 to 5,000 RPM). It will show the complete engine cycle or just one cylinder at a time. The IA-1 is especially helpful in locating stubborn defects which may show up only when the vehicle is in motion and under load if a vibrator-type converter is used to supply 115 VAC power for the analyzer. This easy-to-build instrument will help you make faster, more efficient engine tune-ups or repairs and will pay for itself many times over. Shpg. Wt. 20 lbs.



# Electronic Tachometer KIT

*Constant, Reliable Check of Engine Revolutions*

Convenient and useful on inboard and outboard boats as well as in automobiles, the TI-1 is an electronic tachometer operating directly from the spark impulse of your engine. It may be used on any spark ignited 2 or 4 cycle engine of any number of cylinders. Completely transistorized, the instrument operates on 6, 8, 12, 24 or 32 volt DC systems. Easy to read indicator reads revolutions-per-minute from 0 to 6,000. Calibration control conveniently located on the instrument panel for ease in adjusting to engine type. The tachometer is put into operation by merely attaching the special clamp to ignition leads. Shpg. Wt. 4 lbs.

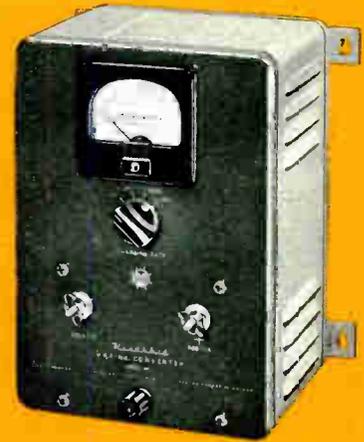


**MODEL TI-1 \$25.95**

## Marine Converter KIT

*Save your boat batteries*

Keep your boat batteries fully charged at all times with this convenient dockside marine converter and battery charger. Charges 6 or 12 volt batteries even while your boat's electrical system is in use. Provides up to 20 amperes continuously for charging 6 volt batteries or 10 amperes continuously for charging 12 volt batteries, regardless of type. A panel mounted 25 ampere meter continuously monitors the charging current, and the primary circuit is fused to protect the instrument from overloads or short circuits. Moisture and fungus proof lacquer is provided with the kit. Convection cooling prevents unsafe temperature rise. The MC-1 has no moving parts, tubes nor blowers to wear out or break. Absolutely no maintenance to worry about. Mounting brackets are supplied for easy installation on any boat. Measures 9½" H. x 8" W. x 5½" D. Shpg. Wt. 16 lbs. **\$4295**



MODEL MC-1

## Power Converter KIT

*Convenient household current*

*Afloat or on wheels*

Now you can operate your TV set, radio, small hi-fi system, electric razor, lights, and other AC electrical equipment directly from your 12-volt boat or car battery. With the Heathkit Power Converter you can enjoy the convenience of home electricity whether boat cruising or on automobile trips. An extremely simple circuit in the PC-1 changes the direct current of your marine or auto battery into 60 cycle AC current used in the household. A saturable reactor transformer serves to couple two power transistors in a multi-vibrator circuit, operating at a nominal 60 cycles-per-second. A fuse is incorporated to prevent operation into a load too large for the power converter and to protect the transistors from excessive heat. The circuit filtering has been designed to protect the transistors and to eliminate generation of radio or television interference. The compact unit measures only 10" H. x 4½" W. x 4¾" D. No moving parts to wear out, no tubes to replace, the PC-1 offers you years of trouble-free, dependable service. Shpg. Wt. 8 lbs. **\$2495**

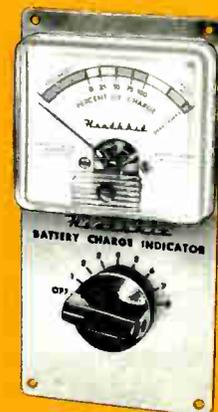


MODEL PC-1

## MARINE BATTERY Charge Indicator KIT

*Don't chance battery failures*

Stop working with dangerous acid in dark bilges checking your boat storage batteries the old fashioned hydrometer way. The CI-1 checks as few as one or as many as eight storage batteries instantly. Mounted in your instrument panel the charge indicator meter tells you at a glance whether your boat batteries are sufficiently charged for safe cruising. Operates on either 6 or 12 volt systems using any size lead-acid batteries. The meter is hermetically sealed and completely waterproof. Although designed mainly for marine use the CI-1 has also found extensive use in service stations, power stations, and radio stations where banks of batteries are kept in reserve. It can also be used in new automobiles having no ammeter to note the actual condition of the battery rather than indicating only charge and discharge. Can be installed in the boat in a matter of minutes. Dimensions are 2⅞" W. x 5¾" H. x 2" D. Shpg. Wt. 3 lbs. Note: For mounting on nonferrous metals or wood. **\$1695**



MODEL CI-1



**MODEL FD-1-6** (6 volt)  
**MODEL FD-1-12** (12 volt)

## Fuel Vapor Detector KIT

*Protect your boat and passengers*

Don't risk fire or explosion on your boat. The Heathkit Fuel Vapor Detector indicates the presence of fumes in your bilge on a 3-color "safe-dangerous" meter scale and immediately shows if it is safe to start the engine. The pilot lamp shows whether or not the detector is operating. A panel control enables initial calibration of the detector. The meter features a watertight seal for long life. Easy-to-build and install, the instrument operates from your boat's battery. The kit is complete including a heavy-duty neoprene-insulated cable and a spare detector unit. This highly sensitive instrument should be a "must" on any enclosed-bilge power boat. Measures 7 $\frac{7}{8}$ " H. x 3 $\frac{1}{4}$ " W. x 3 $\frac{1}{8}$ " D. **\$35<sup>95</sup>**  
Shpg. Wt. 4 lbs. **each**



**MODEL RI-1**

## Rudder Position Indicator KIT

*See at a glance the position of your rudder*

Useful in docking or underway, the position receiver is calibrated 60 degrees to port and starboard from dead ahead allowing the operator to see at a glance the exact position of the rudder at all times. Operates on 6 or 12 volt battery systems. Top quality components are used throughout. Kit includes 20' of cable and all necessary mechanical linkage. Extremely useful in docking larger boats with minimum steerage way and also convenient for trimming ship on larger sailing craft. Very simple to construct and requires very little installation time. A valuable accessory for the boat owner. **\$14<sup>95</sup>**  
Shpg. Wt. 4 lbs.



**MODEL PM-1**

## Power Meter KIT

*Quick check of transmitter operation*

The PM-1 is ideal for sampling the RF field of marine, mobile, or fixed transmitters. Continuous indication of RF radiation from your transmitter is read directly from the panel meter. Operates on any transmitter having output frequency between 100 kc and 250 mc, regardless of power. Sensitivity is 0.3 volts RMS full scale, and a special control on the panel allows for further adjustment of the sensitivity. Requires no batteries, electricity, nor direct connection to the transmitter. The entire unit measures only 3 $\frac{3}{4}$ " W. x 6 $\frac{1}{4}$ " L. x 2" D. A simple and inexpensive way to be sure at all times just what your transmitter is putting out. Top quality parts used throughout. Can be assembled in a short time—for years of dependable service. **\$14<sup>95</sup>**  
Shpg. Wt. 2 lbs.

### SAVE—WITH HEATHKIT MARINE GEAR

If you are a boat owner, or have anything to do with boats at all, you are probably aware of the high cost of marine equipment. Heath Company's entry into the field of marine instruments was sparked by a desire to be a part of the fast growing marine industry and also the belief that marine products need not necessarily be priced out of the average person's reach. The rapid expansion of the line of marine Heathkits has more than justified this move. The interest you have shown in marine Heathkits both at the various boat shows we attend and by your ever-increasing volume of orders, has been our encouragement to put more and more effort in the research and development of the marine line. You may be sure of looking forward to more new kits for your boating pleasure, convenience and safety in the future. And, as always, you can expect the same high quality at the lowest possible cost.



**TWO BAND TRANSISTOR RADIO**

# Direction Finder KIT

*A 2-Band Portable RDF for Your Boat*

6 Transistor Circuit  
 Powered by 6 Standard Flashlight Batteries  
 Doubles as Portable Radio

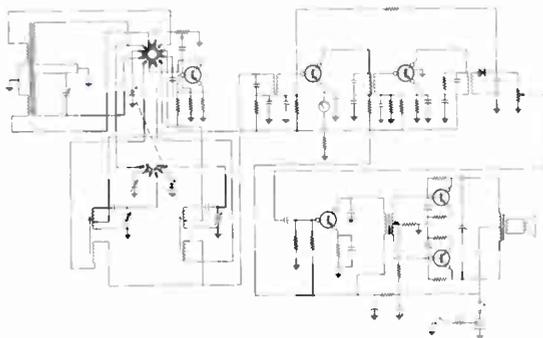
Enjoy the safety and convenience of a two-band radio direction finder that is economical to buy, easy-to-build, and costs only pennies to operate. The DF-2 is a self-contained, self-powered, six-transistor super heterodyne radio direction finder. It receives aeronautical and marine beacons as well as standard band broadcasts with startlingly clear tone reproduction over a long range. Covering the beacon band from 200 to 400 kc and broadcast band from 540 to 1620 kc the DF-2 is designed to take directional "fixes" on both aircraft and marine beacons as well as standard broadcast stations while providing you with the entertainment of a high quality transistor portable radio. You are able to receive aircraft weather reports every thirty minutes and constant Coast Guard beacons on the 200-400 kc band. The "bearing" control knob on the front panel rotates the ferrite-loop antenna, and a dial light is provided for night operation. Power is supplied by 6 standard size flashlight batteries which will last up to one year under normal operation. Moisture and fungus proof lacquer is supplied with the kit. The crackle-finish case is of corrosion-proof aluminum, handsomely styled in two-tone seafoam green with black control knobs. Dimensions are 9½" W. x 8" H. x 5" D. A splendid investment for boat owners, light plane owners, campers and hunters. Shpg. Wt. 9 lbs.



**MODEL DF-2 \$69<sup>95</sup>**

### Specifications

- Beacon Band ..... 200 to 400 Kilocycles
- Broadcast Band ..... 540 to 1620 Kilocycles
- Loudspeaker ..... 4" by 6" "Weather-proofed"
- Power Requirements ..... Six standard flashlight batteries
- Battery Drain ..... (9 ma. no signal) (20 ma. full volume)
- Battery Life ..... 500 to 1000 hours  
(up to 1 year of normal operation)
- Dial Light ..... Push button operated
- Transistors ..... Six  
 2N252-RF amp., mixer, local oscillator  
 2N308-IF amp.  
 2N309-IF amp.  
 2N238-Audio amp./driver  
 2N185-(2) "Class B" Audio output
- Audio Transformers ..... "Moisture and Fungus Proofed", in drawn steel case
- Controls ..... Sensitivity: On/off volume, Band switch, Bearing and Heading, Station tuning, Null and tune indicator meter
- Overall Size ..... Length—9½"  
 Depth—5"  
 Height—8" (including antenna)
- Net Weight with Batteries ..... 5½ pounds



**MODEL DF-1**

**TRANSISTOR RADIO**

# Direction Finder KIT

Useful and entertaining, this 6-transistor radio direction finder is capable of obtaining "fixes" on standard broadcast transmitters and doubles as a handy portable radio. Powered by a single 9-volt battery, the DF-1 covers the broadcast band from 540 to 1600 kc. A directional high-Q ferrite antenna is incorporated which is rotated from the front panel to obtain a fix on a station. A 1 ma meter serves as a null and tuning indicator. Controls consist of: tuning, volume, power (on-off), sensitivity, heading and bearing indicators. A 6-to-1 vernier is provided on the tuning condenser for precision tuning. Moisture and fungus proof lacquer supplied with kit. IF transformers are prealigned. Overall dimensions are 7½" W. x 5⅞" H. x 5⅜" D. Slip-in-place mounting brackets are supplied for easy mounting on ship bulkhead or other places. **\$54<sup>95</sup>** Shpg. Wt. 5 lbs.



*the largest plant  
in the world devoted exclusively  
to the design and  
manufacture of electronic equipment  
in kit form*



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