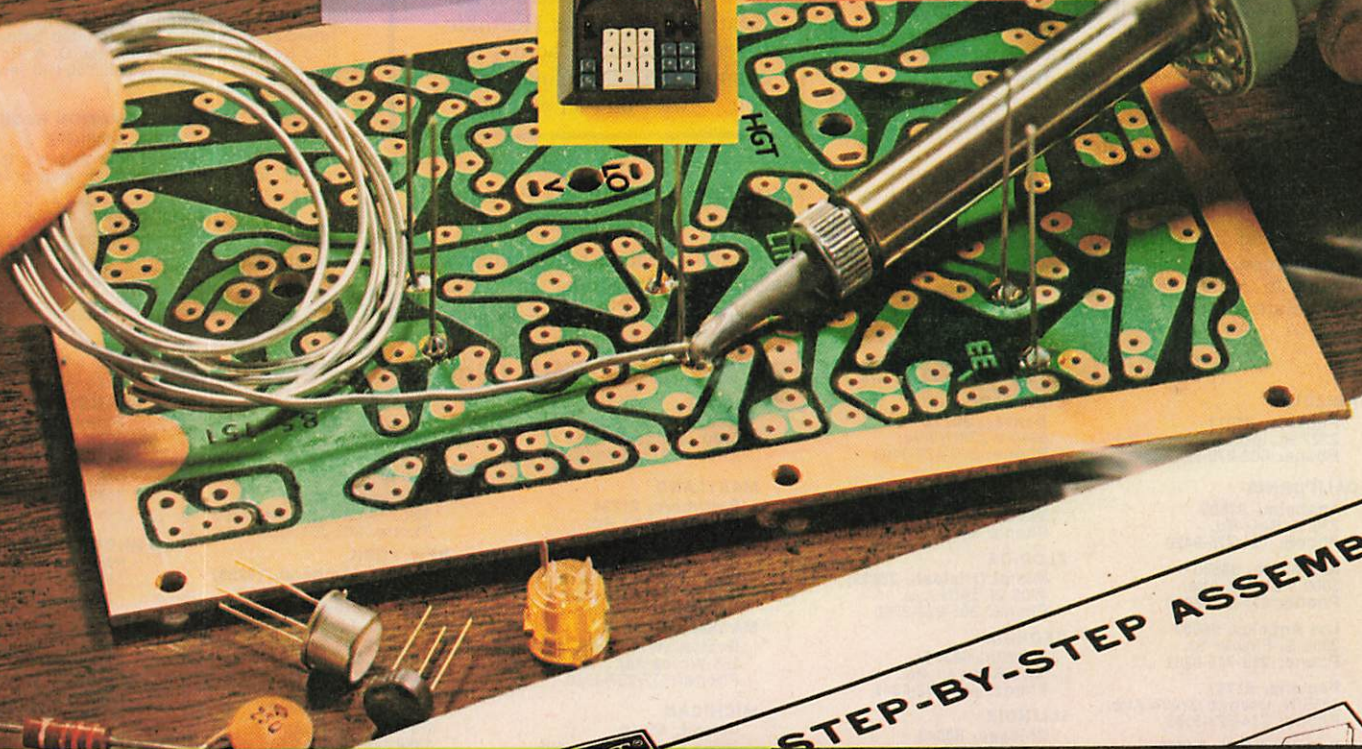
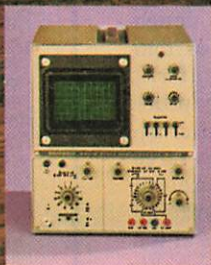
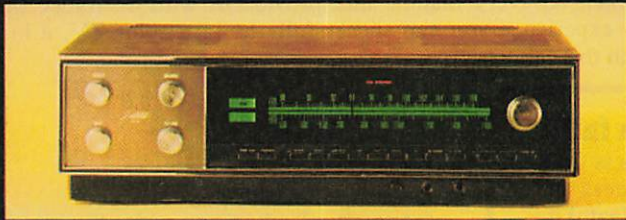


heathkit '74

Better electronics with do-it-yourself savings and satisfaction



- NEW Electronic Air Purifier, p. 5
- NEW 4-Channel Audio Scope, p. 15
- NEW 12V B&W Portable TV, p. 81
- NEW Deluxe Garage Door Opener, p. 66
- NEW Bookshelf Speaker Systems, p. 28
- NEW 180 MHz Frequency Counter, p. 54
- NEW Solid-State Lamp Dimmer, p. 3
- NEW Automatic Lamp Switch, p. 3
- NEW Amateur Coaxial Switch, p. 39



Factory Mail Order Catalog 810/74

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SEE INDEX ON BACK COVER

**See special-savings offers
on pages 12, 55 and 71**

Heathkit News & Views



Now — fully assembled automotive and electronic test equipment from Heath!

Heath is now assembling some of our popular pieces of automotive and professional test equipment. Every item in this new Assembled Instruments line is an outstanding value. Each is assembled, tested, and calibrated here at Heath's Benton Harbor factory, and each carries a full one-year warranty on parts and workmanship. Heath Assembled Instruments can be found on the automotive pages, 76 & 77, and in the instrument section, pages 47-62.

What's in an evening?

You'll find the "...evening kit" symbol appearing with various kits throughout the catalog. Its purpose is to give you an approximate time that it may take you to assemble a particular kit.

However, since it is virtually impossible to establish an exact time for every kitbuilder, the symbol should be considered only as a guide. It may take you more time or less time to build a particular kit.

Even more important, we feel, is that you work at a pace you find enjoyable, and avoid the possibility of errors as a result of working too fast, or becoming tired.

Remember, building your Heathkit is not a race to meet the number of evenings we estimate. So relax...and enjoy yourself.

Dear Friends:

We have long had the policy that anyone can build a Heathkit. Briefly stated — we won't let you fail.

Behind this statement lies the construction manual which translates an engineering design from a box of parts to a finished product.

Assembly manual development at Heath is a unique and distinctive process. It begins when the manual writer builds a new model just to familiarize himself with the product. He then builds a second model and while doing so writes the first draft of the assembly sequence. Using this draft, he builds a third — tying in preliminary sketches. The manual then goes to "pre-proof" where the writer and engineer validate the instructions and artwork. The next step is "proofbuild" when many people, representing a cross-section of novice, technical and non-technical kit builders construct the kit and make comments on the manual. Finally, before shipping to you, additional kits are built from the first production run. In all, dozens of kits have been built after the product has been designed and before the first shipment is made to you.

These six steps are taken on every manual and provide us with assurance that regardless of your prior experience you can successfully build a color TV, a hi-fi receiver, or any product in this catalog.

Sincerely,

D. W. Nurse
D. W. Nurse

Order a Heathkit Manual...your money back when you order the kit

If you've been wondering about a particular kit, but would like a chance to take a close look before you buy...just send for the manual. It costs only \$2 postpaid (except Color TV, Organs, EK and EF series which are \$5). Also, we give your money back on the manual when you buy the kit (see order form for complete details). Either way, Heathkit manuals are a bargain...many cost us more than this minimum charge.

BASE PRICE INFORMATION

The Freeze Price for any item sold by Heath Company may be obtained by filling in the Freeze Price Information Request Form printed below and mailing it to Heath Company, Attention C. A. Robertson, Benton Harbor, Michigan 49022. You will receive a prompt answer by mail.

FREEZE PRICE INFORMATION REQUEST FORM

Heath Company

Please furnish me with your freeze price for the following item sold through your mail order catalog:

ITEM (describe) _____
(give model number if possible)
CUSTOMER NAME _____
please print
ADDRESS _____
(street)

(city) (state) (zip)

We won't let you fail!

Our company's success is tied directly to your success in building and using Heathkit products. Every kit we design is judged in the light of that philosophy before we offer it to you. If you have any problem before, during or after assembly — no matter how large or small — it will be resolved in the spirit of that philosophy to your satisfaction here at the Heath factory and at Heathkit Electronic Centers across the country. This is our pledge to you... "we won't let you fail."

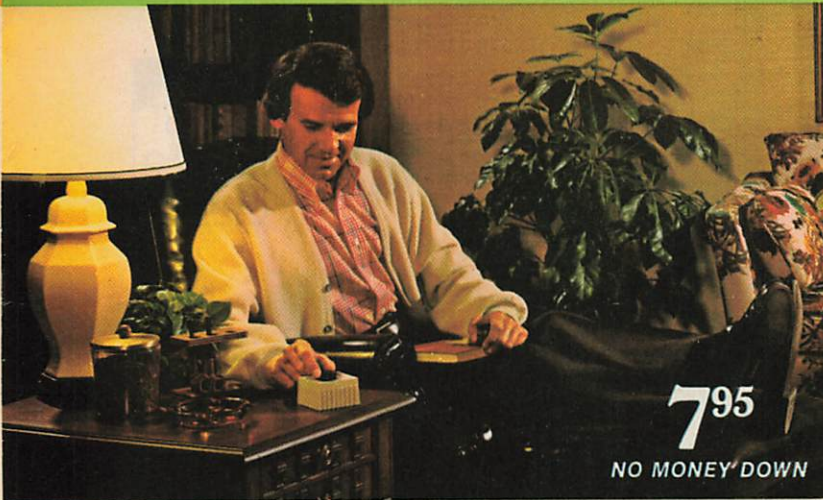
Attention: U.S. Military Personnel in W. Germany:

All Heathkit products and catalogs are available at your nearest Audio Club.

HEATHKIT ELECTRONIC CENTERS (Sales and Service)

- | | | | | |
|--|---|--|--|---|
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Phone: 714-776-9420</p> <p>El Cerrito, 94530
6000 Potrero Ave.
Phone: 415-236-8870</p> <p>Los Angeles, 90007
2309 S. Flower St.
Phone: 213-749-0261</p> <p>Pomona, 91767
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Phone: 714-623-3543</p> <p>Redwood City, 94063
2001 Middlefield Rd.
Phone: 415-365-8155</p> <p>San Diego (La Mesa, 92041)
8363 Center Dr.
Phone: 714-461-0110</p> <p>Woodland Hills, 91364
22504 Ventura Blvd.
Phone: 213-883-0531</p> | <p>COLORADO
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5940 W. 38th Ave.
Phone: 303-422-3408</p> <p>CONNECTICUT
Hartford (Avon, 06001)
395 W. Main St. (Rte. 44)
Phone: 203-678-0323</p> <p>FLORIDA
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4705 W. 16th Ave.
Phone: 305-823-2280</p> <p>GEORGIA
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5285 Roswell Rd.
Phone: 404-252-4341</p> <p>ILLINOIS
Chicago, 60645
3462-66 W. Devon Ave.
Phone: 312-583-3920</p> <p>Chicago (Downers Grove, 60515)
224 Ogden Ave.
Phone: 312-852-1304</p> <p>INDIANA
Indianapolis, 46220
2112 E. 62nd Ave.
Phone: 317-257-4321</p> | <p>KANSAS
Kansas City (Mission, 66202)
5960 Lamar Ave.
Phone: 913-362-4486</p> <p>MARYLAND
Baltimore, 21234
1713 E. Joppa Rd.
Phone: 301-661-4446</p> <p>Rockville, 20852
5542 Nicholson Lane
Phone: 301-881-5420</p> <p>MASSACHUSETTS
Boston (Wellesley, 02181)
165 Worcester Ave.
Phone: 617-237-1510</p> <p>MICHIGAN
Detroit, 48219
18645 W. Eight Mile Rd.
Phone: 313-535-6480</p> <p>E. Detroit, 48021
18149 E. Eight Mile Rd.
Phone: 313-772-0416</p> <p>MINNESOTA
Minneapolis (Hopkins, 55343)
101 Shady Oak Rd.
Phone: 612-938-6371</p> | <p>MISSOURI
St. Louis, 63123
9296 Gravois Ave.
Phone: 314-638-5100</p> <p>NEW JERSEY
Fair Lawn, 07410
35-07 Broadway (Rte. 4)
Phone: 201-791-6935</p> <p>NEW YORK
Buffalo (Amherst, 14226)
3476 Sheridan Dr.
Phone: 716-835-3090</p> <p>Jericho, Long Island, 11753
15 Jericho Turnpike
Phone: 516-334-8181</p> <p>New York, 10036
35 W. 45th St.
Phone: 212-765-4590</p> <p>Rochester, 14626
1384 Long Pond Rd.
(Long Ridge Plaza)
Phone: 716-227-4750</p> <p>OHIO
Cincinnati (Woodlawn, 45215)
10133 Springfield Pike
Phone: 513-771-8850</p> <p>Cleveland, 44129
5444 Pearl Rd.
Phone: 216-886-2590</p> | <p>PENNSYLVANIA
Philadelphia, 19149
6318 Roosevelt Blvd.
Phone: 215-288-0180</p> <p>Pittsburgh, 15235
3482 Wm. Penn Hwy.
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2221 Third Ave.
Phone: 206-682-2172</p> <p>WISCONSIN
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Phone: 414-873-8250</p> |
|--|---|--|--|---|

NEW Beginner Kits anybody can build and enjoy!



New Heathkit Solid-State Lamp Dimmer

- A simple beginner kit-building project
- Smoothly adjusts brightness of table or floor lamps
- Handier than a 3-way lamp — saves you money, too

Here's your chance to prove to yourself that you — or anybody else — can successfully assemble any Heathkit product, have fun doing it, and enjoy the sense of satisfaction and personal accomplishment that have been the hallmark of the Heathkit-building fraternity for more than a quarter of a century.

The new Heathkit GD-1018 Lamp Dimmer fits attractively and neatly on the end table or night stand — lets you adjust the brightness of table or floor lamps smoothly from full ON to complete invisibility with absolutely no step or flicker common to some competitive models. Turn it up to read, part way down for watching TV, still farther down for snoozing. It's handier than a 3-way lamp...saves you money too, since you can use lower cost bulbs...and eliminate the annoyance of burned-out elements in 3-way bulbs.

Easy to install and use — you simply plug the Lamp Dimmer into a wall outlet, then plug the table or floor lamp into the socket provided on the rear panel of the Lamp Dimmer. Or, using extension cords,

New Heathkit Photoelectric Lamp Switch

- Designed expressly for first-time kitbuilders — goes together in an hour or less

Find out just how easy and enjoyable Heathkit building really is...on a budget! The new Heathkit GD-600 is designed especially for first-time kitbuilders and includes the famous Heathkit check-by-step assembly manual that leads you a simple non-technical step at a time to successful completion. Electronic components mount on single circuit board. Project demonstrates how easy it is to build larger kits...including Heathkit color TVs. The GD-600 automatically turns table or floor lamps on at night, off in the morning while you're at home or away, discouraging burglars or prowlers. Photoelectric switch features fully electronic circuit with relay control of external load. Adjustable sensitivity lets you set switch to operate at various levels of light or darkness at dusk and dawn. No timers to set — unit is fully automatic to compensate for changes in daylight hours during the year. Controls resistive loads to 300 watts. Operates on regular 120 VAC household current. Features and performance compare with other photoelectric controls costing twice this low price.

Kit GD-600, 1 lb., mailable 5.00

you can control any number of lamps (not to exceed 300 watts total) ...or even control the temperature of warming trays not exceeding 300 watts. A convenient screwdriver adjustment recessed into the underside of the Lamp Dimmer housing gives you infinite adjustment of the light threshold level to avoid lamp flicker.

The GD-1018 is not only a simple and satisfying kit to build — with gratifying results — it's also a great first-kit venture. And for those who are interested in learning how things work, there's even a clear description of what makes the unit operate.

Technically speaking, the device is a phase-controlled switch, utilizing a Triac and a Diac solid-state switching element. It is designed for resistive loads only, and will not work on motors or fluorescent lamps.

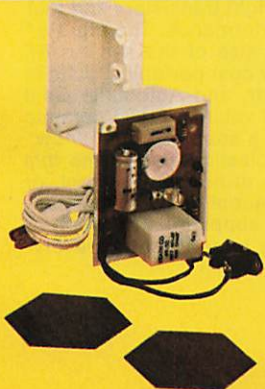
Get started on a rewarding and satisfying Heathkit project.

Kit GD-1018, 2 lbs., mailable 7.95

GD-1018 SPECIFICATIONS — Supply voltage: 105-135 VAC @ 60 Hz. Rated load: 300 watt maximum. Load type: Incandescent lamp (resistive). Control range: Less than 5% to more than 95% of rated power into load. Dimensions (overall): 3¼" x 3¼" x 2½" approximately.

FREE SERVICE OFFER

During the normal 90-day warranty period we will service your Heathkit Lamp Dimmer at no charge — regardless of the nature of the problem. Simply return the kit to the factory or any Heathkit Electronic Center.



5⁰⁰

NO MONEY DOWN

FREE SERVICE, TOO!

During the normal 90-day warranty period, we will service your Heathkit Photoelectric Switch at no charge — regardless of the nature of the problem. Simply return the kit to the factory or any Heathkit Electronic Center.

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

Build these "beginner" kits over a weekend

New Heathkit Telephone Amp

14⁹⁵



Simple solid-state circuitry can be assembled in two easy evenings — making the GD-1024 a great "starter" kit.



Specially designed "universal" cradle accepts all types of handsets. Unit is automatically switched on when handset is placed on cradle.



Unique liquid-filled acoustic seal minimizes speaker feedback and increases coupling between ear-piece and microphone.

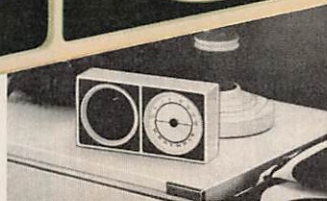
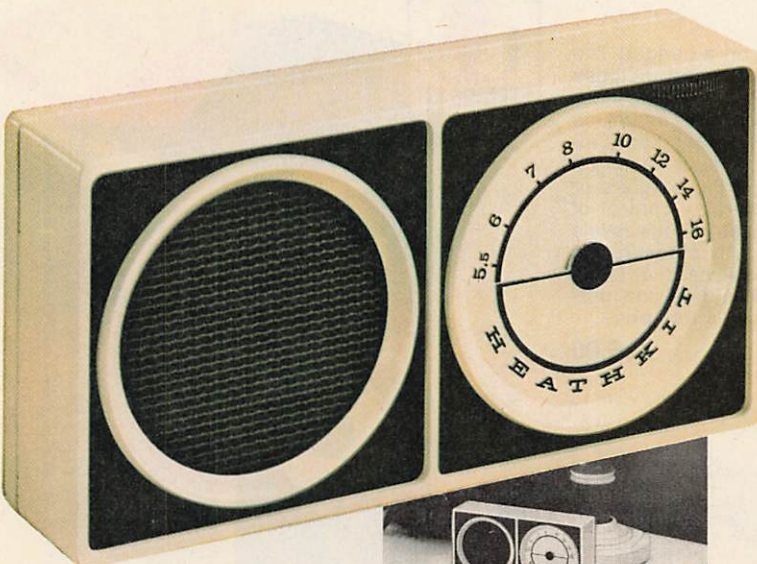
NEW



The new Heathkit GD-1024 Acoustic Coupled Telephone Amplifier lets you carry on the conversation without holding the phone in your hand. Wherever a household is busiest, that's where the GD-1024 will be most appreciated. And at this remarkably low kit-form price, you might want to order more than one. The GD-1024 works with virtually any telephone — conventional, Slim-Line, princess type, etc. To use, simply place the handset in the amplifier cradle. The incoming voice only is amplified and reproduced at the external speaker...you adjust the loudness to suit your room size. Your own voice is picked up by the telephone itself.

The unique acoustic coupling between the handset earpiece and built-in microphone makes the GD-1024 one of the few devices of this kind that works with the newer type phones as it isn't dependent upon an external magnetic field. The all solid-state circuitry has low no-signal drain and operates from low-cost 9-volt battery (not supplied). The external speaker has an 8-foot extension cord. Easy two-evening assembly time makes the Heathkit Acoustic Coupled Telephone Amp a perfect kit for the first-time kitbuilder.

Kit GD-1024, 2 lbs., mailable 14.95



Handsome contemporary styling blends harmoniously with any surroundings — in the home, at the office, or on the beach.

Heathkit AM Portable Radio

Now anyone can get started on a rewarding, exciting kit-building hobby for only a few dollars. Even a youngster can build it, yet the new Heathkit GR-1008 definitely is no toy. It's every inch a quality AM portable receiver capable of pulling in signals from far and wide over the complete broadcast band and reproducing them with outstanding fidelity and clean, crisp "big-set" sound.

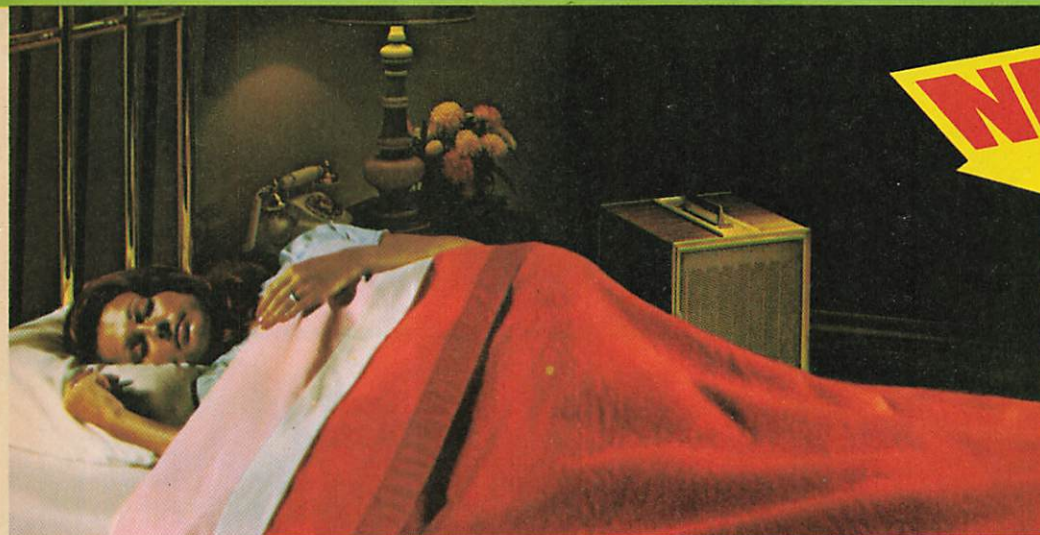
The kit is a joy to build, with all components except the speaker mounting on a single circuit board. A couple evenings' kit-building fun and you're enjoying your own personal, portable AM entertainment.

The all solid-state circuitry consists of eight transistors and four diodes for long life and dependable performance. The big 3½" speaker offers unusual fidelity for the size of the set. An RF amplifier stage, not usually found in low cost portables, pulls in distant or weak stations loud and clear, and Automatic Gain Control Circuit assures you of constant volume. Fixed ceramic filters in the IF circuit make alignment a snap. And the "now" look of the neatly styled high-impact plastic case makes this dandy little radio a conversation piece at home, at school, or wherever you take it with you. Power is supplied by an inexpensive readily available 9-volt battery (not supplied). For giving or keeping — the new Heathkit GR-1008 is priced right for everyone. Order one (or a couple) today.

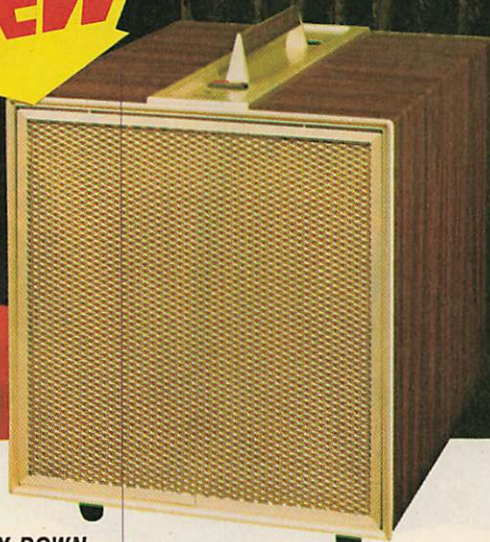
Kit GR-1008, 2 lbs., mailable 14.95

You can build any Heathkit with no prior knowledge or experience. We won't let you fail

Protect your family against dust, dirt & pollen



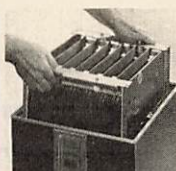
NEW



New Heathkit Electronic Air Purifier

- Removes up to 99% of airborne pollen and 95% other contaminants regardless of size or concentration
- Purifies air in 20' x 20' room in minutes
- Powerful 2-stage fully electronic operation
- Cleans in a jiffy — removable collector cell can be washed in soap and water
- Replaceable activated charcoal filter for complete odor removal
- Five-blade 2-speed fan with lifetime lubrication for maximum efficiency with no maintenance
- Completely self-contained for easy carrying from room to room — plugs into any wall outlet
- Solid-state selenium rectifier power supply for reliable long life, low power drain
- Interlock switch for cleaning safety — fuse protected circuitry throughout
- Attractive modern walnut & gold finish fits any home decor

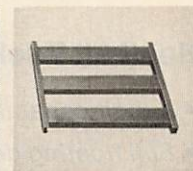
139⁹⁵ NO MONEY DOWN



Collector cell slides out for easy cleaning with plain soap and water.



Safety interlock switch guards against shock hazards.



Activated charcoal odor filter slides out for easy replacement.

Now your whole family can breathe easier at home with the new Heathkit Electronic Air Purifier. It has been estimated in some highly industrial areas that as much as 125 tons of contaminants per square mile per month are spewed into the atmosphere. The new GD-1003 removes up to 95% of these harmful contaminants even as small as .01 micron in size — quietly and efficiently.

This amazing efficiency is accomplished by the GD-1003's powerful 2-stage cleaning cycle — an 8,000 volt initial ionizing stage, followed by a 4,000 volt collecting state. Airborne dirt particles passing through the small wires in the ionizing stage are given a powerful electrical charge. The particles are then carried by the air flow between closely placed aluminum plates which are alternately charged and grounded — adhering to the plates until removed by cleaning.

The GD-1003 easily cleans the air in a 400 sq. ft. room, and the completely self-contained unit can be handily carried from room to room at will — plugging into any 120 VAC electrical outlet. A two-speed switch allows you to move large volumes of air — fast — in the "high" position, and to enjoy whisper quiet continuous operation in the "low" position. The big, efficient 5-bladed fan is lifetime lubricated for trouble-free operation. The fuse-protected solid-state selenium rectifier power supply is further assurance of long, reliable operation and minimum power consumption.

Cleaning's a breeze, too. Simply flip off the rear grille screen, lift out the collector cell and wash in plain detergent and water. The activated charcoal deodorant filters also slip out easily for replacing when needed. A built-in safety-interlock switch offers positive shock-hazard protection while cleaning (should you forget to unplug the unit), and against the prying fingers of small children.

To your better health! Besides downright comfort, there's another good reason to buy the new Heathkit Electronic Air Purifier. Your health. According to the U.S. Public Health Service, more than 85% of the infectious diseases are caused not by what we eat or drink, but by the air we breathe. Add to this, the 8 million children and adults suffering from allergenic asthma, and 17 million hay fever sufferers, and you begin to understand the seriousness of the problem. The GD-1003 removes up to 99% of all pollens and mold spores and up to 95% of all other airborne contaminants, regardless of size or concentration — eliminating one of the major reasons for disease and poor health.

Pays for itself in reduced home maintenance. While you breathe easier, your GD-1003 pays for itself by reducing the cost of keeping up your home. The expense of redecorating, washing walls and windows, cleaning draperies and furniture upholstery is drastically reduced. Also, fabrics last much longer in electronically cleaned air and seldom have to be replaced. Makes Mom's life easier, too, since the GD-1003 catches dirt and grime ordinary filters won't touch — cuts routine dusting, mopping, vacuuming and general cleaning. And entertaining's a lot more pleasant... electronic air cleaning is the only known practical method of collecting tobacco smoke since the individual particles are so small they are permanently airborne and must be removed from the atmosphere by means of electronics. The GD-1003 removes all the "eye-smarting" odorous contamination that makes a crowded room "stuffy" — eliminates ventilating problems since you don't have to open drafty doors and windows making guests uncomfortable.

Fits into any room — beautifully! The handsome walnut grain vinyl-clad steel case with anodized gold trim complements any home surroundings. And the compact (15" H x 13½" W x 17¾" D) size offers maximum flexibility of placement in the room. You can have your GD-1003 together in just a couple of enjoyable kitbuilding evenings. Order yours now — for a breath of fresh air in your own home.

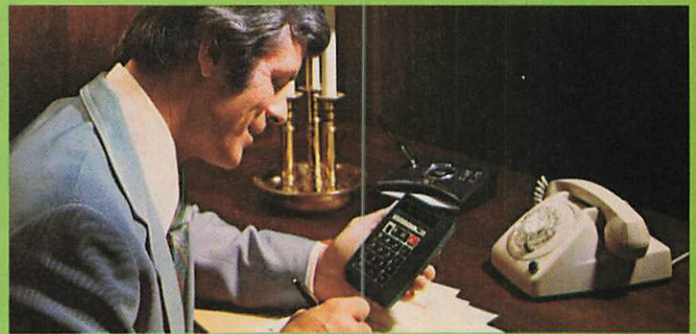
Kit GD-1003, 46 lbs. 139.95

GD-1003 SPECIFICATIONS — Power requirements: 120 VAC; 50/60 Hz; 55 watts. Type: 2-stage. Air volume: Low, 110 cfm; High, 185 cfm. Efficiency: 95% determined by the National Bureau of Standards Dust Spot Method. Efficiency is higher at lower speed. Cabinet: wood-grained vinyl-coated steel. Dimensions: 15" H x 13½" W x 17¾" D. Weight: 46 lbs.

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

Count on quality and value...in a Heathkit

92⁵⁰
NO MONEY
DOWN



Optional Naugahyde® carrying case has cushioned felt lining, zipper closure.



Includes separate battery charger that can be wired for 120 or 240 VAC.

Heathkit Pocket Calculator

- 8-digit capability; adds, subtracts, multiplies, divides
- Full floating decimal; constant key and chain operation
- Clear-entry key; entry & total overflow indicators; negative answer indicator
- Battery-saver circuitry with low-battery indicator
- Permanent rechargeable batteries; tactile-feedback keyboard for positive entry "feel"

Use this pocket-size, 11-oz. "electronic brain" either as a self-contained portable or as a desk-top model. The internal Nickel-Cadmium battery gives 4 to 8 hours of use before recharging. Or, leave it connected to the charger for indefinite operation.

The heart of the IC-2009 is a MOS large-scale integrated circuit that performs addition, subtraction, multiplication and division with speed and accuracy. A special battery-saver circuit turns off the lighted

digital display if 15 seconds pass without entries. However, the calculator retains all information and the display is instantly reactivated with the display recall key (D), or by entering a new number or operation. The bright LED (light-emitting diode) readout device with no distorting "magnifier," has easy to read digits sloped for wide-angle viewing, indoors or out. Unlike other pocket calculators, the IC-2009 can be serviced by you. Both the keyboard and display board are plug-in modules. Your Heathkit Assembly Manual contains a complete trouble-shooting section. You can build your Pocket Calculator in just three or four evenings. The all-solid-state circuitry mounts neatly in a stylish, high impact-strength case with a "no-slip" textured surface. The separate battery charger, included, can be wired for either 120 or 240 VAC wall outlets.

Kit IC-2009, 3 lbs., mailable **92.50**

ICA-2009-1, carrying case, 1 lb., mailable **3.95**

IC-2009 SPECIFICATIONS — Operation: Portable (from internal battery). Calculator can also be operated while charging. Operating temperature: 0 to 50°C. (32 to 120°F.). Charger input voltage: 120/240 VAC, 50/60 Hz. Charger power requirements: 3 W. Operating time: 5 hours typical, depending on display and amount of use when starting with a fully charged battery. Charging time: 14 hours with calculator off. Dimensions: Calculator, 5½" H x 3¾" W x 1¾" D. Charger: 2½" L x 1⅞" H x 2¼" W.

Heathkit Electronic Clock

- Displays hours, minutes, seconds with soft orange readout tubes readable from across the room
- 60-cycle line-voltage accuracy; 120/240 VAC operation
- 12 or 24-hr. time format; 24-hr. alarm cycle, 7-minute snooze alarm interval

The most versatile clock you've ever owned — The Heathkit Electronic Clock gives you a 24-hour alarm cycle. That means you can go to bed at 9 pm and set the alarm for 10 am without being awakened in an hour. In the morning, when the gentle intermittent electronic beep wakes you, just flip the switch on the back of the cabinet and the Heathkit Electronic Clock will give you seven more minutes of sleep before sounding off again. You can repeat these seven-minute snooze alarm cycles for up to one hour. The assembly manual shows you how to wire your Heathkit Electronic Clock to read out in

the international 24-hour format. If you're a ham radio operator, the GC-1005 makes an ideal station clock. A hold-and-run switch on the base of the clock makes setting the time simple. An am/pm indicator light on the front panel puts you in the proper 12 hour cycle when setting the alarm. Should power be interrupted for more than a few seconds the display will show all "eights" until it is reset, thus avoiding a false reading. The GC-1005 goes together simply and neatly. Most components mount on just two clearly marked circuit boards. Even the display tubes plug into individual receptacles. The dual primary power transformer can be wired for either 120 or 240 VAC operation, and the clock can be easily wired for 50 cycle operation during building. Put the Heathkit Electronic Clock anywhere you need an accurate highly visible timepiece. The black Cylolac® cabinet fits-in in any decor, and for additional flexibility your kit contains a walnut-finish vinyl decorator panel to dress-up the top and the front.

Kit GC-1005, 4 lbs., mailable **54.95**

GC-1005 SPECIFICATIONS — Power requirements: 120/240 VAC, 50/60 Hz. Accuracy: Determined by line frequency. Display: 6 full digits, 7 segment neon Planar. Format: 12 hr or 24 hr. Dimensions: 2½" H x 7" W x 4¾" D.

Calculator

79⁹⁵

NO MONEY
DOWN



Large scale integrated circuit mounts in socket for easy, trouble-free kitbuilding.



Components mount on one roomy circuit board, and there's an internal adjustment to compensate for high or low line voltage.



Heathkit Desktop Calculator

- Human-engineered with low-profile cabinet & sloped keys for effortless operation
- 8-digit capacity, adds, subtracts, multiplies, divides, with fixed and floating decimal
- Performs chain calculations
- Clear entry; key; entry & result overflow indicator; negative number indicator
- One of the largest, most legible readouts in the industry

The Heathkit IC-2108 adds up to be the best bargain we have ever offered in an electronic digital calculator. This distinctive desk-top unit has a sleek low-profile case with bright 1/2"-high readout tubes in an eight-digit display. The large color-coded keyboard is conveniently sloped so the user can rest his entire arm while operating the calculator. And the IC-2108 is so trim and light that it easily fits in an attache case.

The full-function IC-2108 is loaded with features that make addition,

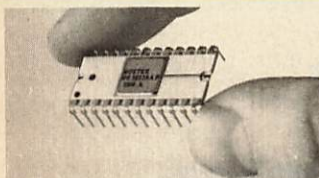
subtraction, multiplication and division operations even easier. A constant key (K) simplifies repetitive problem solving. The separate equal key (=) permits entering computations as you would write them out totaling-up as you go or working in a chain manner. The display has individual lighted indicators for entry and result overflow. A negative number sign gives the credit-balance capability. Reciprocals (1/x) are quickly found using the constant, divide and equal keys. A rocker switch places the decimal in either the floating mode or in a single fixed position, preselected during kit assembly. And there's no warm-up delay with the Heathkit IC-2108. Turn it on and the display lights up instantly.

The calculator kit is easy to build. The single-large-scale integrated circuit mounts in a socket. Related circuitry goes on three-single-sided printed boards that fit with room to spare in the cabinet.

The Heathkit IC-2108 Calculator is a great budget minder for the budget-minded buyer, even if you've never built a kit before. You can have yours together in just three interesting and enjoyable evenings. Order one today.

Kit IC-2108, 4 lbs., mailable **79.95**

IC-2108 SPECIFICATIONS — Operating temperature: 10 to 40° C. (50 to 104°F.). Line voltage: 120/240 VAC, 50/60 Hz. Power requirements: 5 W. Protection: 1/8 amp slow-blow fuse (120 VAC). 1/4 amp slow-blow fuse (240 VAC). Dimensions: 2 1/4" Hx7" Wx9 5/8" D.



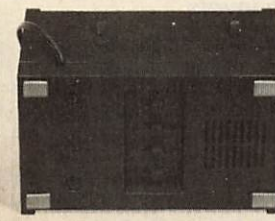
Reliable MOSTEK MOS/LSI integrated circuit "chip", is the "brain" of the GC-1005.



The black Cicolac® top panel can be left as is or dressed up with the Burma Teak vinyl included in the kit.



Assembly is an easy three evening project.



Alarm shut-off and snooze alarm switches are on back panel. Time and alarm setting controls on bottom.



54⁹⁵

NO MONEY DOWN



charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

Discover plus-values in Heathkit Metal Locators

Heathkit Deluxe Metal Locator

Handle-mounted sensitivity controls for fingertip-convenient adjustment

Improved circuitry for rock-solid stability

Advanced styling for fold-up portability, easier handling

Simplified assembly — build it in three evenings ... use it next day

The Heathkit GD-348 offers you accurate, sensitive metal detecting capabilities comparable to detectors costing far in excess of this low kit price. And what a sweet kit it is! With easy check-by-step instructions and simplified circuit board solid-state design, three evenings puts it all together ... and you're ready for treasure hunting the next day.

Many low and medium-priced locators use a "beat frequency" system, requiring the user to hear a frequency change in the constant tone. The GD-348 uses an improved "induction balance" system in which no tone is heard until a metal object enters the field of the search coils and upsets the balance between them. This unbalanced condition results in a signal which is amplified and coupled to the built-in speaker, producing a loud tone which increases or decreases in volume as you get closer or farther away from the metal object. New solid-state circuitry results in more "transmitted" power, offers improved stability, minimum drift, and less need for readjustment. Convenient front-panel meter pinpoints your "find." Built-in jack is provided for use with optional head-phones. The null and ten-turn sensitivity controls are conveniently located on the carrying handle for precision fingertip setting.

All new styling makes the GD-348 easier and more fun to use. The new pistol grip and control console are designed for perfect balance and effortless use. The search coil features new stainless steel hardware, lightweight anodized aluminum and space-age plastic parts.

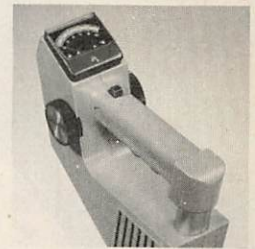
The handle telescopes down and rotates so that search coil, handle and control console all fold into a neat, flat, compact, portable package you can slip into a suitcase, or carry with you, in the optional leatherette case with shoulder strap (below). Whether you're a weekend hobbyist or a professional treasure hunter, the new GD-348 is the locator for you. Order yours today.

Kit GD-348, Locator only, 6 lbs., mailable 89.95

GDA-48-1, 9-volt battery, 1 lb., mailable 1.50

GD-396, headphones, 2000 ohm (Superex), 1 lb., mailable 4.50

GDA-348-1, carrying case, 2 lbs., mailable 6.95



Convenient handle-mounted controls

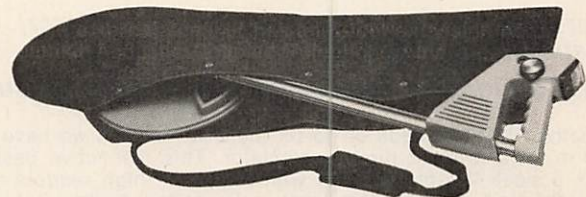


Easy, two evening circuit board assembly



89⁹⁵

NO MONEY DOWN



Shoulder Carrying Case
Ruggedly constructed of rich, black grain simulated leather with sturdy adjustable shoulder strap. Top snaps shut for positive protection. Folds up neatly for packing away when not in use.

Heathkit "Economy" Metal Locator at kit-form savings

Detects metal objects as small as a dime

Both visual and audible detection signals with built-in meter and speaker

Adjustable sensitivity control — locator can be set to work at specific levels

Detects metal objects as small as a dime and performs prospecting jobs comparable to detectors selling for much more. Produces no tone until a metal object enters the field of the search coils. You hear the tone either through the speaker or earphone. As buried metal is approached, the tone gets louder. A built-in meter helps you estimate size/depth ratio of find. You can set the locator to work at specific levels, too. All solid-state circuitry means light weight, reliable operation and minimum battery drain (typical battery life is about 80 hours). Power is supplied by a single 9-volt battery (not supplied).

Kit GD-48, Metal Locator, 6 lbs., mailable 64.95

GDA-48-1, 9-volt battery, 1 lb., mailable 1.50

GD-396, headphones, 2000 ohm (Superex), 1 lb., mailable 4.50



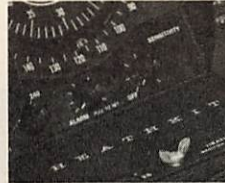
64⁹⁵

NO MONEY DOWN

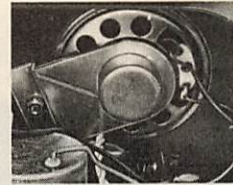
Enjoy building your own electronic fishing gear



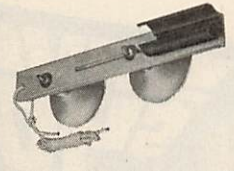
SUPER-BRIGHT FLASH



Controls for range and alarm depth.



Built-in audible alarm signals fish-find.



Portable transducer bracket supplied with kit.

Heathkit Dual-Range Audible Alarm Fish Spotter®

Set it to read from 0 to 60 ft. for sharp definition in shallow waters, or from 0 to 240 ft. where deep water fish feed. Set the adjustable audible alarm for any depth, and your Fish Spotter® sounds off loud and clear when individual fish or schools swim between the surface and preset depth. The Super-bright long-life neon flasher gives you precise depth reading. A noise rejection circuit eliminates engine ignition interference. Solid-state circuitry offers exceptional sensitivity, reliability and minimum battery drain. Powered by two 6V lantern batteries (not supplied.) Features rugged, compact aluminum cabinet with sun-shielded dial face and portable suction-cup transducer bracket. Or order the scanning transducer bracket below.

- Kit MI-2901, 9 lbs., mailable **99.95**
 Kit MIA-2900-1, Scanning Transducer Bracket, 4 lbs., mailable **12.95**

MI-2901 SPECIFICATIONS: Range: 0 to 60 feet on hard bottom. 0 to 240 feet on hard bottom. Accuracy: $\pm 2\%$ with motor speed of 2400 rpm in the 0-60' range and with motor speed of 600 rpm in the 0-240' range. Sounding: Rate: 40 times per second on the 0-60' range. 10 times per second on the 0-240' range. Frequency: 200 kHz, $\pm 5\%$. Amplitude at the transducer: 150 peak-to-peak minimum. Pulse width: 0.8 millisecond on the 0-60' range. 1.4 milliseconds on the 0-240' range. Noise Rejection: Fixed at approximately 500 microseconds integration time. Receiver Sensitivity: 75 μ V nominal at 200 kHz. Depth Indication: Neon lamp flashes at zero and again at the indicated depth from the object. Alarm: 5-59' on the 0-60' range. 5-239' on the 0-240' range. Controls: Sensitivity, with on-off switch. Alarm, with a pull-to-read alarm depth and off position. Range, with two depth indicating ranges (0-60 feet and 0-240 feet). Transducer: Barium titanate ceramic element encased in a watertight housing. Transducer Cable Length: 15'. Power Requirements: 12 VDC. Dimensions: (Less Handle): 7" H x 6" W x 11" D.

99⁹⁵

NO MONEY DOWN



Scanning Transducer Bracket for MI2901 & MI-2900 Fish Spotters® "C" clamp mounting; scans 360°; locks in any position; accepts any 1 3/8" cylindrical transducers.

69⁹⁵

NO MONEY DOWN



SUPER-BRIGHT FLASH

Heathkit "Economy" Fish Spotter®

A compact, completely self-contained battery powered unit (batteries not supplied) that spots schools and individual fish down to 240 feet. Also doubles as a reliable depth sounder. All solid-state circuitry for outstanding accuracy, sharp definition, dependability and low battery drain. Built-in noise rejection circuit eliminates ignition interference. Improved disk and slip-ring assembly result in quieter operation. New, super-bright neon indicator lamp gives you high visibility, even in direct sunlight. Kit includes transducer and suction-cup transducer mount. Or order the scanning transducer mount at left for even greater fishing convenience.

- Kit MI-2900, 9 lbs., mailable **69.95**
 Kit MIA-2900-1, Scanning Transducer Bracket, 4 lbs., mailable **12.95**

MI-2900 SPECIFICATIONS: Range: 0 to 240 feet on hard bottom. Accuracy: $\pm 2\%$ @ 240 rpm. Sounding: Rate: 20 times per second. Frequency: 200 kHz $\pm 5\%$. Amplitude at the transducer: 150 peak-to-peak minimum. Pulse width: 1.0 millisecond. Noise Rejection: Fixed at approximately 500 microseconds integration time. Receiver Sensitivity: 75 μ V nominal at 200 kHz. Depth Induction: Neon lamp flashes at zero and again at the indicated depth from the object. Control: Sensitivity, with on-off switch. Transducer: Barium titanate ceramic element encased in a watertight housing. Transducer Cable Length: 15'. Power Requirements: 12 VDC, 2 6V lantern batteries. Dimensions: 7" H x 6" W x 11" D.



24⁹⁵

NO MONEY DOWN

Circuitry mounts neatly on the reel housing, so there are no rubbing contacts to wear out.

Pin-point the temperature where your favorite fish feed — Heathkit Thermo Spotter

Seeks out the water temperature where your favorite fish feed. Ideal for still fishing or thermo-plotting your favorite trolling grounds. The unit is completely self-contained with a submersible sensing element on a 100-ft. cable and battery-powered meter circuitry all housed in a rugged, high-impact plastic take-up reel case. To use, you simply lower the line, press the spring-loaded meter button for temperature readout, then check depth as indicated by marks on the cable. All electronics are located inside reel hub, so there are no rubbing contacts to malfunction. Kit includes operation manual with fish temperature preference charts by Stanley J. Lievense; calibrating thermometer, sensor line depth marking material. Easy one evening assembly. And you can put it to good use skin diving, or for swimming pools too.

- Kit MI-104, 3 lbs., mailable **24.95**

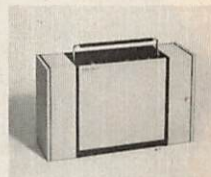
charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

Deluxe Stereo-Phono/Radio Combo priced to go!

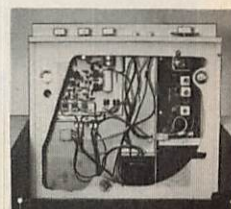
SAVE \$40



59⁹⁵
NO MONEY DOWN



Turntable flips up, snaps shut; detachable speakers swing shut to locked position for portability.



Powerful, easy-to-build 18-watt amplifier.

Heathkit Stereo Phono/AM Radio Combo at new low price saves \$40

The Heathkit GD-111 was designed for people who prefer stereo on the go. It combines a dynamic stereo phonograph system and a powerful AM radio in a neat portable package that folds up to go. The record changer, 18-watt amplifier and two 4½-in. high-compliance speakers are taken from the popular Heathkit GD-109. The solid-state AM tuner section with built-in antenna has high sensitivity for performance to match the overall high quality of the system.

Record changer flips down for easy access and hassle-free manual or automatic operation — plays 16, 33½, 45 and 78 rpm discs, includes 45 rpm spindle adapter. Features volume, tone and balance audio controls. The speaker sections can be lifted from their hinges and placed as far as 5 feet away from the main section for maximum stereo separation. Changer and cabinet are preassembled, so you

simply build the AM and amplifier circuit boards, install changer, speakers and circuitry in cabinet. Order today . . . and carry one way.

Kit GD-111, 48 lbs.,

available WAS 99.95 NOW only **59.95**

GD-111 SPECIFICATIONS: AM TUNER: Tuning Range: 535-1620 kHz. Intermediate Frequency (IF): 455 kHz. Sensitivity: Better than 75 uV/meter for 10 dB signal-to-noise ratio, or 200 uV/meter for 20 dB signal-to-noise ratio. Better than 300 uV/meter for rated output. **AMPLIFIER:** Music Power: 9 W per channel.* Continuous Power Output: 4½" W at 1.5% total harmonic distortion.** Frequency Response: ±3 dB from 20 Hz to 15 kHz. Sensitivity: 2 V at 1 megohm. Harmonic Distortion: Less than 1.5%. Hum and Noise: -60 dB. Channel Separation: Greater than 40 dB. Damping Factor: Greater than 25. Controls: Volume, Tone and Balance. **CHANGER:** Turntable Speeds: 16, 33, 45 and 78 rpm. Record size: 12", 10", or 7". Cartridge Type: Ceramic stereo cartridge. Stylus: Diamond/sapphire; 7 mil diamond for LP records, 3 mil sapphire for 78 rpm records. Stylus Pressure: 3½ grams. Separation: 30 dB average. **GENERAL:** Speakers: 4½" cloth suspension cone type, 8 ohms nominal impedance, 2.5 oz. Alnico 5 magnet. Power Requirements: 120 VAC, 60 Hz, 26 W idling, 62 W full output. Dimensions: (overall): 14½" H x 24½" W x 7½" D.

*Rated EIA (Electronics Industries Association) standards.

**Rated IHF (Institute of High Fidelity) standards.



Heathkit component-quality portable Stereo Phono

The Heathkit GD-109 portable stereo phonograph proves that a low cost portable need not compromise on audio quality. Solid-state 18-watt stereo amplifier, dependable four-speed changer, and two 4½-in. high-compliance speakers. Changer folds down, speakers swing out and can be positioned up to 5 feet away from cabinet for better stereo separation. Entire kit assembles in 5-7 hours. Start enjoying component quality sound you can carry . . . order today.

Kit GD-109, 46 lbs., mailable **79.95**

GD-109 SPECIFICATIONS — CHANGER — Speeds: 16, 33½, 45 & 78 RPM. Record sizes: 7", 10" & 12". Stylus: 0.7 mil sapphire. **AMPLIFIER —** Power Output: 18 W, 9 W per channel, EIA music power. Frequency response: ±3 dB, 30 Hz-15 kHz. Dimensions: Overall, 14½" H x 24½" W x 7½" D. Power requirements: 120 VAC, 60 Hz, 25 W.

79⁹⁵
NO MONEY DOWN

Super sound, super values in Heathkit radios



AM/FM Solid-state Portable Radio... 44.95

Enjoy the best of both FM and AM worlds in a battery-powered portable that plugs in, too, with the optional converter/charger below. Three tuned AM transformers and amplified AGC offer clean, stable AM listening. On the FM side, a collapsible 34" whip antenna, three IF stages and an amazing 5 uV sensitivity combine to give you sharp, accurate FM reception over great distances. And the AFC keeps your favorite FM station locked in. The portable runs 200-300 hours on six "D" cells (not supplied) that last even longer with the optional charger/converter. The rich brown simulated leather case measures 6 3/4" H x 8 3/4" W x 4" D.

Kit GR-17, 6 lbs., mailable 44.95
GRA-43-1, converter/charger, 1 lb., mailable 6.95

Solid-state AM/FM Radio... 39.95

AFC for drift-free tuning...AGC on AM keeps volume constant. Built-in AM and FM antennas for better reception. Back-lighted dial for easy reading in the dark. Avocado green cabinet with matching grille cloth or design your own grille. 5 1/4" H x 10" W x 4 7/8" D.



Kit GR-48, 5 lbs., mailable 39.95

Solid-state AM Portable... 29.95

Six-transistor circuit, tuned RF stage and double-tuned IF stage offer excellent sensitivity and selectivity. Push-pull audio output stage produces clean sound — even when batteries are low. Operates on six long-lasting "D" cells (not included). Handsome brown simulated leather case, chrome-finished frame, anodized aluminum grille, 7" H x 8 3/4" W x 3 3/4" D.



Kit GR-24, 5 lbs., mailable 29.95

Solid-state AM Clock Radio... 32.95

Features "Snooze Alarm" that wakes you up with music ten minutes before the alarm goes off. Auxiliary rear panel clock-controlled 1200 W socket ideal for perking coffee, turning lights on. Back-lighted clock dial is easily read at night. AGC provides constant volume under varying signal conditions. Attractive coral cabinet, 5 3/8" H x 10" W x 4 7/8" D.



Kit GR-38, 6 lbs., mailable 32.95

Beginner's AM Portable... 19.95

The ideal kit for first-time builders. Heathkit manual, supplementary theory of radio, clearly marked circuit board give the novice a rewarding introduction to electronics.



Receiver has 4" x 6" speakers, pre-aligned coil and IF transformer, built-in antenna. Tan simulated leather case measures 6 1/2" H x 8" W x 3" D.

Kit GR-151B, 5 lbs., mailable 19.95

Solid-state AM Radio... 24.95

Seven-transistor, 3-diode circuit assures top performance, long life. Automatic gain control keeps volume constant. Full wave transformer power supply eliminates annoying line hum. Styled in handsome gold and brown with matching grille cloth supplied... or design your own to match drapes or carpet. Measures 5 1/4" H x 10" W x 4 7/8" D.



Kit GR-28, 5 lbs., mailable 24.95

Solid-state AM/FM Clock Radio... 49.95

"Snooze Alarm" wakes you to music in the morning, 10 minutes before the alarm goes off. Auxiliary clock-controlled 120 watt socket on rear panel for perking coffee in the morning.



Back-lighted clock dial. Built-in AM and FM antennas. AGC on AM; AFC on FM. Fast, easy circuit board assembly. Compact powder blue cabinet measures just 5 3/8" H x 10" W x 4 7/8" D.

Kit GR-58, 6 lbs., mailable 49.95

Solid-state FM Stereo Radio... 69.95

Brings you FM entertainment via two 5 1/4" wide range speakers. Features stereo-indicator light; adjustable phase control for maximum stereo separation; automatic frequency control; 5 uV sensitivity; adjustable tone control; pre-assembled and aligned front end for easier assembly. Walnut finish wood cabinet measures 9 1/4" H x 19" W x 6 1/2" D.



Kit GR-36, 26 lbs., mailable 69.95

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

Special savings on Heathkit Stereo Compacts

SAVE \$49.90



Last call! Save \$50 on this Heathkit Stereo Credenza —

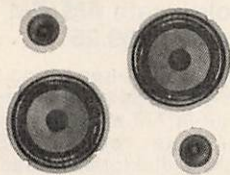
A complete stereo package combining the popular Heathkit AR-14 Stereo Receiver, BSR/McDonald Stereo Turntable, and two stereo speaker systems in a luxurious factory-assembled Mediterranean cabinet. Provides an honest 15 watts music power per channel, with the same outstanding performance specifications found under the AR-14 Receiver on page 19. The Heathkit/BSR McDonald Turntable has four speeds, cue/pause control, adjustable anti-skate. Comes complete with Shure diamond stylus magnetic cartridge — all fully assembled! Matched speaker systems mount in tuned-port enclosures. Each contains a 10-in. high compliance woofer and 3½-in. ring-damped tweeter for response from 60 to 16 kHz. The cabinet itself is finished in rich, dark oak veneer with solid oak trim, accented by antiqued brass hardware. Measures 27" H x 49½" W x 20½" D. Don't miss this last-call savings special! **Not Eligible for 5% System Discount.**

Kit AD-19A, 148 lbs., Express/Frt.

Was 299.95 **Now Only 249.95**



Top lifts to expose turntable and all controls.



Two separate speaker systems, four individual speakers fill your listening room with sound.



Order your AD-17A Stereo Compact before Oct. 31, 1973 and get a pair of AS-106 Speaker Systems (page 28) FREE! Please include mailing charges for AD-17A and two AS-106 Speakers with your order.



Free speakers with this Heathkit Stereo Compact... a \$39.90 saving!

Here's the Heathkit AA-14 Stereo Amplifier combined with the Heathkit/BSR McDonald AD-120 Turntable in a beautiful walnut base that fits neatly on a table or in a bookcase. Delivers 30 watts of stereo music power — enough to easily drive any reasonably efficient 4 to 16-ohm speakers. Has accessory inputs for tuner and tape recorder. Fully automatic turntable has cue/pause control, adjustable stylus pressure, anti-skate control. Shure diamond stylus magnetic cartridge. Optional smoked plastic dust cover has matching walnut sides. 8¼" H x 21¼" W x 14½" D.

Kit AD-17A, 39 lbs., mailable 129.95
ADA-17-1, plastic cover, 5 lbs., mailable 15.95



The Heathkit AD-27A Stereo-Compact

Combines the famed Heathkit AR-14 Solid-State Stereo Receiver and Heathkit/BSR McDonald AD-130 Automatic Turntable in a neat package. A handsome walnut cabinet with sliding tambour dust cover houses them both. The amplifier delivers an honest 15 watts per channel and has output impedance from 4 to 16 ohms — more than enough to drive any reasonably efficient speaker system. Frequency response is virtually flat from 12 Hz to 60 kHz. The FM stereo tuner portion boasts 5 uV sensitivity and 27 dB channel separation. Harmonic & IM distortion throughout the system are both less than 1%. The BSR turntable has control, counterbalanced aluminum tone arm, variable anti-skate control and comes with a famous Shure diamond stylus magnetic cartridge. Order with a pair of speakers and take advantage of Heath's 5% stereo system discount.

Kit AD-27A, 50 lbs., Express/Frt. 179.95

AR-17 14-watt FM-Stereo Receiver

28-transistor, 7-diode circuit delivers 14 watts music power. Response of 25 to 35,000 Hz ±1 dB at full power with less than 1% distortion. Selector for magnetic phono, tuner, aux., stereo or phono. Assembled FM front end. 3" H x 12" W x 10¾" D.

Kit AR-17, less cabinet, 9 lbs., mailable 72.95

AE-35 beige metal cabinet, 4 lbs., mailable 3.95

AE-25, walnut veneer cabinet, 5 lbs., mailable 9.95



AA-18 4-watt Mono Amplifier

Drives any 4-16 ohm high-efficiency speaker with power to spare. Excellent frequency response and low distortion. Inputs for ceramic phono cartridges, mono AM or FM tuners or tape recorders. Front panel headphone jack.

Kit AA-18, 4 lbs., mailable 19.95

AA-18 SPECIFICATIONS — Dynamic power output: 4 watts.* Continuous power output: 3.25 watts.* Harmonic distortion: Less than 1.5% from 40 Hz to 60 kHz at 4 watts output. Less than 0.7% from 20 Hz to 60 kHz at 1 watt output. Intermodulation distortion: Less than 4% with 4 watts output using 60 Hz and 6 kHz mixed 4:1. Power requirements: 120/240 VAC, 50/60 Hz, 5 watts maximum. Cabinet size: 2½" H x 7¼" W x 5¼" D. *Rated IHF (Institute of High Fidelity) Standards.



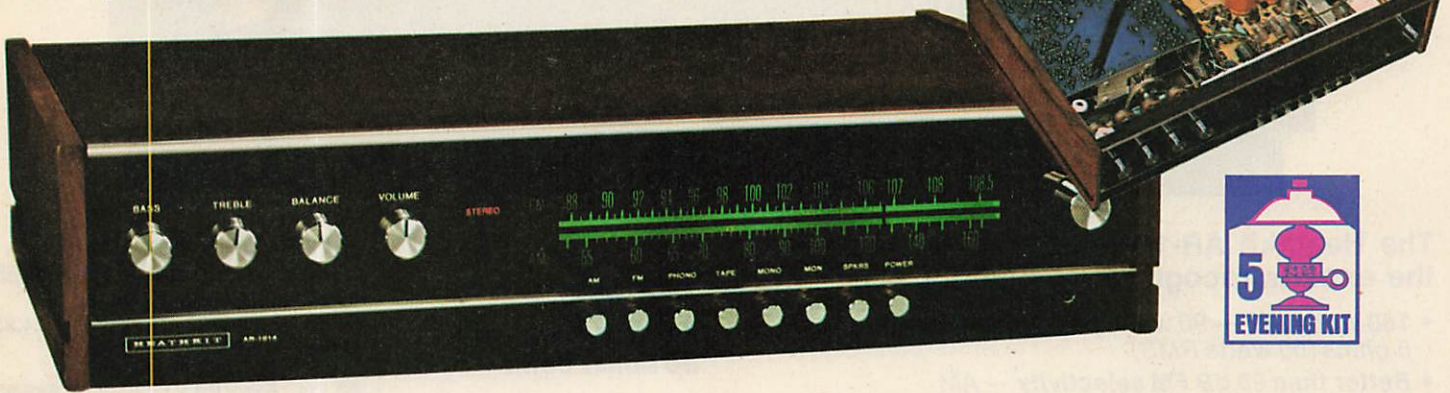
Only Heath gives you so much stereo for so little

Heathkit AR-1214 50-Watt AM/FM Stereo Receiver

- 25 watts music power per channel
- Separate phono preamp level controls
- Latest phase-lock Multiplex IC

169⁹⁵

includes cabinet
NO MONEY DOWN



Compare the styling, the performance, the features with any — you'll find the AR-1214 is the value winner! The amplifier section produces a clean 25 watts IHF, 15 watts RMS, per channel into 8 ohms. Two integrated circuits and two ceramic filters in the IF give this receiver a selectivity greater than 60 dB and superior amplifying/limiting characteristics. The phase lock multiplex demodulator gives 40 dB typical channel separation at less than 0.5% distortion. The pre-assembled FM tuning unit provides 2 μ V sensitivity and a 2 dB capture ratio. The phono preamp section also uses integrated circuitry and has its own level controls so turntable volume can be set to coincide with tuner levels. Most circuitry mounts neatly on just three printed boards. Advanced features include: Black Magic panel lighting; flywheel tuning; stereo indicator light; headphone jack; speaker on/off button. And there are complete tape monitor facilities. Build the winner — get more for your stereo dollar.

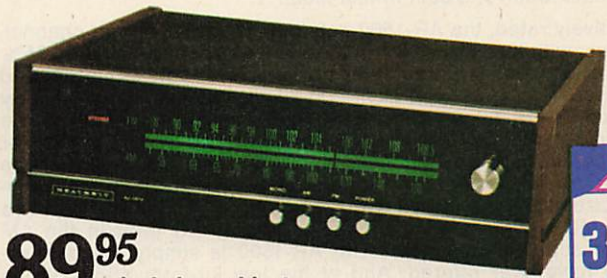
AR-1214 SPECIFICATIONS — FM SECTION (Monophonic) — Frequency response: ± 1 dB, 20 to 15,000 Hz. Sensitivity: 2 μ V.* Volume sensitivity: Below measurable level.* Selectivity: 60 dB.* Image rejection: 50 dB.* IF rejection: 75 dB.* Capture ratio: 2 dB.* AM suppression: 50 dB.* Harmonic distortion: 0.5%.* Intermodulation distortion: 0.5%.* Hum and noise: 65 dB.* Spurious rejection: 70 dB.* **FM SECTION (Stereo) —** Channel separation: 40 dB typical, 35 dB minimum. Frequency response: ± 1 dB from 20 to 15,000 Hz. Harmonic distortion: 1% @ 1000 Hz with 100% modulation, 19 kHz and 38 kHz suppression: 55 dB. SCA suppression: 55 dB. **AM SECTION —** Sensitivity: 100 μ V per meter.* Selectivity: 40 dB (alternate channel). AM antenna: Built-in rod type (adjustable). Image rejection: 60 dB.* IF rejection: 50 dB.* Harmonic distortion: Less than 2%. Hum and noise: 35 dB.* **AMPLIFIER —** Dynamic power output per channel: 25 W (8 ohm load), 30 W (4 ohm load), 14 W (16 ohm load). Continuous power per channel: 15 W (8 ohm load), 20 W (4 ohm load), 10 W (16 ohm load). Power bandwidth for constant 0.5% total harmonic distortion: 5 Hz to 30 kHz. Frequency response (1 W level): ± 1 dB, 7 Hz to 100 kHz, ± 3 dB, 5 Hz to 150 kHz. Harmonic distortion: Less than 0.5% from 20 Hz to 20 kHz @ 15 W output. Less than 0.25% @ 1000 Hz with 1 W output. Intermodulation distortion: Less than 0.5% with 15 W output. Less than 0.2% @ 1 W output. Damping factor: Greater than 50. Input sensitivity: Phono: 2 mV (Overload 75 mV), Tape: 190 mV (Overload 2.5 V), Tape monitor: 190 mV. (Overload 2.5 V). Hum and noise: Phono — 65 dB. Channel separation: 55 dB Phono & Tape. Tape output: 0.4 V input. **GENERAL —** AC outlet sockets: 2 (350 W max.), 1 switched, 1 unswitched. Power requirements: 120/240 VAC, 50-60 Hz. Dimensions: 3 $\frac{7}{8}$ " H x 17" W x 13" D. *Rated IHF (Institute of High Fidelity) Standards **Record Industry of America

Kit AR-1214, 18 lbs., mailable 169.95



89⁹⁵

includes cabinet
NO MONEY DOWN



89⁹⁵

includes cabinet
NO MONEY DOWN



Heathkit AA-1214 50-Watt Stereo Amplifier

Here's a great piece of audio gear for the seasoned music lover who's a novice kit builder, but likes to save money. The AA-1214 produces 15 watts RMS, 25 watts IHF, per channel into 8 ohms. That's sufficient to drive all but the most inefficient speaker systems with volume to spare. And there are inputs for phono, tape, tuner and auxiliary source. Plus a tape monitor jack that makes the "1214" an ideal low cost amp for 4-channel use. A headphone jack and level control for phono input round out the "top-of-the-line" extras on this sensational little amplifier. Pushbuttons select program source, mono or stereo mode, and provide on-off control of speaker systems and power. Master controls actuate bass, treble, balance and volume. The new AA-1214 has all the power and performance most music lovers will ever want, and the "stackable" bookcase styling makes it as pleasing to the eye as it is to the ear. Order now — it's easy to build and easy on the budget.

Kit AA-1214, 13 lbs., mailable 89.95

AA-1214 SPECIFICATIONS — GENERAL — AC outlet sockets: 2, one switched, 1 unswitched, 350 W max. Power requirements: 120/240 VAC, 50/60 Hz, 100 W at full output with no load on accessory outlets. Dimensions: 3 $\frac{7}{8}$ " H x 12 $\frac{3}{4}$ " W x 12" D. Other specifications same as Amplifier Section of AR-1214.

Heathkit AJ-1214 AM/FM Stereo Tuner

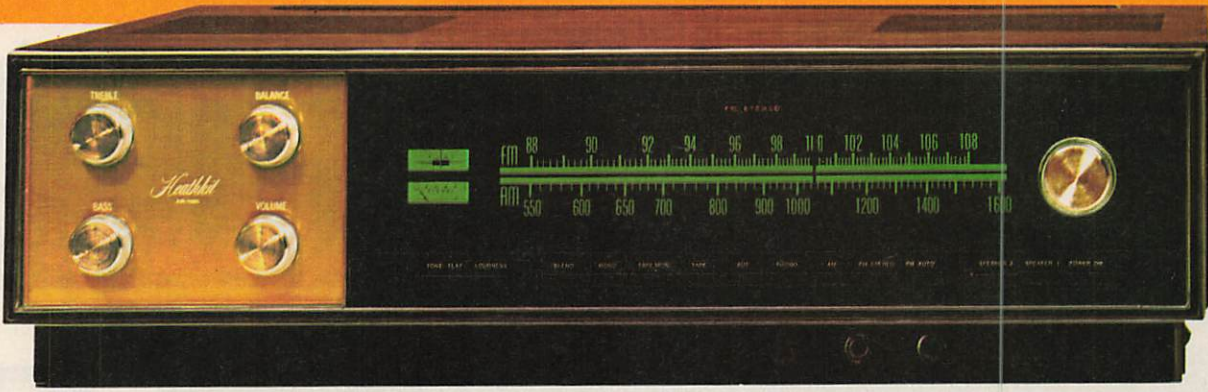
The beginner kit builder will find the AJ-1214 especially delightful to assemble and enjoy...with handsome "1214" styling in an even smaller cabinet. The AJ-1214 has single-knob flywheel tuning for AM and FM, pushbutton mode controls, stereo-broadcast light, adjustable AM antenna and inputs for 75 or 300 ohm external FM antenna. And what's inside stands out even more. The solid-state circuitry utilizes 13 transistors, six diodes and three integrated circuits. The pre-assembled and aligned FM tuning unit uses an RF field effect transistor to achieve a 2 μ V sensitivity with low cross modulation and minimal overload on strong signal stations. The FM IF includes two ICs and two ceramic filters for selectivity greater than 60 dB, superior amplifying/limiting characteristics, overall compactness and dependability. A phase-lock multiplex demodulator contributes to the 40 dB typical channel separation at less than 0.5% distortion. A great kit for the beginner, goes together simply in three evenings. Big performance at little cost.

Kit AJ-1214, 11 lbs., mailable 89.95

AJ-1214 SPECIFICATIONS — AM Output: 0.6 V nominal. FM output: 1 V nominal. Power requirements: 120-240 VAC, 50/60 Hz, 10 W. Dimensions: Overall, 3 $\frac{7}{8}$ " H x 12 $\frac{3}{4}$ " W x 13" D. All other specifications same as Tuner Section of AR-1214 Receiver.

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

The renowned Heathkit AR-1500 Stereo Receiver---



The Heathkit AR-1500...the stereo receiver the experts recognize as superior

- **180 watts IHF** — 90 watts per channel into 8 ohms (60 watts RMS)
- **Better than 90 dB FM selectivity** — AM performance approaching FM quality
- **Hinged plug-in circuit board design** — for easier kit assembly and servicing

This is the receiver for the audiophile who demands the best there is. Yet this fine audio component can be built by anyone capable of assembling the simplest electronics kit. Julian Hirsch of STEREO REVIEW put it this way:

"With their well-known thoroughness, Heath has left little to the builder's imagination, and has assumed no electronic training or knowledge on his part. The separate packaging of all parts for each circuit board subassembly is a major boon...Virtually all the circuit boards plug into sockets, which are hinged so that boards can be swung out for testing or servicing without shutting off the receiver. An 'extender' cable permits any part of the receiver to be operated in the clear — even the entire power-transistor and heat-sink assembly! The 245-page manual has extensive test charts that show all voltage and resistance measurements in key circuits as they should appear on the receiver's built-in test meter..."

Conservatively rated, the AR-1500 puts out 180 watts, 90 per channel, into 8 ohms, with less than 0.2% intermod distortion, less than 0.25% harmonic distortion. Two computer-designed five-pole LC filters and the improved 4-gang 6-tuned front end combine for an FM selectivity better than 90 dB, 1.8 uV sensitivity. And here are some things the specs won't show you. There are outputs for two separate speaker systems, two sets of headphones, biampification, and oscilloscope monitoring of FM. Standard inputs — all with individual level controls. Electronically monitored overload circuitry. There are even two dual-gate MOSFETS, one J-FET and a 12-pole LC filter in the AM section for super sound there! The AR-1500 is simply the best receiver we have ever offered. And at the low kit-form price, it's an incredible value for the audiophile who demands excellence. Build it, listen to it, and you'll believe it.

379⁹⁵
less cabinet
NO MONEY DOWN

Kit AR-1500, less cabinet, 53 lbs., mailable **379.95**
ARA-1500-1, walnut cabinet, 8 lbs., mailable **24.95**
Model ARW-1500, assembled receiver & walnut cabinet, 42 lbs., Exp./Frt. **649.95**
Kit ARA-15-1, adaptor kit permits use of AD-1013 scope, opp. page, 1 lb., mailable **24.95**

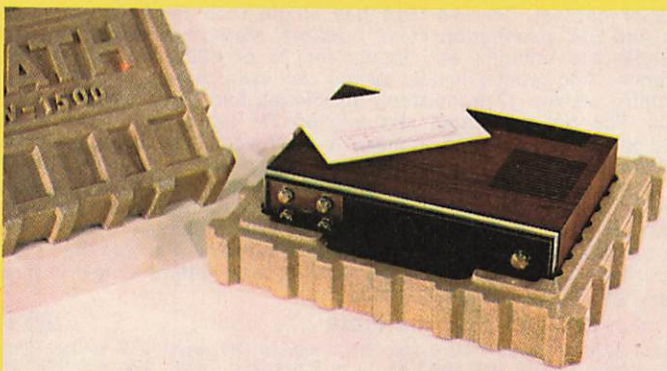
AR-1500 SPECIFICATIONS — TUNER — FM SECTION (Monophonic): Tuning Range: 88 to 108 MHz. Intermediate Frequency (IF): 10.7 MHz. Frequency Response: ± 1 dB, 20 to 15,000 Hz. Antenna: Balanced input for external 300 ohm antenna. 75 ohm antenna input may be used between either FM antenna terminal and ground. Sensitivity: 1.8 uV.* Volume Sensitivity: Below measurable level. Selectivity: 90 dB.* Image Rejection: 100 dB.* IF Rejection: 100 dB.* Capture Ratio: 1.5 dB.* AM Suppression: 50 dB.* Harmonic Distortion: 0.5% or less.* Intermodulation Distortion: 0.1% or less.* Hum and Noise: 60 dB.* Spurious Rejection: 100 dB.* **FM SECTION (Stereophonic):** Channel Separation: 40 dB or greater at midfrequencies; 35 dB at 50 kHz; 25 dB at 10 kHz; 20 dB at 15 kHz. Frequency Response: ± 1 dB from 20 to 15,000 Hz. Harmonic Distortion: 0.5% at 1000 Hz with 100% modulation. 19 kHz and 38 kHz Suppression: 55 dB or greater. SCA Suppression: 55 dB. **AM SECTION:** Tuning Range: 535 to 1620 kHz. Intermediate Frequency (IF): 455 kHz. Sensitivity: 50 uV with external input; 300 uV per meter with radiated input. Selectivity: 20 dB at 10 kHz; 60 dB at 20 kHz. AM Antenna: Built-in rod type; connections for external antenna and ground on rear chassis apron. Image Rejection: 70 dB at 600 kHz; 50 dB at 1400 kHz. IF Rejection: 70 dB at 1000 kHz. Harmonic Distortion: Less than 2%.* Hum and Noise: 40 dB.* **AMPLIFIER — Dynamic Power Output per Channel (Music Power Rating):** 90 watts (8 ohm load)*; 120 watts (4 ohm load); 50 watts (16 ohm load). Continuous Power Output per Channel: 60 watts (8 ohm load)*; 100 watts (4 ohm load); 40 watts (16 ohm load). Power Bandwidth for Constant .25% Total Harmonic Distortion: Less than 8 Hz to greater than 30 kHz.* Frequency Response (1 watt level): -1 dB, 7 Hz to 80 kHz; -3 dB, less than 5 Hz to 120 kHz. Harmonic Distortion: Less than 0.25% from 20 Hz to 20 kHz at 60 watts output; less than 0.1% at 1000 Hz with 1 watt output. Intermodulation Distortion: Less than 0.1% with 60 watts output, using 60 and 6,000 Hz mixed 4:1; less than 0.1% at 1 watt output. Damping Factor: Greater than 60. Input Sensitivity: Phono, 1.8 millivolts; Tape, 140 millivolts; Aux, 140 millivolts; Tape Mon, 140 millivolts. Input Overload: Phono, 145 millivolts; Tape, greater than 10 volts; Aux, greater than 10 volts; Tape Mon, greater than 10 volts. Hum & Noise: Phono (10 millivolt reference), -63 dB. Tape and Aux (0.25 volt reference), -75 dB. Volume control in minimum position, -90 dB referred to rated output. Channel Separation: Phono, 55 dB; Tape and Aux, 55 dB or greater. Output Impedance (each channel): 4 ohm through 16 ohms. Tape Output Impedance: Approximately 50 ohms. Input Impedance: Phono, 49 k ohm (RIAA** Equalized); Aux, Tape, and Tape Mon, 100 k ohms. Tape Output: Tape or Aux inputs, 1 volt output with 0.2 volt input. **GENERAL — Accessory AC Outlet Sockets:** Two. One switched and one unswitched (240 watts maximum). Power Requirements: 120 or 240 volts 50/60 Hz AC. 40 watts idling (zero output) and 356 watts at full output with no load on accessory outlets. Dimensions: Overall — 18 1/2" W x 5 1/8" H x 13 7/8" D.

*Rated IHF (Institute of High Fidelity) Standards.
**Rated RIAA (Record Industry Association of America).

Your personal ARW-1500 — hand made, performance documented and guaranteed.

We believe you will find your ARW-1500 to be superior to any stereo component you've ever owned...and distinctively personal, unique. Each receiver is meticulously hand made right down to the last solder connection, painstakingly aligned, and thoroughly tested. Actual performance curves of your receiver are plotted on graph paper, signed by the engineer who made the measurements, and included with the elaborate owner's manual you will receive with your ARW-1500. A verified record of your personal receiver's quality performance... with specifications guaranteed for a full year. A limited edition, this is one receiver that is definitely not mass produced.

Model ARW-1500, receiver & walnut cabinet, 42 lbs., Exp./Frt. **649.95**



and a new Heathkit 4-channel Audio-Scope to match



The New Heathkit 4-Channel Audio-Scope lets you see how your music system performs — with superior features at savings of 50% or more.

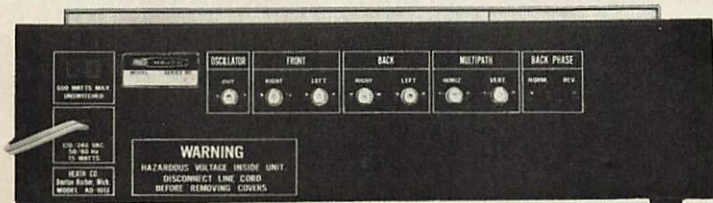
- **Shows you an actual electronic "picture" of the sound being reproduced on each channel**
- **Monitors multipath reception of FM tuners — enabling you to optimize FM antenna position for best reception**
- **Built-in 4-channel decoder — gives you independent or simultaneous visual indication of all 4 channels**
- **Triggered sweep oscilloscope operation — A Heath exclusive — for stable trace displays without fussing with adjustment knobs — a feature found only in professional 'scopes.**
- **Automatic base line generator — displays a straight line across CRT screen when no signal is present.**
- **Front panel scope input — lets you use the Audio-Scope as a conventional oscilloscope**
- **Built-in 20 Hz to 20 kHz audio oscillator — for convenience in setting up and checking audio systems — variable level control with 60 Hz calibrated position — less than 1% distortion**
- **Contemporary slim-line styling — designed to complement the AR-1500**

The new AD-1013 represents another Heathkit "first"...a top quality professional audio oscilloscope capable of visually monitoring the performance of all two- and four-channel stereo systems — cabinet-matched to the famed Heathkit AR-1500 Stereo Receiver on the facing page, but styled to enhance the appearance of other contemporary component systems — and at a kit-form savings of hundreds of dollars!

The new Heathkit Audio-Scope is a sophisticated solid-state instrument especially designed for use with any 2-channel or 4-channel stereo system to provide visual checking and monitoring of such parameters as channel separation, phasing, relative signal strengths, multipath reception, center-tuning of receivers and tuners, etc.

Triggered sweep, another Heathkit exclusive Plus-Value, assures you of a stable, jitter-free signal trace with no fiddling around with knobs. Inputs are provided on the rear panel of the Audio-Scope for Left-Front, Left-Back, Right-Front, Right-Back, and Multipath. Any of these inputs can be switched and observed on the cathode ray screen, independently or in combination.

In addition, a front panel input is provided for observing any external source, permitting you to use the AD-1013 as a conventional oscillo-



Inputs are provided on the rear panel of the Audio-Scope for Left-Front, Left-Back, Right-Front, Right-Back, and Multipath. Any of these inputs can be switched and observed on the cathode ray screen, independently or in combination.

scope for checking out malfunctions in various stages of your tape equipment, receiver, amplifier, tuner, turntable, etc.

Lighted function indicators at the edge of the CRT screen on the front panel show you at a glance what function is being displayed on the screen, so you don't have to constantly refer to the function switch itself during operation.

A built-in independent 20 Hz to 20 kHz low distortion audio oscillator provides a convenient means of setting up and checking your 4-channel or 2-channel stereo system. Front panel controls are provided for frequency selection of the audio oscillator as well as controlling the amplitude of the generated signal. Outputs from the audio oscillator are located on both front and rear panels. Output voltage will not vary with frequency change.

Other convenient front-panel controls include a Sweep Variable control providing a continuous adjustment of the sweep time between the rates indicated on the range switch; Sweep Range Switch, selects the range to display the desired number of cycles on the oscilloscope screen; Function Switch, selects the modes of operation for the Audio-Scope; Vertical Position control, varies vertical position of the display; Vertical Gain control, adjusts vertical size of the trace; Horizontal Position control; Horizontal Gain control; Display Focus control, adjusts sharpness of the display; Display Intensity control, varies the brightness of displays.

You'll find the new Heathkit Audio-Scope an extremely satisfying kit to build. Most of the solid-state components mount on a single large circuit board in a wide-open arrangement. Point-to-point wiring is held to a minimum. In short, you'll find as much enjoyment in assembling this kit as you'll have checking out and displaying the performance of your own audio system or those of friends. And at this remarkably low kit price, the new AD-1013 is one of the best values we've ever offered in accessory audio equipment.

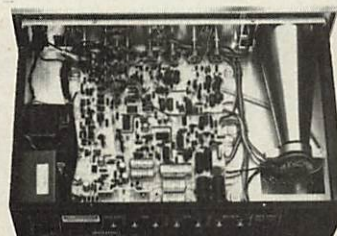
Kit AD-1013, 19 lbs., mailable199.95

ARA-1500-1, walnut cabinet, 8 lbs., mailable27.95

ATTENTION AR-15 AND AJ-15 OWNERS: In less than an evening you can add multipath provision to your equipment. The ARA-15-1 Adaptor Kit makes your AR-15 or AJ-15 compatible with the AD-1013 above, or any DC-coupled oscilloscope, for observing multipath conditions which may be limiting the quality of your FM reception.

Kit ARA-15-1, 1 lb., mailable24.95

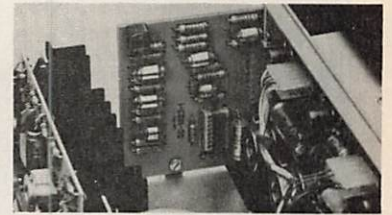
AD-1013 SPECIFICATIONS — FRONT PANEL — Scope Input: Vertical Sensitivity: 25 millivolts P-P/cm. Input Impedance: 100 k Ω . Frequency Response: 5 Hz to 200 kHz ± 3 dB. **Audio Oscillator Output:** Range: 20 Hz to 20 kHz. Voltage Level: 2 mV to 3 volts (rms) (variable). Output Variation: ± 25 dB 20 Hz to 20 kHz. Output Impedance (front panel jack): Approximately 600 Ω . Calibrator Voltage: 1.0 volt P-P $\pm 5\%$. Total Harmonic Distortion: 1% or less. **REAR PANEL — Oscillator Output Impedance:** 6000 Ω . **Multipath Input (Scope Horizontal and Scope Vertical):** Sensitivity: 25 mV P-P/cm. Input Impedance: 100 k Ω . **Left Front, Right Front, Left Back and Right Back Inputs:** Sensitivity: 25 mV P-P/cm. Input Impedance: 100 k Ω . Frequency Response: 5 Hz to 200 kHz, ± 3 dB. **4-Channel Input:** Sensitivity: 1 volt P-P/cm. Input Impedance: 5000 Ω . **GENERAL — Triggered Sweep Generator:** Range: 10 Hz to 100 kHz. Power Requirement: 120 or 240 volts AC, 50/60 Hz, 15 watts with no accessory load. **AC Outlet (on rear panel):** Unswitched. **Dimensions (overall):** 5 $\frac{1}{2}$ " H x 18 $\frac{1}{2}$ " W x 13 $\frac{1}{2}$ " D.



A satisfying kit-building experience — most solid-state components mount on a single large circuit board in the spacious cabinet. Point-to-point wiring is held to a minimum for easier kit assembly and self-service.

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

The world's most advanced audio technology



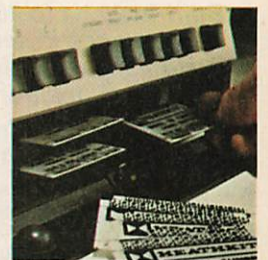
New "universal" decoder IC reproduces all matrixed 4-channel recordings on the market.



Rear panel jacks are clustered in two separate stereo systems, include receptacles for bi-amplification, separate filters, equalizers, etc.



359⁹⁵ less cabinet
NO MONEY DOWN



Three computer-type programming cards, programmed by you for your favorite FM stations, are inserted in the AJ-1510 behind hinged front panel, and can be left there indefinitely while you use other modes of tuning. Additional cards are supplied with the kit for pre-programming other frequencies of your choice.

539⁹⁵ less cabinet
NO MONEY DOWN



The Heathkit Decoder links two stereo amps for Matrixed-4

The new Heathkit "Universal" Decoder, with an additional stereo amplifier and speakers, gives four-channel capability to any stereo system having tape monitor circuitry — or any system using separate amp and preamp.

channel programming. This "hidden presence" is fed to two rear speakers, resulting in a realistic "derived" 4-channel effect. The AD-2022 adds two simple controls to your present system: a master-gain knob adjusts the sound level for the entire 4-speaker installation. A 4-position mode switch provides "STEREO-4-ENHANCE" for giving quadrasonic effect to conventional stereo; "SOURCE-4-DECODE" for decoding 4-channel information; "TAPE-4-DECODE" for playing tape through the decoder; and "TAPE-2-MONITOR" to cut out the decoder for normal 2-channel operation.

Kit AD-2022, 4 lbs., mailable **39.95**

The "2022" decodes all matrix encoded material on the market today, and also enhances recorded stereo material and stereo FM broadcasts by reproducing the out-of-phase ambience common to two-

...another "Plus-Value" in Heathkit components

The 4-Channel Heathkit Amp that does it all

Experience the thrill of building your own amplifier for stereo, matrixed and discrete 4-channel

The AA-2010 decodes all matrix encoded material on the market, and enhances recorded stereo material and stereo FM broadcasts by reproducing the out-of-phase ambience common to 2-channel programming. This "hidden presence" is fed to two rear speakers, resulting in an extremely realistic 4-channel effect. A flip of the "mode" switch, and your AA-2010 handles any discrete 4-channel material available today — or in the future. At the heart of the AA-2010's sterling performance are four conservatively rated amplifiers producing 260 watts IHF into 4 ohms (4x65), 200 watts into 8 ohms (4x50), 120 watts into 16 ohms (4x30). The individual amplifier sections are controlled in pairs, giving you two complete and independent stereo systems, if you desire. Duplicate control clusters provide front and rear bass, treble, balance and volume, as well as phono, tape, tuner, aux., tape monitor, hi filter and loudness. A master mode switch selects mono, stereo, matrixed 4-channel or discrete 4-channel. Pushbuttons activate speaker pairs in any combination of up to eight speakers — or, two complete 4-channel systems. Twenty input level controls — enough for up to five 4-channel program sources — can be adjusted beneath the chassis.

And there are separate rear panel jacks to permit biamping, separate filters, equalizers, etc. Four VU meters monitor the outputs. 3-range meter switch sets meter levels.

The Heathkit Computer Tuner — "has got to be the way all tuners of the future will be made. It's very nice to know that Heath has just brought that future into the present..."

— Leonard Feldman, *Audio Magazine*

The only similarity between the AJ-1510 "Computer Tuner" and conventional solid-state tuners is the FM spectrum it receives. From there on, computer technology takes over — encompassing digital logic, scalars, dividers, decoders, programmers, counters and registers — a technology never before available to the general consumer, and specifically to the uncompromising audiophile who judges electronics in terms of brilliant, undistorted sound.

In the AJ-1510, a state-of-the-art digital frequency synthesizer employing phase-lock-loop techniques does the station tuning — with channel frequency accuracy better than 0.005%. An inductorless digital frequency discriminator of the pulse counting (averaging) type follows two fixed-tuned five-pole LC IF filters thus eliminating all IF and discriminator adjustments while achieving distortion levels of 0.1%. The preassembled varactor FM RF tuning unit (front end) uses field-effect transistors to provide high sensitivity (less than 1.8 μ V) and low cross modulation with no overload on strong signal local stations. The familiar, mechanically gauged, variable capacitor has been replaced by varicaps (voltage variable capacitance diodes) to provide complete electronic tunability.

Computer-keyboard tuning — a Heath exclusive. Gone is the knob-twisting search for that elusive FM station. Now you can simply program the station's assigned frequency with a light touch of the keys. If the broadcast is receivable you can hear it, and hear it instantly, regardless of strong adjacent stations. Gone is the center-tune meter. The AJ-1510 is always center tuned! Gone also is the old familiar slide-dial. Four softly glowing numerals show you the channel frequency — exactly!

Scan the band at a touch of a button. A touch of a button and the frequency synthesizer starts counting down from 107.9 MHz, with the readout displaying every available FM frequency through 88.1 MHz, stopping at each station with a listenable signal, or stopping only at stereo stations if you prefer. Depress the by-pass button and the Tuner resumes scanning.

Computer cards let you pre-program your favorite stations. Up to three computer-type punch cards, programmed by you for your fa-

Compare the conservatively rated specs for yourself. Power bandwidth on all channels from less than 5 Hz to more than 45 kHz for 0.25% THD. Damping factor greater than 100. Hum and noise — 65 dB for phono, —75 dB for tape and auxiliary. A 50-volt DC regulator supplies power to all preamp stages. A 10-amp bridge rectifier supplies power to the four power amps.

To get more performance for your money, plus the satisfaction of building quality equipment, choose the AA-2010.

Kit AA-2010, 36 lbs., less cabinet, mailable 359.95

AAA-2004-1, pecan cabinet, 7 lbs., mailable 24.95

AA-2010 SPECIFICATIONS — Dynamic power output per channel: 50 W (8 ohm load), 65 W (4 ohm), 30 W (16 ohm). Continuous power output per channel: 35 W (8 ohm load)*, 35 W (4 ohm), 25 W (16 ohm). Power bandwidth for constant 0.25% total harmonic distortion: Less than 5 Hz greater than 45 kHz.* Frequency response (1 W level): —1 dB, 7 Hz to 50 kHz, —3 dB, 4 Hz to 90 kHz. Harmonic distortion: Less than 0.25% from 20 Hz to 20 kHz @ 35 W output. Less than 0.1% @ 1000 Hz with 1 W output. Intermodulation distortion: Less than 0.2% with 35 W output, using 60 and 7,000 Hz mixed 4:1. Less than 0.1% @ 1 W output. Damping factor: Greater than 100. Input sensitivity: Phono: 2.2 mV. Tuner, Aux. Tape, Tape Mon: 180 mV. Input Overload: Phono: 155 mV. Tuner, Aux, Tape, Tape Mon: Greater than 10 V. Tape output: 1.4 V output with 0.2 V input. Hum and noise: Phono (10 mV reference): —65 dB. Tuner, Aux, Tape, Tape Mon. (0.25 V reference): —75 dB. Volume control in minimum position: —90 dB referred to rated output. Channel separation: Phono: 50 dB. Tuner, Aux, Tape, Tape Mon: 55 dB or better. Hi filter: —3dB @ 9 kHz, —14 dB @ 20 kHz. Recommended speaker impedance (each channel): 4 through 16 ohm. Tape output impedance: Approx. 50 ohm. Input impedance: Phono: 49 k ohm (RIAA equalized). Tuner, Aux, Tape and Tape Mon: 100 k ohm. Dimensions: 6½" H x 18½" W x 13¾" D.

*Rated IHF (Institute of High Fidelity) Standards.

vorite stations, can be inserted in the Tuner behind the hinged lower front panel. Selector buttons marked A, B, C give you instant access to any of these pre-programmed stations. Extra cards are supplied with the kit so you'll have one for each of your preferred FM frequencies.

Secondary controls, positioned behind the hinged lower front panel, include AGC and noise squelch level adjusts. Both can be independently set to cut out or by-pass those stations with a signal quality unacceptable to the listener. The squelch circuitry can be circumvented by simply pushing the squelch defeat button. Other secondary controls include variable "sweep speed," a switch for selecting mono, stereo or blend listening modes, and a light test button for checking the numeric readout indicators. Still another hidden switch controls the dual-function front-panel meter. The meter shows relative signal strength and, at the flip of the switch, becomes a multipath indicator for optimum antenna alignment. Also, outputs are provided for visually monitoring multipath signals with an oscilloscope.

Not only is the "Computer Tuner" one of the most exciting audio instruments you can own, it's also one of the most interesting and satisfying kits you'll ever put together. Using ICs with TTL and ECL logic and other state-of-the-art components, you build up 10 modular boards, with 7 plugging into a master board, and an extender board for performing in-circuit adjustments and service. The end result is a tuner with such amazing specifications, you simply have to hear it to believe it!

Kit AJ-1510, Tuner less cabinet, 23 lbs., mailable 539.95

AJA-1510-1, Pecan cabinet, 8 lbs., mailable 24.95

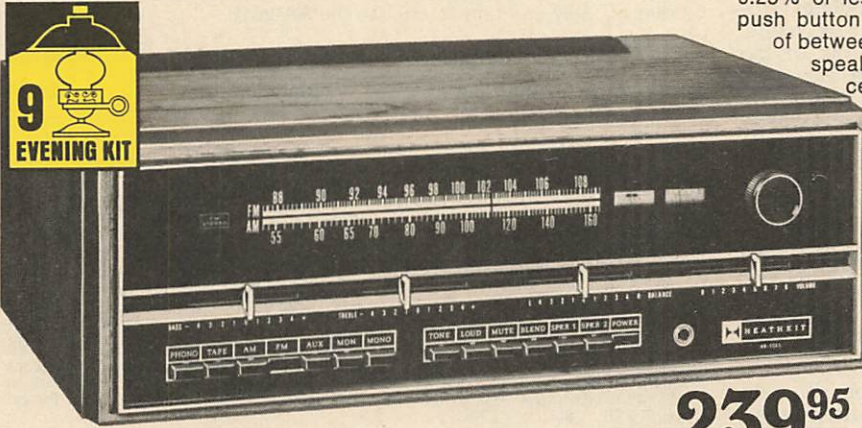
AJ-1510 SPECIFICATIONS — MONOPHONIC — Exact tuning range: 88.1 to 107.9 MHz. Tuning: Digitally synthesized. Intermediate frequency: 10.7 MHz. Antenna: 75 or 300 ohm. Frequency response: Discriminator: 10-60,000 Hz, \pm 0.5 dB. Audio: 20-15,000 Hz, \pm 1 dB. Sensitivity: Less than 1.8 μ V. Selectivity (alternate channel):* Greater than 95 dB. Capture ratio:* Less than 1.5 dB. Harmonic distortion:* Less than 0.3%. Intermodulation distortion:* Less than 0.1%. Image rejection. Greater than 90 dB. IF rejection:* Greater than 95 dB. Spurious rejection:* Greater than 90 dB. Signal-to-noise* ratio (100% mod.): Greater than 65 dB. AM suppression:* Greater than 60 dB. Channel frequency accuracy: Better than .005%. STEREO PHONIC — Channel separation: 1,000 Hz, 40 dB; 80 Hz, 25 dB; 10 kHz, 25 dB; 15 kHz, 20 dB. Harmonic distortion* (100% mod.): 0.35%. Frequency response: (\pm 1 dB): 20 to 15,000 Hz. 19 kHz and 38 kHz suppression: Greater than 60 dB. SCA suppression: Greater than 60 dB. AUDIO OUTPUT — Audio output level: (fixed): 1.2 V rms nominal (with 100% mod.). Output impedance (fixed): Approx. 4,700 ohms. GENERAL — Power requirements: 120/240 VAC, 50/60 Hz, 50 W. AC outlet socket: Unswitched, 350 W Max. Dimensions: 6" H x 16¾" W x 14¾" D. Weight 23 lbs. (less cabinet)

*IHF

Heathkit Receivers, hand-crafted by you, offer better

Heathkit AR-1302 60-Watt Stereo Receiver

- Proof positive that medium price can buy maximum performance in an AM/FM Stereo Receiver
- Features power & station-pulling characteristics of components costing far more



239⁹⁵

less cabinet
NO MONEY DOWN

AR-1302 SPECIFICATIONS — AMPLIFIER — Music Power (Each channel): 8 ohms, 30 W*, 4 ohms, 20 W; 16 ohms, 17 W. Continuous power: 8 ohms, 20 W*; 4 ohms, 20 W; 16 ohms, 15 W. Power bandwidth for 0.25% T.H.D.: 5 Hz to 30 kHz*. Harmonic distortion: 0.25% from 5 Hz to 20 kHz at 20 rms. Intermodulation distortion: 0.25% at 20 W, 60 and 6,000 Hz marked, 4:1. Channel separation: Phono, 50 dB, Tape & Aux., 55 dB. Output impedance (each channel): 4 to 16 ohms. **FM SECTION (Monophonic) —** Tuning range: 88 to 108 MHz. Antenna: Balanced for external 300 ohm antenna. Unbalanced 75 ohm. Frequency response: ±1 dB, 20 to 15,000 Hz. Sensitivity: 1.9 μV*. Selectivity: 60 dB*. Capture ratio: 1.8 dB*. AM Suppression: 45 dB*. Spurious Rejection: —90

Modular design makes the AR-1302 a simple yet fascinating kitbuilding experience. 57 transistors, 35 diodes and three integrated circuits mount on eight-printed circuit boards, all of which plug-into chassis connectors. Chassis-mounted parts are held to a minimum, a three-cable assembly makes point-to-point wiring fast and trouble-free. The FM IF section uses two ICs and two ceramic filters to achieve truly outstanding sound reproduction. Sensitivity is 1.9 μV, selectivity 60 dB, capture ratio 1.8 dB, harmonic distortion 0.5% or less, IM distortion 0.25% or less, channel separation 40 dB at midfrequencies. There's push button selection of tone-flat contour, loudness control, muting of between station noise, blending of any on-station FM hiss, stereo speaker system 1 and system 2 (or use the extra connection for center channel sound — it can be switched from stereo to mono). One knob tunes AM and FM with ball bearing inertia smoothness. Linear motion controls for volume, bass, treble, and balance. Individually adjustable controls for each input including tape monitor. Two tuning meters, center and signal level. Other features: direct coupled outputs; dissipation limiting circuitry; massive power supply; assembled and aligned FM tuner; built-in test circuitry (no other instruments needed); "black magic" panel lighting.

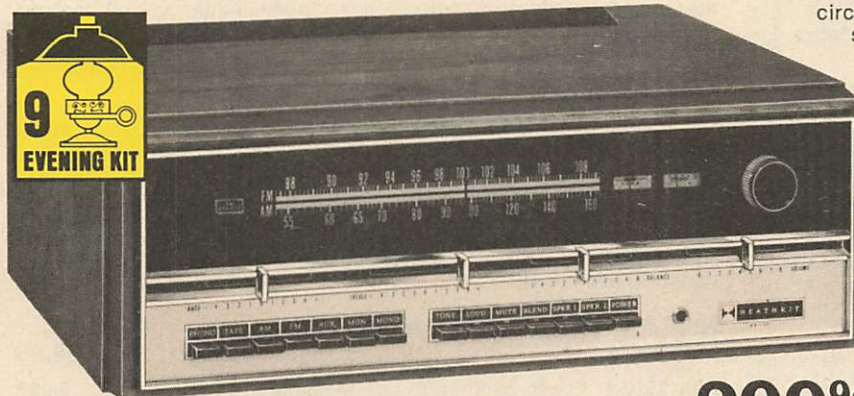
Kit AR-1302, less cabinet,
32 lbs., mailable **239.95**

AE-19, oiled pecan cabinet, 9 lbs., mailable . . **19.95**

dB*. **FM SECTION (Stereophonic) —** Channel Separation: 40 dB at mid-frequencies. Frequency Response: ±1 dB from 20 to 15,000 Hz. Harmonic distortion: 0.5% at 1000 Hz with 100% modulation. 19 kHz and 38 kHz Suppression: 50 dB*. **AM SECTION —** Tuning Range: 535 to 1620 kHz. Antenna: Adjustable rod. Sensitivity: Rod Antenna, 300 μV/M*. Selectivity: 25 dB at 10 kHz. Image rejection: 60 dB at 600 kHz*, 60 dB at 1400 kHz*. **GENERAL — AC Outlet Sockets:** One switched, one unswitched (350 W max. each). Power requirements: 120/240 VAC 50/60 Hz. Dimensions: Overall — 5 1/8" H x 16 3/4" W x 14 1/2" D. *Rated IHF (Institute of High Fidelity) Standards.

Heathkit AR-29 100-Watt AM/FM Stereo Receiver

- A medium-priced, superior stereo receiver that's in a class by itself



299⁹⁵

less cabinet
NO MONEY DOWN

AR-29 SPECIFICATIONS — AMPLIFIER — Music power (Each Channel): 8 ohms, 50 W*; 4 ohms, 35 W; 16 ohms, 30 W. Continuous Power: 8 ohms, 35 W*; 4 ohms, 35 W; 16 ohms, 25 W. Power Bandwidth For 0.25%. T.H.D.: 5 Hz to 30 kHz*. Frequency Response (1 W): —1 dB, 7 Hz to 60 kHz. Harmonic Distortion: 0.25% from 20 Hz to 20 kHz at 35 W rms, 0.1% at 1000 Hz at 1 W. Intermodulation Distortion: 0.2% at 35 W, 60 and 6,000 Hz mixed 4:1. 0.1% at 1 W. Damping Factor: 50. Input Sensitivity: Phono: 2.2 mV (Overload 155 mV). Tape, Aux. and Tape Mon., 180 mV (Overload 10 V). Hum and Noise: Phono (10 mV ref.), —65 dB. Tape & Aux. (0.25 V ref.), —75 dB. Channel Separation: Phono, 50 dB. Tape & Aux., 60 dB. Output Impedance: (each channel): 4 to 16 ohms. Tape Output Impedance: 50 ohms. Input Impedance: Phono, 49 k ohm (RIAA Equalized). Aux., Tape & Mon., 100 k ohm. Tape Output: 1 V with 0.2 V input. FM, 3.8 V with 100% modulation. **FM SECTION — (Monophonic) —** Tuning Range: 88 to 108 MHz. Antenna: Balanced for external 300 ohm antenna. Unbalanced 75 ohm. Frequency Re-

The AR-29 has become a benchmark for designers of uncompromising home audio components. Spec for spec few receivers can match it — and those that do usually cost far more than the AR-29. Unquestionably the hours you invest in this kit pay off with fine stereo performance.

And there's no mystery in assembling the sophisticated solid-state circuitry. Most components mount on eight circuit boards, seven of which plug in. Three cable assemblies with color-coded wires connect to six-pin connectors. The remaining chassis wiring and soldering are as simple as following the check-by-step instructions. Components include 65 transistors, 42 diodes, four ICs, preassembled and aligned FET tuner, computer designed LC filter. And you get ball-bearing tuning, mute and blend control on FM, linear master controls, individually adjustable level controls.

Kit AR-29, less cabinet,
34 lbs., mailable **299.95**

AE-19, oiled pecan cabinet, 9 lbs., mailable . . **19.95**

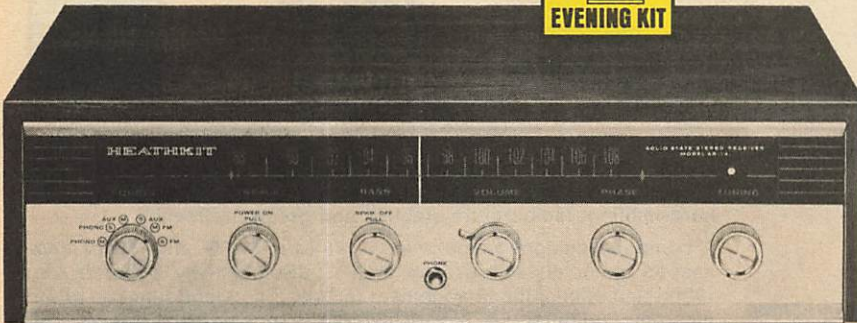
sponse: ±1 dB 20 to 15,000 Hz. Sensitivity: 1.8 μV*. Selectivity: 70 dB*. Image Rejection: 90 dB*. Capture Ratio: 1.5 dB*. AM Suppression: 50 dB*. Harmonic Distortion: 0.5%*. Intermodulation Distortion: 0.4%*. Hum & Noise: —60 dB. Spurious Rejection: —90 dB. **FM SECTION — (Stereophonic) —** Channel Separation: 45 dB at mid-frequencies. Frequency Response: ±1 dB from 20 to 15,000 Hz. Harmonic Distortion: 0.5% at 1000 Hz with 100% modulation. 19 kHz and 38 kHz Suppression: 55 dB. SCA Suppression: 55 dB. **AM SECTION —** Tuning Range: 535 to 1620 kHz. AM Antenna: Adjustable rod. Connections for external ant. grd. Sensitivity: External antenna, 20 μV at 1000 kHz ofr 20 dB S+N/N. Selectivity: 40 dB at 20 kHz. Image Rejection: 60 dB at 600 kHz*, 45 dB at 1400 kHz*. IF Rejection: 50 dB*. Harmonic Distortion: 2%*. Hum & Noise: —35 dB*. **GENERAL — AC Outlet Sockets:** One switched (350 W max.), one unswitched (350 W max.). Power Requirements: 120/240 VAC 50/60 Hz 240 watts at full output. Dimensions: Overall — 5 1/8" H x 16 3/4" W x 14 1/2" D. *Rated IHF (Institute of High Fidelity) Standards.

performance, more value for your stereo dollar

Heathkit AR-14 30-Watt FM Stereo Receiver

- A value second-to-none — with performance that will surpass many receivers that cost considerably more

99⁹⁵
less cabinet
NO MONEY DOWN



The Heathkit AR-14 is designed in the tradition of the higher priced Heathkit receivers — with conservatively rated solid-state components, all the control functions and features you need today plus those you'll want as your system grows.

Two preamplifiers and two power amps deliver a hard-driving 30 watts of music power at ± 1 dB from 15 to 50,000 Hz. The sensitive FM tuner pulls in stations far and wide. Advanced transformerless output circuit provides pure sound, uncolored by reactive circuits. A six-position source switch selects tuner, tape, or records — stereo or mono. Has dual concentric volume control; a tandem treble control with push-pull power switch, and tandem bass control with push-pull speaker on-off switch for listening with headphones. There's also a front-panel headphone jack for private listening; automatic stereo indicator light; and filtered outputs for beat-free stereo taping.

Kit AR-14, less cabinet, 18 lbs., mailable **99.95**

AE-55, walnut veneer cabinet, 7 lbs., mailable . . . **12.95**

AE-65, beige metal cabinet, 6 lbs., mailable **3.95**

AR-14 SPECIFICATIONS — AMPLIFIER — Continuous power output: 10 W each channel — 20 W total. Music power output (IHF): 15 W per channel. Speaker output impedance: 4 through 16 ohm. Tape output impedance: 3.5 K ohm. Damping factor: 50. Hum and noise: Phono —60 dB; Auxiliary: —63 dB. Frequency response: 12 to 60,000 Hz ± 1 dB; 6 to 100,000 Hz ± 3 dB. Power response: 15 to 50,000 Hz ± 1 dB; 7 to 90,000 Hz ± 3 dB. Input sensitivity: Phono: 4.5 mV; Auxiliary: 300 mV. Input impedance: Phono: 47 k ohm; Auxiliary: 180 K ohm. Channel separation: 45 dB or better. Total harmonic distortion (at rated output): 0.5% or less @ 1000 Hz; 1% or less @ 20 & 20,000 Hz. Intermodulation distortion (at rated output): Less than 1% (60 & 60,000 Hz, 4:1). Phono equalization: RIAA. FM: Tuning range: 88-108 MHz. Antenna: Balanced input for external 300 ohm antenna. Intermediate frequency: 10.7 MHz. Sensitivity (IHF): 5 μ V. Hum & noise (IHF): —50 dB.

Audio frequency response (IHF): 0 to —3 dB from 20 to 15,000 Hz. Harmonic distortion (IHF): 1% or less. Image ratio (IHF): —45 dB. Capture ratio (IHF): 3 dB. AFC correction: 150 kHz per volt. AM suppression (IHF): —35 dB. IF Rejection (IHF): —80 dB. FM STEREO — Separation: 30 dB @ 1 kHz. **GENERAL —** Front panel: 6-position Source Switch; Mono-phono; Stereo Phono; Mono Auxiliary; Stereo Auxiliary; Mono FM; Stereo FM; Volume Control; Bass Control; Treble Control; Phone Jack. Rear panel: Fused AC Power Socket; switched and unswitched. Speaker Terminal Blocks: one left & one right. Left & right input sockets; phono & aux. Tape output sockets; left & right channel. Power requirement: 120/240 V, 50/60 Hz; 32 W idling; 65 W full output; (No load on AC power sockets). Dimensions: Overall: 3 $\frac{3}{8}$ " H x 15 $\frac{1}{4}$ " W x 12" D. Mounting position: Horizontal or Vertical, Cutout required 15"x3 $\frac{1}{2}$ "; Depth required from front of mounting surface 11 $\frac{1}{2}$ ".

Heathkit "14"-series Separates

Heathkit AJ-14 FM Stereo Tuner

Has 14 transistors, five diodes. Four-stage IF section provides a 5 μ V sensitivity, less than 1% distortion. Filtered outputs allow beat-free stereo recording. Has on-off switch, flywheel tuning knob, mono-stereo switch, and stereo phase control for maximum separation. Features AFC for drift-free reception; stereo light; pre-aligned and assembled "front-end" tuner for fast, simple kit building. Installs in wall, custom cabinet or optional Heath cabinet.

Kit AJ-14, less cabinet, 6 lbs., mailable **49.95**

AE-25 walnut veneer cabinet, 5 lbs., mailable **9.95**

AE-35 beige metal cabinet, 4 lbs., mailable **3.95**

AJ-14 SPECIFICATIONS: Same as tuner section of AR-14. (3" H x 12" W x 9 $\frac{3}{4}$ " D)

Heathkit AA-14 30-Watt Stereo Amplifier

Easy-to-build high performance solid-state component with enough power to drive any efficient 4-16 ohm speaker system. Has 17 transistors and six diodes producing a 15 to 50,000 Hz ± 1 dB response at a full 15 watts of IHF music power per channel with less than 0.5% harmonic distortion. Six-position source control handles turntable, tuner or tape-deck — stereo or mono. Also has edge-lighted dial, front-panel headphone jack, speaker-off switch.

Kit AA-14, less cabinet, 11 lbs., mailable **59.95**

AE-25 walnut veneer cabinet, 5 lbs., mailable **9.95**

AE-35 beige metal cabinet, 4 lbs., mailable **3.95**

AA-14 SPECIFICATIONS: Same as amplifier section of AR-14. (3" H x 12" W x 10 $\frac{1}{4}$ " D)

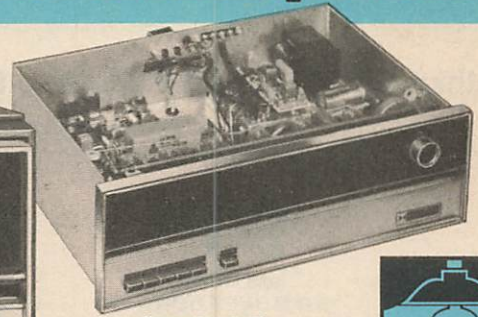
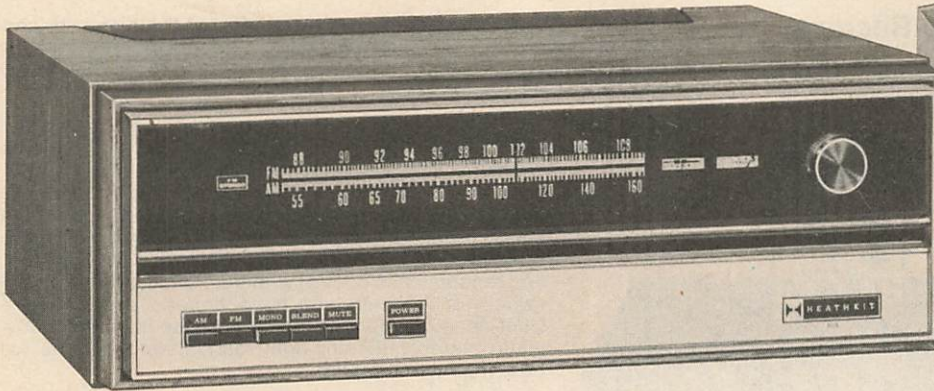


49⁹⁵
less cabinet
NO MONEY DOWN

59⁹⁵
less cabinet
NO MONEY DOWN

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

The finest separate tuners and amplifiers are



179⁹⁵

less cabinet
NO MONEY DOWN



An outstanding value in a hand-crafted-by-you tuner — the Heathkit AJ-29

1.8 uV sensitivity; 70 dB selectivity; blend and mute functions

As the Heathkit AR-29 Receiver was designed to be one of the finest medium-power receivers money can buy, it follows that the Heathkit AJ-29 AM/FM-Stereo Tuner should be one of the best component values. And audio experts agree that the AJ-29 is just that. Plus, it offers the increased flexibility only a separate tuner can provide.

If you already own a fine stereo amplifier and are looking for an AM/FM-stereo tuner to match, the AJ-29 more than meets your needs. Or, if you're starting from scratch with a true component system, mate the AJ-29 with the AA-29 Amplifier. They're designed for each other. For clean, sensitive FM-stereo reception the pre-assembled, factory-aligned FM tuner boasts 1.8 uV sensitivity for great station-pulling power, using FET design for superior overload charac-

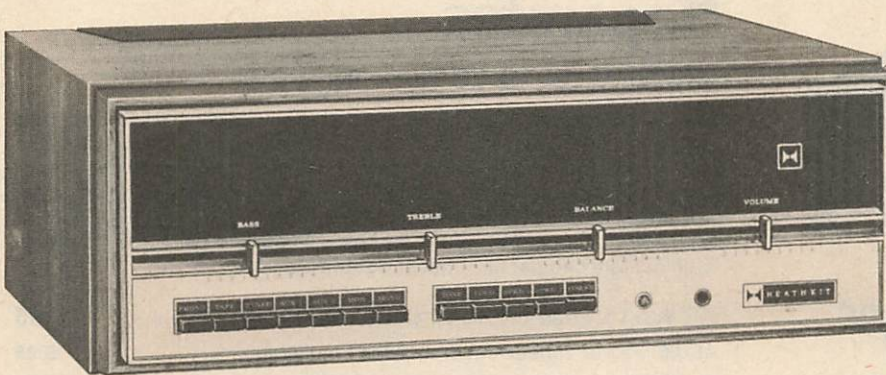
teristics. A tiny integrated circuit performs four different functions in the multiplex section to assure outstanding stereo performance. Three ICs in the IF section provide superior AM rejection capability, hard limiting, temperature stability and greater reliability.

A computer-designed nine-pole L-C filter in the IF strip gives ideally shaped bandpass with greater than 70 dB selectivity, superior separation and eliminates IF alignment forever. The blend function attenuates any on-station FM hiss or high-frequency noise at the push of a button . . . and the mute function attenuates between-station noise on FM without affecting sensitivity of the tuner.

And the AJ-29 has AM that sounds like FM. Three FETs in the AM RF circuits provide superior sensitivity with large signal handling capability for truly remarkable AM reception. The built-in AM rod antenna swivels to allow orientation for best reception.

Kit AJ-29, 19 lbs., mailable 179.95
AE-19 cabinet, 9 lbs., mailable 19.95

Same outstanding performance specifications as the tuner section of the AR-29. (5 1/8" H x 16 3/4" W x 14 1/2" D)



159⁹⁵

less cabinet
NO MONEY DOWN



Here's a clear, clean 100 watts in cost-cutting kit form

Ideal add-on-amp to get you in on the latest 4-channel fun — popular "29" slide controls

If you're looking for increased output for your present stereo component system, or a stout-hearted add-on amp for 4-channel conversion, there are few amplifiers that can match the Heathkit AA-29. It's a pure-power house — with 100 watts music power, 70 watts continuous power. That's more than enough to drive the most inefficient system — and there are outputs for two stereo speaker systems.

Power where you need it, when you need it. The sophisticated solid-state circuitry is designed to use the watts where they'll do the most good — producing crystal clear highs, strong vibrant basses at low-to-medium volume levels. A massive, fully-regulated and filtered power supply, four conservatively heat sunk output transistors and among the best intermodulation and harmonic distortion specifica-

tions in the industry add up to sound fidelity you never expected to hear outside the theater.

Positive circuit protection is provided by a dissipation-limiting circuit that protects the outputs from damage, even with a short circuit condition.

Input level controls for both channels of all inputs including tape monitor allow adjustments of levels so volume remains constant when switching sources.

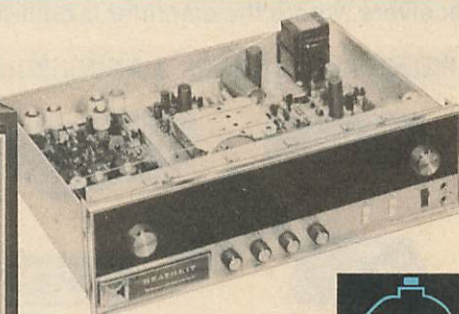
Modular plug-in circuit boards make assembly faster, easier, more enjoyable — snap out in seconds for faster service. And built-in test circuitry, including test probes and meter, let you test the kit as you assemble it . . . makes future servicing a breeze, too.

Kit AA-29, 27 lbs., mailable 159.95
AE-19 cabinet, 9 lbs., mailable 19.95

The same pace-setting performance specs found in the amplifier section of the AR-29 plus an additional "auxiliary" input and an extra tuner input. (5 1/8" H x 16 3/4" W x 14 1/2" D).

Save 5% with Heath's stereo system discount plan. See p. 22.

derived from Heath's finest stereo receivers



199⁹⁵

less cabinet
NO MONEY DOWN



When you build the Heathkit AJ-15, you reward yourself with the tuner that revolutionized the industry

Bred from the famed AR-15 — a thoroughbred tuner for those who demand the very best

Outstanding performance specifications — 1.8 uV sensitivity; 70 dB selectivity; better than 40 dB separation

This is the tuner section of the renowned AR-15 receiver and it is a joy to build. The all solid-state design uses circuit-board wiring harness construction with ICs equivalent to eight conventional IF stages. Field Effect transistors (FET) for 1.8 uV* sensitivity and 70 dB* selectivity; 2 crystal filters for optimum IF bandpass shape; all-silicon transistor

circuitry; 2 calibrated tuning meters; automatic noise-operated FM squelch; stereo threshold control; stereo only switch; stereo indicator light, multiplex phase control; 2 stereo headphone jacks; external antenna connectors.

Kit AJ-15 (less cabinet), 18 lbs., mailable **199.95**
AE-18 walnut cabinet, 8 lbs., mailable **19.95**

AJ-15 SPECIFICATIONS — TUNER SECTION — Tuning Range: 88-108 MHz. Frequency response: ±1 dB, 20-15 kHz. Sensitivity: 1.8 uV*. Selectivity: 70 dB*. Image rejection: 90 dB*. IF rejection: 90 dB*. Capture ratio: 1.5 dB*. AM suppression: 50 dB*. Harmonic distortion: 0.5% or less*. Intermodulation: 0.5% or less*. Hum & Noise: 65 dB*. Spurious rejection: 100 dB*. **STEREOPHONIC SECTION —** Channel separation: 40 dB or greater at midfrequencies; 30 dB at 50 Hz; 25 dB at 10 kHz; 20 dB at 15 kHz. Frequency response: ±1 dB 20-15 kHz. Harmonic distortion: 1% at 1000 Hz with 100% modulation. 19 kHz and 38 kHz suppression: 55 dB or greater. SCA suppression: 50 dB. **AUDIO SECTION —** Output voltage: Tape & fixed, 1.5 V rms nominal (with 100% modulation). Output Impedance: Tape & fixed, Approx. 9000 ohms. Phono & variable: 100 ohms. **GENERAL —** AC outlet socket: Unswitched; 350 W max. Power requirements: 120/240 VAC, 50-60 Hz, 0.25 W. Dimensions: 4 3/4" H x 16 7/8" W x 12 1/2" D.

*Rated IHF (Institute of High Fidelity Standards).



189⁹⁵

less cabinet
NO MONEY DOWN

All the power and features of the famous AR-15 are built into this quality integrated amplifier

*Perfect choice for a top-power addition to go 4-channel
Individual input level controls — less than 0.5% distortion*

Powerful amplifier section of the famed Heathkit AR-15, the AA-15 gives the discriminating audiophile 150 watts of dynamic music power to be used as the stout heart of a complete stereo system, or as a powerful addition to bring your present system into the 4-channel age. Other features are: individual input level controls for each channel of phono, tape, tuner, tape monitor and aux. inputs; unsurpassed response (±1 dB from 8 Hz to 40 kHz at 1-watt); less than 0.5% har-

monic and IM distortion at 50-watts continuous output; recessed input and output jacks; both main and remote stereo speaker switches and connections; two stereo headphone jacks; tone-flat switch; positive circuit protection; loudness switch; tape monitor switch; simplified circuit board construction; versatile three-way installation . . . in the wall, your own custom cabinet, or optional Heath walnut cabinet.

Kit AA-15 (less cabinet), 37 lbs., mailable **189.95**
AE-18 walnut cabinet, 8 lbs., mailable **19.95**

AA-15 SPECIFICATIONS — Music power (each channel): 8 ohms, 75 W*; 4 ohms, 50 W; 16 ohms, 45 W. Continuous power: 8 ohms, 50 W*; 45 W; 16 ohms, 35 W. Power bandwidth for 0.5% THD: 6 Hz to 30 kHz*. Frequency response: (1 W): ±1 dB, 8 to 40 kHz. Harmonic distortion: 0.5% at 50 W. Damping factor: 45. Input sensitivity: Phono 2.2 mV, Tape, Aux., and Tape Mon., 200 mV. Hum & noise: Phono, -60 dB; Tape & Aux., -65 dB. Channel separation: Phono, 45 dB; Tape & Aux., 55 dB. Tape output impedance: 120 ohms. Input impedance: Phono 51 k ohms, Aux., Tape & Tape Mon. 100 k ohms. Tape output: 0.17 volt output with 0.2 volt input. **GENERAL: AC outlet sockets:** 3 on rear panel — 1 switched (350 W max.), 2 unswitched (350 W max.). Power requirements: 120/240 VAC, 50-60 Hz, 240 W @ full output. Dimensions: 2 3/4" H x 16 7/8" W x 12 1/2" D.

*Rated IHF (Institute of High Fidelity Standards).

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

Audio System Planning Guide

A component system consists of a program source, an amplifier, and matching speakers. In the case of receivers, where the amplifier is built-in, a system may consist of the receiver and speakers only.



LOW COST COMPONENTS

AR-1214 AM/FM Stereo Receiver
AR-14 FM/Stereo Receiver

(Requires no amplifier)
(Requires no amplifier)

AJ-1214 AM/FM Stereo Tuner
AJ-14 FM/Stereo Tuner
AD-1125 or AD-1135 Turntables
AD-110 Cassette Recorder
GD-28 Cartridge Player

AA-1214 Amplifier
or
AA-14 Amplifier

(ANY TWO)

AS-1039, AS-1042, AS-105
or AS-106 Speaker Systems.
(Or) — AS-123, AS-133, AS-153,
AS-163, AS-173 Separate
Speakers.

MEDIUM-PRICED COMPONENTS

AR-1302 AM/FM Stereo Receiver
AR-29 AM/FM Stereo Receiver

(Requires no amplifier)
(Requires no amplifier)

AJ-29 AM/FM Stereo Tuner
AD-1135, AD-1145, ADP-170, ADP-190
ACP-1064, ACP-1074 Turntables
AD-110 or AD-1530 Cassette Recorders
GD-28 Cartridge Player

AA-29 Amplifier

AS-105, AS-104, AS-103A, AS-48
or AS-38 Speaker Systems.
(Or) — AS-183, AS-27 Separate
Speakers.

TOP-OF-THE-LINE COMPONENTS

AR-1500 AM/FM Stereo Receiver

(Requires no amplifier)

AJ-15 AM/FM Stereo Tuner
AJ-1510 FM/Stereo Tuner
ADP-200, ADP-190, ACP-1074,
ACP-1084, ACP-1099 Turntables
AD-1530 Dolby® Cassette Recorder

AA-15 Amplifier

AS-101, AS-103A, AS-48
Speaker Systems.
(Or) — AS-27 Separate
Speakers.

4-CHANNEL SYSTEMS

Any Heathkit FM/Stereo Tuner
Any Turntable
Any Tape Source

AA-2010
4-Channel Amplifier

(ANY FOUR)
AS-101, AS-103A, AS-104,
AS-105, AS-38, AS-48
Speaker Systems.
(Or) — AS-27, AS-183
Separate Speakers.

4-CHANNEL CONVERSION SYSTEMS

If your present stereo amplifier has
"Tape Monitor" jacks, add the Heathkit
AD-2022 Stereo-4 Decoder . . .

. . . Add an additional Heathkit
Stereo Amplifier to your present
stereo amplifier (AA-1214,
AA-14, AA-29, AA-15) . . .

. . . Add an additional pair
of Heathkit speakers to your
present pair.

Save An Extra 5% By Ordering A System

Here's How...order any of the systems, or combination of systems, outlined above and subtract 5% from the total price. (This system discount does not apply to the Heathkit AD-19A "Component Credenza" or automotive stereo components.)

Other catalog audio items related to the basic system and ordered at the same time (such as turntables, tape players, cabinets, additional speakers or speaker systems, AC-17 head-phone control, antenna) will also qualify for the 5% discount.

Ready-to-use furniture for your Heathkit system

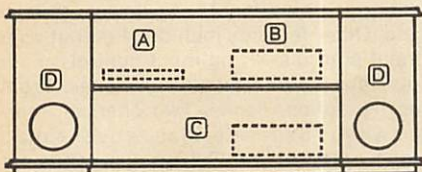
One-piece Mediterranean credenza

One-piece 5½-ft. Mediterranean credenza, crafted in hickory veneers and solid oak trim, finished in oiled pecan. Adjustable shelf (A&B) for stereo receiver, cartridge or cassette deck, or separate tuner and amplifier. Below (C) is room for turntable and record storage. Ducted-port, reflex design speaker enclosures (D) have pre-cut 12-in. openings. Accessory drawers on ball bearing slides available.

AE-101, credenza, 167 lbs., Express/Frt. **195.00**

AEA-101-1, changer drawer, 16 lbs., mailable **31.50**

AEA-101-2, cartridge, cassette drawer, 7 lbs., mailable **19.95**



W x 17½" D x 12¼" H min. (with shelf at 8½").
VOLUME: (D): 2.3 cu. ft. (12" cut out). **CHANGER BASE:** 5½" H x 18¼"
 W x 14" D. **TAPE PLAYER BASE:** 14" W x 12½" D.

CABINET OVERALL: 26¾" H x 66" W x 19¼" D. **SHELF COMPARTMENT:** (A & B) overall, 35¾" W x 17½" D (shelf 15" D); adjustable shelf height: 5½", 6½", 7½", 8½". **LOWER COMPARTMENT:** (C): 35¾" **SPEAKER CABINET**



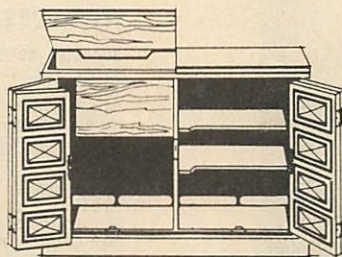
195⁰⁰
 NO MONEY DOWN

3-piece Mediterranean group

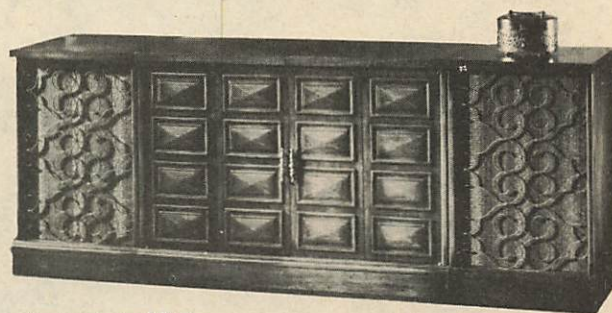
Selected solids and veneers with a dramatic pecan finish. Bi-fold doors. Statuary bronze handles. Top raises to reveal changer compartment, doors open to components. Adjustable shelves. Matching ducted-port speaker cabinets accept 8-in. or 12-in. speakers (installation instructions included), measures 28¾" H x 17¾" W x 18¾" D. Order a pair for stereo.

AE-57, equipment cabinet, 109 lbs., Express/Frt. **175.00**

AEA-57-1, speaker cabinet, 64 lbs., Express/Frt. (each) **95.00**



CABINET OVERALL: 28¾" H x 40" W x 19¾" D. **CHANGER COMPARTMENT:** 19" W x 16" D, mounting board is uncut and can be adjusted in height. **RECORD-TAPE RECORDER COMPARTMENT:** 15" H x 19" W x 16" D. **SHELF COMPARTMENT:** 23¾" H x 19" W x 16" D, with two adjustable shelves.



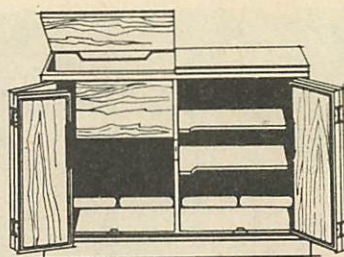
365⁰⁰
 NO MONEY DOWN

3-piece contemporary group

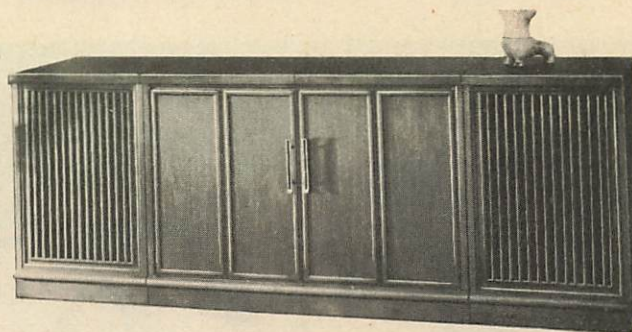
Walnut finish on solids and veneers. Top lifts to expose changer compartment, bi-fold doors hide components. Decorative statuary bronze handles. Matching speaker cabinet. Ducted-port reflex design accommodates 8-in. or 12-in. speakers (installation instructions included), measures 28¾" H x 18" W x 19" D. Order two for stereo.

AE-37, equipment cabinet, 108 lbs., Express/Frt. **150.00**

AEA-37-1, speaker cabinet, 70 lbs., Express/Frt. (each) **74.00**



CABINET OVERALL: 23¾" H x 40" W x 19" D. **CHANGER COMPARTMENT:** 19" W x 16½" D, mounting board is uncut and can be adjusted in height. **RECORD-TAPE RECORDER COMPARTMENT:** 15¾" H x 19" W x 16½" D. **SHELF COMPARTMENT:** 24¾" H x 19" W x 16½" D, with two adjustable shelves.



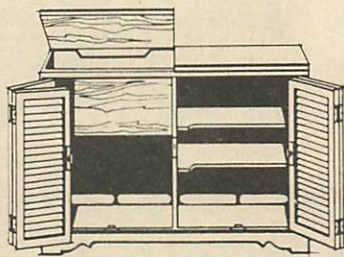
298⁰⁰
 NO MONEY DOWN

3-piece Early American group

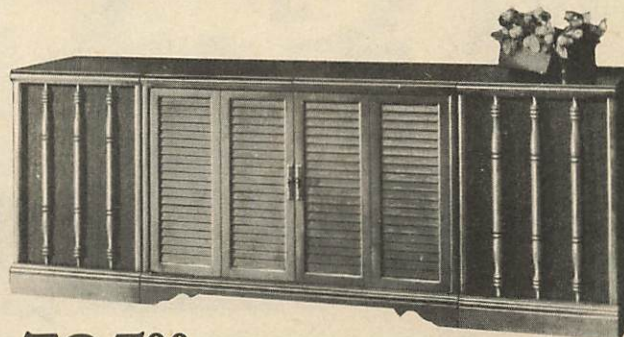
Salem-Maple on solids and veneers, with louvered doors. Lift-top changer compartment, bi-fold front doors swing away to reveal components. Statuary bronze handles. Ducted-port reflex installation for 8-in. or 12-in. speakers. Speaker cabinet measures 28¾" H x 18" W x 19" D. Order two for stereo.

AE-47, equipment cabinet, 104 lbs., Express/Frt. **165.00**

AEA-47-2, speaker cabinet, 67 lbs., Express/Frt. (each) **80.00**



CABINET OVERALL: 28¾" H x 40" W x 19" D. **CHANGER COMPARTMENT:** 19" W x 16" D, mounting board is uncut and can be adjusted in height. **RECORD-TAPE RECORDER COMPARTMENT:** 15¾" H x 19" W x 16" D. **SHELF COMPARTMENT:** 24¾" H x 19" W x 16" D, with two adjustable shelves.



325⁰⁰
 NO MONEY DOWN

Fully assembled famous TEAC tape decks



TEAC 3340S Four-channel Three-head Tape Deck

Teac calls it the ultimate quadrasonic tape deck for the home recordist who wants to go creative. First the 3340S gives you discrete four channel record and playback capability. Then there's Simul-Sync — an exclusive Teac feature that permits recording of four discrete but fully synchronized channels on each track of a four-track tape. This technique makes possible synchronized overdubbing, professional mix-down, special effects tapes, etc. Other features include: 4 output controls, 4 mike input controls, 4 line input controls. Four VU meters. Four tape/source monitor switches. Front and rear stereo headphone jacks. Two channel, four-channel play switch. Separate bias, equalization switches for tape optimization. Selector switches for record mode for each channel. Plus, the 3340S accepts a variety of mix-down panels, sound-on-sound and echo adapter. Separate Simul-Sync switches for each channel, 10" reel capacity.

ATP-1082, 69 lbs., available 999.50

SUPPLIED ACCESSORIES — Empty 10½" reel. Reel adaptor. Input-output connection cord. Lubricating oil. AC power cord. Splicing tape. 117 V. AC fuse. Head cleaning stick. Silicone cloth. Rubber feet. Reel height adjusting sheet. **SPECIFICATIONS** — 3 heads: Erase, Record, Play. Recording system: 4-track, 4-channel and 2-channel stereo (with Simul-Sync). Tape speed: 15, 7½ ips (±0.5%). Reel size: 10½" max. 3 motors: 1 dual speed hysteresis synchronous capstan, 2 eddy current induction reel. Rewind/Fast-Forward time: 140 Sec./1800'. Wow and flutter: 0.04% at 15 ips, 0.06% at 7½ ips. Frequency response (Hz): 25-24k (±3 dB, 30-20k) at 15 ips, 25-22k (±3 dB, 30-18k) at 7½ ips. Signal-to-noise ratio: 55 dB. Level indicators: Four VU Meters (one for each channel). Harmonic distortion: 1% at 1 kHz normal operating level. Stereo channel separation: 50 dB at 1 kHz. Microphone input impedance: 600 ohms. Microphone input sensitivity: -72 dB (0.25 mV). Line input impedance: 50k ohms. Input sensitivity: 0.1V. Stereo headphone jacks output impedance: 8 ohms. Line output impedance: 10k ohms. Output level: 0.775 V. Power requirements: 117 V. AC, 60 Hz, 138 W. Dimensions (WHD): 17½" x 20½" x 8¾".



TEAC 2300S Three-head Stereo Deck

We're proud to be able to offer our customers Teac's most economical reel-to-reel tape deck. While the price may be quite low, this unit has a brilliance and clarity found only on top-of-the-line equipment. And for the amateur recording engineer, it's loaded with features. There's total push-button transport control with logic circuitry. Dual, professional VU meters. Separate bias, equalization switches for using high energy or standard tape. Three motors for improved tape stability. Three heads for better frequency response. Mike/Line mixing or other blending of signals from two sources. Total remote control capability. Pause control with indicator light. Tape/source monitor switch. Operates vertically or horizontally. Walnut side panels included.

ATP-1072, 49 lbs., available 429.50

SUPPLIED ACCESSORIES — Empty reel. Input-output connection cord. Lubricating oil. 117 V. AC fuse. Head cleaning sticks. Silicone cloth. Rubber feet. AC power cord. Splicing tape. **SPECIFICATIONS** — 3 Heads: Play, Erase, Record. Recording system: 4-track 2-channel stereo. Tape speed: 7½ ips, 3¾ ips, (±0.5%). Reel size: 7" max. Motors: 1 dual speed hysteresis synchronous capstan, 2 eddy current induction reel. Rewind and fast-forward time: 140 sec./1,800'. Wow and flutter: 0.08% (7½ ips), 0.10% (3¾ ips). Frequency response: (Hz): 25-24k (±3 dB, 30-20k at 7½ ips), 25-16k (±3 dB, 30-13k at 3¾ ips). Signal-to-noise ratio: 58 dB. Level indicators: Two VU meters (one for each channel). Harmonic distortion: 1% at 1 kHz normal operating level. Crosstalk: 60 dB at 1 kHz. Stereo channel separation: 50 dB at 1 kHz. Microphone input impedance: 600 ohms. Input sensitivity: -72 dB (0.25 mV). Line input impedance: 100k ohms. Input sensitivity: 0.1V Stereo headphone jack output impedance: 8 ohms. Line output impedance: 10k ohms. Output level: 0.3 V. Power requirement: 117 V. AC, 60 Hz, 95 W. Dimensions (WHD): 17½" x 15¾" x 8¾".

Heathkit Cassette and Cartridge Decks

Heathkit Deck with Dolby® circuit

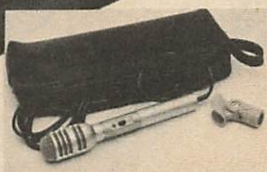
- An easy-to-assemble kit with advanced noise-suppression circuitry
- Superior performance specs at a fraction of what you might normally have to pay

249⁹⁵

NO MONEY DOWN



Kit includes special test cassette so you can optimize deck for the tape you want to use. Plus 60-minute blank cassette.



Optional cardioid electret condenser microphone features 80-13,000 Hz response, on-off switch, 18-ft. cable, 2-conductor phone plug, mike stand adapter, handsome leather-grain vinyl case. Order a pair for stereo recording.

The Heathkit AD-1530 Deluxe Cassette Tape Deck combines a pre-assembled top-quality domestic-make tape transport, the famous Dolby Noise Reduction System, to produce a superb cassette tape deck in easy-to-assemble kit form. The famous-make tape transport comes to you preassembled, ready to wire into the kit, and features PLAY, STOP, FAST-FORWARD, REWIND and EJECT controls. All controls are interlocked, so it's impossible for you to accidentally press the wrong control and break a tape. An automatic shutoff returns the transport to STOP when tape ends in PLAY or RECORD mode. "Piano"-keys give you fingertip control of PLAY, RECORD, and STOP functions. Levers control FAST-FORWARD, REWIND and EJECT functions, STEREO or MONO input; DOLBY ON/OFF; tape-type REGULAR (iron oxide) or CrO₂ (chromium dioxide).

Other features are individual record level controls with separate VU meters; large three-digit resettable counter for reliable indexing of selections within a tape; input selector switch for either microphone or high-level source input (any low impedance microphone with standard 1/4" phone jack can be used). Modular plug-in circuit board design is employed in the amplifier and Dolby circuits of the AD-1530, simplifying kit construction and any servicing. Built-in test circuitry and free test cassette aid in initial kit check-out and can be used for future adjustments to optimize performance with varying tape types. Blank 60 minute cassette included with kit.

Kit AD-1530, 20 lbs., mailable 249.95

ADA-1530-1, dust cover, 1 lb., mailable 4.95

ADP-1034, Electret Condenser Microphone & case, 2 lbs., mailable 39.95

AD-1530 SPECIFICATIONS: Frequency Response: Regular (iron oxide) tape; ±3 dB from 40 Hz to 12 kHz typical. CrO₂ (chromium dioxide) tape; ±3 dB from 40 Hz to 14 kHz typical. Distortion: Tape dependent; electronics less than 0.2%. Hum and Noise: Dolby Switch OFF, -48 dB. Dolby Switch ON-Provides Additional Noise Reduction as Follows; -10 dB @ 4000 Hz and up. -9dB @ 2400 Hz. -6 dB @ 1200 Hz. -3 dB @ 600 Hz. Wow and Flutter: Less than 0.25% RMS. Inputs: Microphone: Lo-Z, 0.2 mV to 10 mV. Auxiliary: Hi-Z, 50 mV to 10V. Bias Oscillator Frequency: Approximately 100 kHz. Tape: Any good quality iron oxide or chromium dioxide tape cassette may be used. Tape Speed: 1 7/8 in/s or 4.76 cm/s. Fast Forward/Rewind Time: Approximately 45 sec. for C-60 cassette. Solid State Devices: 37 transistors and 2 JFET's. Output: Greater than 0.5 volts from low impedance source. Dimensions: 5 1/2" H x 9 1/2" D x 14" W. Power Requirements: 120 volts, 60 Hz, 15 W.

Heathkit AD-110 Cassette Deck

Full-function record and playback of both stereo and mono tape. The Heathkit AD-110 features solid-state circuitry with internally adjustable bias to accommodate the new "wide spectrum" chromium dioxide cassettes; two-transistor regulated DC motor for stable tape speed with minimum "wow" and "flutter". Six pushbuttons control all tape transport functions. Separate level controls and meters for "high level" input from less than 100 mV to 10V. Transport mechanism is pre-assembled and aligned for easier assembly. Blank 60-minute cassette included with kit.

Kit AD-110, 12 lbs., mailable 129.95

ADA-110-1, two matched stereo microphones, 2 lbs., mailable . . 19.95

AD-110 SPECIFICATIONS — Frequency response (record-play): ±3 dB from 30 Hz to 12 kHz typical. Inputs: Aux. 70 mV to 10 V, Mike 0.2-6 mV. Hum and noise: -45 dB. Bias and erase frequency: 110 kHz. Wow and flutter: Less than .25% WRMS record and playback. Motor: Solid-state regulated DC. Speed: 1 7/8 ips. Fast forward-rewind time: Less than 120 sec. for C-60 cassette. Tape: C-30, C-60, C-90 cassettes. Control: Power switch, record level (left and right channel), record, rewind, stop-eject, play, fast forward, pause. Transistor complement: 13 transistors and 1 IC. Output: Greater than 1/2 volt from low impedance amplifier stage. Finish: Black with walnut end panels. Dimensions (overall): 3 1/8" H x 13 5/8" L x 11" D. Power: 120/240 VAC, 50-60 Hz, 7 watts.

129⁹⁵

NO MONEY DOWN



Heathkit 8-Track Stereo Cartridge Player

Plays back pre-recorded 8-track stereo tape cartridges through your present music system. A metal tape splice switches the playhead from one track to the next automatically. Or you can select the track you want to hear by just pushing the convenient slide switch . . . a pilot lamp indicates at a glance which track is playing. The tape player mechanism by Motorola® is pre-assembled and adjusted to make your kit building an easy two evening project. 40-Minute Stereo Cartridge included with your new GD-28. Features 16 instrumentals by world famous Capitol Records recording artists. A \$7.95 value!

Kit GD-28, 10 lbs., mailable 59.95

GD-28 SPECIFICATIONS — Cartridge: 8-track stereo. Tape speed: 3 3/4" per second. Output (each channel): 300 mV at Standard Reference Level. Harmonic distortion: Less than 3%. Separation: Greater than 30 dB at 1 kHz. Frequency response: ±6 dB, 50 Hz to 10 kHz. Wow & flutter: Less than 0.3%. Hum & noise: Better than -40 dB. Motor: 117 VAC synchronous. Power requirements: 105-125 VAC, 60 Hz, 45 watts (momentary). Cabinet: Simulated walnut grained vinyl clad wood. Dimensions: 10 3/8" W x 4 1/2" H x 8 1/4" D.

59⁹⁵

NO MONEY DOWN



These Heath-approved turntables offer



A)



Another new offering from Heath — the Thorens TD-160C

Thorens 2-speed Integrated Transcription Turntable — Our engineers all agreed the TD-160C was a lot of turntable for the money. So we're proud to be able to add it to the Heathkit Catalog. Thorens uses a belt-drive system that eliminates the mechanical vibration common to turntables using an idler-wheel drive. Other features include a 16-pole synchronous motor, unique magnetic anti-skating system, front panel cueing control and rubber turntable mat designed to reduce resonances. Accepts single discs only, 33 $\frac{1}{3}$ and 45 rpm. Includes walnut base and hinged dust cover. 7 $\frac{3}{4}$ " H x 17" W x 13 $\frac{1}{2}$ " D (with base and dust cover). Choose cartridge from table on facing page.

ACP-1099, turntable, base and cover, 26 lbs.,
 available 200.00



maximum performance for your dollar

A new lineup under the highly respected Dual banner

A) Dual 1229 — Standard bearer for the Dual family. Features built-in illuminated strobe; tracking angle selector that shifts tonearm base down for single play, up for multiple discs; tracking as low as 0.25 gram with pressure dial calibrated in 1/10ths from 0.2 through 1.5 grams; manual or automatic play at 78, 45 and 33 1/3 rpm; anti-skating calibrations for spherical and elliptical styli; damped cueing system; full 12-in. diameter 7-lb. platter; synchronous/continuous-pole motor; 6% pitch adjustment. Select cartridge from list below. 14 3/4" W x 12" D x 5" above motor board, 3" below. Select cartridge from turntable below.

ADP-200, includes turntable, WB-19 walnut base and DC-9 dust cover, 44 lbs., mailable **224.95**
ADA-39-2, 45 rpm spindle (Dual AS-12), 1 lb., mailable **7.95**

B) Dual 1218 — Gives three-speed manual or automatic play. Has sep-

Three new automatic changers from Garrard

D) Garrard Zero 100C — Retains all the features that made the original Zero 100 so successful. Dual pivoting tone arm for zero tracking error; cartridge overhang adjustment; magnetic anti-skating system; 3% pitch control; illuminated stroboscope; patented Synchro-Lab motor; separate control for automatic and manual play of 33 1/3, 45 and 78 rpm discs. Plus the new Zero 100C includes a built-in record counter to monitor stylus life, and a new cueing control that's damped in both up and down directions. Measures 15 3/8" W x 14 1/8" D x 4 3/8" above motor board, 2 5/8" below. Select cartridge from table below.

ACP-1084, includes turntable, WB-2 walnut base and D-2 dust cover, 48 lbs., mailable **215.30**

E) Garrard Zero 92 — The famous zero tracking error tonearm on a medium-price changer. The new Zero 92 has cartridge overhang adjustments; sliding weight stylus force setting; lever type sliding weight anti-skating adjustment; patented Synchro Lab motor; kinetically matched turntable; 2-point record support, and refined cueing control with dampening in both directions. Includes interchangeable spindles for single or multiple play. Plays single or stacked discs at 33 1/3, 45 and 78 rpm. Measures 15 3/8" W x 14 1/8" D x 4 3/8" above motor

Heath/BSR Changers include base, dust cover and cartridge in one price

G) Heath/BSR AD-1145 — The new AD-1145 heads up three great new turntables carrying the Heathkit/BSR hallmark. The 1145 features a 3 1/2-lb. heavy-cast machined platter, vernier counter-balance adjustment, synchronous motor, micrometer stylus pressure control, viscous damped cueing, dual-range anti-skate control, slide-in cartridge head, pop filter and interchangeable automatic and manual spindles. Plus, there's a built-in stereo muting switch for complete silence during the change cycle. Handles 7-in., 10-in. or 12-in. discs at 33, 45 and 78 rpm. Includes Shure M93E magnetic cartridge with elliptical diamond stylus, and all connecting cables. Measures 7 1/4" H x 15 1/4" W x 14 1/8" D.

AD-1145, 18 lbs., mailable **84.95**
AD-1037, optional 45 rpm spindle, 1 lb., mailable **1.95**

H) Heath/BSR AD-1135 — A high-performance turntable at a modest price, the AD-1135 offers many of the same features found in the

Save up to 42.50 on cartridges when ordered with a Garrard, Thorens or Dual turntable



New Shure V-15 Type III features newly designed cartridge/stylus structure resulting in lighter mass, wider dynamic response and a flatter frequency response curve. For use with any turntable capable of tracking at 3/4 to 1 1/4 grams. Order with the Garrard Zero 100 (ACP-1084), Dual 1229 (ADP-200) or Thorens TD-160C (ACP-1099) only, pay just \$30.

Model AD-1059, 1 lb., mailable **72.50**
Shure M91E, only \$5 with Garrard, Dual or Thorens turntable order.
Model AD-68F, 1 lb., mailable **49.95**
Shure M93E, only 1¢ with Garrard, Dual or Thorens turntable order.
Model AD-58R, 1 lb., mailable **39.95**

arate anti-skating scales for conical and elliptical styli; tracking angle selector in cartridge housing; 6% pitch control; 10 5/8" diameter 4-lb. one-piece platter. Will track as low as 0.5 gram. Choose cartridge below. Measures 13" W x 10 3/4" D x 5" above motor board, 2 5/8" below.

ADP-190, includes turntable, WB-12 walnut base and DC-4 dust cover, 39 lbs., mailable **179.95**
ADA-39-2, 45 rpm spindle (Dual AS-12), 1 lb., mailable **7.95**

C) New from Heath, the Dual 1216 — They call it "Dual's best buy", and we agree. Offers 33 1/3, 45 and 78 rpm automatic or manual play with 6% pitch control on all speeds; anti-skating system identical to Dual 1229 and 1218; 10 5/8" diameter 4-lb. platter; hi-torque motor; direct-dial setting for tracking pressure as low as 0.75 gram. Choose cartridge below. 13" W x 10 3/4" D x 5" above motor board, 2 5/8" below.

ADP-170, includes turntable, WB-12 walnut base and DC-4 dust cover, 36 lbs., mailable **159.95**
ADA-39-2, 45 rpm spindle (Dual AS-12), 1 lb., mailable **7.95**

board, 2 5/8" below. Choose cartridge from table below.

ACP-1074, includes turntable, WB-2 walnut base and D-2 dust cover, 37 lbs., mailable **165.95**

F) Garrard 82 — This great low-price Garrard retains many of the features from the Zero-100 and new Zero-92. For example, it has 15° vertical tracking adjustment, the identical cartridge clip with overhang adjustment, and sliding weights, instead of springs, for stylus force and anti-skating. The newly designed low mass extruded aluminum tonearm has full provisions for dynamic counterbalancing, and damped cueing in both ascent and descent modes. The new Garrard 82 gives full automatic or manual play at 33 1/3, 45 and 78 rpm. Select cartridge from table below. Measures 15 3/8" W x 14 1/8" D x 4 3/8" above motor board, 2 5/8" below.

ACP-1064, includes turntable, WB-2 walnut base and D-2 dust cover, 37 lbs., mailable **124.85**

ACCESSORIES FOR YOUR GARRARD TURNTABLE

ADA-47-1, molded base (Garrard B2), 3 lbs., mailable **6.95**
ADA-100-2, 45 rpm spindle (Garrard LRS-100), 2 lbs., mailable **3.80**

AD-1145. It has manual; semi-automatic or automatic capability; high torque synchronous motor; viscous damped cueing; aluminum low-mass tone arm; dual range anti-skate control; micrometer stylus adjustment; slide-in cartridge holder. Includes base, dust cover, Shure M78EC cartridge with elliptical stylus and cables. Measures 7 1/4" H x 15 1/4" W x 14 1/8" D including base and dust cover.

AD-1135, 15 lbs., mailable **69.95**
AD-1037, optional 45 rpm spindle, 1 lb., mailable **1.95**

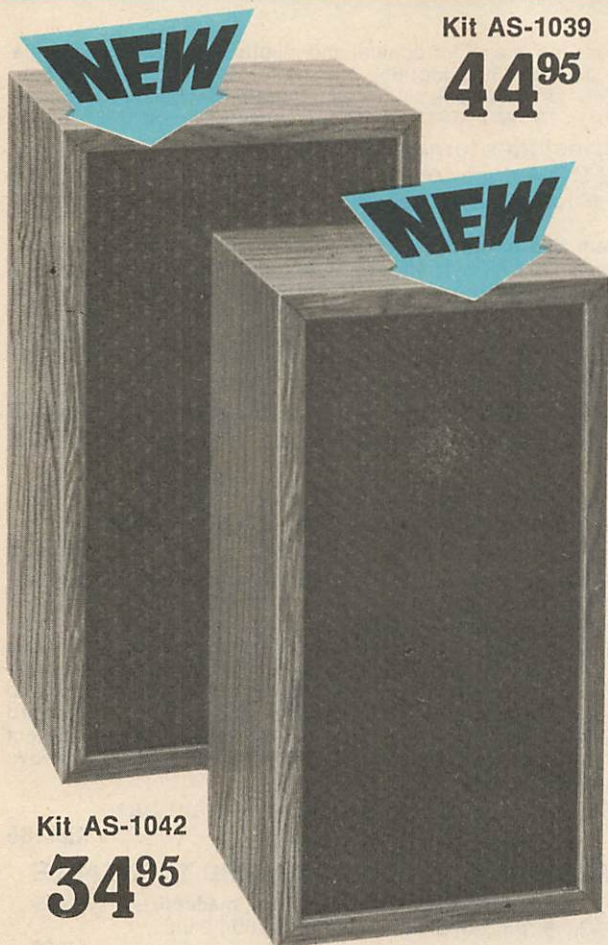
I) Heath /BSR AD-1125 — An excellent choice for rounding out any budget-minded component system. The AD-1125 features manual, semi-automatic or automatic modes; four-pole induction motor; aluminum counterweighted tone arm; slide-in cartridge holder; cue/pause control; stylus force control. Includes base, dust cover, Shure M75EC cartridge with elliptical stylus and cables. Measures 7 1/4" H x 15 1/4" W x 14 1/8" D including base and dust cover.

AD-1125, 14 lbs., mailable **54.95**
AD-1037, optional 45 rpm spindle, 1 lb., mailable **1.95**

Empire 999SE/X, only \$5 with Garrard, Dual or Thorens turntable order.
Model AD-121, 1 lb., mailable **49.95**
Empire 999E/X, only 1¢ with Garrard, Dual or Thorens turntable order.
Model AD-126, 1 lb., mailable **39.95**

MODEL	FREQUENCY RESPONSE	OUTPUT	SEPARATION	ELLIPTICAL STYLUS	TRACKING
Shure V-15 Type III	10-25,000 Hz	3.5 mV	28 dB	0.2 x 0.7	3/4 to 1 1/4 gr.
Shure M91E	20-20,000 Hz	5.0 mV	25 dB	0.2 x 0.7	3/4 to 1 1/2 gr.
Shure M93E	20-20,000 Hz	6.2 mV	25 dB	0.4 x 0.7	1 1/2 to 3 gr.
Empire 999SE/X	8-32,000 Hz	8.0 mV	35 dB	0.2 x 0.7	1/2 to 1 1/2 gr.
Empire 999E/X	10-30,000 Hz	8.0 mV	35 dB	0.3 x 0.7	3/4 to 2 gr.

Super sounding speaker systems in



Kit AS-1039
44⁹⁵

New Heathkit 2-Way ultra-efficient system... 44.95

We've designed this highly efficient bookshelf system to bring out the best in low power amplifiers. Just five watts is enough to drive the new Heathkit AS-1039 at a booming volume. The system uses an 8-in. woofer in vented bass-reflex enclosure and an exponential rectangular horn tweeter with its own level control knob mounted on the back panel. Magnets are 10 ounces for the woofer and 1.47 ounces on the tweeter. Frequency response is 70 to 15,000 Hz with crossover at 3,500 Hz. The AS-1039 has a nominal impedance of 8 ohms, and can handle up to 25 watts of music power.

The one-piece cabinet with removable grille cloth board provides a solid vibration-free housing while also simplifying kit building. You simply build and install the crossover circuit then front-mount both speakers. The grille-cloth board is snugly held in place with zip-strip fasteners. All cabinetry comes fully assembled and finished. The enclosure is clad in a rich-looking walnut toned vinyl, while the grille cloth is done in a dark green, brown and gold tweed. Measures 21½" H x 12" W x 10½" D. Order two for stereo. You can build them both in an evening.

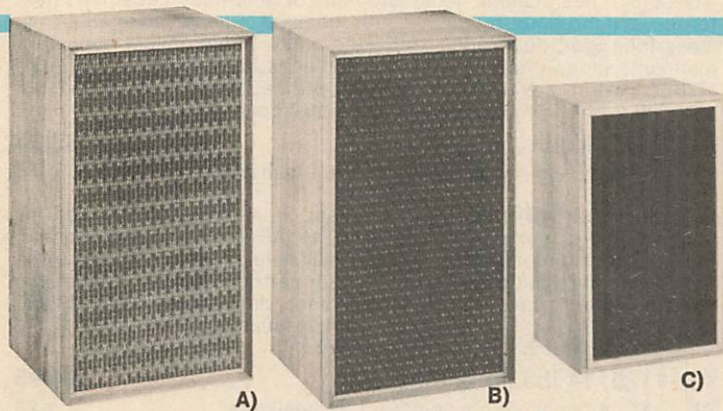
Kit AS-1039, 38 lbs., mailable 44.95

New Heathkit 2-Way acoustic suspension system for an unbelievable 34.95

Now you can have the superior reproduction of acoustic suspension design for an unbelievably low kit-form price. The Heathkit AS-1042 combines a high compliance, long throw 8" woofer with a 3½" shallow cone/dome tweeter to produce a flat frequency response from 40 to 18,000 Hz. The woofer has a hefty 8.5-oz. magnet and is capable of useable bass response down below 30 Hz. The tweeter uses a 1.3-oz. magnet and a high frequency shaping circuit to maintain flat acoustic output. A high-frequency level control on the back panel tailors the "highs" to your listening room. The Heathkit AS-1042 can be powered by as little as 10 watts, yet can handle up to 50 watts. Impedance is 8 ohms nominal, 6 ohms minimum. The mechanical and capacitive crossover system operates at 1500 Hz, and total system resonance is 65 Hz. You can easily assemble a couple AS-1042s in a single evening. All components mount neatly in the one-piece cabinet through the front-panel openings. The grille-cloth board snaps securely in place, yet can be quickly removed when you want to show off your handiwork. Cabinet and grille board come fully assembled and finished. The cabinet is covered with easy-to-care-for walnut toned vinyl, and the speaker cloth is interwoven in brown and black. Measures 19" H x 10" W x 8¼" D.

Kit AS-1042, 27 lbs., mailable 34.95

Kit AS-1042
34⁹⁵



A) Heathkit 2-Way acoustic suspension system... 64.95

Here's tremendous power handling capacity—up to 100 watts of music material—in a two-way system that offers excellent response from 30 Hz to beyond audibility, extremely low distortion below 50 Hz. Has high compliance, low resonance woofer in sealed cabinet filled with sound absorbing material; ring damped, closed back 3½-in. cone/dome tweeter; high frequency level control; factory assembled one-piece cabinet with removable grille. Buy two...and enjoy stereo the same night.

Kit AS-105U, unfinished, 52 lbs., Express/Frt. . . . 64.95

Kit AS-105W, walnut finish, 52 lbs., Express/Frt. . . 69.95

AS-105 SPECIFICATIONS—Speakers: 10" acoustic suspension woofer, 1-lb. Alnico V magnet; 3½" cone/dome tweeter, 1.3-oz. Alnico V magnet. Frequency range: 30—18 kHz. Impedance: 8 ohms. Recommended minimum amplifier power: 10 W rms. Enclosure: Sealed infinite baffle. Crossover: Mechanical and capacitive at 1 kHz. Distortion: Less than 1% above 50 Hz, 10 W in. Recommended amplifiers: AR-150C, AR-29, AR-19, AR-14, AA-15, AA-29, AA-14, AD-27A, AD-17. Dimensions: 24" H x 13½" W x 11½" D.

B) Heathkit 3-Way acoustic suspension system... 89.95

A great new 3-way acoustic suspension system that can easily handle up to 100 watts music material, with response extending smoothly from below 30 Hz to beyond audibility. Has high compliance, low resonance 10-in. woofer in sealed cabinet filled with sound absorbing material; high compliance 4½-in. midrange in sealed and acoustically lined sub-enclosure; ring damped, closed back 3½-in. cone/dome tweeter. Offers extremely low distortion below 50 Hz, where many other systems rapidly begin to weaken. Features individual high and mid-frequency controls; assembled & pre-finished walnut veneer one-piece cabinet with removable front grille.

Kit AS-104, 54 lbs., Express/Frt. 89.95

AS-104 SPECIFICATIONS—Speakers: 10" acoustic suspension woofer, 1-lb. Alnico V magnet; 4½" midrange, 2.5-oz. Alnico V magnet; 3½" cone/dome tweeter, 1.3-oz. Alnico V magnet. Frequency range: 30-18,000 Hz. Impedance: 8 ohms. Recommended minimum amplifier power: 10 W rms. Enclosure: Sealed infinite baffle. Crossover: RLC at 500 Hz and 4500 Hz. Distortion: Less than 1% above 50 Hz, 10 W in. Dimensions: 24" H x 13½" W x 11½" D.

C) Heathkit mini acoustic suspension system... 19.95

Excellent wide-range response—small enclosure. The AS-106 single-speaker system is perfect for that apartment-size 4 to 20-watt amplifier. Features a 4½-in. high-compliance cloth-suspension speaker with long throw voice coil, sealed acoustic suspension cabinet with fiber-glass sound-damping material. Useful frequency response extends from 70 Hz to 16kHz. Cabinet is ½-in. particle board with rich walnut veneer. Order a pair for stereo, and build both in an evening.

Kit AS-106, 10 lbs., mailable 19.95

AS-106 SPECIFICATIONS—Speaker: 4½" full range, 2.5-oz. Alnico magnet. Impedance: 8 ohms. Recommended minimum amplifier power: 4 W rms. Enclosure: Sealed infinite baffle. Dimensions: 12" H x 7" W x 6" D.

money-saving kit-form anyone can build.

A) The Heathkit/Altec-Lansing System...269.95

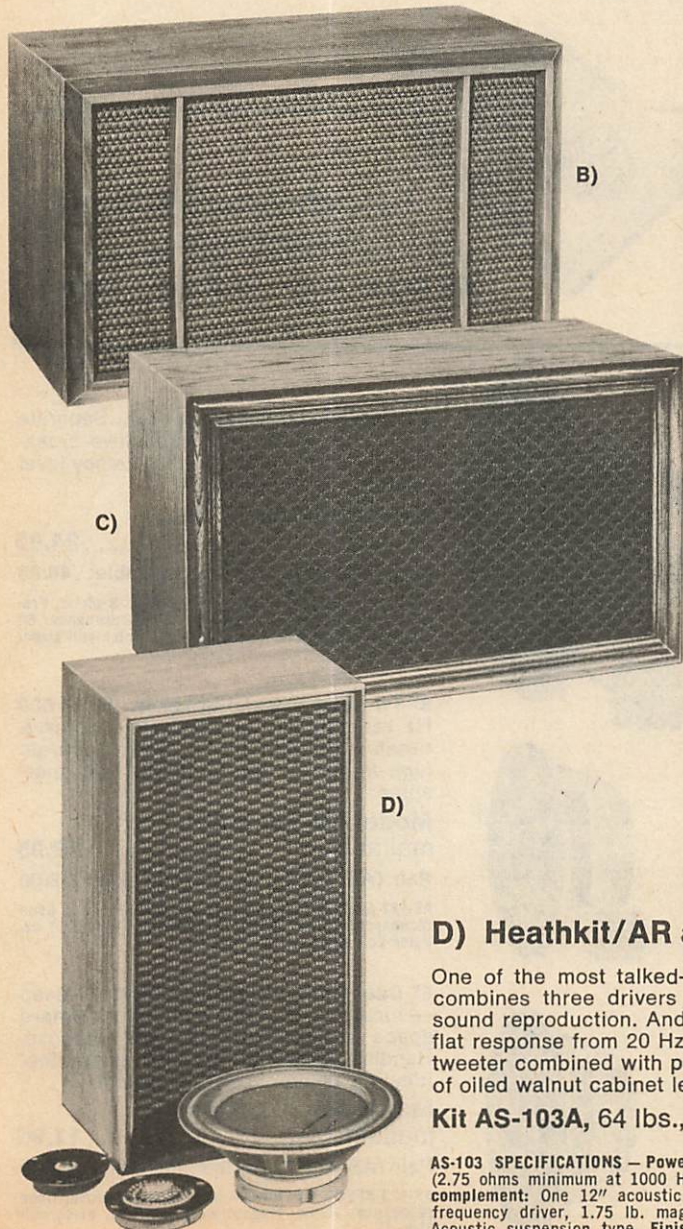
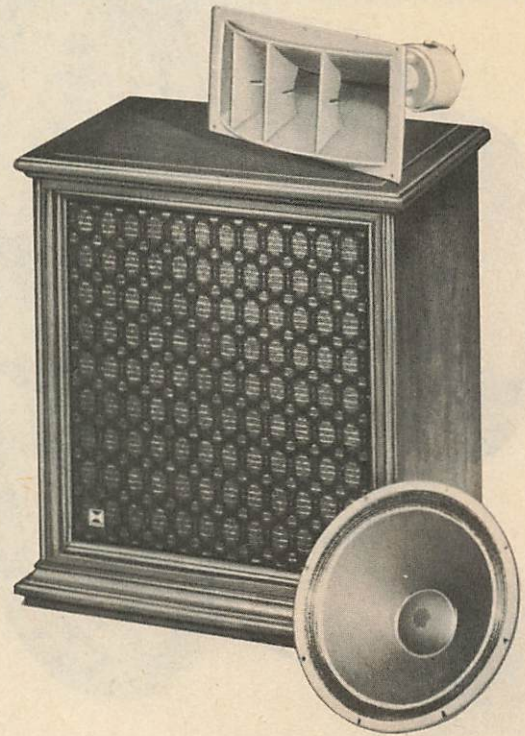
The AS-101 is a skillful blend of Altec-Lansing speaker experience and Heathkit engineering — a medium priced, high performance 8 ohm system designed to meet the demands of quality components such as the AR-1500, AA-15, AR-29 & AR-1302.

The AS-101 drives with as little as 10 watts, yet handles up to 50 watts program material. A bass reflex design incorporating a high compliance 15-in. woofer and sectoral horn, it reproduces from 35 to 22,000 Hz with uncompromising accuracy. Woofer has a 10½-lb. magnet assembly, 3-in. edge-wound copper ribbon voice coil and structurally reinforced cast aluminum frame. The sectoral horn with matching driver, an Altec-Lansing hallmark, uses a 13-oz. magnet, 1¾-in. voice coil and provides controlled dispersion for uniform mid & high frequency coverage.

A two-way crossover network, compatible with bi-amplification, delivers all frequencies below 800 Hz to the massive woofer, and all above to the horn driver. High frequency level control allows balancing horn and woofer output to your taste and room acoustics.

Mount the front panel & speakers in the attractive cabinet, wire the crossover network and it's all together! Beautiful factory-assembled Mediterranean cabinet with pecan veneers, hardwood trim, gold and black grille cloth measures 29½" H x 27¾" W x 19½" D.

Kit AS-101, 128 lbs., Express/Frt.269.95



B)

B) Heathkit/JBL Medium-price System...159.95

Economically priced, but designed for remarkable performance with the most expensive components. Has 12-in. JBL woofer with large, 6¾-lb. magnet assembly for full bodied bass down to 45 Hz, and 2-in. direct radiator delivering natural sound up to 20,000 Hz. High frequency level control at rear of fine walnut finish cabinet lets you modify sound to your taste. Simple, one evening assembly. Cabinet, factory assembled and finished.

Kit AS-38, 49 lbs., mailable159.95

AS-38 SPECIFICATIONS — Speakers: 12" woofer, 6¾ lb. magnet assembly; 2" piston-type direct radiator tweeter, 1.25 lb. magnet assembly. Frequency range: 45 Hz to 20 KHz. Crossover: RLC type 2500 Hz. Power rating: 40 W program material. Impedance: 8 ohms. Control: High Frequency Level. Cabinet: Damped reflex, tube-ported. Walnut veneer and furniture grade hardwoods, oiled finish. Dimensions: 14" H x 23½" W x 11¾" D.

C)

C) Heathkit/JBL 2-Way System...189.95

Heath design know-how and JBL speakers combined in the classic bookshelf cabinet for a system that will do justice to your top-of-the line components. The 14-in. woofer uses an inert, self-damping cone suspension and massive 11½-lb. magnet for clear, full bass down to 40 Hz. JBL 2-in. direct radiator produces sharp, lifelike highs. Factory assembled and finished cabinet. System assembles in one or two hours.

Kit AS-48, 57 lbs., mailable189.95

AS-48 SPECIFICATIONS — Speakers: 14" woofer, 4" voice coil, 11½ lb. magnet assembly; 2" piston-type direct radiator tweeter, 1.25 lb. magnet assembly. Frequency range: 40-20,000 Hz. Crossover: LC-type, 2000 Hz. Power rating: 50 W program material. Impedance: 8 ohms. Control: Three-position high frequency level control. Cabinet: Damped reflex, tube-ported. Oak veneer and furniture grade hardwoods, pecan finish. Dimensions: 14" H x 23½" W x 12" D.

D)

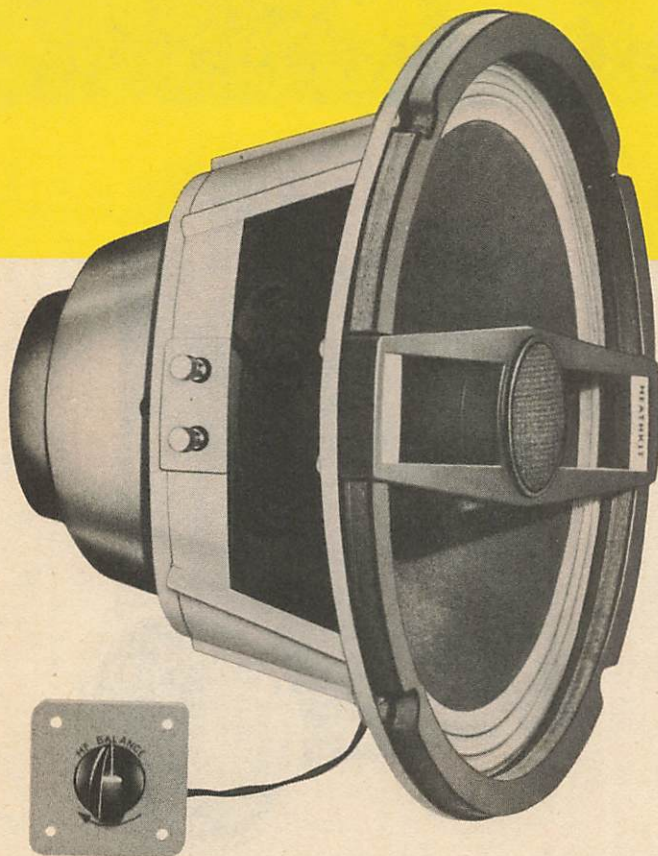
D) Heathkit/AR acoustic suspension system...189.95

One of the most talked-about speaker systems in the audio world, the Acoustic Research AR-3A combines three drivers in a sealed acoustic suspension enclosure to achieve truly remarkable sound reproduction. And it's available to you now in an easy-to-build one-evening kit. Gives virtually flat response from 20 Hz to 20,000 Hz. Has 12-in. woofer, special hemispherical dome midrange and tweeter combined with precisely engineered crossover network. Separate output level controls at rear of oiled walnut cabinet let you "custom tailor" the sound to your environment.

Kit AS-103A, 64 lbs., Express/Frt.189.95

AS-103 SPECIFICATIONS — Power requirements: 25 W rms recommended minimum per channel. Impedance: 4 ohms nominal (2.75 ohms minimum at 1000 Hz). Frequency range: 20 Hz to 20,000 Hz. Crossover frequencies: 575 Hz and 5000 Hz. Speaker complement: One 12" acoustic suspension low-frequency driver (woofer); 3.3 lb. magnet. One 1½" hemispherical dome mid-frequency driver, 1.75 lb. magnet. One ¾" hemispherical dome high-frequency driver (tweeter); 10 oz. magnet. Enclosure: Acoustic suspension type. Finish: Oiled walnut. Dimensions: 25" H x 14" W x 11¾" D.

Sound values in separate speakers for custom installations



Three-Way High Compliance Speaker . . . Our finest separate speaker system, designed to bring out the best in top-quality stereo-hi-fi systems. Features 12" unitary speaker with woofer, compression mid-range and a horn-loaded compression super tweeter; 80-watts peak power capability; heavy die-cast frame; 600 and 4000 Hz crossovers; special mid & high frequency level control; 1-year guarantee. Cabinet recommendations included. Pick a pair for stereo.

Model AS-27, 15 lbs., mailable 79.50
Pair (AS-27-2), 33 lbs., mailable 152.00

AS-27 SPECIFICATIONS — Impedance: 8 ohms. Frequency response: 20-20,000 Hz. Cone resonance: 30 Hz. Magnet weights: 1 lb., 6.4 oz., 4.6 oz. Voice coil sizes: 1½" and 1".

79⁵⁰

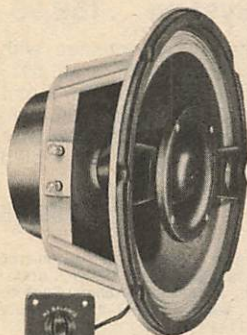
NO MONEY DOWN



Headphone control unit

Takes two sets of headphones. Dual concentric level control. 20' cable.

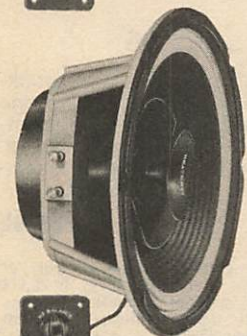
Kit AC-17, 3 lbs., mailable . . . 8.50



Two-Way High Compliance Speaker...12" high-compliance woofer with re-entrant horn tweeter. High frequency level control. 1-yr. guarantee.

Model AS-183, 15 lbs., mailable 54.95
Pair (AS-183-2), 39 lbs., mailable . . 105.00

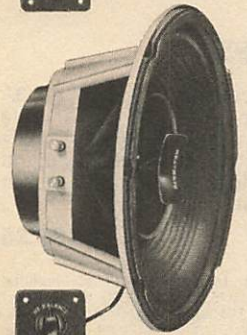
AS-183 SPECIFICATIONS — Impedance: 8 ohms. Power rating: 30 watts. Frequency response: 20-15,000 Hz. Cone resonance: 25 Hz. Magnet weights: 1¾ lbs., 4.65 oz. Voice coil sizes: 1½" and 1".



Three-Way High Compliance Speaker... 12" high-compliance woofer with mid-range cone; special Heath-designed tweeter. 1¾-lb. ceramic magnet. High frequency level control. 1-yr. guarantee.

Model AS-173, 14 lbs., mailable 44.95
Pair (AS-173-2), 37 lbs., mailable . . 85.00

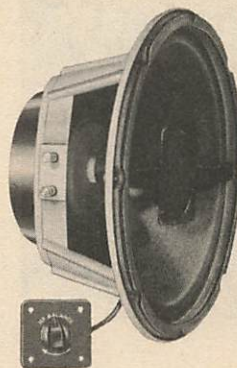
AS-173 SPECIFICATIONS — Impedance: 8 ohms. Power rating: 25 watts. Frequency response: 35-15,000 Hz. Cone resonance: 40 Hz. Voice coil sizes: 1½" and 1".



12" Three-Way Coaxial Speaker...Handles up to 20 W. True coaxial design with woofer, mid-range cone and special design horn tweeter. Electrical & mechanical crossovers. High frequency level control. 1-yr. guarantee.

Model AS-163, 12 lbs., mailable 34.95
Pair (AS-163-2), 32 lbs., mailable . . 66.00

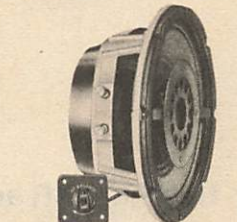
AS-163 SPECIFICATIONS — Impedance: 8 ohms. Frequency response: 40-15,000 Hz. Cone resonance: 60 Hz. Magnet weights: 13 oz., 1 oz. Voice coil sizes: 1½" and 1".



12" Two-Way Coaxial Speaker...Separate woofer & tweeter with capacitive crossover for up to 15 W. High frequency level control. 1-yr. guarantee.

Model AS-153, 10 lbs., mailable 24.95
Pair (AS-153-2), 28 lbs., mailable . . 46.00

AS-153 SPECIFICATIONS — Impedance: 8 ohms. Frequency response: 50-15,000 Hz. Cone resonance: 60 Hz. Magnet weights: 10 oz., 1.47 oz. Voice coil sizes: 1" and ¾".



8" Two-Way Coaxial Speaker...50-14,000 Hz response from separate woofer & tweeter. Handles up to 12 W. Separate high frequency level control. 1-yr. guarantee.

Model AS-133, 6 lbs., mailable 19.95
Pair (AS-133-2), 18 lbs., mailable . . 38.00

AS-133 SPECIFICATIONS — Impedance: 8 ohms. Cone resonance: 70 Hz. Magnet weights: 10 oz., 0.68 oz. Voice coil sizes: 1" and ¾".



8" Dual Cone Speaker...Only 3½" deep — ideal for in-wall mounting or where space is tight. 50-12,000 Hz response. Handles up to 12 watts. 1-yr. guarantee. Ideal for playroom or den system.

Model AS-123, 5 lbs., mailable 11.95
Pair (AS-123-2), 15 lbs., mailable . . 22.00

AS-123 SPECIFICATIONS — Impedance: 8 ohms. Cone resonance: 70 Hz. Magnet weight: 10 oz. Voice coil size: 1".

Heathkit Shortwave Receivers are long on quality and value

129⁹⁵
NO MONEY DOWN



6-band receiver that goes where you go

- AM or SSB/CW reception
- Rechargeable battery operation

Modular circuit board design makes the GR-78 an enjoyable nine evening project. A favorite of discriminating SWLs, hams needing a reliable standby receiver, and campers, hunters, travelers and vacationers wanting a ready-to-go portable. 190 kHz to 30 MHz coverage in 6 bands; AM or SSB/CW reception; AVC; switched ANL; signal meter; external antenna connection; receiver/standby switch; muting connection; headphone jack; 500 kHz crystal calibrator; carry-handle; whip antenna. Runs on nickel-cadmium battery with built-in charger.

Kit GR-78, 14 lbs., mailable 129.95

GR-78 SPECIFICATIONS — Frequency coverage: Band A, 190 kHz-410 kHz; Band B, 550 kHz-1300 kHz; Band C, 1.3 MHz-3.0 MHz; Band D, 3.0 MHz-7.5 MHz; Band E, 7.5 MHz-18.0 MHz; Band F, 18.0 MHz-30 MHz. Meter: Indicates relative signal strength. Intermediate frequency: Band A thru E: 455 kHz; Band F (Double conversion): 1st IF, 4,034 MHz; 2nd IF, 455 kHz. Sensitivity*: 0.2 uV — 10 uV depending on band and portion

thereof. Selectivity: 7.5 kHz \pm 1 @ 6 dB down. Audio output: 300 milliwatts @ 10% distortion. Battery: 9.6 VDC 500 mAh Nickel-Cadmium rechargeable. Battery charge rate: The battery is always being charged at 20 to 25 mA when the built-in trickle charging circuit is connected to an external power source with the Receiver turned off. A full battery charge will be maintained if the Receiver is connected to an external power source and used an average of 5 hours daily at a normal listening level. Overall size: 6 1/4" H x 11 1/2" W x 9" D. *Signal level for 10 dB signal + noise/noise ratio.

The ultimate Heathkit SWL Receiver for those who demand the best

Covers 9 switch-selected shortwave bands between 3.5 and 21.8 MHz; receives SSB, CW, and AM with professional performance. A 5 kHz AM crystal filter is supplied with the kit, with separate SSB and CW crystal filters available as optional accessories. Outstanding stability, selectivity and sensitivity are the result of advanced-design all solid-state circuitry. Preamsembled and aligned Heath LMO for good linearity and highly stable tuning. An IC crystal calibrator provides markers every 100 kHz or 25 kHz. Other features are a transistor-regulated power supply; an RF attenuator; and virtually backlash-free dial tuning. An 11 megohm input VTVM, an 8-ohm speaker or headphones, and an antenna are all you need for alignment.

Kit SB-313, 22 lbs., mailable 339.95

Kit SB-600, 8-ohm, 6"x9" speaker & cab., 7 lbs., mailable 19.95

SBA-301-2, deluxe CW Filter, 1 lb., mailable 22.95

SBA-310-2, deluxe SSB Filter, 1 lb., mailable 39.95

SB-313 SPECIFICATIONS — Frequency Range (MHz): 3.5 to 4.0, 5.7 to 6.2, 7.0 to 7.5, 9.5 to 10.0, 11.5 to 12.0, 14.0 to 14.5, 15.0 to 15.5, 17.5 to 18.0, 21.3 to 21.8. Intermediate Frequency (IF): 3.395 MHz. Frequency Stability: Less than 100 Hz per hour after 10 minutes warmup under normal ambient conditions. Less than 100 Hz drift for \pm 10% line voltage variation. Sensitivity: Less than 0.5 microvolt for 10 dB signal-plus-noise to noise ratio for SSB operation. Selectivity: AM: 5.0 kHz at 6 dB down, 15 kHz maximum at 60 dB down (crystal filter supplied). SSB: 2.1 kHz 6 dB down, 5.0 kHz maximum at 60 dB



339⁹⁵
NO MONEY DOWN

down (crystal filter available as an accessory). CW: 400 Hz at 6 dB down, 2.0 kHz maximum at 60 dB down (crystal filter available as an accessory). Image Rejection: 60 dB or better. IF Rejection: 3.395: Greater than 55 dB. 8.595: Greater than 40 dB. Spurious Response: All below 1 microvolt equivalent signal input except at 10.0 MHz and 15.375 MHz. Dial Accuracy: Electrical: Within 400 Hz after calibration at nearest 100 kHz point. Visual: Within 200 Hz. Calibration: Every 100 kHz or 25 kHz. Dial Backlash: No more than 50 Hz. Antenna Input Impedance: 50 Ω nominal unbalanced. Audio Output Impedance: Matching Speaker: 8 Ω . Matching Headphones: Low impedance. Audio Output Power: 4 watts at less than 10% distortion. Muting: Open external ground at Mute socket. Power Requirements: 105 to 130 or 210 to 260 volts AC, 40 watts max. Overall Dimensions: 7 1/8" H x 12 1/4" W x 14" D.

4-Band shortwave just right for the novice

Ideal beginner's kit... most components mount on single circuit board for easy check-by-step assembly in about five evenings. Tunes foreign broadcasts from around the globe — weather reports — ships at sea — amateur and CB bands — plus local AM entertainment. Features slide-rule tuning; log-scale; bandspread tuning for separating adjacent stations; variable BFO for clear code reception; built-in speaker; front panel jack for headphone or external speaker; switched automatic noise limiting; signal strength meter; built-in AM rod antenna plus connection for SWL antenna.

Kit SW-717, 10 lbs., mailable 59.95

SW-717 SPECIFICATIONS — Frequency Coverage: Band A — 550 kHz — 1500 kHz. Band B — 1.5—4 MHz. Band C — 4—10 MHz. Band D — 10—30 MHz. Meter: Indicates relative signal strength. Headphone Jack: Accepts low impedance headphones or external speaker. Loudspeaker: Built-in. Controls: Volume with on/off switch; Mode (AM, Standby & CW);



59⁹⁵
NO MONEY DOWN



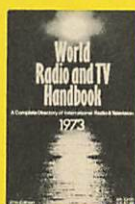
BFO; Main Tuning; Bandspread Tuning; ANL on/off. Transistor Complement: 40673, Mixer & RF amplifier; 2N3393, Audio preamplifier; 2N5232A, IF amplifier, AGC amplifier; 2N5308, IF amplifier; MPF105, oscillator; S2090, final audio amplifier; S2091, final audio amplifier; X29A829, Audio driver. Power Supply: Transformer operated; full-wave bridge rectifier. Voltage Requirements: 120/240 VAC, 50-60 Hz, 8 W. Dimensions: 5 1/2" H x 14 1/2" W x 8" D.

Handy accessories for your Heathkit SWL gear

Superex headphones

... ideal for all Heath SWL receivers except GR-43A. Dual coils; wide headband; 2 k ohm impedance.

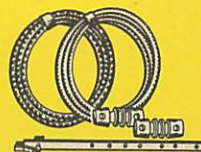
GD-396, 1 lb., mailable 4.50



SWL guide

1973 edition . . . lists worldwide SW, FM, TV stations, call signs, frequencies & addresses.

GDP-315, 2 lbs., mailable 6.95



Long-wire antenna

... includes a 75' long-wire antenna with 30' of lead-in all insulators & hardware.

GRA-72, 2 lbs., mailable 2.95

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

Build your own Heathkit marine electronics



Heathkit Dual-Range Visible/Audible Depth Sounder

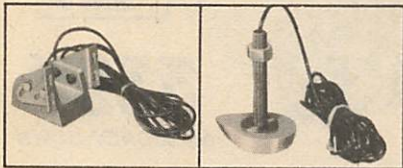
- Pre-select depth alarm
- Super-Bright flash

It's the bold new look in nautical instrumentation. And the Heathkit MI-1031 Visible/Audible Depth Sounder sets a new precedent in kit-form value — with accuracy, convenience and safety features never before available at such a low price. The Super Bright flasher-type readout provides the big picture of what's below — depth to bottom, terrain and vegetation — shows schools and individual fish, submerged floating objects. For extra security afloat, high-pitch beep alerts you to shallow waters or objects above any pre-selected depth from 5-240 ft. Just set the front-panel alarm control and forget it. The two switch-selected ranges make reading depths to 240 ft. easier and permit far more accurate readings in waters 60 ft. or less.

The state-of-the-art design features all-transistor circuitry with electronically controlled silent-running motor and built-in fixed noise rejection circuit to eliminate ignition interference. Diode protection against accidental reversal of polarity when connecting to your ship's 12 VDC system. The marine-white water-resistant Cyclocac® cabinet has a glare-free black bezel and integrated sun shield that lets the Super Bright neon indicator light stand out even in bright sunlight. The gimbal mount and quick-disconnect power and transducer leads let you easily remove your depth sounder when your boat is not in use. The MI-1031 is available with transom mount for permanent installation on planing hulls, or thru-hull transducer for installation on displacement hulls (see below). Build this kit in just four evenings.

99⁹⁵

NO MONEY DOWN



Transom-mount transducer (left) is recommended for high-speed craft with planing hulls. Through-hull transducer (right) is ideal for permanent installation in larger boats with displacement hulls.



Kit MI-1031-1, sounder with thru-hull transducer & 15' cord, 9 lbs., mailable **99.95**

Kit MI-1031-2, sounder with transom transducer & 25' cord, 10 lbs., mailable **99.95**

MI-1031 SPECIFICATIONS — Range: 0-240' on hard bottom. Sounding: 60' range: rate 2400/min. or 40/sec. 240' range: rate 600/min. or 10/sec. Frequency on both ranges approx. 200 kHz. Accuracy: Within 2% of actual depth. Depth indication: Neon lamp flashes at zero and again at indicated depth from object. Transducer: Barium titanate ceramic element encased in watertight housing. Controls: RANGE, 0-60' or 0-240'; ALARM, adjustable from 5'-240' with on-off capability; SENSITIVITY, with on-off switch. Transistor & diode complement: 26 transistors, 10 diodes. Power requirements: 0-60' range, 225 mA @ 11-15 VDC; 0-240' range, 125 mA 11-15 VDC with one return pulse. Dimensions: 6½" H x 5¾" W x 7¼" D.



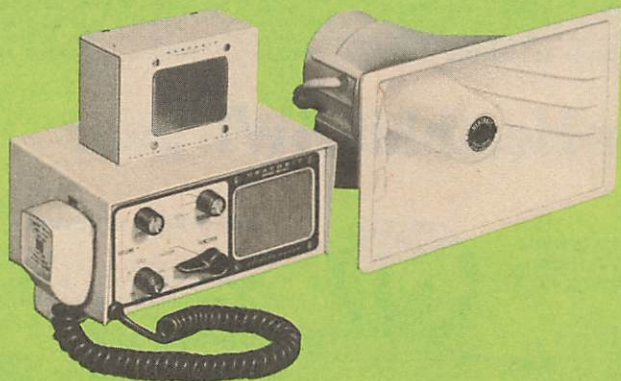
Heathkit "Economy" Sounder

- Reads depths to 240 ft.
- Easy assembly

This top-value sounder reads depths to 240 ft., displays underwater terrain, spots fish and other submerged objects. Circuitry includes electronic motor control, noise-rejection circuit, diode protection against polarity reversal, 12 VDC power requirement. SUPER BRIGHT neon light for visibility in direct sunlight. Quick-disconnect jacks and gimbal bracket. Includes 15' power cord. Measures 6½" H x 5¾" W x 7½" D.

Kit MI-1030-1, sounder with thru-hull transducer & 15' cord, 8 lbs., mailable **69.95**

Kit MI-1030-2, sounder with transom transducer & 25' cord, 9 lbs., mailable **69.95**



Heathkit Foghorn/Hailer... 89.95

Next summer, put yourself in command of one of the most versatile pieces of Heathkit Marine Gear you can have aboard. The MD-19A functions as a foghorn, hailer, boathorn and intercom...all in one system. Features powerful 55-watt amplifier; foghorn rate & duration controls; separate "listen" & "hail" gain controls; optional remote speaker for use as ship's intercom. Special coupling circuit gives good acoustical efficiency, reduces feedback & ignition interference. Easy-to-assemble kit includes low-profile weather-resistant deck horn, 20' speaker cable, gimbal mount. Styled in marine white with blue trim. Operates on your ship's 12 VDC power system, positive or negative ground. Order yours now and get a jump on next season.

Kit MD-19A, with horn speaker, 15 lbs., mailable . . **89.95**

Kit MDA-19-1, remote speaker, 2 lbs., mailable **9.95**

for the greatest boating values afloat today

139⁹⁵

NO MONEY DOWN



Heathkit Digital Depth Sounder

- Automatic dual range selection
- Red warning light alerts you to shoals of 10 ft. or less
- Bright numerical display tubes

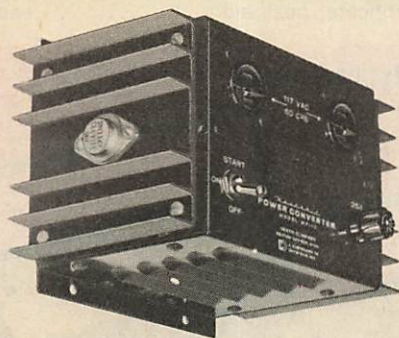
Chart a course for value and performance this season with the latest solid-state-of-the-art development in digital depth sounders. The MI-101 shows you the depth at a glance. Bright numerical display tubes and solid-state digital circuitry eliminate need to interpret dials or meter scales. Dual-range scale automatically switches to give depth from 2.5 to 19.9 ft. in increments of 0.1 ft., and from 20 to 199 ft. in increments of 1 ft. A red warning light alerts you to shoals of 10 ft. or less. A single knob gives you control of on-off, and light intensity to suit conditions either below decks or up on the bridge. Noise rejection is automatic, as is gain control for maximum sensitivity. 42 silicon transistors, seven TTL integrated circuits with regulated power supply maintain accuracy over a wide range of varying DC power supply voltages.

Since there are no discs or motors, the instrument is completely silent in use. Other features are a weatherproof Cyclocac® case with blue and white finish accented by grey tinted plastic window that turns midnight black when not in use; matching gimbal mounting bracket; optional through-hull transducer or high speed transom mount transducer; 15-ft. cable for through-hull installation, 25 ft. for transom mount. Kit goes together in about 9 hours.

Kit MI-101-1, with through-hull transducer, 8 lbs., mailable 139.95

Kit MI-101-2, with transom transducer, 9 lbs., mailable 139.95

MI-101-1 & -2 SPECIFICATIONS — Ranges: 2.5-19.9' and 20-199', automatically switched. Sounding frequency: 200 kHz. Sounding rate: Maximum of 11/sec on both ranges for a total of 22/sec. Normal rate of approx. 1/sec. Accuracy: ±2%, ±1 digit. Current drain: 300-500 mA. Power requirements: 10-17 VDC @ 500 mA. Display: 7 segment incandescent display tubes — 3 digit red warning indication for depths 10' or less. Controls: Display intensity with on-off switch. Transducer: Barium titanate ceramic element encased in watertight housing. Dimensions: 2 1/4" H x 6 5/8" W x 8 1/2" D (less gimbal hardware).



34⁹⁵

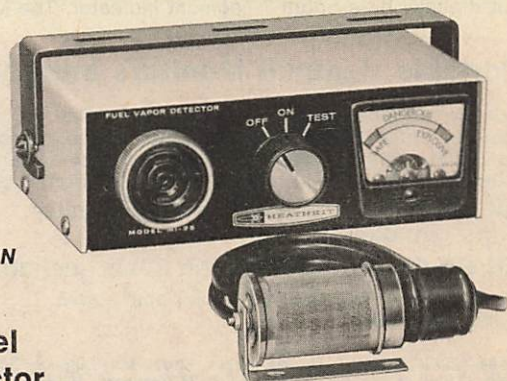
NO MONEY DOWN

Low-Cost Heathkit Power Inverter...

The Heathkit MP-10 Power Inverter converts your boat's 6 or 12 VDC electrical system to 117 VAC square wave with up to 175 watts continuous for operating electric razors, lamps and other small appliances. Not recommended for equipment requiring high starting current or sine wave AC.

Kit MP-10, 8 lbs., mailable 34.95

MP-10 SPECIFICATIONS — Power source: 6 or 12V storage battery. Power output: Nominal 117 V, 60 Hz AC; 12 V operation 175 W continuous, 240 W max; 6 V operation, 120 W continuous and max. Input current for continuous ratings: 6 V operation 25 A, 12 V operation, 16.5 A.



47⁹⁵

NO MONEY DOWN

Heathkit Fuel Vapor Detector...

Make your craft secure below with the Heathkit MI-25 Fuel Vapor Detector. This kit-form instrument gives a meter indication of safe-dangerous-explosive conditions... sounds an audible alarm when gasoline fumes are present. Fully transistorized circuit has fail-safe provision that triggers alarm when any component fails. Built-in relay circuits provided for control of bilge blower or additional warning devices.

Kit MI-25, 3 lbs., mailable 47.95

MI-25 SPECIFICATIONS — Voltage: 12 VDC, +10%. Current: 1.0 A nominal. Panel size: 2 1/4" H x 5 1/8" W. Depth: 5". Detector head size: 1 1/2" round x 2 1/2" long. Length of interconnecting cable supplied: 15'. Color: Marine white & black. Material: Aluminum. Temp. range: -30°C. Audio alarm: 2500 Hz.

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

Build and Save with Heathkit Emergency Monitors

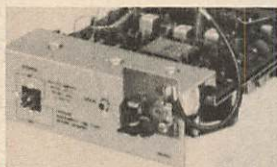


GR-110 SPECIFICATIONS — Frequency Range: 146 to 174 MHz. Scanning Range: Any 9 MHz segment of frequency range. Sensitivity: Less than 1 μ V for 20 dB of quieting. Usable Sensitivity: Less than 0.5 μ V. Adjacent Channel Rejection: -40 dB (\pm 30 kHz spacing). Intermediate Frequency (IF): 10.7 MHz, crystal filter. IF Rejection: Greater than -80 dB. Image Rejection: Greater than -40 dB. Modulation Acceptance: 7.5 kHz maximum. Antenna Input Impedance: 50 ohms. Scan Rate: Approximately 17 channels per second. Audio Output: 2 watts into a 4-ohm load, with less than 10% distortion. Solid-State Devices: 29 transistors, 8 integrated circuits, 17 diodes. Readout Device: 3015A, 7-segment indicator tube. Power Requirements: AC: 120 volts, 50/60 Hz; 13 watts. DC: 13.8 volts. Squelched .275 amperes. Unsquelched with full audio, 0.8 amperes. Dimensions: 3" H x 8 $\frac{1}{4}$ " W x 9 $\frac{3}{4}$ " D.

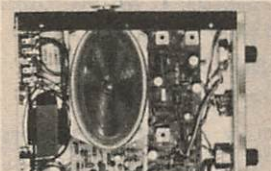
119⁹⁵
NO MONEY DOWN

Heathkit Band-Scanning VHF Monitor

The Heathkit GR-110 seeks and locks-in on ham, radio, fire, police, marine, weather, 2-way commercial radio, mobile telephone calls. The eight-channel crystal-controlled, VHF receiver tunes any selected 9 MHz segment of the 146 through 174 MHz band of frequencies. You can choose up to eight separate crystals to cover the active VHF frequencies used in your locality (check state and local laws regarding use of monitors in vehicles in your area). In the manual scanning mode, you depress the "manual" switch to step to any channel 0 through 7, which is read out digitally by a bright 7-segment indicator. The Monitor then stays



Crystal OSC/Mixer Signal Source simplifies alignment.



Modular circuit-board design simplifies assembly.

locked to that frequency until you step up to another, or go to automatic scan. In the automatic mode, the Monitor scans rapidly through all eight channels and locks on to the first one that starts a transmission. It stays locked on that channel as long as the transmission continues. After the transmission stops, the monitor waits four seconds and then resumes scanning. A priority channel "0" takes precedence over all other channels and the Monitor will return to "0" whenever a station is transmitting on that frequency. Front panel push-buttons let you lock-out any channels you desire. The readout can be wired to display a channel number only when the Monitor locks on a transmitted signal, or to continuously display each channel number in sequence while scanning. Line cords and plugs are provided for 120 VAC and 12 VDC vehicle or boat battery. A gimbal bracket is also supplied for vehicle or boat mounting. Other features are a built in speaker plus rear panel jack for connecting an external 4-ohm speaker; rear panel antenna jack; front panel controls for on/off, volume, squelch, manual/automatic scan switches. Manual gives complete instructions on alignment procedure and how to order crystals.

Kit GR-110, 9 lbs., mailable **119.95**
GRA-110-1, Crystal Certificate, postpaid each **4.95**

Portable Heathkit Monitors bring you fire, weather, police and aircraft calls

Tune in the local action wherever you go. Both of these fine monitors feature vernier tuning, single channel crystal (not supplied), squelch, solid-state battery operation, carrying handle/stand, whip antenna, external antenna jack, rugged brown leatherette case.

Kit GR-88, Fire, Weather, Police Monitor,
5 lbs., mailable **49.95**

Kit GR-98, Aircraft Monitor, 5 lbs., mailable **49.95**

Kit GRA-88-1, AC power supply for both above,
2 lbs., mailable **8.50**

GR-88 SPECIFICATIONS — Tuning range: 152-174 MHz. Antenna input: 50-75 ohms. Sensitivity: 2.0 μ V or less for 20 dB quieting. IF frequency: 10.7 MHz. IF selectivity: \pm 40 kHz @ 6 dB down. Image rejection: 40 dB or greater. IF rejection 80 dB or greater. Audio output: 250 mW at less than 10% distortion. Speaker: 3" round, 24 ohms, permanent magnet. Transistor complement-tuner: (2) 2SC784 and (1) SE-5006. Transistor complement-IF audio: (5) 2N2369, (4) 2N3393, (1) X29A829, (1) 2N2430, (1) 2N2431, (1) 40481. Diode complement: (2) 1N191 and (2) 1N4646. Batteries: Six 1.5 V "C" cells, not supplied. Dimensions: 7 $\frac{1}{2}$ " H x 8 $\frac{3}{4}$ " W x 3 $\frac{1}{2}$ " D.

GR-98 SPECIFICATIONS — Tuning range: 108-136 MHz. Antenna input: 50 to 75 ohms. Sensitivity: 1.5 μ V or less for 10 dB signal-to-noise plus noise ratio @ 1000 Hz 30% modulation. IF frequency: 10.7 MHz. IF selectivity: 40 kHz @ 6 dB down; 100 kHz @ 30 dB down. Image rejection: 40 dB or greater. IF rejection: 80 dB or greater. Audio output: 250 mW at less than 10% distortion. Speakers: 3" round, 24 ohm, permanent magnet. Transistor complement-tuner: (2) 2SC784 and (1) SE-5006. Transistor complement-IF & audio: (4) 2N2369, (3) 2N3393, (2) X29A829, (1) MPF-105, (1) 2N2430, (1) 2N2431 and (1) 40481. Diode complement: (2) 1N191, (1) 1N4646 and (1) S-160. Batteries: Six 1.5 V size "C" cells (not included). Dimensions: 7 $\frac{1}{2}$ " H x 8 $\frac{3}{4}$ " W x 3 $\frac{1}{2}$ " D.



49⁹⁵

NO MONEY DOWN

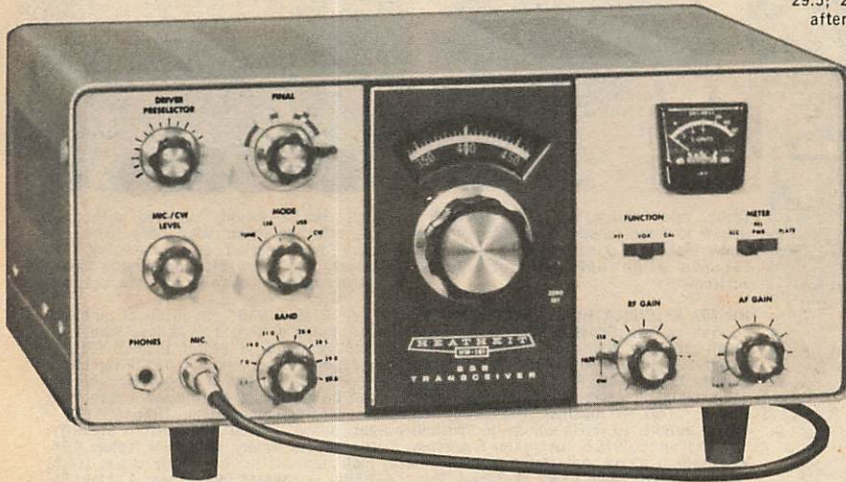
Your best buy-Heathkit amateur transceivers

The 5-band Heathkit HW-101 — more SSB performance for less

259⁹⁵
NO MONEY DOWN

Direct descendant of the widely acclaimed Heathkit HW-100, the "101" brings you even greater performance...with improved receiver circuitry & dial drive, new front-panel SSB/CW filter selection, and superior overall performance specifications. Check them yourself, then order your HW-101.

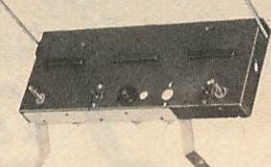
- Kit HW-101, 23 lbs., mailable **259.95**
- Kit HP-23B, AC power supply, 19 lbs., mailable **51.95**
- Kit HP-13B, DC power supply, 8 lbs., mailable **69.95**
- SBA-301-2, 400 Hz crystal filter, 1 lb., mailable **22.95**
- SBA-100-1, mobile mount, 6 lbs., mailable **15.95**
- Kit HS-24, mobile speaker, 4 lbs., mailable **9.50**



HW-101 SPECIFICATIONS — RECEIVER: Sensitivity: Less than 0.35 microvolt for 10 dB signal-plus-noise to noise ratio for SSB operation. SSB selectivity: 2.1 kHz minimum at 6 dB down; 7 kHz maximum at 60 dB down (3.395 MHz filter). CW selectivity: (with optional SBA-301-2 CW crystal filter installed); 400 Hz min. @ 6 dB down; 2.0 kHz max. @ 60 dB down. **Input:** Low impedance for unbalanced coaxial input. **Output impedance:** 8 ohm speaker, and high impedance headphone. **Power output:** 2 watts with less than 10% distortion. **Spurious response:** Image and IF rejection better than 50 dB. **TRANSMITTER:** DC power input. SSB (A3J emission), 180 watt PEP (normal voice, continuous duty cycle). CW (A1 emission) 170 watts (50% duty cycle). **RF power output:** 100 watts on 80 through 15 meters; 80 watts on 10 meters (50 ohm non-reactive load). **Output impedance:** 50 ohm to 75 ohm with less than 2:1 SWR. **Oscillator feed-through or mixer products:** 55 dB below rated output. **Harmonic radiation:** 45 dB below rated output. **Transmit-receive operation:** SSB: PTT or VOX. CW: Provided by operating VOX from a keyed tone, using grid-block keying. **CW sidetone:** Internally switched to speaker or headphone in CW mode. Approximately 1000 Hz tone. **Microphone input:** High impedance with a rating of -45 to -55 dB. **Carrier suppression:** 45 dB down from single-tone output. **Unwanted sideband suppression:** 45 dB down from single-tone output at 1000 Hz reference. **Third order distortion:** 30 dB down from two-tone output. **RF compression (TALC*):** 10 dB or greater at .1 mA final grid current. **GENERAL:** Frequency coverage: 3.5 to 4.0; 7.0 to 7.3; 14.0 to 14.5; 21.0 to 21.5; 28.0 to 28.5; 28.5 to 29.0; 29.0 to 29.5; 29.5 to 30.0 (megahertz). **Frequency stability:** Less than 100 hertz per hour after 45 minutes warmup from normal ambient conditions. Less than 100 Hz for ±10% line voltage variations. **Modes of operation:** Selectable upper or lower sideband (suppressed carrier) and CW. **Dial calibration:** 5 kHz. **Calibration:** 100 kHz crystal. **Audio frequency response:** 350 to 2450 Hz. **Transistors:** MPF105 FET—VFO; 2N3393—Voltage regulator. **Rear apron connections:** CW key jack; 8 ohm output; ALC input; Power and accessory plug; RF output; Spare. **Power requirements:** 700 to 850 volts at 250 mA with 1% maximum ripple; 300 volts at 150 mA with .05% maximum ripple;—115 volts at 10 mA with .5% maximum ripple; 12 volts AC/DC at 4.76 amps. **Cabinet dimensions:** 6³/₈" H x 14¹/₈" W x 13³/₈" D. *Triple Action Level Control



Optional mobile mount puts your rig on the road — in style.



Compact 80, 40 & 20-meter single banders for hams on the go...112.50

The Heathkit transceivers designed to get you on the air on a budget. Choice of 80, 40, or 20 meter models with full 200W PEP input SSB; choice of fixed or mobile operation with Heathkit power supplies (page 41); 2 kHz dial calibration, ALC input; S-meter; VOX & PTT. Order your favorite model, today.

- Kit HW-12A, 80-meter, 15 lbs., mailable .. **112.50**
- Kit HW-22A, 40-meter, 15 lbs., mailable .. **112.50**
- Kit HW-32A, 20-meter, 16 lbs., mailable .. **112.50**
- Kit HRA-10-1, plug in 100 kHz crystal calibrator, 1 lb., mailable **9.95**
- Kit HP-13B, DC Power Supply, 8 lbs. **69.95**
- Kit HP-23B, AC Power Supply, 19 lbs., mailable **51.95**

SPECIFICATIONS — RF input: 200 watts PEP. **Sideband generation:** Crystal lattice bandpass filter method. **Stability:** 200 Hz per hour after warm-up. **Carrier & unwanted sideband suppression:** 45 dB. **Frequency coverage:** HW-12A, 3.8 — 4.0 MHz; HW-22A, 7.2 — 7.3 MHz; HW-23A, 14.2 — 14.35 MHz. **Receiver sensitivity:** 1μV for 15 dB (S+N/N) ratio.



Mobile PTT Mike

Rugged, high impedance ceramic mike ideal for mobile work. Color matches SB & HW-Series gear. With cable, less connector. Excellent accessory for "Single-Band" gear.

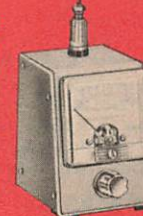
Kit GH-12A, 1 lb., mailable **9.95**



Mobile Speaker

Rugged 8 ohm mobile speaker in steel forest green cabinet. Gimballed mount included. 6¹/₂" W x 4³/₄" H x 2¹/₂" D. A "must" for mobile Single-Banders.

Kit HS-24, 4 lbs., mailable **9.50**



Relative Power Meter

Features 0.3V rms sensitivity at antenna; 100 kHz — 250 MHz frequency range; magnetic base. Requires no power...operates from radiated transmitter signal.

Kit PM-2, 2 lbs., mailable **12.95**

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

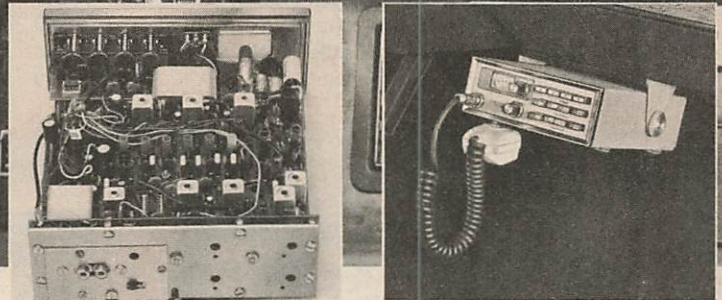
Heathkit...for the best

HW-202 shown below with Tone Burst Encoder installed.



179⁹⁵
less Encoder
NO MONEY
DOWN

Push-to-talk
mike included



Clean, open design makes the HW-202 a dream to build (shown here with encoder board installed). Nine built-in adjustments let you align unit without special instruments.

Neat mobile mount, supplied with your kit, attaches under your car's dash. Remove two knurled screws, unplug two cables, and the radio and gimbal mount can be quickly removed for safe keeping.

HW-202 SPECIFICATIONS — RECEIVER — Sensitivity: 12 dB SINAD* (or 20 dB of quieting) at .5 μ v or less. Squelch threshold: 0.3 μ v or less. Audio output: 3 W at less than 10% total harmonic distortion (THD). Operating frequency stability: Better than \pm .0015%. Image rejection: Greater than 45 dB. Spurious rejection: Greater than 60 dB. IF rejection: Greater than 80 dB. First IF frequency: 10.7 MHz \pm 2 kHz. Second IF frequency: 455 kHz (adjustable). Receiver bandwidth: 22 kHz nominal. De-emphasis: -6 dB per octave from 300 to 3000 Hz nominal. Modulation acceptance: 7.5 kHz minimum. **TRANSMITTER —** Power output: 10 watts minimum. Spurious output: Below -45 dB from carrier. Stability: Better than \pm .0015%. Oscillator frequency: 6 MHz, approximately. Multiplier factor: X 24. Modulation: Phase, adjustable 0-7.5 kHz, with instantaneous limiting. Duty cycle: 100% with ∞ VSWR. High VSWR shutdown: None. **GENERAL —** Speaker impedance: 4 ohms. Operating frequency range: 143.9 to 148.3 MHz. Current consumption: Receiver (squelched): Less than 200 mA. Transmitter: Less than 2.2 amperes. Operating temperature range: -12° to 122° F (-25° to +50° C). Operating voltage range: 12.6 to 16.0 VDC (13.8 VDC nominal). Dimensions: 23/4" H x 8 1/4" W x 9 7/8" D.

*SINAD = $\frac{\text{Signal} + \text{noise} + \text{distortion}}{\text{Noise} + \text{distortion}}$



Heathkit VHF Wattmeter
*Tune-up tool for 2-meter gear —
built-in SWR bridge*
**50 to 160 MHz range — covers
commercial, aircraft and ham**

HM-2102 SPECIFICATIONS — Frequency range: 50 MHz to 160 MHz. Wattmeter accuracy: \pm 10% of full-scale reading.* Power capability: To 250 W. SWR sensitivity: less than 10 W. Impedance: 50 ohms nominal. SWR bridge: Continuous to 250 W. Connectors: UHF type SO-239. Dimensions: 5 1/4" W, 5 1/8" H and 6 1/2" D, assembled as one unit.
*Using a 50 Ω noninductive load.

The Heathkit HM-2102 VHF Wattmeter pays you for your kitbuilding time with an instrument that stands alone in this price range. It's an ideal accessory for your HW-202 2-Meter Transceiver and HA-202 2-Meter Amplifier. Lets you test transmitter output in power ranges of 1 to 25 watts and 10 to 250 watts \pm 10% of full scale. 50 ohm nominal impedance permits placement in the transmission line permanently with little or no loss. The built-in SWR bridge lets you tune your 2-meter or 6-meter antenna for proper match, and has a less than 10-watt sensitivity. The Heathkit HW-2102 gives you error-free tune-up capability for an unbelievably low price. Get one for your 2-meter rig.

Kit HM-2102, 4 lbs., mailable **29.95**



**Heathkit Regulated AC
Power Supply**

Styled to match the Heathkit HW-202-2 Meter Transceiver, the HWA-202-1 AC Supply makes for a great-looking base station. It produces 13.8 VDC at 2.2 amps and can be wired during kitbuilding for either 120 or

240 VAC, 50 or 60 Hz. The all solid-state circuitry uses an IC for regulation better than 1%, and is circuit-breaker protected against overload. The HWA-202-1 AC Supply goes together in an evening, includes grounded line cord and transceiver leads. There's no neater way to get a 2-meter rig off the road, and on the air.

Kit HWA-202-1, 7 lbs., mailable **29.95**



Heathkit Tone Burst Encoder

An integral option for your Heathkit HW-202 2-Meter Transceiver. The HWA-202-2 Tone Burst Encoder mounts behind a removable bezel on the front panel of the transceiver; provides four tone select buttons. Buttons can be preset for any desired tones between 1800 Hz and 2500 Hz, with individual burst duration also fully adjustable from 0.25 second to continuous. Frequency stability is \pm 1%, -30° to +50° C. The Encoder can be completely disengaged by placing all selector buttons in the off position. Build it and install it in a couple of hours. All components mount on one glass epoxy board for easier assembly.

Kit HWA-202-2, 1 lb., mailable **24.95**

2-Meter values on the road or in the shack

Heathkit 2-Meter Transceiver

All solid-state design can be aligned without instruments
36-channel capability — pushbutton selection
of 6 transmit and 6 receive crystals

10-Watts Minimum Output — designed to operate into
even an infinite VSWR without failure

Optional Tone Burst Encoder — mounts inside, gives
front-panel selection of four presettable tones

The Heathkit HW-202 compares with the best wired amateur 2M/FM rigs you can buy. Plus it has: 36-channel capability via independent selection of 6 transmit and 6 receive crystals. Solid-state circuitry with complete built-in alignment procedures using only the manual and the front-panel meter allow operation over a 1 MHz segment from 143.9 to 148.3 MHz. Removable front-panel bezel permits installation of the Heathkit HWA-202-2 Tone Burst Encoder. Operational stability over a wide -30° to $+50^{\circ}$ C range. Quality components throughout, with all glass-epoxy boards for ultimate reliability and trouble-free kit assembly.

Ten to 15 watts transmission into an infinite VSWR — indefinitely, with no failure! The HW-202 needs no automatic shut-down — it continues to generate a signal regardless of antenna condition. This important design consideration can save a life in an emergency situation where a mobile antenna has been damaged. Transmitter deviation is fully adjustable from 0 to 7.5 kHz, with instantaneous deviation limiting.

Harmonic output is greater than -45 dB from carrier. The push-to-talk ceramic microphone supplied has an audio response tailored to the HW-202. Plug it in and you have one of the clearest audio transmissions on 2-meters.

Excellent reception — even under the most rigorous mobile conditions. 0.5 μ V or less produces 12 dB Sinad, or 15 dB quieting. Output at the built-in speaker is typically 2 watts at less than 3% total harmonic distortion. The receiver circuitry utilizes diode-protected dual-gate MOSFETS in the front end; an IC IF that completely limits with less than a 10 μ V signal; dual conversion, 10.7 MHz and 455 kHz via a 4-pole monolithic 10.7 MHz crystal filter. All this gives you excellent overload and adjacent channel interference rejection, excellent impulse noise rejection and a built-in hash filter. Image response is -55 dB or better. Spurious response is -75 dB or better. Now that you've read this far, take another look at that price.

The Heathkit HW-202 comes with two crystals that are used in initial set-up and alignment, and give you simplex operation on 146.94. The kit includes microphone, quick-connecting cable for 12-volt hook-up, heavy duty alligator clips for use with a temporary battery, antenna coax jack, gimbal bracket, and a unique mobile mount that lets you remove the radio from the car by simply unscrewing two thumbscrews. Both the mobile mount and quick-release connections represent the best theft protection you can buy, since they make it easy to get your rig from the car and into the trunk where it can be locked out of sight.

Great new 2-meter accessories — specially designed for your HW-202, make it one of the most versatile communications systems you can own. If an audible tone is your key to the repeaters, the HWA-202-1 AC Power Supply. Need some help for fringe-area work? The HA-202 2-Meter Amplifier puts out 40 watts for 10 watts in, and externally it's a perfect mate for your HW-202. There are two Heathkit 2-Meter antennas to choose from, too. The HWA-202-3 is a $\frac{5}{8}$ -wave, 3 dB gain mobile whip. The HWA-202-4 is the same thing in fixed-station ground plane form.

The repeaters are waiting — there are probably several open repeaters in your area now. So here's an economical Heathkit rig to get you in on the activity — with all the mobile portability, fixed-station versatility and all-around high performance you want.

Kit HW-202, 11 lbs., mailable **179.95**



Heathkit Mobile 2-Meter Antenna

Popular rear deck whip includes clip for attaching to trunk lid edge to eliminate drilling. $\frac{5}{8}$ -wave design gives 3-dB gain over a $\frac{1}{4}$ -wave vertical. Kit includes 17 feet of coax cable and antenna adjustment instructions to assure proper tuning.

Kit HWA-202-3, 2 lbs., mailable **17.95**



Heathkit Fixed-Station 2-Meter Antenna

Mast mounting $\frac{5}{8}$ -wave vertical gives 3 dB gain over a $\frac{1}{4}$ -wave vertical. Comes with mounting clamps and antenna adjustment instructions for perfect alignment. (Coax not included).

Kit HWA-202-4, 4 lbs., mailable .. **15.95**

Heathkit 2-Meter Amp for clear copy on the fringe



69⁹⁵

NO MONEY DOWN

HA-202 SPECIFICATIONS — Frequency range: 143-149 MHz. Power output: 20W @ 5 W in, 30W @ 7.5W in, 40W @ 10 W in, 50W @ 15W in. Power input (rf drive): 5 to 15W. Input/output impedance: 50 ohms, nominal. Input VSWR: 1.5:1 max. Load VSWR: 3:1 max. Power supply requirements: 12 to 16 VDC, 7 amps max. Operating temperature range: -30° F. to $+140^{\circ}$ F. Dimensions: 3" H x 4 $\frac{1}{4}$ " W x 5 $\frac{1}{2}$ " D.

40 watts nominal out for 10 watts in — requires only 12 VDC supply

Perfect match for the HW-202 Transceiver — also gives fully automatic operation with any 2-meter exciter delivering 5-15 watts drive

Solid-state design — all components mount on single board for fast, easy assembly

If you're regularly working from a fringe area, the new Heathkit HA-202 2-Meter Amplifier can boost your mobile output to 40 watts (nominal), while pulling a maximum of 7 amps from your car's 12-volt battery. You can mount the compact HA-202 anywhere it's convenient — in the trunk or under dashboard. Use it with your HW-202 2-Meter Transceiver, or with any 2-meter exciter delivering 5-15 watts drive.

Fully automatic operation — An internal antenna changeover relay and sensing circuitry provide automatic transmit-receive switching. The all solid-state design features rugged, emitter-ballasted transistors, combined with a highly efficient heat sink. This permits the HA-202 to withstand high VSWR loads, yet remain cool and continue to transmit, without the need for complex sensing circuits. Tuned input/output circuits provide a low spurious content yet allow coverage of any 1.5 MHz segment of the 2-meter band without readjustment.

Easy, 4-hour assembly — All components mount on one printed circuit board. Then you align your HA-202 with either a VOM or VTVM. The manual shows you how, every step of the way. Installation is even faster. Kit includes transceiver connecting cable, antenna connector. The HA-202 is designed for operation from a 12 VDC system. Additional power supplies are not required. Order yours for your mobile 2-meter rig and boom out of the fringe.

Kit HA-202, 4 lbs., mailable **69.95**

Heathkit Ham Stations represent



A) Heathkit Digital Frequency Display — only 179.95

Counts the three different frequencies produced in your receiver, then computes and displays operational frequency to within 100 Hz accuracy. Six bright digital readout tubes show you exactly where you are as you tune across the 80 through 10 meter bands. Reads kHz to five places, plus tenths of a kHz. No bandswitching necessary. Designed to operate with SB-300/301/303 Receivers; SB-100/101/102 Transceivers; and HW-100/101 Transceivers. With transceivers the counter calculates and displays both transmitted and received frequencies.

Kit SB-650, 10 lbs., mailable 179.95

SB-650 SPECIFICATIONS — Frequency range: 3-40 MHz (80-10 meters). Frequency display: 6 display tubes (kHz to 5 places, plus tenths of kHz). Maximum viewing distance: 30 ft. Maximum input signal: 5V rms. Accuracy: 100 Hz \pm 1 count after 20 min. warmup. Compute time: 160 msec. Sensitivity: Adjustable. Input impedance: 2 k ohm. Internally generated spurious frequencies: Less than 0.25 μ V equivalent signal level. Crystal (clock) frequency: 1 MHz. Crystal aging rate: Approx. 10 ppm/yr. Ambient crystal stability: Approx. 10 ppm from +10 to +65°C. Ambient operating temperature: 0° — +40°C. Ambient storage temperature: -55° to +80°C. Power source: 120/240 VAC, 50/60 Hz, 10 W. Dimensions: 3 1/2" H x 10" W x 10" D.

B) Heathkit SB-303 works the world at kit-form savings — just 319.95

The Heathkit SB-303 delivers all the signal seeking capability any ham could possibly want, plus a complement of performance features most other receivers can only offer as a lengthy (and costly) list of options. The "303" brings you USB, LSB, AM, CW and RTTY, 80-10 meters; 15 MHz WWV reception; solid-state instant on, 100 Hz stability in 10 minutes, and superior tracking. The exclusive Heath LMO with 1 kHz dial readout is factory-assembled and aligned for peak performance and incredibly smooth linear tuning. And an RF attenuator lets you adjust sensitivity for optimum signal handling.

Other standard features are complete SSB/CW transceive compatibility with the famous Heathkit "400" or "401"; three-position AGC (off, fast, slow); 25 kHz and 100 kHz crystal calibrator for spotting the new subbands; antenna & power connections for up to two VHF converters, with front panel switch eliminating need for changing cables; four spare sockets on rear panel for connecting a wide range of Heathkit station accessories.

Kit SB-303, 22 lbs., mailable 319.95
 SBA-301-1, optional 3.75 kHz AM crystal filter, 1 lb., mailable .. 21.95
 SBA-301-2, optional 400 Hz CW crystal filter, 1 lb., mailable ... 22.95

SB-303 SPECIFICATIONS — Frequency range (MHz): 3.5 to 4.0, 7.0 to 7.3, 14.0 to 14.5, for 0.5 audio output (single tone SSB). AGC Characteristics: Blocking — Greater than 3.0 15.0 to 15.3, 21.0 to 21.5, 28.0 to 30. Intermediate frequency (IF): 3.395 MHz. Frequency

stability: Less than 100 Hz drift/hr. after 10 min. warmup under normal ambient conditions. Less than 100 Hz drift for +10% line voltage variation. Frequency selection: Built-in Linear Master Oscillator. Modes of operation: SSB, CW, AM, RTTY. Sensitivity: Less than 0.25 μ V for 10 dB S+N/N for SSB operation. Overall gain: Less than 1.5 μ V input V CW/SSB/RTTY. Dynamic Range — Greater than 150 dB CW/SSB. RF Attenuator — Variable 0-40 dB nominal. Selectivity: SSB — 2.1 kHz @ 6 dB down, 5.0 kHz maximum at 60 dB down (crystal filter supplied). CW — 400 Hz at 6 dB down, 2.0 kHz maximum at 60 dB down (crystal filter available as an accessory). AM — 3.75 kHz at 6 dB down, 10 kHz maximum at 60 dB down (crystal filter available as an accessory). RTTY — 2.1 kHz at 6 dB down, 5.0 kHz maximum at 60 dB down (uses SSB crystal filter). Image rejection: 60 dB or better. IF rejection: 3.395 — greater than 55 dB. 8.595 — greater than 50 dB. Spurious response: All below 1 μ V equivalent signal input. Temperature ranges: 10°C-50°C ambient. Dial accuracy: Electrical — Within 400 Hz after calibration at nearest 100 kHz or 25 kHz point. Visual — Within 200 Hz. Calibration: Every 100 kHz or 25 kHz. Dial Accuracy: No more than 50 Hz. Antenna Input Impedance: 50 ohm nominal unbalanced. Audio response: SSB — 350-2450 Hz nominal at 6 dB. CW (with accessory filter) — 800-1200 Hz nominal at 6 dB. AM (with accessory filter) — 200-3500 Hz nominal at 6 dB. RTTY — 1840-3940 Hz nominal at 6 dB. Audio output impedance: Speaker — 8 ohm. Headphones — Low impedance. Audio Output Power: 4 W at less than 10% distortion. Muting: Open external ground at mute socket. Power Requirements: 120/240 VAC, 40 W max. Front Panel Controls: Main tuning dial; function switch; mode switch; band switch; AGC switch; AF gain/power on-off; RF gain/speaker disable; preselector; RF Attenuator. Circuit board controls: IF/Audio — Bias adjust; meter zero; meter full scale. Power Supply/BFO — +15 V adjust; 100 kHz adjust. RTTY — Wide shift; narrow shift; CW shift. Connections: Rear Panel — Phones; HF antenna; VHF antenna #1, VHF antenna #2; mute, anti-vox; speaker; HFO out; LMO out; BFO out; CW shift; 3 spare sockets; 3-wire line cord socket; accessory, VHF Converter, +15 VDC @ 25 mA, switched. RTTY Keyboard. Cabinet Dimensions: 6 5/8" H x 12 1/4" W x 13" D. Overall Dimensions (with knobs & feet installed): 7 3/4" H x 12 1/4" W x 14" D.

C) Heathkit SB-600 Station Speaker ... 19.95

Eight-ohm speaker in grey aluminum cabinet matches other Heathkit SB and HW gear. Audio response shaped from 300 to 3000 Hz for optimum voice reproduction. Enclosure has mounting for HP-23-series power supplies. Measures 6 1/2" H x 10" W x 10 1/2" D.

Kit SB-600, 7 lbs., mailable 19.95

D) Heathkit SB-401 SSB Transmitter ... 299.95

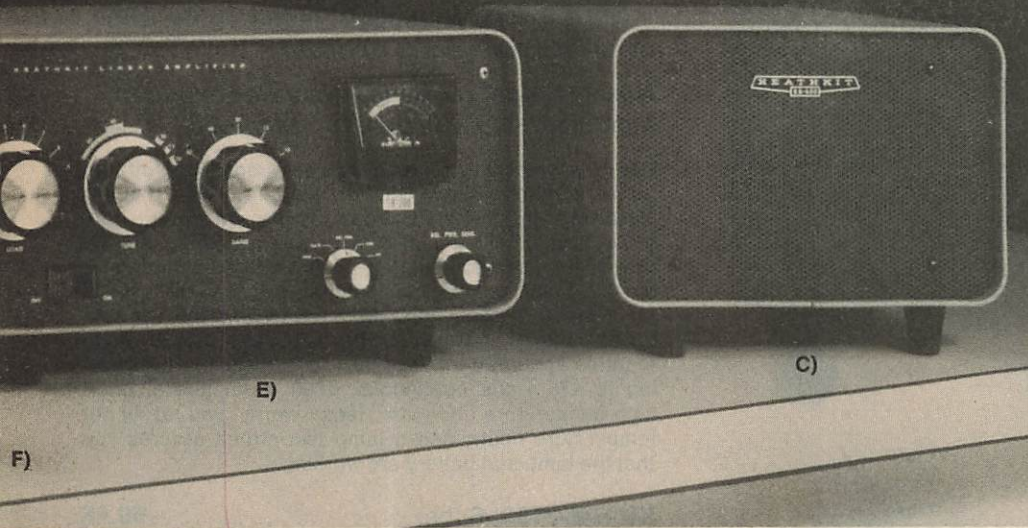
Covers 80-10 meters; USB, LSB & CW. Front panel switch selects transceive or independent operation of "401" and 300-series receiver. Usable with any receiver with optional SBA-401-1 crystal group. Built-in 120/240 VAC power supply.

Kit SB-401, 36 lbs., mailable 299.95

SBA-401-1, crystal pack, 1 lb., mailable 29.95

SB-401 SPECIFICATIONS — Emission: SSB (upper or lower sideband) and CW. Power input: 170 W CW, 180 W P.E.P. SSB. Power output: 100 W (80-15 meters), 80 W (10 meters). Output impedance: 50-75 ohm — less than 2:1 SWR. Frequency range: (MHz) 3.5 — 4.0; 7.0 — 7.5; 14.0 — 14.5; 21.0 — 21.5; 28.0 — 28.5; 28.5 — 29.0; 29.0 — 29.5; 29.5 — 30.0. Frequency stability: Less than 100 Hz/hr. after 20 min. warmup. Carrier suppression: 55 dB below peak output. Unwanted sideband suppression: 55 dB @ 1 kHz. Intermodulation distortion: 30 dB below peak output (two-tone test). Keying characteristics: Break-in CW provided by operating VOX from a keyed tone (Grid block keying). CW sidetone: 1000 Hz. ALC characteristics: 10 dB or greater @ 0.2 mA final grid current. Noise level: 40 dB below rated carrier. Visual dial accuracy: Within 200 Hz (all bands). Backlash: Less than 50 Hz. Oscillator feedthrough or mixer products: 55 dB below rated output (except 3910 kHz crossover which is 45 dB). Harmonic radiation: 35 dB below rated output. Audio input: High impedance microphone or phone patch. Audio frequency response: 350-2450 Hz \pm 3 dB. Power requirements: 80 W STBY, 260 W key down @ 120/240 VAC, 50/60 Hz. Dimensions: 6 5/8" H x 14 7/8" W x 13 3/4" D.

the best values on the air



E) Heathkit SB-200 1kW Amp...229.95

The Heathkit SB-200 1 kW Amplifier puts your SB-series gear in the "maxi" class. Provides 1200 W PEP SSB input, 1000 W CW. Built-in solid-state power supply with circuit breaker protection. Metering for SWR, grid current, plate current, relative power, plate voltage. ALC output. Shielded, fan-cooled amplifier compartment. Pre-tuned cathode input circuit for maximum efficiency and low distortion. The sturdy, yet lightweight construction of the SB-200 is achieved through the use of a heavy-gauge one-piece aluminum chassis that is partitioned for extra strength and isolation of components and circuitry. This clean, open layout makes assembly extra easy, too.

Kit SB-200, 50 lbs., available 229.95

SB-200 SPECIFICATIONS — Band coverage: 80, 40, 20, 15 & 10 meters. Maximum power input: 1200 W P.E.P. SSB, 1000 W CW. Driving power required: 100 W. Duty cycle: SSB, continuous voice modulation; CW 50% (key down time not to exceed 5 min.). Third order distortion: 30 dB or better at 1000 W P.E.P. Output impedance: 50-75 ohm unbalanced; variable pi-output circuit. SWR not to exceed 2:1. Input impedance: 52 ohm unbalanced; broadband pretuned input circuit requires no tuning. Meter functions: 0-100 mA grid current, 0-100 mA plate current, 0-1000 mA plate current, 0-1000 relative power, 1:1-3:1 SWR, 1500-3000 volts high voltage. Front panel controls: Load; Tune; Band; Relative Power Sensitivity; Meter Switch, Grid-Plate-Rel. Power-SWR-HV; and Power Switch, on/off. Tube complement: Two 572B/T-160-L (in parallel). Power requirements: 120 VAC @ 16 A (max.), 240 VAC @ 8 A (max.). Cabinet size: 6 5/8" H x 14 7/8" W x 13 3/8" D.

F) Ham desk mike...29.95

High impedance dynamic mike recommended for SB-series gear. Ideal SSB response. Grip-to-talk switch w/lock. Wiring diagram & cables included.

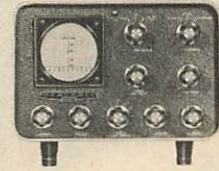
HDP-21A, 4 lbs., available 29.95



Heathkit Signal Monitor

Gives accurate display of transmitted AM, CW, SSB, RTTY signals. Shows signal envelope, AF and RF trapezoid patterns. Shows receiver IF envelope with IFs up to 6 MHz. Typically requires 0.5V IF signal for 1" display. Operates 160-6 meters, 15W - 1kW. Not recommended for use with solid-state receivers. Grey cabinet measures 6 5/8" H x 10" W x 11 5/8" D.

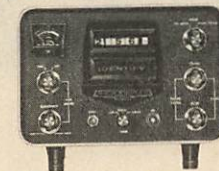
Kit SB-610, 14 lbs., available 89.95



Heathkit Spectrum Analyzer

Offers 10 and 50 kHz sweep widths for single signal analysis. Variable width to 500 kHz for IFs above 455 kHz, up to 100 kHz for 455 kHz IFs. Has log and linear displays, operates with common receiver IFs up to 6 MHz. Grey aluminum cabinet matches SB series, measures 6 5/8" H x 10" W x 10 1/2" D.

Kit SB-620, 15 lbs., available 129.95



Heathkit Station Console

Four control-monitor units in one. Has 24-hour clock with digital readout; SWR meter for proper matching; hybrid phone patch, and automatic resettable electronic 10-minute timer with red "Identify" light and buzzer. SB styled cabinet measures 6 5/8" H x 10" W x 11 5/8" D.

Kit SB-630, 10 lbs., available 89.95



Hybrid phone patch

Has individual receiver-to-line & line-to-receiver gain controls; VU meter; 30 dB isolation for positive VOX operation. Matches 3-16 ohm speakers & hi-Z or 600 ohm inputs; operates VOX or PTT. 2 5/8" H x 9 1/4" W x 3 5/8" D.

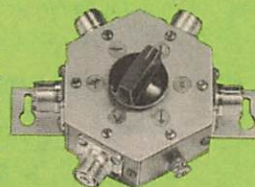
Kit HD-15, 3 lbs., available 24.95



"Cantenna" transmitter dummy load

Provides 50 ohm non-inductive load with SWR less than 1.5:1 for frequencies of 1.5-300 MHz. Coax fitting to transmitter line, & phone jack for relative power measurements. One gal. coolant oil capacity (oil not included) permits power up to 1 kW.

Kit HN-31, 3 lbs., available 10.95



New Heathkit Coaxial Switch

An ideal accessory for the Heathkit RF Load/Wattmeter (p. 40), the new HD-1234 Coaxial Switch lets you tune up off the air, then immediately switch to an antenna for normal transmission and reception. The HD-1234 is designed to switch one RF source to any one of several antennas or RF loads while grounding the unused outputs. Two Heathkit Coaxial Switches can be used to switch up to four antennas/loads to four different units (transceivers, transmitters, receivers, etc.) Standing wave ratio to 250 MHz, 1.1:1 max. Power capability is 1000 W (2000W PEP). Bracket provided for mounting on equipment cabinets, desk or wall.

Kit HD-1234, 2 lbs., available 9.95

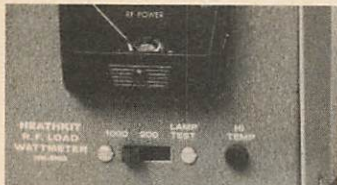
charg-a-kit — No money down on any kit — up to 2 years to pay — see page 42 for details.

Look to Heathkit ham gear

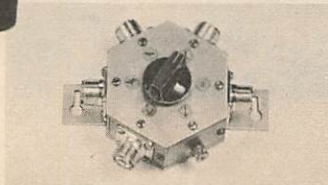


59⁹⁵

NO MONEY DOWN



Front panel switch serves as wattmeter range selector & temperature indicator lamp test switch.



Coaxial Switch accessory (see p. 39) lets you tune up off the air, then switch to an antenna for normal transmission.

Heathkit RF Load/Wattmeter

50-Ohm Non-Inductive Load — with less than 1.2:1 SWR for frequencies of 1.8 to 30 MHz

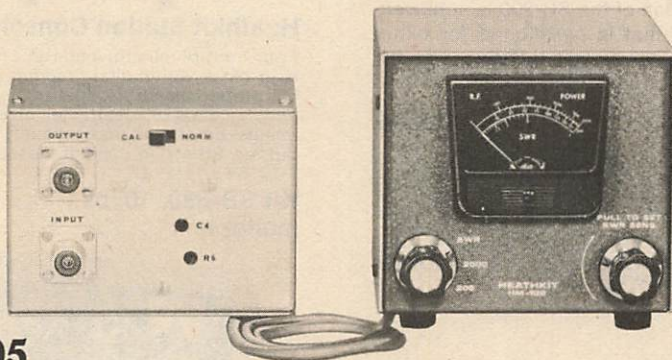
0-200 & 0-1000 Wattmeter Range with $\pm 10\%$ of full scale accuracy or better

No oil coolant required — features overload indicator lamp with built-in test circuit

Here's a great way to tune up your transmitter off-the-air . . . and help reduce QRM on the ham bands. The new Heathkit HM-2103 RF Load/Wattmeter gives you an accurate, reliable instrument for measuring the RF power output of your rig. The unit has a 50-ohm non-inductive load resistor and features less than 1.2:1 SWR for measuring frequencies from 1.8 to 30 MHz. The top-quality, built-in wattmeter with 0-200 and 0-1000 range features accuracy within $\pm 10\%$ of full scale. Power rating is 175 watts continuous, 1000 watts maximum. A high-temperature indicator lamp warns you of upper temperature limits, and a lamp test circuit assures you that the lamp and battery are working.

Kit HM-2103, 6 lbs. **59.95**

HM-2103 SPECIFICATIONS — Frequency Range: 1.8 to 30 MHz. Wattmeter Range: 0-200 and 0-1000. Wattmeter Accuracy: $\pm 10\%$ of full-scale reading. Power Rating: 175 watts continuous, 1000 watts maximum. Overload Indication: Thermal switch activated (requires 9 volt battery, NEDA #1604). SWR: Less than 1.2:1. Load Type: Noninductive. Load Impedance: 50 ohms nominal. Connectors: UHF type SO-239. Dimensions: 6" H x 5 $\frac{1}{2}$ " W x 13 $\frac{3}{4}$ " D.



29⁹⁵

NO MONEY DOWN

Heathkit Wattmeter/SWR Bridge

Two switch-selected ranges measure RF output from 10-200 and 100-2000 W...built-in SWR capability for proper tuneup, transmission line to antenna Z matching. Negligible loss for permanent insertion into 50 ohm line. Remote detector permits placement of meter in any convenient location. (6 ft. of cable supplied.)

Kit HM-102, 4 lbs., mailable **29.95**

HM-102 SPECIFICATIONS — Frequency range: 1.8 to 30 MHz. Wattmeter accuracy: $\pm 10\%$ of full-scale reading. Power capability: 10 to 2000 watts. Impedance: 50 ohm nominal. Connectors: UHF type SO-239. Dimensions: 5 $\frac{1}{4}$ " H x 5 $\frac{1}{4}$ " W x 6 $\frac{1}{2}$ " D.



369⁹⁵

NO MONEY DOWN

Heathkit 2kW Linear Amplifier

The SB-220 Linear Amplifier uses a pair of conservatively rated Eimac 3-500Z's in grounded grid circuitry to provide up to 2000 watts PEP SSB input. And it can be loaded to a full 1 kW input on both CW and RTTY. A broadband pre-tuned pi-input delivers maximum efficiency with low distortion over 80 thru 10 meters. Requires only 100 watts drive. Built-in solid-state power supply can be wired for either 120 or 240 VAC. Built-in circuit-breaker protection. Zener diode regulated operating bias reduces idling current for cooler running, extended tube life. A large quiet fan is another feature.

Kit SB-220, 69 lbs., mailable **369.95**

SB-220 SPECIFICATIONS — Band coverage: 80, 40, 20, 15 and 10 meters. Driving power: 100 W. Max. power input: SSB, 2000 W. PEP; CW, 1000 W.; RTTY, 1000 W. Duty cycle: SSB, Continuous voice modulation, CW, Continuous (maximum key-down 10 minutes), RTTY, 50% (maximum transit time 10 minutes). Third order distortion: -30 dB or better. Input impedance: 52 ohm unbalanced. Output impedance: 50 ohm unbalanced; SWR 2:1 or less. Front panel controls: Tune, Load, Band, Sensitivity Meter Switch, Power CW/Tune — SSB, Plate meter, Multi-meter (Grid mA, Relative Power and High Voltage). Rear panel: Line cord, circuit breakers (two 10 A), Antenna Relay (phono), ALC (phono), RF Input (SO-239), Ground post, RF Output (SO-239). Tubes: Two Eimac 3-500Z. Power required: 120 VAC, 50/60 Hz at 20 amp. max. 240 VAC, 50/60 cycles, at 10 amp. max. Cabinet size: 8 $\frac{1}{4}$ " H x 14 $\frac{7}{8}$ " W x 14 $\frac{1}{2}$ " D.

Heathkit performance specifications are guaranteed

for versatility and value



**The incomparable Heathkit SB-102
80-10 Meter Transceiver... 385.00**

Proud descendant of the SB-100 & 101, the Heathkit SB-102 gives you an all solid-state, factory-assembled and aligned Linear Master Oscillator. Result: a rig that stabilizes from a cold start in half the time and tracks more accurately than ever. Other features include front panel selection of built-in 2.1 kHz SSB or optional 400 Hz crystal filters; built-in CW side-tone; built-in VOX; full coverage of 10 meters; complete metering facilities. Find out why the Heathkit SB series has become the talk of the ham bands — order your SB-102 today.

- Kit SB-102, 24 lbs., mailable 385.00**
- Kit SB-600, 8 ohm desk speaker, matches SB-Series gear; provides mounting space for AC supply, 7 lbs., mailable 19.95**
- SBA-301-2, optional 400 Hz CW crystal filter, 1 lb., mailable ... 22.95**
- Kit HP-23B, AC supply, 19 lbs., mailable 51.95**
- Kit HP-13B, DC supply, 8 lbs., mailable 69.95**
- SBA-100-1, mobile mount, 6 lbs., mailable 15.95**

SB-102 SPECIFICATIONS — RECEIVER SECTION: Sensitivity: Better than 0.35 microvolt for 10 dB signal-plus-noise to noise ratio for SSB operation. **SSB selectivity:** 2.1 kHz minimum at 6 dB down, 5 kHz maximum at 60 dB down — 2:1 nominal shape factor — 6 to 60 dB. **CW Selectivity:** (With optional CW filter SBA-301-2 installed) 400 Hz minimum at 6 dB down, 2.0 kHz maximum at 60 dB down. **Input Impedance:** Low impedance for unbalanced coaxial input. **Output impedance:** Unbalanced 8 and 600 ohm speaker, and high impedance headphone. **Power output:** 2 watts with less than 10% distortion. **Spurious response:** Image and IF rejection better than 50 dB. Internal spurious signals

below equivalent antenna input of 1 microvolt. **TRANSMITTER SECTION:** DC power input: SSB 180 watts P.E.P. continuous voice. CW: 170 watts — 50% duty cycle. RF power output: 100 watts on 80 through 15 meters; 80 watts on 10 meters (50 ohm non-reactive load). **Output impedance:** 50 ohms to 75 ohms with less than 2:1 SWR. **Oscillator feed-through or mixer products:** 55 dB below rated output. **Harmonic radiation:** 45 dB below rated output. **Transmit-receive operation:** SSB: Push-to-talk or VOX. CW: Provided by operating VOX from a keyed tone, using grid-block keying. **CW side-tone:** Internally switched to speaker in CW mode. Approx. 1000 Hz tone. **Microphone input impedance:** High impedance. **Carrier suppression:** 50 dB down from single-tone output. **Unwanted sideband suppression:** 55 dB down from single-tone output at 1000 Hz reference. **Third order distortion:** 30 dB down from two-tone output. **Noise level:** At least 40 dB below single-tone carrier. **RF compression (TALC):** 10 dB or greater at .1 ma final grid current. **GENERAL: Frequency coverage:** 3.5 to 4.0; 7.0 to 7.3; 14.0 to 14.5; 21.0 to 21.5; 28.0 to 28.5; 28.5 to 29.0; 29.0 to 29.5; 29.5 to 30.0 (megahertz). **Frequency stability:** Less than 100 Hz per hour after 10 minutes warm-up from normal ambient conditions. Less than 100 Hz for +10% line voltage variations. **Modes of operation:** Selectable upper or lower sideband (suppressed carrier) and CW. **Visual dial accuracy—"Resettable":** Within 200 Hz on all bands. **Electrical dial accuracy:** Within 400 Hz after calibration at nearest 100 kHz point. **Dial mechanism backlash:** Less than 50 kHz. **Calibration:** 100 kHz crystal. **Audio frequency response:** 350 to 2450 Hz +3 dB. **Phone patch impedance:** 8 ohm receiver output to phone patch; high impedance phone patch input to transmitter. **Front panel controls:** Main (LMO) tuning dial; Driver tuning and Preslector; Final tuning; Final loading; Mic and CW Level Control; Mode switch; Band switch; Function switch; Freq. Control switch; Meter switch; RF gain control; SSB-CW filter switch; Audio Gain control. **Internal controls:** VOX Sensitivity; VOX Delay; Anti-Trip; Carrier Null (control and capacitor); Meter Zero control; CW Side-Tone Gain control; Relative Power Meter Adjust control; P.A.—Bias; Phone Vol (headphone volume); Neutralizing. **Rear Apron Connections:** CW Key jack; 8 ohm output; Spare A; Spare B; Phone patch input; ALC input; Power and accessory plug; RF output; Driver Output for SB-500. **Power requirements:** 700 to 800 volts at 250 ma; 300 volts at 150 ma; —115 volts at 10 ma; 12 volts at 4.76 amps. **Cabinet dimensions:** 14 7/8" W x 6 5/8" H x 13 3/4" D.



Heathkit Power Supplies are more reliable than ever

The new HP-23B Fixed SSB Supply

Our popular fixed station power supply now features a higher voltage rating on B + filter capacitors; improved filtering on bias voltage; fixed bias voltage, and heavier filament wires in the power cable. Now the popular Heathkit power supply is better than ever.

Kit HP-23B, AC power supply, 19 lbs., mailable 51.95

HP-23B SPECIFICATIONS — Power requirements: 120/240 VAC, 50-60 Hz, 350 watts maximum. **High voltage output:** 820 VDC no load; 700 VDC @ 250 mA ±10%. AC ripple: Less than 1% @ 250 mA. Duty cycle: 150 mA continuous to 300 mA @ 50%. **Low voltage output:** (High tap) 350 VDC, no load; 300 VDC @ 150 mA ±10%, (Low tap) 275 VDC, no load, 250 VDC @ 100 mA, +%. Less than .05% AC ripple @ 150 mA, continuous duty to 175 mA. **Fixed bias:** —130 VDC ±10%, no load; —100 VDC @ 20 mA. **Filament voltage:** 12.6 VAC @ 5.5 amps. **Dimensions:** 9" L x 4 3/4" W x 6 3/4" H.

The new HP-13B Mobile SSB Supply

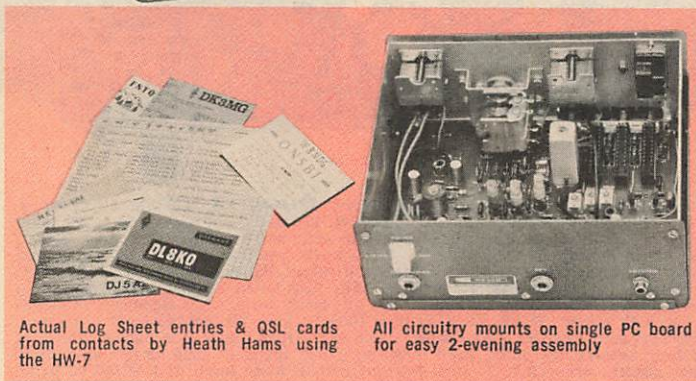
The solid-state circuit has been further refined for improved starting and power transistor protection. The bias voltage is now fixed and we've put heavier wires in the filament leads of the power cable. There's no better way for the ham who wants to get his station on the road.

Kit HP-13B, DC power supply, 8 lbs., mailable 69.95

HP-13B SPECIFICATIONS — Input voltage: 12 to 16 VDC (neg. ground only). **Input current:** 25 amp. max. full load. **High voltage output:** 800 VDC, no load; 750 volts DC @ 250 mA. AC ripple: less than 1% @ 250 mA. Duty cycle: Continuous up to 150 mA; 50% up to 300 mA. **Low voltage output:** (high tap) 310 VDC, no load; 300 VDC @ 150 mA. (low tap) 265 VDC, no load; 250 VDC @ 150 mA. AC ripple: Less than .05% @ 150 mA. Continuous duty cycle to 175 mA. **Fixed bias:** —130 VDC @ 20 mA. **Switching frequency:** 1500 Hz (approx.). **Ambient temperature:** —10° to 122°F. **Dimensions:** 7 3/4" W x 7 3/4" L x 2 3/8" D. All voltages referenced at 13 VDC.

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

Heathkit "mini-rig" works the world for 69⁹⁵



Actual Log Sheet entries & QSL cards from contacts by Heath Hams using the HW-7

All circuitry mounts on single PC board for easy 2-evening assembly

Heathkit 3-Band QRP CW Transceiver

- Readable signal with 1 μ V input or less
- Input powers of 3 watts on 40 meters, 2.5 watts on 20 meters, 2 watts on 15 meters

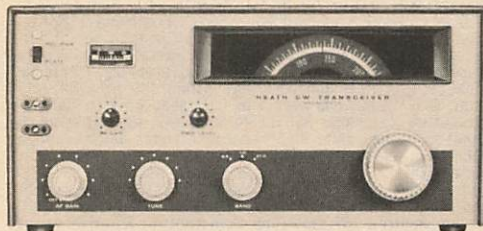
Experienced amateur, QRP fan, or novice, you'll appreciate the dependability, versatility and take-along portability of this rugged little performer. The reliable solid state transceiver circuitry featuring both built-in VFO and crystal transmit capabilities, makes the HW-7 ideally suited for novice use. The sensitive Direct Conversion receiver circuitry offers you a readable signal with 1 μ V input or less. Carefully designed transmitter circuitry provides input powers of 3 watts on 40 meters, 2.5 watts on 20 meters, and 2 watts on 15 meters.

Band changing and tune-up are a snap, with pushbutton band selection and single-control main tuning featuring 6 - 1 vernier drive with virtually backlash-free operation. Pushbutton crystal transmit provision is great for the novice or QRP roundtables. Built-in sidetone and a relative Power Meter are other top quality features. The HW-7 can be operated from the accessory Heathkit AC power supply, HWA-7-1 (below), an equivalent low impedance power supply, or 12V batteries. Order your Heathkit "mini-rig" today...and stay in touch with the world.

Kit HW-7, Transceiver, less batteries, 6 lbs., mailable 69.95

Kit HWA-7-1, low voltage power supply provides 13 VDC to power the HW-7 Transceiver from an AC power source. 120/240 VAC operation. 4 lbs., mailable 14.95

HW-7 SPECIFICATIONS — TRANSMITTER: RF Power Input: 3 watts on 40 meters. 2.5 watts on 20 meters. 2 watts on 15 meters. Frequency Control: 40 meter crystal, or built-in VFO on 40 meters. 20 meter crystal or built-in VFO on 20 meters. 15 meter crystal, or built-in VFO on 15 meters. Output Impedance: 50 Ω unbalanced. Sidetone: Built-in. Spurious and Harmonic Levels: At least 25 dB down. **RECEIVER:** Sensitivity: Less than 1 microvolt provides a readable signal. Selectivity: 1kHz at 6 dB down. Type of Reception: CW. Audio Output Impedance: 1000 Ω nominal. **GENERAL:** Frequency Coverage: 40 meters, 7.0 to 7.2 MHz. 20 meters, 14.0 to 14.2 MHz. 15 meters, 21.0 to 21.3 MHz. Frequency Stability: Less than 100 Hz drift after 10 minutes warmup. Power Required: 13 volts DC, 35 mA receive and 450 mA transmit. Dimensions: 4 1/4" H x 9 1/4" W x 8 1/2" D, including knobs and feet.



99⁹⁵
NO MONEY DOWN



39⁹⁵
NO MONEY DOWN

Heathkit 3-Band 50-90 Watt CW Transceiver

Operates on first 250 kHz of 80, 40 & 15 meter bands. Adjustable input; crystal control transmit; VFO receiver tuning; provision for external VFO.

Kit HW-16, 25 lbs., mailable 99.95

HW-16 SPECIFICATIONS — TRANSMITTER SECTION: RF power input: 50-90 W (adjustable.) Frequency control: 80-meter crystal or VFO on 80-meter band, 80 or 40-meter crystal, or VFO on 40-meter band. 40-meter crystal or VFO on 15-meter band. Keying: Grid-block. Break-in with automatic antenna switching and receiver muting. Output impedance: 50 ohm unbalanced, SWR less than 2:1. Sidetone: Neon lamp relaxation oscillator. **RECEIVER SECTION:** Sensitivity: Less than 1 μ V for 10 dB signal-plus-noise to noise ratio. Selectivity: 500 Hz at 6 dB down. Intermediate frequency: 3396 kHz. Antenna impedance: 50 ohm, unbalanced. External speaker impedance: 8 ohm. **GENERAL:** Frequency coverage: 3.5 to 3.75 MHz. 7.0 to 7.25 MHz. 21.0 to 21.25 MHz. Power: 120 VAC, 50-60 Hz. Dimensions: 6 1/2" H x 13 3/4" W x 11 1/2" D.

Heathkit Solid-State Electronic Keyer

Ideal companion to the HW-7 "Mini-Rig". Features 15-60 wpm with 10-20 slow-speed option; self-completing dashes; adjustable paddle "feel"; right or left hand and semi-automatic adaptability; variable dot-space ratio; "hold" for transmitter tuning; built-in sidetone, speaker, transformer-operated power supply. For use only with transmitters with grid-block keying circuits, negative 105V @ 35 ma max. 4 1/2" H x 3 3/4" W x 10 1/2" D.

Kit HD-10, 6 lbs., mailable 39.95

Ham starter group

Group includes 4 ARRL handbooks, HD-16 code practice oscillator, 3 code-teaching records.

HDP-22, all above, 6 lbs., mailable 18.95

HDP-32, records only, 3 lbs., mailable .. 9.50

HDP-42, books only, 2 lbs., mailable .. 2.50

Kit HD-16, osc. & key, 3 lbs., mailable 9.95

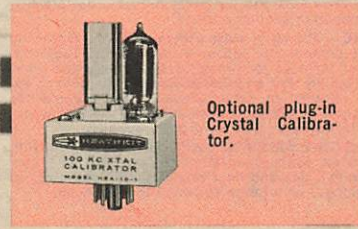
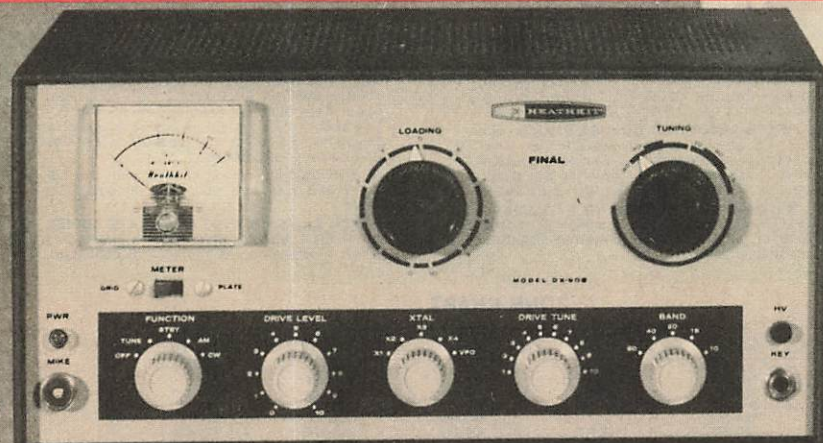


Code practice oscillator

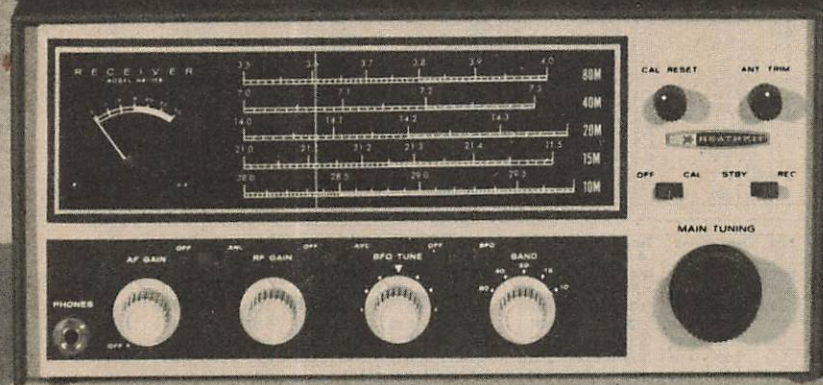
For beginning CW ops. Unijunction transistor with separate controls for tone and volume. Built-in speaker; headphone jack; blinker light. Includes key, phone plug, cord. Uses 2 - 9V and 1 "C" batteries, not supplied.

Kit HD-16, 3 lbs., mailable 9.95

Your dollars go farther on Heathkit novice rigs



Optional plug-in Crystal Calibrator.



A) Heathkit DX-60B Phone & CW Transmitter... 79.95

Run 75 watts CW input for novice operation — a full 90 watts phone or CW when you move up to general. Pi output provides fast, easy tuneup into any 50-75 ohm resistive load. Drive Level control, grid/plate current meter and Drive Tune control enable proper tune-up for maximum output, minimum harmonics, best quality audio. Four crystal sockets and provision for operation with external VFO such as the HG-10B provide maximum operating versatility. Easy assembly... requires only a VTVM for alignment. Get on the air now, with a rig that'll last a lifetime — order your Heathkit DX-60B today.

Kit DX-60B, 24 lbs., less crystals, mailable 79.95

DX-60B SPECIFICATIONS — Power input: 90 watts, peak; controlled carrier phone, or CW. Output impedance: 50-75 ohm (coaxial). Output coupling: Pi-network. Operation: CW or AM phone — crystal or VFO control. Band coverage: 80 through 10 meters. Power requirements: 120/240 VAC, 50/60 Hz, 225 watts. Dimensions: 6½" H x 13¾" W x 11½" D.

B) Heathkit HR-10B 5-Band Receiver... 79.95

Ideal for the novice or beginning general class ham who demands top performance at a modest price. Tunes AM, CW & SSB, with excellent stability for CW & sideband. Full 80 through 10 meter coverage with each band separately displayed on the accurately calibrated illuminated slide-rule dial. Separate RF and AF gain controls provide extra convenience... BFO allows easy, fast sideband tuning. A high quality crystal lattice filter delivers sharp 3 kHz selectivity. 1 uV sensitivity provides capability that puts many more expensive receivers

out of the QSO. Built-in "S" meter, switchable AVC and automatic limiter provide the versatility you expect in a first-rate communications receiver. Provision for the optional HRA-10-1 kHz crystal calibrator. Alignment requires an RF signal generator and VTVM.

Kit HR-10B, less speaker, 20 lbs., mailable 79.95

Kit HRA-10-1, plug-in 100 kHz crystal calibrator, 1 lb., mailable . . 9.95

HR-10B SPECIFICATIONS — Frequency coverage: 80 Meter Band, 3.5 to 4.0 MHz; 40 Meter Band, 7.0 to 7.3 MHz; 20 Meter Band, 14.0 to 14.35 MHz; 15 Meter Band, 21.0 to 21.5 MHz; 10 Meter Band, 28.0 to 29.7 MHz. Intermediate frequency (IF): 1681.0 kHz. Sensitivity: 1 microvolt for a 10 dB signal plus noise-to-noise ratio. Selectivity: 3 kHz at 6 dB down, 9 kHz at 40 dB down. Image rejection: 40 dB or better. Input impedance: 50 to 75 Ω, coaxial. Audio output impedance: 8 Ω, or 500 Ω. Panel controls: AF GAIN, AC OFF-ON; RF GAIN; BFO TUNE; BAND Switch; MAIN TUNING; CALIBRATE; ANTenna TRIMMER; REC-STBY Switch; CALIBRATE ON-OFF; BFO On-OFF; AVC On-OFF; ANL On-OFF. Tube complement: 6BZ6 RF Amplifier; 6EA8 Mixer Oscillator; 6BA6 1st IF Amplifier; 6EA8 2nd IF Amplifier-BFO; 6BJ7 Detector-AVC-ANL; 6EB8 1st Audio-Audio Output; 6X4 Rectifier. Power requirements: 120/240 VAC, 50/60 Hz, 50 watts. Cabinet size: 6½" H x 13¾" W x 11½" D.

C) HG-10B 80-2 Meter VFO... 47.50

Our HG-10B VFO covers 80 through 2 meters with separate calibrated scales for each band. Has smooth 28:1 vernier tuning; temperature compensated circuitry for drift free tuning. Provides 5 V rms in the 3.4-4, 7-7.425 and 8-9 MHz ranges. Compatible with virtually all grid-block keyed transmitters and most cathode-keyed transmitters. Alignment requires receiver of known accuracy covering either the 80-2 meter bands or 3.5 to 8.222 MHz range.

Kit HG-10B, 12 lbs., mailable 47.50



100 kHz crystal calibrator

Produces a signal every 100 kHz thru 54 MHz. Can be calibrated with trimmer against WWV. 9V battery, not included.

Kit HD-20, 1 lb., mailable . . 14.95



Amateur's handbook

Latest edition of ARRL handbook with reliable, up-to-date info on radio communications & electronics. Covers theory, construction and operation of HF, UHF, FM and SSB equipment.

HDP-293, 3 lbs., mailable . 4.50

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

HOW TO ORDER

- BY MAIL**—Complete the simple Heath order form, including the reverse side if you wish to use our Revolving Charge plan. Always use the same name whenever you order. Enclose check or money order to cover type of payment plan chosen. Include shipping charges only if item can be mailed Parcel Post or sent UPS (see rate information below). Do not include charges for REA or Motor Freight shipments. Fill out section 2 of order blank if you want order shipped to another address.
- BY TELEPHONE**—For kit or parts orders only...on Revolving Charge, COD, or commercial accounts call 616-983-7381 day, night, weekends or holidays for prompt order service and information on kit availability. For all other business...kit building assistance, product information, order checking, and if you'd like to place a COD order at the same time, call 616-983-3961 weekdays from 8 a.m. to 4:30 p.m. EST for proper routing.
- VISIT OUR FACTORY SALES/SHOWROOM**...located on Hilltop Rd. in St. Joseph, Mich. Open Mon.-Fri. 8:30 a.m. to 5 p.m. (Sat. 9 a.m. to 3 p.m.). See and hear Heathkit products in action...take your kit along...or arrange shipment to your home.

METHODS OF PAYMENT

- CASH**—Do not send currency or stamps. Send personal check or money order only.
- C.O.D.**—A 20% deposit is required on all COD orders by mail. Balance will be collected by carrier. Payment must be made in cash, money order or certified check. (They will not accept personal checks.) Parcel Post shipments cannot be made if balance is over \$200. No limit on UPS, Motor Freight or Express. Be sure to include "COD FEES" when figuring "Parcel Post" or "UPS" COD orders.
- HEATH REVOLVING CHARGE PLAN**—No money down. Up to 2 full years to pay. Two convenient payment plans. We figure postage for you...add it on to your account. See order blank for details and "ADD-ON" purchases.
- Net 30-Day Open Accounts** available to rated commercial firms. Company Purchase Order or letterhead over authorized signature acceptable.

NON-MAILABLE ITEMS

REA & MOTOR FREIGHT—Shipments exceeding Parcel Post or UPS limitations will be sent REA or Motor Freight. Check with local carriers for charges and best delivery service in your area. Do not enclose money for REA or Motor Freight...shipping charges will be collected by the carrier. When necessary we reserve the right to change routing instructions.

PREMIUM ROUTINGS—Upon your request, we can ship via Air Parcel Post, Parcel Post Special Handling, or Special Delivery, Air Express, Bus or Air Freight, if service is available to your area. Contact your local office for rates and delivery information.

IF YOU MOVE...please send in your old address and your new address...including Zip Code.

IF YOU ARE RECEIVING DUPLICATE COPIES of Heathkit catalogs, please return the mailing labels of those copies you wish discontinued.

HOW TO FIGURE PARCEL POST & UPS CHARGES

Use the zone chart at right and the first 3 numbers of your zip code to determine your zone. Then refer to the Parcel Post or UPS rate charts at right for charges for each model per shipping weight given in price line. For example, if your Zip Code is 10036, use the first 3 numbers (100) and check the zone chart for your zone, which is 5. Parcel Post charge for a kit weighing 10 pounds is therefore \$1.90. Add insurance and COD fees, if desired.

ZONE CHART

Zip Code Prefixes	Zone	Zip Code Prefixes	Zone	Zip Code Prefixes	Zone	Zip Code Prefixes	Zone	Zip Code Prefixes	Zone	Zip Code Prefixes	Zone
006-009	8	260-261	3	370-386	4	478	3	600-609	2	823-826	5
010-069	5	262-278	4	387	5	479-489	2	610-619	3	827	6
070-089	4	279	5	388	4	490-491	1	620-623	4	828-832	6
090-099	5	280-283	4	389-397	5	492	2	624-628	3	833	7
		284-285	5			493-495	1	629-668	4	834	6
100-108	5	286-293	4	400-406	3	496-499	3	669-679	5	835-838	7
109	4	294-295	5	407-409	4			680-687	4	840-847	6
110-119	4	296-297	4	410-412	3	500-516	4	688-693	5	850-864	7
120-123	4	298-299	5	413-422	4	520-524	3	700-722	5	865-884	6
124-126	5			423	3	525	4	723-727	4	890-898	7
127-128	4	300-303	4	424-426	4	526-528	3	728-768	5		
129	5	304	5	427-432	3	530-534	2	769	6	900-921	8
130-152	4	305-307	4	433-436	2	535-539	3	770-778	5	922-928	7
153	3	308-329	5	437-457	3	540	4	779-789	6	930-934	8
154-160	4	330-334	6	458	2	541-546	3	790-792	5	935	7
161	3	335-338	5	460-462	3	547-548	4	793-799	6	936-960	8
162-163	4	339	6	463-464	2	549	3			961	7
164-165	3	350-352	4	465-466	1	550-566	4	800-803	5	962-976	8
166-199	4	354	5	467-469	2	567	5	804-805	6	977-979	7
		355-359	4	470-472	3	570-572	4	806-807	5	980-987	8
200-232	4	360-361	5	473	2	573-588	5	808-816	6	988-994	7
233-237	5	362	4	474-475	3	590-597	6	820-822	5	995-999	8
238-259	4	363-369	5	476-477	4	598-599	7				

PARCEL POST RATES for MAILABLE ITEMS

Postal Regulations...limit parcel post shipments to 40 lbs. per package, all zones. EXCEPTION: Shipments up to 70 lbs. per package will still be accepted to RD addresses, and to APO numbers. Products listed as "mailable" that are over the Parcel Post & UPS weight limitations have been packed in multiple cartons.

APO and FPO Airlift Parcels...not over 30 lbs. and not over 60" length and girth combined can be sent "Airlift" for an additional \$1 fee; just figure regular surface rates, add \$1 for each kit 5 lbs. or over (but less than 30 lbs.) and mark "Airlift" on your order.

IMPORTANT

- Shipping weights listed for model numbers shipped in more than one carton have been adjusted to provide correct postage remittance based on Parcel Post chart at right.
- Figure the postage charges for each model number separately using the indicated shipping weight for that model.
- Then, total the individual charges determined and remit the full amount for Parcel Post.

C.O.D. Fees in Addition to Postage

Up to \$10.00	70 cents
\$10.01 to \$25.00	80 cents
\$25.01 to \$50.00	90 cents
\$50.01 to \$100.00	\$1.00
\$100.01 to \$200.00	\$1.10

Note: If C.O.D. shipment cannot be made in one package, we reserve the right to change routing. C.O.D. shipments cannot be made if balance is over \$200.00.

INSURED PARCEL POST (Add to Postage)

Liability:	Fee
\$0.01 to \$15	\$.02
\$15.01 to \$50	.30
\$50.01 to \$100	.40
\$100.01 to \$150	.50
\$150.01 to \$200	.60

Liability for insured mail is limited to \$200.

Ship. Wt.	Zone 1 & 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
2 lbs.	\$.065	\$.70	\$.075	\$.080	\$.090	\$.100	\$.105
3 lbs.	.75	.80	.85	.95	1.10	1.20	1.35
4 lbs.	.80	.85	.95	1.10	1.30	1.40	1.60
5 lbs.	.85	.90	1.05	1.20	1.45	1.65	1.90
6 lbs.	.95	1.00	1.15	1.35	1.60	1.85	2.10
7 lbs.	1.05	1.10	1.25	1.50	1.75	2.10	2.35
8 lbs.	1.10	1.15	1.35	1.60	1.90	2.30	2.60
9 lbs.	1.15	1.20	1.45	1.75	2.05	2.45	2.85
10 lbs.	1.20	1.30	1.55	1.90	2.20	2.65	3.10
11 lbs.	1.25	1.35	1.60	2.00	2.30	2.85	3.35
12 lbs.	1.30	1.45	1.70	2.10	2.45	3.05	3.55
13 lbs.	1.35	1.55	1.80	2.20	2.60	3.25	3.80
14 lbs.	1.40	1.60	1.90	2.35	2.75	3.45	4.00
15 lbs.	1.45	1.65	2.00	2.45	2.85	3.60	4.20
16 lbs.	1.55	1.75	2.05	2.55	2.95	3.80	4.40
17 lbs.	1.60	1.80	2.15	2.65	3.10	3.95	4.60
18 lbs.	1.65	1.90	2.20	2.75	3.20	4.15	4.80
19 lbs.	1.70	2.00	2.30	2.85	3.35	4.30	5.00
20 lbs.	1.75	2.05	2.40	2.95	3.50	4.50	5.20
21 lbs.	1.85	2.10	2.45	3.05	3.65	4.65	5.40
22 lbs.	1.90	2.15	2.55	3.15	3.75	4.85	5.60
23 lbs.	1.95	2.20	2.60	3.25	3.90	5.00	5.80
24 lbs.	2.00	2.25	2.65	3.35	4.05	5.15	6.00
25 lbs.	2.05	2.30	2.75	3.45	4.15	5.35	6.20
26 lbs.	2.10	2.35	2.85	3.55	4.30	5.50	6.40
27 lbs.	2.15	2.40	2.90	3.70	4.45	5.65	6.60
28 lbs.	2.20	2.45	2.95	3.80	4.60	5.80	6.80
29 lbs.	2.25	2.50	3.05	3.90	4.70	5.95	7.00
30 lbs.	2.30	2.55	3.10	4.00	4.85	6.10	7.20
31 lbs.	2.35	2.65	3.20	4.10	5.00	6.25	7.40
32 lbs.	2.40	2.70	3.30	4.20	5.15	6.45	7.60
33 lbs.	2.45	2.75	3.35	4.30	5.25	6.60	7.80
34 lbs.	2.50	2.80	3.40	4.40	5.40	6.75	8.00
35 lbs.	2.55	2.85	3.45	4.50	5.55	6.90	8.20
36 lbs.	2.60	2.90	3.55	4.60	5.65	7.10	8.40

Ship. Wt.	Zone 1 & 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
37 lbs.	2.65	3.00	3.65	4.70	5.75	7.25	8.60
38 lbs.	2.70	3.05	3.70	4.80	5.90	7.45	8.80
39 lbs.	2.75	3.10	3.80	4.90	6.05	7.60	9.00
40 lbs.	2.80	3.15	3.85	5.00	6.15	7.75	9.20
41 lbs.	2.85	3.20	3.95	5.15	6.25	7.95	9.40
42 lbs.	2.90	3.25	4.00	5.25	6.40	8.10	9.60
43 lbs.	2.95	3.30	4.10	5.35	6.55	8.25	9.80
44 lbs.	3.00	3.35	4.15	5.45	6.65	8.40	10.00
45 lbs.	3.05	3.40	4.20	5.55	6.80	8.55	10.20
46 lbs.	3.10	3.50	4.30	5.65	6.90	8.70	10.40
47 lbs.	3.10	3.55	4.40	5.75	7.00	8.90	10.60
48 lbs.	3.15	3.60	4.45	5.85	7.15	9.05	10.80
49 lbs.	3.20	3.65	4.50	5.95	7.30	9.20	11.00
50 lbs.	3.25	3.70	4.60	6.05	7.40	9.35	11.15
51 lbs.	3.30	3.80	4.70	6.15	7.50	9.50	11.35
52 lbs.	3.35	3.85	4.75	6.25	7.65	9.65	11.55
53 lbs.	3.40	3.90	4.80	6.35	7.80	9.80	11.75
54 lbs.	3.40	3.95	4.90	6.45	7.90	9.95	11.90
55 lbs.	3.45	4.00	4.95	6.55	8.00	10.10	12.10
56 lbs.	3.50	4.10	5.05	6.60	8.10	10.25	12.25
57 lbs.	3.55	4.15	5.15	6.70	8.25	10.40	12.45
58 lbs.	3.60	4.20	5.20	6.80	8.40	10.55	12.60
59 lbs.	3.65	4.25	5.25	6.90	8.50	10.70	12.80
60 lbs.	3.65	4.30	5.35	7.00	8.60	10.85	12.95
61 lbs.	3.70	4.35	5.45	7.05	8.70	11.00	13.10
62 lbs.	3.70	4.40	5.50	7.15	8.85	11.15	13.30
63 lbs.	3.75	4.45	5.55	7.25	9.00	11.30	13.45
64 lbs.	3.80	4.50	5.60	7.35	9.10	11.45	13.65
65 lbs.	3.85	4.60	5.70	7.45	9.20	11.60	13.80
66 lbs.	3.90	4.65	5.80	7.50	9.30	11.75	13.95
67 lbs.	3.95	4.70	5.85	7.60	9.40	11.85	14.10
68 lbs.	3.95	4.75	5.90	7.70	9.55	12.00	14.30
69 lbs.	4.00	4.80	5.95	7.75	9.65	12.15	14.50
70 lbs.	4.05	4.85	6.05	7.85	9.75	12.25	14.65

Note: These parcel post rates are effective as of Nov. 14, 1970 and are subject to change without notice.

ANY FRACTION OF A POUND OVER THE WEIGHT SHOWN TAKES THE NEXT HIGHER RATE

UNITED PARCEL SERVICE (UPS) RATES

Zones 2-6 only. For Zones 7-8, use Blue Label rates. NOTE: United Parcel Service is available from Heath to all states east of and immediately west of the Mississippi, plus North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Texas, Wyoming, Colorado and New Mexico. See UPS Blue Label (Air) Service to the West Coast only. UPS rates include insurance for up to \$100 value. Remit 25¢ for each additional \$100 value or fraction thereof.

REGULATIONS: Maximum weight per package, 50 lbs.; and 100 lbs. per shipment.

IMPORTANT

- Figure UPS charges for each model number separately using the indicated shipping weight for that model.
 - Then total the individual charges figured and remit the full amount.
 - Shipping weights listed for model numbers shipped in more than one carton have been adjusted to provide correct remittance based on rate chart at right.
- C.O.D. FEES IN ADDITION TO REGULAR CHARGES** For each C.O.D. delivery, 65 cents; for each address correction, 65 cents.

Weight Not To Exceed	RATES TO						BLUE LABEL AIR SERVICE CHARGES to Calif., Ore., Wash. only.
	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 8	
1 lb.	\$.055	\$.057	\$.060	\$.062	\$.065	.82	\$.82
2 "	.60	.64	.69	.74	.80	1.14	1.14
3 "	.65	.71	.79	.86	.95	1.48	1.48
4 "	.70	.78	.88	.98	1.10	1.78	1.78
5 "	.75	.85	.98	1.10	1.25	2.10	2.10
6 "	.80	.92	1.07	1.22	1.40	2.42	2.42
7 "	.85	.99	1.17	1.34	1.55	2.74	2.74
8 "	.90	1.06	1.26	1.46	1.70	3.06	3.06
9 "	.95	1.13	1.36	1.58	1.85	3.38	3.38
10 "	1.00	1.20	1.45	1.70	2.00	3.70	3.70
11 "	1.05	1.27	1.55	1.82	2.15	4.02	4.02
12 "	1.10	1.34	1.64	1.94	2.30	4.34	4.34
13 "	1.15	1.41	1.74	2.06	2.45	4.66	4.66
14 "	1.20	1.48	1.83	2.18	2.60	4.98	4.98
15 "	1.25	1.55	1.93	2.30	2.75	5.30	5.30
16 "	1.30	1.62	2.02	2.42	2.90	5.62	5.62
17 "	1.35	1.69	2.12	2.54	3.05	5.94	5.94
18 "	1.40	1.76					

HEATH REVOLVING CHARGE PLAN

ABOUT HEATH'S REVOLVING CHARGE PLANS

The "Cash Price" of merchandise on Heath's Revolving Charge Plans includes the cash price as listed on the page describing the merchandise, plus applicable sales tax, shipping charges, and less any advertised allowances. Regular or extended terms are the two plans available for your use. To use the extended plan, the balance must be at least \$400. The amount of your monthly installment can be determined from the chart below. The periodic rate for the *finance charge* is $1\frac{1}{2}\%$ per month and is equal to an *annual percentage rate of 18%* before deducting payments and credits or adding purchases made during the current billing period. No down payment is required on new orders but one may be remitted if desired. **HOW TO OPEN AN ACCOUNT** Just fill out the credit application, sign the Revolving Charge agreement and mail to Heath with your order. **ADD-ON PURCHASES** List items you want on order blank, check the add-on box, and give your account number. Sign the Revolving Charge agreement, and send to us.

REVOLVING CHARGE AGREEMENT TO: HEATH COMPANY, BENTON HARBOR, MICHIGAN 49022

I hereby purchase the merchandise listed on the reverse side at a time sale price which is the cash price including shipping charges and tax, if any, less down payment, if any, plus the *[finance charge]* which, in lieu of being added to this contract in total as of the date hereof will be added monthly on the previous months ending balance of my account before deducting payments and credits or adding purchases made during the current billing period. *[Finance Charge]* will be assessed on the balance according to the following schedule or in accordance with the laws of the State of my residence which ever is the lesser.

Account Balance Amount	[Periodic % Rate]	[Annual % Rate]
ALL BALANCES	1½ %	18%

The minimum *[Finance Charge]* assessed will be .50¢ on all small balances. If within 30 days from my billing date I pay the full outstanding balance shown on my monthly statement, no *[finance charge]* on such balance, will be charged on any subsequent statement.

The highest level of my balance reflected by the payment chart will govern my monthly payment, beginning 30 days from the cycle closing date shown on the statement, until such time as the total unpaid balance of each purchase is fully paid (minimum \$10). Regular or Extended Terms are the two plans available for my use. To use the extended plan, the balance of my account must be at least \$400. The amount of my monthly installment can be determined from the charts below:

REGULAR REVOLVING CHARGE								EXTENDED REVOLVING CHARGE											
Charge up to	\$150	200	250	300	350	400	450	500	550	Charge up to	\$400	500	600	700	800	900	1,000	1,100	1,200
Pay Monthly	\$10	15	20	25	30	35	40	45	50	Pay Monthly	\$20	25	30	35	40	45	50	55	60

Add \$5 for every \$100, or a portion thereof over \$1,200.

I will not sell, transfer possession of, remove or encumber the property without your written consent: Upon default on the terms of this agreement, you may declare my existing outstanding balance due and payable and you may repossess the property. If legal proceedings are commenced, I will be required to pay reasonable attorney's fees in such an amount as may be allowed by the court. My installments shall be applied as follows: In case of items purchased on different dates, the first purchase shall be deemed first paid for. In the case of items purchased on the same date, the lowest price shall be deemed first paid for. You are authorized to investigate my credit record and report to proper persons and bureaus my performance of this agreement. **NOTICE TO BUYER: 1.** Do not sign the contract before you read it. **2.** The other side of this page is part of this contract. **3. NO FINANCE CHARGE IF PAID IN FULL IN 30 DAYS FROM CYCLE BILLING CLOSING DATE AS SHOWN ON STATEMENT.**

Date _____ Sign here _____
(Customer's Signature)

CREDIT APPLICATION

Check Revolving Charge Plan Desired
 Regular Extended

IMPORTANT: Please fill in completely. Omissions and errors cause delays. SIGN REVOLVING AGREEMENT ABOVE.

NAME ^{Mr.} ^{Mrs.} Miss _____
 (Please Print) (First Name) (Middle Initial) (Last Name)

ADDRESS _____

CITY _____ STATE _____ ZIP CODE _____

Number of Dependents _____ How Long at Present Address _____ No. of Rooms _____ OWN RENT BOARD Monthly Rent or Mortgage Payments \$ _____

Former Address _____ City _____ State _____ How Long _____

Phone No. _____ AGE _____ MARRIED WIDOWED SINGLE DIVORCED Wife's First Name _____

Employer _____ Address _____ City _____ State _____

How Long _____ Occupation _____ Social Security No. _____ Military Serial No. _____ (if serviceman) _____ EARNINGS \$ _____ Hr. Wkly.

Former Employer _____ How Long _____

Name of Wife's Employer _____ Address of Wife's Employer _____ WIFE'S WEEKLY INCOME \$ _____

Other Income — Give Details _____ TOTAL FAMILY INCOME \$ _____

Your Bank _____ Address _____ Type of Account _____

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

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

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

Nearest Relative _____ Address _____ Relationship _____
 (Do not list those with whom you are living) (If Military give permanent mailing address)



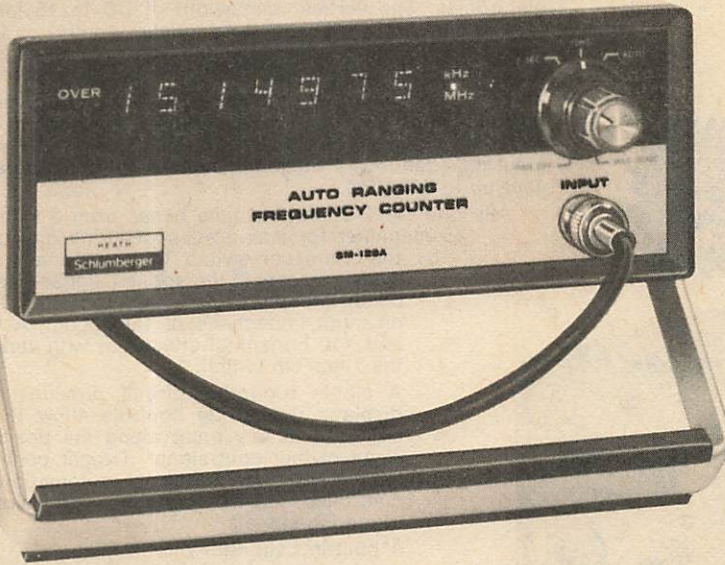
HEATH

Schlumberger

New values in instrumentation

New 110 MHz Autoranging Frequency Counter

- 5 Hz to 110 MHz guaranteed; 2 Hz to 130 MHz typical
- 15 mV input sensitivity guaranteed; 2-10 mV typical
- Adjustable sensitivity control for easier measurements in the presence of noise
- 1 megohm/15 pf input impedance



The new SM-128A provides all the features and performance you're likely to need in a VHF-range counter, yet the price is realistically low. Compare the features: 5 Hz to 110 MHz range guaranteed, typically 2 Hz to 130 MHz. High input sensitivity of 15 mV guaranteed across the range, with typical sensitivity running from 2 mV to 10 mV, depending on frequency. Autoranging provides automatic determination of correct range for maximum resolution without over-ranging. In the two manual range positions the least significant digit remains valid even though the most significant digit is beyond display range. A front-panel sensitivity control allows input trigger level selection above and below the signal zero-crossing level. Other features include seven-digit LED readout, leading-zero blanking, external clock input and convenient carrying handle-tilt stand. If you're in the market for a low cost, high performance counter, look no further...Heath/Schlumberger has it.

Factory assembled & calibrated SM-128A, 10 lbs. \$325.00

Save \$45 On This 80 MHz Counter... just \$250!!

- 10 Hz to over 80 MHz range
- 5-digit LED readout
- Crystal clock: 10 parts in 10⁶/yr aging rate; ±10 parts in 10⁶ from 0-40° C.

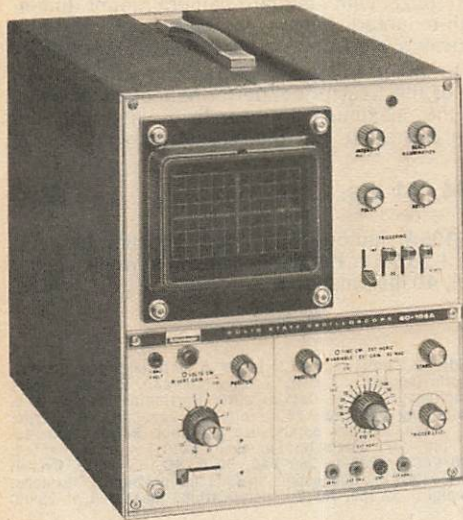


Factory assembled & calibrated SM-105A, 6 lbs. Was \$295.00 Now Only \$250.00

SM-128A SPECIFICATIONS: Input: Frequency Range: 5 Hz to 110 MHz minimum guaranteed. 2 Hz to 130 MHz typical. Sensitivity: 15 mV rms guaranteed. 2 mV to 10 mV typical. Input Impedance: 1 megohm/15 pf. Maximum Voltage: 200 V rms. Time Base Oscillator (referenced to 25° C after 30 minute warmup): Frequency: 1 MHz. Settability: ±0.1 Hz. Maximum Aging Rate: less than 1 ppm/month; less than 7.5 ppm/yr. Temperature Stability: ±10 ppm maximum, 0-40° C. External Oscillator: DC to 2 MHz. Sensitivity: TTL or 2.5 V rms from 50 ohm source. Protection: -5 V peak to +10 V peak. Ranges-Gate Interval: Manual: kHz - 1 sec. MHz - 10 ms. Auto: kHz - 10 sec., kHz - 1 sec., MHz - 100 ms or MHz - 10 ms, depending on incoming signal. General: Display Time: 200 ms plus gate interval. Power Requirements: 120/240 VAC, 50/60 Hz, 25 watts max. Fuse: ¼ amp, 125 V slow-blow or ½ amp, 250 V slow-blow. Dimensions: 2¾" H x 7¼" W x 10½" D. (less handle). Net weight: 5 lbs.

New 15 MHz triggered sweep solid-state scope

- DC-15 MHz vertical bandwidth with 24 ns risetime
- 10 mV input sensitivity
- 22 calibrated sweep rates from 2 sec/cm to 0.2 usec/cm
- X5 calibrated sweep magnifier
- Built-in calibrator circuit
- Regulated power supplies



Before you buy your next scope, check out the new SO-106A. It probably has everything you need at less than you planned to spend. Check the features against the competition: Wide DC-15 MHz bandwidth with fast risetime...high input sensitivity with 12 calibrated vertical attenuator positions up to 50 mV/cm...1 megohm/40 pf input impedance...input will accept up to 600 VDC... 22 calibrated sweep rates...X1 and X10 horizontal attenuator...trigger controls include selection of normal or automatic modes...AC/DC coupling...provision for external triggering...built-in calibrator...regulated power supplies for maximum stability...6x10 cm graticule...standard camera mount bezel...all solid-state design.

Factory assembled & calibrated SO-106A, 40 lbs. \$475.00

SO-106A SPECIFICATIONS - Vertical - Input impedance: 1 MΩ shunted by 40 pF. Maximum input voltage: 600 volts DC. Sensitivity: 10 millivolts/cm. Frequency response: DC to 15 MHz, ±3 dB with 4 cm deflection. Rise time: 24 ns. Attenuator: 12 positions in a 1, 2, 5 sequence. .01 volt/cm to 50 volts/cm ±3%. Horizontal - Input impedance: ≈1 MΩ. Sensitivity: Less than .5 volt/cm. Frequency response: DC to 1 MHz, ±3 dB. Attenuator: 2 position, X1 and X10. Time Base - Sweep: 22 steps in a 1, 2, 5 sequence, 2 s/cm to .2 μs/cm, ±5%. Horizontal expansion: X5 ±5%. Trigger modes (switch selected): AUTO/NORMAL; + or -; AC/DC; INT/EXT. Trigger sensitivity - Internal: 1 cm display. External: 0.5 volt peak-to-peak. Calibrator - Signal Source: 4 MHz oscillator, crystal controlled ±0.01%. Outputs (TTL square wave, peak-to-peak): Front panel: 1 kHz, .4 volt ±5%. Internal: 1 kHz, 2.5 volts (approx.). 1 kHz, 5 volts (approx.). 10 kHz, 3 volts (approx.). 100 kHz, 3 volts (approx.). 1 MHz, 3 volts (approx.). 2 MHz, 3 volts (approx.). GENERAL - Input connections: Vertical: Coaxial, BNC. Horizontal: Banana jack. Trigger: Banana jack. CRT accelerating potential: 2800 volts DC, regulated. CRT type: 5ABP31, 6x10 cm viewing area; green, medium persistence phosphor. Retrace suppression: DC-coupled unblanking of the CRT. Graticule: Engraved, 6x10 cm, edge lighted. Power requirements: 110 to 130 VAC or 220 to 260 VAC, 50/60 Hz, 45 watts. Overall dimensions: 12¾" H x 10¾" W x 20" L. Dimensions include all protruding surfaces; knobs, handle, feet, etc. Net weight: 32 lbs. NOTE: Specifications measured at 25° C with 120 VAC line voltage.

FREE! 1973 Heath/Schlumberger Electronic Instruments Catalog.

Includes complete description and specifications for these and dozens of other high performance, low cost instruments for industry, r&d and education...frequency counters, scopes, VTVMs, DVMs, strip chart recorders and many more. Use coupon to send for your FREE copy now!



Heath/Schlumberger Scientific Instruments
Dept. 583-742
Benton Harbor, Michigan 49022

HEATH
Schlumberger

Please send 1973 Heath/Schlumberger Electronic Instruments catalog.

Name _____

Title _____

Company _____

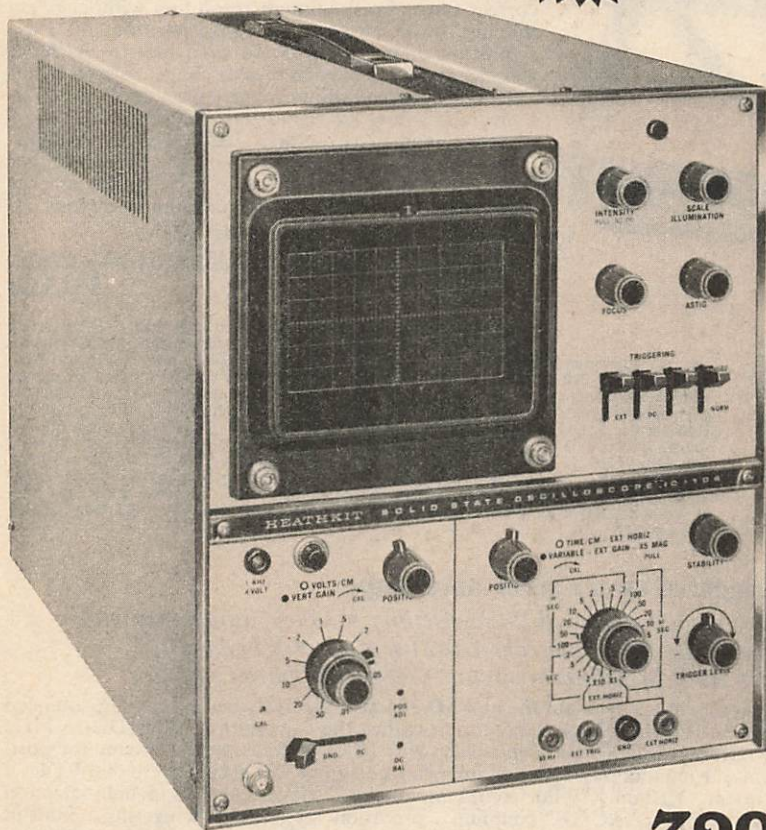
Address _____

City _____ State _____ Zip _____

New Heathkit IO-104 Solid-State 15 MHz Scope

- DC to 15 MHz vert. bandwidth with 24 ns rise time
- 10 mV input sensitivity
- 22 sweep rates from 2 s/cm to 0.2 μ s/cm
- X5 calibrated sweep magnifier

**Kit, or
Assembled,
Tested,
Calibrated**



329⁹⁵
NO MONEY DOWN

The new Heathkit IO-104 is a precise, solid-state laboratory or service bench oscilloscope designed to meet the needs of contemporary electronics. The vertical bandwidth of DC to 15 MHz satisfies the requirements of most laboratory, quality control or trouble-shooting applications. Calibrated vertical and horizontal circuits permit voltage and frequency measurements of even complex waveforms.

Vertical sensitivity of 10 mV/cm and 12 calibrated vertical attenuator positions up to 50 V/cm accommodate a broad range of input signals. A variable gain control gives precise control between settings. The input impedance is 1 megohm shunted by 40 picofarads and will accept up to 600 VDC.

Any one of 22 calibrated time bases from 2 s/cm to 0.2 μ s/cm (X5 magnifier for max. sweep of 40 ns/cm) can be selected by the Time/cm switch to provide accurate frequency measurements of the applied signal. The horizontal amplifier accepts external inputs from DC to 1 MHz with an input impedance of 1 megohm. A two-position X1 and X10 horizontal attenuator with vernier is built into the Time/cm switch.

A stable triggering circuit provides solid waveform displays. Triggering controls allow the sweep to be triggered at any point along the positive or negative slope of the input signal. Trigger controls include selection of either normal or automatic modes; switch-controlled AC-DC coupling; provision for external triggering signals.

A built-in calibrator circuit in the IO-104 provides accurate frequency and amplitude signals that can be used during calibration or anytime you wish to check the accuracy of the instrument. A crystal-controlled oscillator is included in the circuit for accurate calibration of the sweep rates.

Power supply regulator circuits provide stable supply voltages to all critical circuits under varying line voltage and load conditions. A dual-primary power transformer allows you to wire the IO-104 to operate from either a 110-130 volt or 220-260 volt 50/60 Hz AC power source.

A big 6 x 10 cm screen with lighted graticule makes for easy, accurate measurements. Other features include a CRT bezel with standard camera mount dimensions, flush-mounted handle for easy stacking and easily-removable side panels for quick accessibility.

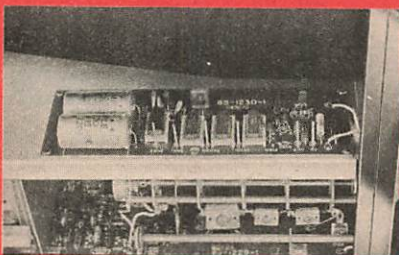
Designed to meet today's requirements, the IO-104 offers one of the best price/performance ratios available. For the maximum in sensitivity, stability and trouble-free operation, put the IO-104 on your bench, today.

Kit IO-104, 44 lbs., 329.95

Model SO-106A, factory-assembled & calibrated version of the IO-104 in handsome black & white styling (not shown), 40 lbs., mailable 475.00

IO-104 SPECIFICATIONS — Vertical — Input impedance: 1 M Ω shunted by 40 pF. Maximum input voltage: 600 volts DC. Sensitivity: 10 millivolts/cm. Frequency response: DC to 15 MHz, ± 3 dB with 4 cm deflection. Rise time: 24 ns. Attenuator: 12 positions in a 1, 2, 5 sequence, .01 volt/cm to 50 volts/cm $\pm 3\%$. Horizontal — Input impedance: ~ 1 M Ω . Sensitivity: Less than .5 volt/cm. Frequency response: DC to 1 MHz, ± 3 dB. Attenuator: 2 position, X1 and X10. Time Base — Sweep: 22 steps in a 1, 2, 5 sequence, 2 s/cm to .2 μ s/cm, $\pm 5\%$. Horizontal expansion: X5 $\pm 5\%$. Trigger modes (switch selected): AUTO/NORMAL; + or -; AC/DC; INT/EXT. Trigger sensitivity — Internal: 1 cm display. External: 0.5 volt peak-to-peak. Calibrator — Signal Source: 4 MHz oscillator, crystal controlled $\pm 0.01\%$. Outputs (TTL square wave, peak-to-peak): Front panel: 1

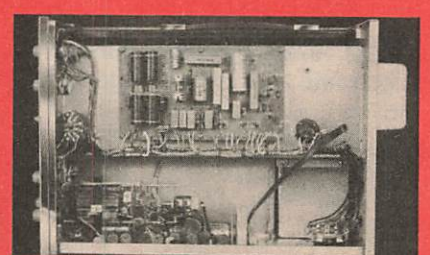
kHz, .4 volt $\pm 5\%$. Internal: 1 kHz, 2.5 volts (approx.). 1 kHz, 5 volts (approx.). 10 kHz, 3 volts (approx.). 100 kHz, 3 volts (approx.). 1 MHz, 3 volts (approx.). 2 MHz, 3 volts (approx.). General — Input connections: Vertical: Coaxial, BNC. Horizontal: Banana jack. Trigger: Banana jack. CRT accelerating potential: 2800 volts DC, regulated. CRT type: 5ABP31, 6X10 cm viewing area; green, medium persistence phosphor. Retrace suppression: DC-coupled unblanking of the CRT. Graticule: Engraved, 6X10 cm, edge lighted. Power requirements: 110 to 130 VAC or 220 to 260 VAC, 50/60 Hz, 45 watts. Overall dimensions: 12 $\frac{3}{4}$ " H x 10 $\frac{3}{4}$ " W x 20" L. Dimensions include all protruding surfaces; knobs, handle, feet, etc. Net weight: 32 lbs. NOTE: Specifications measured at 25° C with 120 VAC line voltage.



A built-in calibrator circuit provides accurate frequency and amplitude signals that can be used during calibration or anytime you wish to check the accuracy of the instrument.



Front-panel sweep control provides 22 calibrated time bases from 2 s/cm to 0.2 μ s/cm. A X1 and X10 horizontal input attenuator with vernier is built into the Time/cm switch.



The removable side panels provide convenient access to all circuitry for calibration and adjustments.

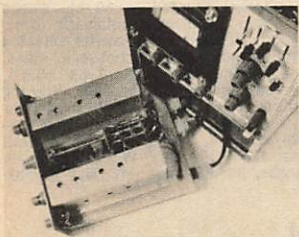
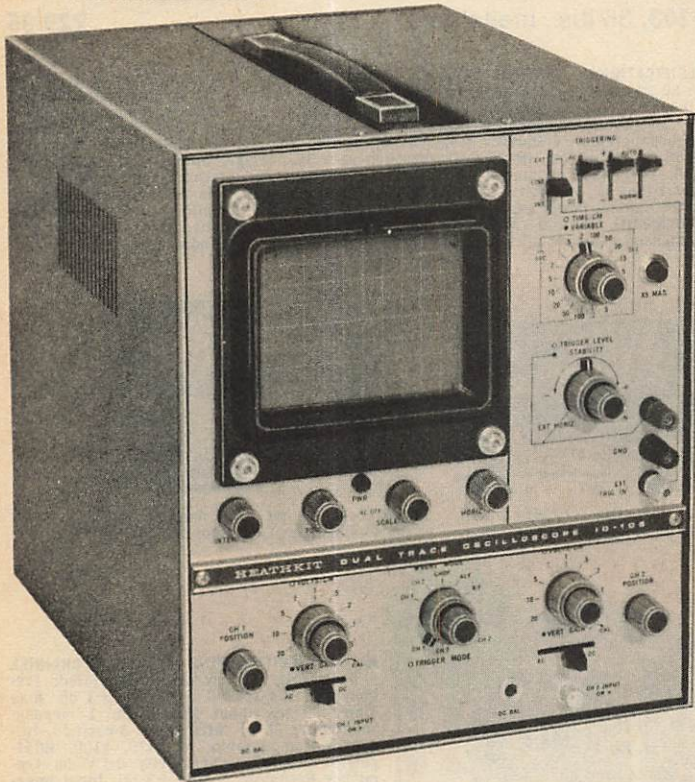
Heathkit performance specifications are guaranteed

Solid-state, dual-trace, 15 MHz...at Heathkit savings!

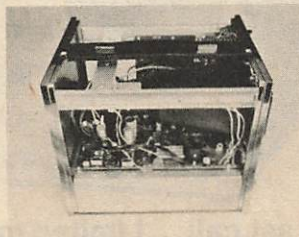
- DC — 15 MHz bandwidth
- 50 mV/cm sensitivity
- Triggered sweep with 18 calibrated sweep rates
- X-Y display capability

399⁹⁵

NO MONEY DOWN



Vertical gain and mode controls and circuitry are mounted in drawer type sub-chassis for easy access should service be required.



The easy-access side panels open up the circuitry all around to make checks and adjustments simple. This feature makes the IO-105 great for classroom demonstration use, too.

With the Heathkit IO-105 kit and less than seven evenings of your time you can build a versatile solid-state instrument for at least \$100 less than you would pay for a comparable wired unit.

Here's complete dual trace and X-Y capability, allowing comparison of input/output for such parameters as loss, gain, phase shift and distortion. You can display two separate input signals in Channel 1 or Channel 2 modes of operation. Direct comparison of both signals is possible in alternate and chopped modes. In the alternate mode, both signals are alternately displayed on successive sweeps — at faster sweep speeds they are retained on the screen for time relationship comparison. In the chop mode, both signals are sampled at 50 kHz and appear as a function of the same time base. In X-Y, both channels are displayed as a function of each other — channel 1 controlling the vertical (Y) axis and channel 2 controlling the horizontal (X) axis.

Both input channels are precision balanced for 5° or less phase shift to 50 kHz. Switch selected AC or DC coupling lets you trigger the time base at a given point on the signal or at a preselected DC level. Flipping a switch gives you automatic triggering at the crossover (0) point. You can also switch-select positive or negative slope triggering. Internal, External and Line trigger inputs are provided.

The convenient 18-position time base switch in a 1, 2, 5 sequence provides sweep rates from 100 ms/cm to 0.2 μs/cm. The separate vernier control with a calibrated position gives you continuous control between settings, while a x5 magnifier switch allows detailed trace viewing. Full bandwidth is featured from 20 V/cm in 1, 2, 5 sequence. For special applications, a rear panel Sweep Gate output delivers a 3.5 V pulse in sync with the sweep. A TTL-compatible external blanking input is also provided.

Kit IO-105, 40 lbs., mailable 399.95

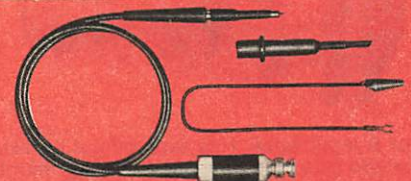
IO-105 SPECIFICATIONS — VERTICAL — Accuracy: ±3%. Input impedance: 1 megohm shunted by 35 pF. Maximum input voltage: 600 VDC. Sensitivity: AC or DC, 0.05 V/cm. Frequency response: DC to 15 MHz, 3 dB with 4 cm deflection. Vertical windows: 2 minimum. Rise time: 24 ns. Overshoot: Less than 10%. Attenuator: 9 positions in a 1, 2, 5 sequence. 0.05 V/cm, ±3%. Variable gain (uncalibrated) thru entire range. Vertical display in sweep mode: Channel 1, Channel 2, Channel 1 & 2 alternately; or Channel 2 chopped (50 kHz). HORIZONTAL — Time base: Triggered with 18 calibrated rates, 0.2 μs/cm to 100 ms/cm in a 1, 2, 5 sequence, ±3%. Continuously variable (uncalibrated) within the same range. Sweep magnifier: x5 (time base accuracy is ±5% when the magnifier is being used). External horizontal input: 750 mV/ (uncalibrated & not adjustable). 100 K ohm minimum input impedance, DC to 100 kHz. X-Y MODE — Sensitivity: 0.05 V/cm to 20 V/cm, ±3%. Frequency response: -3 dB @ 100 kHz (Channel 2). Phase shift between channels: ±5° or less from DC to 50 kHz within graticule limits. TRIGGERING — Delay: Approx. 600 ns. Auto: Zero crossing ±½ cm of zero crossing. Norm: Within viewing area. Source: Channel 1, Channel 2, or Channels 1 & 2. Polarity: + or - slope. Coupling: AC or DC. Sensitivity: Internal, ½ cm; external, 100 mV minimum, 7 V max. GENERAL — Blanking in: TTL compatible (Logic 0-blank). Gate out: 3.5 V minimum. Input connections: Vertical, BNC; horizontal, binding post; external trigger, binding post on ¾" center with ground. CRT accelerating potential: 2200 VDC regulated. CRT type: 8x10 cm, rectangular, flat-face, D14-107GA. Retrace suppression: DC coupled unblanking of the CRT. Graticule: 8 cm x 10 cm grid, edge lighted. Power requirements: 105-125 or 210-250 VAC, 50/60 Hz, 60 W. Warm-up time: CRT heating time, approx. 30 seconds; for full calibration, approx. 15 min. Overall dimensions: 12½" H x 10½" W x 15" D. Note: Specification measured at 25° C with 120 VAC line voltage.



Low Capacitance Scope Probe Kit. Ideal for use with IO-102. Provides direct or x10 attenuated operation; trimmer capacitor gives proper match to scope. Wiring options for 3.3 or 1 megohm. Kit PK-1, 1 lb., mailable 4.95



Scope Demodulator Probe. For distortion checks & observation of RF & IF signal modulation. Functions as an AM detector, 30V rms, VDC max. Ideal for IO-102. Kit 337-C, 1 lb., mailable 5.00 Assembled 337-WC, 1 lb., mailable 6.50



High Frequency Scope Probe

High Frequency Compensated Scope Probe. Ideal for use with IO-103, IO-104 and IO-105 scopes. Features 10 megohm input impedance shunted by 11.5pF; compensation for matching to any 1 megohm scope input shunted by 15-40 pF; DC-60 MHz bandwidth; x10 attenuation; 500 VAC & VDC voltage rating; BNC connector; combination spring-loaded outer hook connector and fine pointed inner tip probe; 3½" long.

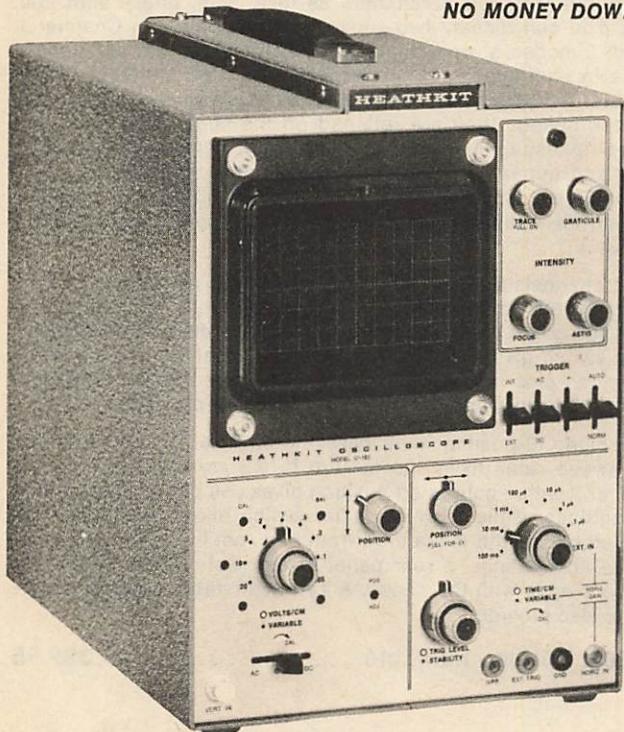
Assembled PKW-101, 1 lb., mailable 19.95

Top-value scopes at build-it-yourself savings

Solid-State 10 MHz Triggered Scope

- 50 mV sensitivity
- AC-DC coupling
- 50 ns sweep rate with magnifier

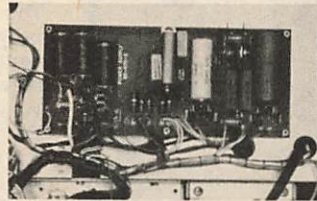
229⁹⁵
NO MONEY DOWN



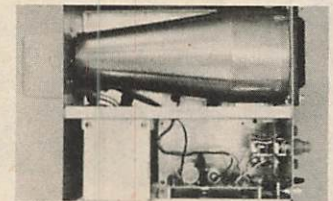
Here's maximum flexibility in a general purpose scope at a price to fit your budget — comfortably. Features big 6x10 cm screen with lighted graticule for easy, accurate measurements. DC-10 MHz ± 3 dB response with less than 50 ns rise time on vertical channel. Horizontal expansion gives x2 magnification $\pm 5\%$ for a 50 ns/cm sweep rate. Triggered sweep, too, with selection of either normal or automatic modes. Other features are switch-controlled AC-DC coupling; provision for external triggering signals and horizontal deflection signal; front-mounted connectors for vertical inputs and 1V peak-to-peak signal for checking calibration; 120/240 VAC operation. Put this budget minder to work for you, now.

Kit IO-103, 36 lbs., mailable **229.95**

IO-103 SPECIFICATIONS — VERTICAL CHANNEL — Input impedance: 1 megohm shunted by 30 pF. Sensitivity: 50 mV/centimeter. Frequency response: DC to 10 MHz ± 3 dB @ 3 cm deflection. DC to 8 MHz ± 3 dB @ 6 cm deflection. Rise time: Less than 50 ns. Attenuator: 9-position, 0.05 to 20 V/cm (1, 2, 5 sequence). **HORIZONTAL CHANNEL —** Input impedance: 100 k ohms. Sensitivity: 0.25 V/cm (uncalibrated). Frequency response: DC to 500 kHz ± 3 dB. TIME BASE — Sweep: 7 steps, 100 ms to 100 ns/cm. Horizontal expansion: x2 $\pm 5\%$. Trigger Options (switch selected): Auto/Normal: +/- (plus or minus); AC/DC: INT/EXT. Sensitivity: Internal, 1 cm display. External, 0.5 v peak-to-peak. **GENERAL — CRT:** 5DEP1F, green, medium persistence phosphor. Graticule: 6x10 cm, edge lighted. Power supplies: All solid-state rectifiers, all amplifier supplies regulated. Power requirements: 120/240 VAC, 50/60 Hz, 35 W. Overall dimensions: 12 $\frac{3}{4}$ " H x 9 $\frac{1}{4}$ " W x 16 $\frac{1}{4}$ " L. Dimensions include all protruding surfaces such as knobs, handle, feet, etc.



Open layout and five printed circuit boards make assembly and service easy.



Easy-access cabinet has removable side panels — ideal for classroom demonstration.

DC-5 MHz General Purpose Scope

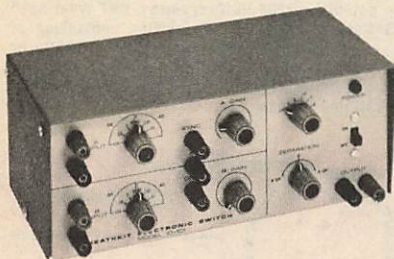
The IO-102 offers a wide band response of DC-5 MHz, fast 80 ns rise time, and a high 30 mV/cm input sensitivity to make it a truly high performance, low cost scope for a wide variety of applications. And for added convenience there's switch selected AC or DC coupling; frequency-compensated three-position attenuator to accommodate varying input levels; switch selected grounding for zero reference line; FET high impedance input circuit to minimize loading. Has recurrent automatic sync-type sweep generator offering five sweep ranges from 10 Hz to 500 kHz. Separate frequency vernier control permits selection of desired sweep rate to give stationary trace. External horizontal input allows sweep signal to be applied by external generator. Front-panel internal-external switch and external sync connector permit applying an external sync signal.

Kit IO-102, 31 lbs., mailable **119.95**
Assembled IOW-102, 31 lbs., mailable **179.95**



Kit, or Assembled, Tested, Calibrated

IO-102 SPECIFICATIONS — VERTICAL CHANNEL — Sensitivity: 30 mV/cm, uncalibrated. Frequency Response: DC — 5 MHz, ± 3 dB. Rise Time: 80 ns. Input Impedance: 1 megohm shunted by 35 pF. Attenuator: 3-position, frequency compensated; x1, x10, x100. **HORIZONTAL CHANNEL —** Sensitivity: 0.1 V/cm. Frequency Response: 1 MHz ± 3 dB. Input Impedance: 1 megohm shunted by 50 pF. Sweep Generator Type: Recurrent, automatic sync. Range: 10 Hz — 500 kHz in five switch-selected steps, continuously variable between steps. **GENERAL — Cathode Ray Tube:** Type 5DEP1, green medium persistence phosphor. Viewing area, 6x10 cm. Power Supplies: All solid-state rectifiers, regulated. Power requirements: 110-130 or 220/260 VAC, 50/60 Hz, 35 W. Overall Dimensions: 12 $\frac{3}{4}$ " H x 9 $\frac{1}{4}$ " W x 16 $\frac{1}{4}$ " D, including knobs, handle, feet, etc. Net Weight: 27 lbs.



Heathkit Electronic Switch

Provides simultaneous visual display of two input signals on a single-beam oscilloscope by alternating from one input to the other at the internal square-wave generator frequencies offering the most favorable presentation on the scope — or a single A

or B input trace. Has sync output on each channel permitting oscilloscope sweep to be locked to either input signal; DC coupling for even greater versatility, and DC-5 MHz $+1\frac{1}{2}$ —3 dB frequency response, 10-times the bandwidth of other similarly priced units.

Kit ID-101, 6 lbs., mailable **39.95**

ID-101 SPECIFICATIONS — Signal frequency response: DC-5 MHz $+1\frac{1}{2}$ dB, -3 dB. Signal gain: Greater than 10 times. Maximum input signal: 600 VDC or 600 VAC peak-to-peak. Input impedance: 1 megohm, 50 pF. Maximum signal output: 8 V peak-to-peak. Output loading: 1000 ohm minimum resistance. Hum and noise: (Single channel only). Less than 40 mV peak-to-peak. Chopping rates: Approximately 100, 500, 1000 and 5000 Hz. Power requirements: 120/240 V, 50-60 Hz, 6 W. Dimensions: 4 $\frac{1}{4}$ " H x 10 $\frac{3}{8}$ " W x 5 $\frac{1}{2}$ " D.

Last call... Limited quantity!

An outstanding dollar value, the IO-17 features wide bandwidth response, good sensitivity and stability for a broad range of general purpose applications.

A favorite among TV service men for work in the shop and in the field. Schools find its blend of high performance and low cost ideal in tight equipment budget situations. And hobbyists of all kinds appreciate the IO-17's outstanding performance-per-dollar value — order yours today, and have it on your bench in just a few evenings.

Kit IO-17, 16 lbs., mailable . . . **82.50**

IO-17 SPECIFICATIONS — VERTICAL CHANNEL — Input Impedance: 1 megohm shunted by 25 pF; x50 attenuator position, 1 megohm shunted by 15 pF. Sensitivity: 3 0mV P-P/div. (uncalibrated). Frequency response: 5 Hz — 5 MHz ± 3 dB. **HORIZONTAL CHANNEL —** Input impedance: 10 megohm shunted by 15 pF. Sensitivity: 300 mV P-P/div. Frequency response: 2 Hz — 300 kHz ± 3 dB. **HORIZONTAL SWEEP GENERATOR —** Sweep generator: Recurrent type. Frequency: 20 Hz — 200 kHz in four overlapping ranges. Retrace: Blanked by a pulse from blanking amplifier. Synchronization: Automatic type. Size: 9 $\frac{1}{2}$ " H x 5 $\frac{1}{2}$ " W x 14 $\frac{1}{2}$ " D.



Heathkit Digital Multimeters - at substantial savings

Heathkit IM-1202 2½-Digit Multimeter

- 2½-digit Cold Cathode Readout Tubes — eliminate ambiguous readings
- Convenient Front-panel Polarity Switch — for positive and negative DC values.

State-of-the-art digital circuitry and readout, rugged portability and versatility . . . at unbelievable kit-form savings. The Heathkit IM-1202 Digital Multimeter has 1% accuracy on DC volt ranges, 1½% on AC volts and AC-DC current, 2% on ohms. Yet with its low price, ease of assembly and simplicity of operation, this multimeter is the obvious choice for every ham and every electronics hobbyist.

The IM-1202 accurately measures voltages from 10 mV to 1000 V on DC in either polarity, 10 mV to 700 V rms on AC, 10 µA to 2 A on AC or DC current, and 1 ohm to 2 megohms on resistance. On DC functions, a handy front-panel polarity switch eliminates the need to switch leads. Diodes can be measured for forward and reverse current flow at the snap of a switch. Four overlapping ranges on each of the AC, +DC and -DC volts and current, and five ranges for resistance make operation even easier. There are lighted indicators for overrange, positive and negative DC voltages and current. And the decimal is placed correctly with range selection.

The bright 2½-digit display ends the parallax and interpolation errors common to conventional analog meters. Resolution is 10 mV, 10 µA and 1 ohm. The all solid-state design utilizes IC circuitry for clear, non-blinking display; dependable ramp analog-to-digital converter with the readout updated every 16 msec; overload protection on all ranges. Other features are a three-wire cord and dual primary power transformer (no batteries needed), isolated floating ground and completely enclosed heavy-gage aluminum case for safe, rugged use. For your convenience, the IM-1202 includes a neat carrying handle, tinted viewing window and universal banana jacks.

We've kept this kit simple to build (3 or 4 evenings) and simple to service. Most circuitry mounts on two fiberglass circuit boards which are almost totally exposed when the case is removed. And the exclusive Heath built-in lifetime calibration standards are all you need for those initial and periodic adjustments.

- Kit IM-1202, 6 lbs., mailable 79.95**
Model SM-600, factory-assembled & calibrated version of the IM-1202 in handsome black & white styling (not shown), 6 lbs., mailable 120.00

IM-1202 SPECIFICATIONS — Functions: ±DC volts, ±DC current, AC volts, AC current, ohms. **Ranges:** (full scale): DC volts: 2, 20, 200, 1,000V. DC current: 2, 20, 200, 2,000 mA. AC volts: 2, 20, 200, 700V rms (25 Hz to 10 kHz). AC current: 2, 20, 200, 2,000 mA rms (25 Hz to 10 kHz). Ohms: 200, 2k, 20k, 200k, 2,000k ohms. **Maximum input without damage:** 3 A into AC or DC mA, and ohms (fuse protected). 700 VAC rms into volts (except 2V range — 140 VAC rms). 1000 VDC into volts (except 2V range — 200 VDC). **Resolution:** (Lowest Range) Volts: 10 mV. Current 10µA. Ohms: 1 ohm. **Display:** Two & one half digit numeric. **Rated accuracy carried to 25% overrange.** Accuracy: (Full Scale ±1 digit): 1% DCV (1000 V max.), 1½% ACV (700V max.), AC & DC current, 2% ohms. **Input Impedance:** 1 megohm on all voltage ranges. 2V drop maximum on current ranges. **Sample Rate:** Approximately 60 per second. **Power Requirements:** 120/240 VAC, 50/60 Hz, 8 watts. **Dimensions (overall):** 7¼" H, 5½" W x 3⅞" D.

Kit, or Assembled, Tested, Calibrated



Heathkit IM-102 3½-Digit Multimeter

The IM-102 accurately measures AC/DC voltages and currents and resistance without switching probes for polarity. Dual slope integrator converts analog to digital, and pre-assembled precision DC calibrator simplifies assembly and periodic adjustment. Cold cathode readout and memory circuit assure non-blinking operation. Includes detachable line cord (no batteries needed), banana jack connectors complete with test leads.

- Kit IM-102, 9 lbs., mailable 229.95**

IM-102 SPECIFICATIONS — DC VOLTMETER — 5 ranges: 200 mV, 2V, 20V, 200V, 1000V. **Input Impedance:** Approx. 100 megohm on 200 mV, approx. 1000 megohm on 2V, 10 megohm on all other ranges. **Accuracy:** ±0.2% ±1 digit with furnished DC calibrator, ±0.1% ±1 digit with lab calibration. **Overload protection:** 350V on 200 mV and 2V, 1000V on other ranges. **Overrange capability:** 20% minimum (subject to overload protection limits). **Resolution:** 100 µV. **Full scale step response:** 2 sec. to rated accuracy. **Input bias current:** 10nA maximum at reference conditions. **Temperature influence:** ±0.005%/°C, ±1 digit /°C. **Normal mode rejection:** 35dB minimum @ 60 Hz. **Common mode rejection:** 80dB minimum with 1k unbalance @ 60 Hz. **OHMMETER — 6 ranges:** 200 ohm with 1mA test current, 2k with 100µA, 20k with 10µA, 200k with 10µA, 2M with 1µA, 20M with 100nA. **Accuracy:** With DC calibrator, ±0.5% ±1 digit on 200, 2k, 20k, 200 ranges; ±1.5% ±1 digit on 2M and 20M ranges. With lab calibration, ±0.5% ±1 digit on 200 ohm range; ±0.25% ±1 digit on 2k, 20k, 200k; ±1% ±1 digit on 2M and 20. **Overload protection:** 250 V RMS. **Resolution:** 0.1 ohm (200 ohm range). **Full scale step response:** 2 sec. on ohm and k ohm ranges, 10 sec. at 10 megohms to rated accuracy. **Temperature influence:** ±0.05% @ 0°C. **Overrange capability:** 20% minimum. **AC VOLTMETER (Average responding, RMS calibrated) — 5 ranges:** 20mV, 2V, 20V, 200V, 1000V. **Input impedance:** 1 megohm @ 150 pF. **Overload protection:** 250 RMS on 200mV and 2V, 500 V on higher ranges. **Accuracy:** With DC calibrator, ±0.75% ±1 digit for 40Hz-10kHz, ±1% ±1 digit for 10kHz-20kHz on 200 mV and 2V ranges; ±0.75% ±1 digit for 40Hz-5kHz, ±1.5% ±1 digit for 5kHz-10kHz on 20V and 200V ranges; ±1.5% ±1 digit for 40kHz-7.5kHz on 1000V range. **DC AMMETER — 5 ranges:** 200µA, 2mA, 20mA 200mA, 2A. **Voltage drop:** 0.2V (nominal). **Accuracy:** With DC calibrator, ±0.5% ±1 digit for 2A, ±0.3% ±1 digit on all other ranges. With lab calibration, ±0.25% ±1 digit for 2mA and 20mA; ±0.3% ±1 digit for 200mA; ±0.5% ±1 digit for 2A. **Resolution:** 100 nanoamperes (200µA range). **Overload protection:**

3 A, any range, by fuse and clamp diodes. **AC AMMETER (40kHz-10kHz) — 5 ranges:** 200µA, 2mA, 20mA, 200mA, 2A. **Voltage drop:** 0.2 V (nominal). **Accuracy:** With DC calibrator, ±1.5% ±1 digit on 2A, ±1% on all other ranges. With lab calibration, ±0.75% ±1 digit on 200µA, ±0.7% ±1 digit on 2mA and 20mA; ±0.8% ±1 digit on 200mA; ±1% ±1 digit on 2A. **Resolution:** 100 nanoamperes. **Overload protection:** 3A, any range, by fuse and clamp diodes. **GENERAL — Display:** Maximum count, 1999. **Overrange indication,** automatic beyond 1999. **Polarity indication,** automatic "+" or "-". **Reading rate,** 5 per sec., nonblink (200 millisecond integration time). **Numeric display** by side-viewing neon glow tubes with integral decimal points. **Power requirement:** 120 or 240 VAC, 50Hz/60Hz, 8 W nominal. **Operating temperature:** 10°C-40°C. **Reference:** 25°C. ±1°C. **Size:** 3" H x 7" W x 7.9" D.

229.95
NO MONEY DOWN



High voltage probe for IM-102 Multimeter
 Ideal for measuring extremely high (up to 30,000 V) DC. Has multiplication factor of 100 on DC ranges of any 10 megohm input meter, provides useful 1000 megohm input for measuring voltages as low as 1 V in high-impedance circuits. Has 1% resistor.
Kit ID-1041, 2 lbs., mailable 6.95

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

The most valuable tool on your bench - Heathkit VTVM



Kit, or Assembled, Tested, Calibrated

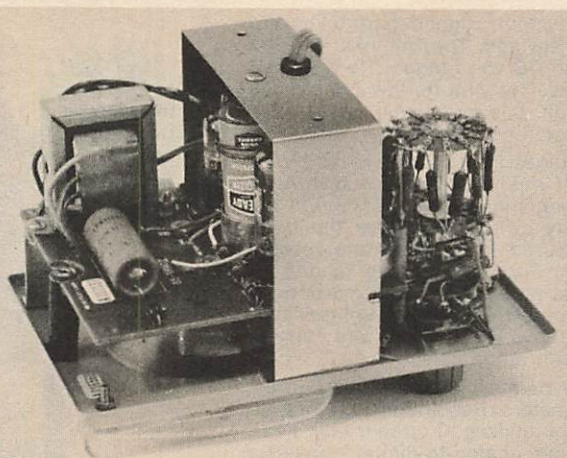
Top-value Heathkit IM-18 VTVM — over 50,000 sold!

For decades, Heathkit VTVMs have been prized by owners for their convenient size, practical meter ranges, single test probe, and low cost. The IM-18 possesses all of these traditional Heathkit values, plus impressive features of its own: a single probe for all measurements — seven AC, seven DC, and seven Ohms ranges; precision $4\frac{1}{2}''$ 200 μ A meter; 1% precision divider network resistors; ± 1 dB 25 Hz to 1 MHz frequency response; rms & p-p AC voltage measurements; circuit board design for fast, easy assembly; 120/240 VAC wiring options.

Kit IM-18, 5 lbs.,
 mailable **29.95**

Model SM-20A, factory-assembled & calibrated version of the IM-18 (not shown), 6 lbs., mailable . . . **55.95**

IM-18 SPECIFICATIONS — Meter scales: DC & AC (rms): 0-1.5, 5, 15, 50, 150, 500, 1500 V full scale. AC peak-to-peak: 4.0, 14, 40, 140, 400, 1400, 4000. Resistance: 10 ohm center scale x1, x10, x100, x1000, x10k, x100k, x1 meg. Measures .1 ohm to 100 megohms. Meter: $4\frac{1}{2}''$ 200 μ A movement. Input resistance DC: 11 megohms (1 megohm in probe) on all ranges; Circuit: Balanced bridge (push-pull) using twin triode. Accuracy: DC $\pm 3\%$, AC $\pm 5\%$ of full scale. Frequency response: ± 1 dB, 25 Hz to 1 MHz (600 ohm source). Tubes: 12AU7, 6AL5. Battery requirements: 1.5 V, size "C" flashlight cell (not supplied). Power requirements: 120/240 VAC, 50/60 Hz, 10 W. Dimensions: $7\frac{3}{8}''$ H x $4\frac{1}{4}''$ W x $4\frac{1}{4}''$ D.



Kit, or Assembled, Tested, Calibrated

Service bench VTVM

A deluxe service bench version of the popular Heathkit IM-18.

Kit IM-28, 7 lbs.,
 mailable **39.95**

Assembled IMW-28, 7 lbs., mailable **59.95**

IM-28 SPECIFICATIONS — DC VOLTMEETER — Ranges: 0-1.5, 5, 15, 50, 150, 500, 1500 V full scale; up to 30,000 V with accessory probe. Input Resistance: 11 megohm (1 megohm in probe) on all ranges: 1100 megohms with accessory probe. Circuit: Balanced bridge (push-pull) using twin triode. Accuracy: $\pm 3\%$ of full scale. AC VOLTMEETER — Ranges: 0-1.5, 5, 15, 50, 150, 500, 1500 rms scales (.353 of peak-to-peak). Frequency Response (5 V range): ± 1 dB 25 Hz to 1 MHz (600 ohm source, referred to 60 Hz). Circuit: Halfwave voltage doubler, using twin diode. Accuracy: 5% of full scale. Input Resistance & Capacitance: 1 megohm shunted by 40 pF measured at input terminals (200 μ mf at probe tip). OHM-METER — Ranges: Scale with 10 ohm center X1, X10, X100, X1000, X10k, X100k, X1 meg. Measures .1 ohm to 1000 megohms with internal battery. Meter: 6" 200 μ A movement, polystyrene case. Probe: Combined AC-OHMS-DC switching probe, single jack input for probe and ground connections. Dividers: 1% precision type. Battery: 1 $\frac{1}{2}$ V, "C" cell. Power Requirements: 120/240 VAC, 50-60 Hz, 10 W. Dimensions: 5" H x 12 $\frac{1}{4}''$ W x 4 $\frac{3}{4}''$ D.

Laboratory AC VTVM

The IM-38 features extended accuracy in measuring low-level AC voltages. Any voltage from 10 Hz to 1 MHz can be measured quickly. It can also be used as a VU meter to indicate changing AC voltages, such as those that occur in speech or music equipment.

Kit IM-38, 5 lbs., mailable **41.95**

Assembled IMW-38, 6 lbs., mailable **59.95**

IM-38 SPECIFICATIONS — Frequency response: ± 1 dB 10 Hz to 500 kHz. ± 2 dB 10 Hz to 1 MHz, all ranges. Ranges: Ten ranges from 0.01 to 300 V rms full scale. Decibels: Total-range -52 to +58 dB, meter scale -12 to +2 dB (0 dB = 1 mV in 600 ohms), ten switch selected ranges from -40 dB to +50 dB in 10 dB steps. Input impedance: 10 megohms shunted by 12 pF on ranges 10 to 300 V, scale, 10 megohms shunted by 22 pF on ranges .01 to 3 V. Accuracy: Within 5% of full scale. Power requirements: 120/250 VAC, 50/60 Hz, 10 W. Dimensions: $7\frac{3}{8}''$ H x $4\frac{1}{4}''$ W x $4\frac{1}{8}''$ D.



Kit, or Assembled, Tested, Calibrated

Heathkit IM-17 Portable VOM

The perfect buy for homeowners, hams, servicemen, hobbyists, modelers — everyone. All solid-state with FET input. Features include portable battery operation, zero and ohms adjust controls, accessory probe jack, DC polarity reversing switch, three built-in test leads, easy 3-5 hour assembly. Not recommended for use in RF fields.

Kit IM-17, 4 lbs., mailable **22.50**

IM-17 SPECIFICATIONS — DC VOLTMEETER — Four ranges: 0-1, 10, 100, 1000 V full scale. Input resistance: 11 meg, on all ranges. Accuracy: $\pm 3\%$ of full scale. AC VOLTMEETER — Four ranges: 0-1, 10, 100, 1000 V full scale. Input resistance: 1 meg, on all ranges. Accuracy: $\pm 5\%$ of full scale. Frequency response: ± 1 dB, 10 Hz to 1 MHz. OHM-METER — Four ranges: RX1, RX100, RX10k, RX1M. Input resistance: 1 meg, on all ranges. Amplifier circuit: 8.4 V mercury cell (NEDA #1611), batteries not supplied. GENERAL — Meter: $4\frac{1}{2}''$, 200 μ A, 100 \times movement. Dimensions: $5\frac{3}{8}''$ H x $9\frac{3}{8}''$ W x $9''$ D.

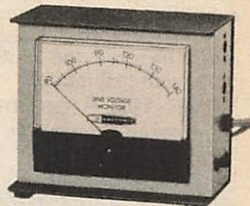


Heathkit Line Voltage Monitor

The ideal accessory for labs, shops, hams & CBer's, hobbyists. Improper line voltage can cause poor operation of test equipment and circuits. With the solid-state IM-103, you always know what your line voltage is. When calibrated from a source of known accuracy, the IM-103 has an accuracy of $\pm 2\%$. The large, expanded scale meter lets you know at a glance what your power line voltage is . . . without having to use a separate AC voltmeter . . . without having to depend on utility company estimates. Not for use in RF fields.

Kit IM-103, 3 lbs., mailable **16.95**

IM-103 SPECIFICATIONS — Voltage range: 90 VAC (rms) — 140 VAC (rms). Voltage accuracy (sine wave): $\pm 5\%$ when calibrated with a known line voltage. Power requirements: 90-140 VAC, 50-60 Hz, 4.2 W. Dimensions: $5\frac{1}{8}''$ H x $6\frac{1}{4}''$ W x $3''$ D.



Etched Circuit RF Probe with 11 meg input; for RF measurements from 1000 Hz. to over 100 MHz; 1000 VDC max. at tip; 90 V rms RF max.

Kit PK-3, 1 lb., mailable **5.00**
Assembled PKW-3, 1 lb., mailable **7.00**



30 KV DC Probe x 100 on DC range of 11 meg. input; 1100 megohm input for hi Z circuits. 2% resistors.

Kit 336, 1 lb., mailable **6.50**
Assembled 336W, 1 lb., mailable **7.95**

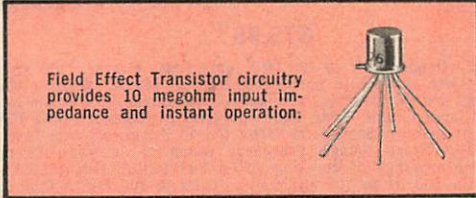
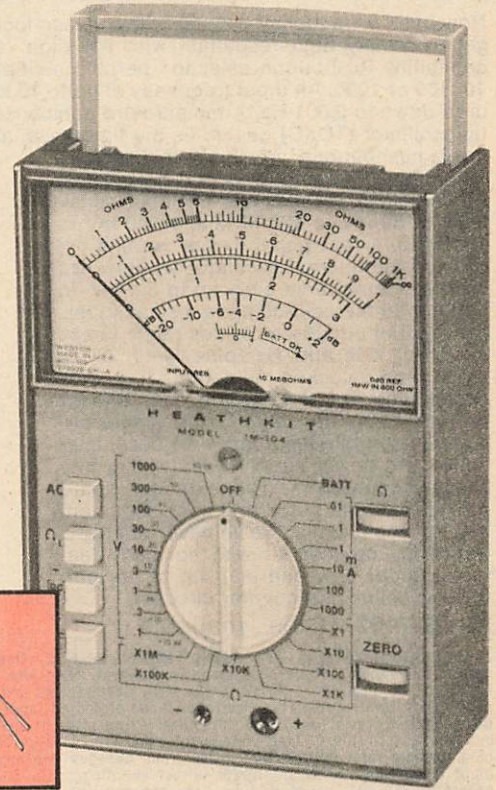
Performance where you need it - Heathkit VOM

Portable VOM with FET input

This is the tool you've been waiting for. A portable lab-grade FET VOM combining accuracy, versatility, convenience and ruggedness—in an easy-to-build dollar-saving kit! Our IM-104 has low-drift 1% precision metal film and wirewound resistors for exceptional stability. Nine DCV & ACV ranges measure from .01V to 1000V. Six current ranges cover 0.001 mA to 1000mA, DC & AC. Seven resistance ranges from 1 ohm to 100 megohms, conventional or low voltage modes. Decibel ranges from -40 dB to +62 dB. DC null scale with better than 1 mV resolution. The 4½" ruggedized, taut-band meter is diode protected, built to take plenty of abuse. Built-in circuitry shows battery condition at the flip of the range selector. Three evenings put this great portable VOM on your bench. Batteries not included.

Kit IM-104, 4 lbs., mailable 79.95

IM-104 SPECIFICATIONS — DC VOLTMETER — 9 ranges: 0-1, 0.3, 1, 3, 10, 30, 100, 300, 1000V. Input resistance: 10 megohm. Accuracy: ±2% of full scale (meter in horizontal position). AC rejection: Accuracy not affected by impressed 60 Hz sine wave with rms value 2x greater than full-scale value. Null indicator: On 0.1, 1, 10, 100, 1000V, meter zero level may be adjusted to center of null referenced scale. Null variations of approx. 1% of full-scale can be resolved. AC VOLTMETER — 9 ranges: 0-0.1, 0.3, 1, 3, 10, 30, 100, 300, 1000V. Range factor: 1 to 3.162 (10 dB) per step. Input resistance: 10 megohm. Input capacity: 100 pF typical. Accuracy: ±3% of full scale (meter in horizontal position; 60 Hz sine wave). Response: Average value of ½ sine wave. Scale calibrated to indicate rms. Frequency response: 20 Hz to 20 kHz ±3%, 20 Hz to 50 kHz ±5% on 0.1 to 30 V. 20 Hz to 10 kHz ±3%, 20 Hz to 20 kHz ±5% on 100 and 300 V. 20 Hz to 1.0 kHz ±3%, 20 Hz to 2.5 kHz ±5% on 1000 V. DC MILLIAMMETER — 6 ranges: 0-0.01, .1, 1, 10, 100, 1000 mA. Voltage drop (approx. full scale): 0.100 V on 0.01 to 10, 0.150 V on 100, 0.350 V on 1000. Insertion resistance: Voltage drop divided by full-scale current. Accuracy: ±2% on 0.01 to 100, ±3% on 1000. (Meter in horizontal position.) AC MILLIAMMETER — 6 ranges: 0-0.01, 0.1, 1, 10, 100, 1000 mA. Voltage drop (approx. at full scale): 0.100 V on 0.01 to 10, 0.150 V on 100, 4½", 100 µA, 95°, ruggedized, taut-band movement. Meter protection: will sustain momentary overload of 220 VAC or DC on any range, diode and 2A fuse protected on ohms x1 and 0.01 to 1000 mA, FET protected on 0.1 V to 1000 V and ohms x10k to ohms x1M. Internal circuitry protected against improper battery installation. Diode protected meter. Amplifier circuit: Dual FET source followers driving operational amp. Front panel switches: 24-position, continuous rotation RANGE switch (including battery check position BATT and OFF). 4-position push-button switch for AC, ohm LV, —DC/ohm, +DC/ohm. Meter temperature coefficient: Maximum of ±0.2% or ±0.2° of arc per °C over range of 15 to 35°C. Operating temperature: 0 to 50°C. Storage temperature (less batteries): —40 to +80°C. Batteries (not supplied): 1 1.5 V D-cell (NEDA #13), 4 1.5 V AA-cell (NEDA #15). Dimensions 6.95" H x 4.95" W x 2.25" D.



Field Effect Transistor circuitry provides 10 megohm input impedance and instant operation.

Solid-state VOM

The Heathkit IM-16 combines the precision of a vacuum tube voltmeter and the portability of a volt-ohmmeter. A front panel switch permits operation from the power line or the internal battery. Battery operation permits accurate voltage and resistance measurements in remote locations where an AC source is not available. All measurement functions (AC volts, DC — or DC + volts) are selected by one switch. A single test probe eliminates tangled leads. Printed circuit board and cable assembly allow easy, neat construction. Not recommended for use in RF fields.

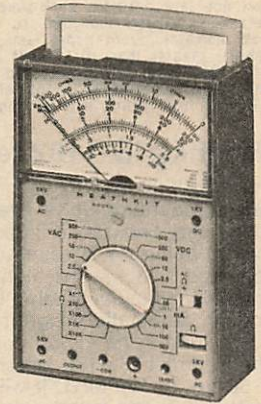


Kit IM-16, 10 lbs., mailable 52.50

IM-16 SPECIFICATIONS — DC VOLTMETER — 8 Ranges: 0.5, 1.5, 5, 15, 50, 150, 500, 1500 V. Input resistance: 11 megohms on all ranges. Accuracy: ±3% of full scale. AC VOLTMETER — 8 Ranges: 0.5, 1.5, 5, 15, 50, 150, 500, 1500 V. Input resistance: 1 megohm. Accuracy: ±5% of full scale. OHMMETER — 7 Ranges: x1 (10 ohm center scale), x10, x100, x1k, x10k, x1 megohm. INPUT — Probe with shielded cable: AC-ohms/DC switch in probe. (Single plug for probe & common connections). POWER SUPPLIES — Amplifier circuit: Power line, 120/240 VAC, 50/60 Hz. Battery, 9 V NEDA 1602 or equivalent. Ohms circuit: Battery, 1.5 V (one "C" cell), Meter: 6", 100 µA (100° movement). Dimensions: 5½" H x 16¾" W x 7¾" D.

General purpose VOM

It's an easy, enjoyable one-evening kit — build-up two modular circuit boards and you have it. This highly versatile IM-105 gives you a low-friction, taut-band meter with diode & fuse protected movement that can suffer years of rough treatment and bounce back for more. Fuse in-line with the input connector is removable from front for extra convenience. Other professional features include calibrating controls, DC polarity switch, self-storing handle.



Kit IM-105, 3 lbs., mailable . . 47.95

IM-105 SPECIFICATIONS — DC VOLTAGE RANGES — 0.25, 2.5, 10, 50, 250, 500, 1000 & 5000 V full scale. Accuracy: ±3% of full scale. Input resistance: 20,000 ohms/V full scale. Accuracy: ±4% of full scale. Input resistance: 5000 ohms/V. Input capacity: Less than 20 pF. Frequency response: 2.5, 10, and 50 V ranges: ±5%, 10 Hz to 100 kHz; 250, 500 V ranges: ±5%, 10 Hz. DC CURRENT RANGES — 0.05, 0.5, 5, 10, 100, 500 mA & 10 A full scale. Accuracy: ±3% of full scale. Voltage drop: Approximately 0.25 V at full scale. RESISTANT RANGES — x1 (20 center scale), x10, x100, x1k. Accuracy: ±3 degrees of arc. Source voltage: x1 through x1k ranges: 1.5 V x 10k range: 15 V. DECIBEL RANGES: (0 dB = 1 mW in 600 ohms); —10 to +50 dB. GENERAL — Voltage dividers: —1% metal film resistors on most ranges. Meter: 4½", 50 µA, ruggedized, taut-band movement. Meter protection: Combined fuse and diode overload protection. Meter temperature coefficient: 15 to 35° C, ±1% (or 0.1 degree of arc) per degree C. Operating temperature range: 0-55° C. Batteries (not supplied): One 1.5 V "D" cell (NEDA #208). Dimensions: 7" H x 5" W x 2¼" D. Test Leads: Supplied.

Heathkit IM-25... a deluxe solid-state high-impedance VOM



Ideal for solid-state circuit analysis. Extra low current and voltage ranges. Not recommended for use in RF fields.

Kit IM-25, 11 lbs., mailable 85.00

IM-25 SPECIFICATIONS — DC VOLTMETER — 9 Ranges: 0.15, .5, 1.5, 5, 15, 50, 150, 500, 1500 V full scale. Input resistance: 11 megohms on all ranges. Accuracy: ±3% of full scale. DC MILLIAMMETER — 11 Ranges: 0-0.15, .05, .15, .5, 1.5, 5, 15, 50, 150, 500, 1500 mA full scale. Input resistance: 0.10 ohm (1500 mA). Accuracy: ±4% of full scale. AC VOLTMETER — 9 Ranges: 0-15, .5, 1.5, 5, 15, 50, 150, 500, 1500

V full scale. Input resistance: 10 megohm shunted by 175 pF (measured at probe tip). Accuracy: ±5% of full scale. Frequency response: ±2 dB, 10 Hz to 100 kHz. AC MILLIAMMETER — 11 Ranges: 0-0.15, .05, .15, .5, 1.5, 5, 15, 50, 150, 500, 1500 mA full scale. Input resistance: 0.1 ohm (1500 mA) to 10 k ohm (0.15 mA). Accuracy: ±5% of full scale. OHMMETER — 7 Ranges: 10 ohm center scale x1, x10, x100, x1k, x10k, x100k, x1 meg. Terminal voltage 70 mV (not sufficient to cause diode junction conduction). Probe: Combined AC-OHMS-DC switching probe. Meter: 6", 200 µA 100° movement. Power supplies: Battery operation; "C" cells. Line operation; Transformer operated ½ wave circuit, operable on either 120/240 VAC, 50/60 Hz. Dimensions: 5½" H x 13½" W x 6¼" D.

Get professional-quality instrumentation

NEW Heathkit 180 MHz Counter with phase-locked frequency multiplier

Now build a frequency counter with a phase-locked multiplier . . . and get extremely high resolution with 8½-digit readout and 180 MHz capability. Pushbutton selection permits multiplication by 1 (direct), 10, 100 or 1000. An input frequency of up to 10 kHz can be measured down to 0.001 Hz. A temperature compensated crystal oscillator (TCXO) generates the time base, and three pushbuttons provide 1 millisecond, 100 millisecond and 1 second gate times. The Heathkit IB-1103 has an input sensitivity of 50 mV to 120 MHz and 100 mV to 180 MHz. A rear panel switch permits bypassing the internal oscillator to allow use of any external time base up to 3 volts. In addition to the cold-cathode display tubes, the readout circuitry provides range lamps for MHz, kHz and Hz, plus Gate, Overrange, and unlocked indicators.

Assembling the IB-1103 is a neat 20-hour project. Many ICs mount on a single circuit board, while the input, time base, multiplier and power supply boards plug into chassis connectors. The extender board provided allows quick and easy alignment and service checks. We've never offered a frequency counter kit with so many features. Order now and step up to the ultimate in solid-state counter circuitry.

Kit IB-1103, 12 lbs., mailable 379.95

IB-1103 SPECIFICATIONS — FREQUENCY MEASUREMENTS — Range: 1 Hz to 180 MHz. **Gate time:** 1 msec., 100 msec, or 1 sec. **Accuracy:** ± 1 count \pm time base stability. **Readout:** MHz, kHz, or Hz with positioned decimal. **SIGNAL INPUT — Maximum sensitivity:** 50 mV to 120 MHz, 100 mV to 180 MHz. **Coupling:** AC and DC (two separate inputs). **Impedance:** 1 megohm in parallel with 35 pF. **Trigger level:** Automatic. **Overload:** Diode-protected input circuit. **TIME BASE — Crystal frequency:** 4 MHz TCXO (Temperature Compensated Crystal Oscillator). **Stability:** Aging rate ± 1 ppm/yr. Short term better than 0.5 ppm in 1 sec. Temperature ± 1 ppm between 15° to 40° C. Line voltage 0.5 ppm with $\pm 10\%$ voltage change. **Frequency trimming:** Accuracy ± 1 ppm. Range ± 10 ppm. **Sample rate:** Approx. 500 msec. (time between two openings of counting gate.) **FREQUENCY MULTIPLIER — Ranges versus input frequency:** x1: No multiplier (direct counting), x10: 100 Hz to 300 kHz, x100: 10 Hz to 100 kHz, x1000: 10 Hz to 10 kHz. **Accuracy:** x10: ± 1 count \pm time base accuracy, x100: ± 1 count \pm time base accuracy, x1000: At less than 500 Hz, ± 1 count \pm time base stability. At greater than 500 Hz, ± 2 counts \pm time base stability. **To remain locked:** Frequency rate of change must not exceed 10 Hz. **Lock time after step frequency change:** x10 & x100: 5 sec. for frequencies less than 500 Hz; 3 sec. for frequencies greater than 500 Hz. x1000: 1.5 sec. for frequencies less than 500 Hz; 1 sec. for frequencies greater than 500 Hz. **Lock indicator:** Front panel lamp; "Off" = locked, "On" = unlocked. **EXTERNAL TIME BASE INPUT — Frequency:** 1 MHz with stability greater than 10^{-7} . **Input impedance:** 1000 ohms. **Maximum input:** 3 V rms. **GENERAL — Display:** 8½ digits plus overrange, gate, MHz, kHz, Hz and unlocked lamps. **Operating temperature range:** Operating 10°C to 40°C. **Power requirements:** 120/240 VAC, 50-60 Hz, 40 W when not using frequency multiplier, 45 W when using frequency multiplier. **Connectors:** 3 BNCs. Input (AC & DC) on front panel; external clock on rear panel. **Dimensions:** 3½" H x 8½" W x 9¼" D.



379⁹⁵
NO MONEY DOWN



An extender circuit board is provided to allow easy access to the input, time base or frequency multiplier circuit boards for in-circuit servicing.

Heathkit IB-1102 reads from 1 Hz to over 120 MHz in 8 digits

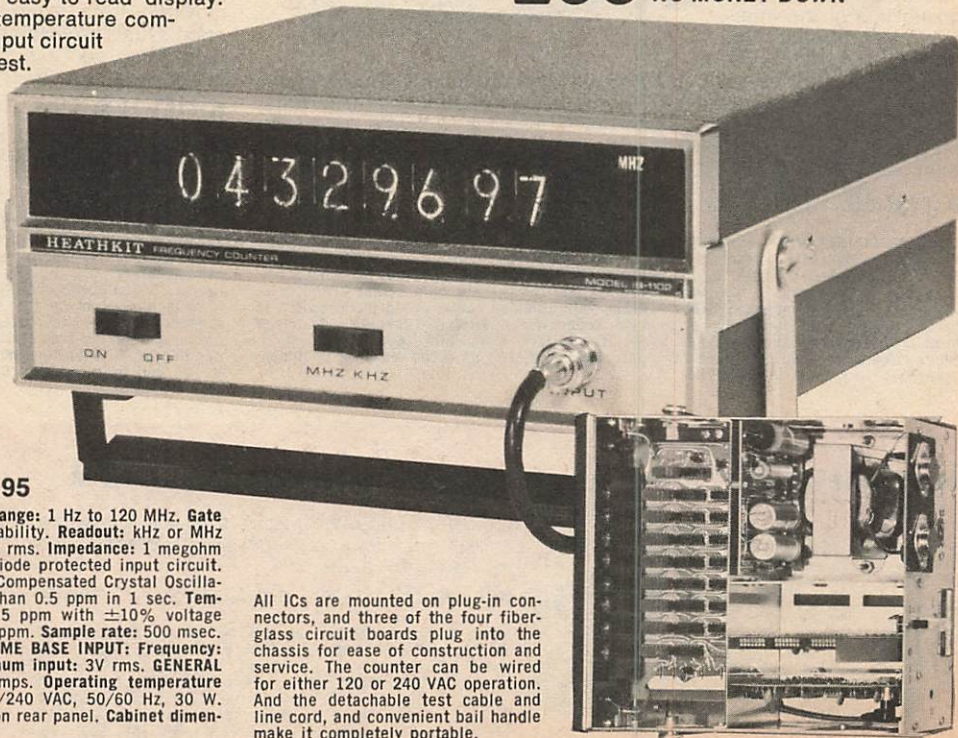
The Heathkit IB-1102 is one of the most versatile, easy-to-use frequency counters we've ever offered. It has an overrange lamp, gate lamp, and two range indicator lamps for an easy-to-read display. Overall accuracy is assured by the use of the temperature compensated "clock." The high-impedance (FET) input circuit presents minimum loading to the circuit under test. And an automatic triggering level feature offers simple "hands-off" operation.

The Heathkit IB-1102 features a sensitivity of 50 mV to 120 MHz. It will accept inputs up to 120 V rms without damage to the instrument. The time base crystal oscillator is temperature compensated and offers ± 1 ppm stability from +10° to +40°C with an aging rate of less than ± 1 ppm/yr. The full eight-digit cold-cathode readout lets you read frequencies with the best possible resolution (down to 1 Hz) without bothering to switch the time base. About 15 hours' assembly time puts the IB-1102 together. All ICs are mounted on plug-in connectors, and three of the four fiberglass circuit boards plug into the chassis for ease of construction and service.

Kit IB-1102, 12 lbs., mailable 299.95

IB-1102 SPECIFICATIONS — FREQUENCY MEASUREMENTS — Range: 1 Hz to 120 MHz. **Gate time:** 1 msec or 1 sec. **Accuracy:** ± 1 count \pm time base stability. **Readout:** kHz or MHz with fixed decimal point. **SIGNAL INPUT — Sensitivity:** 50 mV rms. **Impedance:** 1 megohm in parallel with 35 pF. **Trigger level:** Automatic. **Overload:** Diode protected input circuit. **TIME BASE — Crystal Frequency:** 4 MHz, TCXO (Temperature Compensated Crystal Oscillator). **Stability:** Aging rate: ± 1 ppm/yr. Short term: Better than 0.5 ppm in 1 sec. **Temperature:** ± 1 ppm between 15°C to 50°C. Line voltage: 0.5 ppm with $\pm 10\%$ voltage change. **Frequency trimming:** Accuracy: ± 1 ppm. Range: ± 10 ppm. **Sample rate:** 500 msec. (Time between two openings of counting gate.) **EXTERNAL TIME BASE INPUT: Frequency:** 1 MHz with stability $>10^{-7}$. **Input impedance:** 1000Ω. **Maximum input:** 3V rms. **GENERAL — Display:** 8 digits plus overrange, gate, kHz, and MHz lamps. **Operating temperature range:** Operating 10° C to 40° C. **Power requirements:** 120/240 VAC, 50/60 Hz, 30 W. **Connectors:** Two BNC's. Input on front panel; external clock on rear panel. **Cabinet dimensions:** 8½" W x 3½" H x 9¼" D.

299⁹⁵
NO MONEY DOWN



All ICs are mounted on plug-in connectors, and three of the four fiberglass circuit boards plug into the chassis for ease of construction and service. The counter can be wired for either 120 or 240 VAC operation. And the detachable test cable and line cord, and convenient bail handle make it completely portable.

and save with Heathkit frequency counters

Order the Heathkit IB-102 Scaler with either counter on this page and save \$30!

The Heathkit IB-102 Frequency Scaler will extend the range of the IB-1100 or 1101 counter to 175 MHz. And if you order before October 31, 1973, you can save \$30 when ordering it with either model counter. The IB-102 will divide input frequencies from 2 MHz to 175 MHz with the scaled output fed to a companion counter with a 1 megohm input. Front panel switch-selection of 10:1 or 100:1 scaling ratios... resolution down to 10 Hz, with a counter having a 1 second time base. For use with frequencies within the range of the counter being used, a 1:1 switch position provides straight-thru counting without scaling. The Test Switch gives a quick, easy method of checking input level... just press it — if the frequency reading changes, the input level is too low or the sensitivity control is not adjusted properly. In most cases you'll get improved sensitivity across all ranges. At 100 MHz, for example, 50 mV maximum is all that's needed to trigger.

Not for use with the Heathkit IB-1102.

Kit IB-102, 8 lbs., mailable \$89.95
With special counter offer only **\$59.95**
(Offer expires October 31, 1973)



SAVE \$30

IB-102 SPECIFICATIONS — Frequency Range: 2 MHz to 175 MHz. Resolution: Counter with 1 millisecond time base — divide by 10=10 kHz; divide by 100=100 kHz. Counter with 1 second time base — divide by 10=10 Hz; divide by 100=100 Hz. Meter: Green area indicates adequate signal level. **INPUT** — Sensitivity: 50 mV, 2 MHz to 100 MHz. 125 mV, 100 MHz to 175 MHz. **Impedance.** Divide by 1, same as frequency counter. Divide by 10 and 100, 50 ohms. **Amplitude (maximum):** 3 volts RMS. **OUTPUT** — Amplitude (minimum):

1 volt across 1 megohm and 20 pF load. **Rise Time:** 20 nanosecs. **Fall Time:** 10 nanosecs; **Offset from Ground:** Adjustable from zero to ± 500 millivolts. **GENERAL** — Power Requirements: 110-130 or 220-260 VAC, 50/60 Hz, 5 watts. **Ambient Temperature Range:** Storage, -55 degrees C to 80 degrees C. Operation, 10 degrees C to 40 degrees C. **Dimensions:** 8 1/4" W x 3 3/8" H x 9" D (not including handle).

5-digit counter measures 1 Hz to 100 MHz

The Heathkit IB-1101 has an exclusive Heath-designed input circuit that will accept input levels from less than 50 mV to 140 V rms, depending on frequency, without damage to the instrument. The full five-digit readout can be expanded to eight-digit capability by a simple method using the overrange circuitry. To make accurate readout and operation even easier digits are positioned automatically with respect to decimal point, and MHz, kHz, overrange and gating conditions are shown as illuminated legends on the front panel. The one megohm input impedance and low input capacitance minimize the possibility of circuit loading. The all solid-state circuitry and cold cathode readout tubes mean instant operation whenever the counter is turned on. Count storage circuitry provides a non-blinking or count-up readout changing only if the count varies. The time-base crystal is custom designed for rigid stability, with accuracy better than ± 3 ppm from 17° to 32°C.

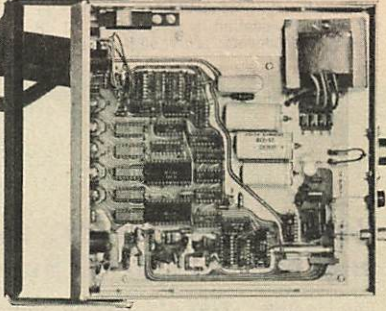
Kit IB-1101, 8 lbs., mailable \$229.95

IB-1101 SPECIFICATIONS — Frequency range: 1 Hz to over 100 MHz. Accuracy: ± 1 digit \pm time base stability. Sensitivity: 50 mV rms, to 50 MHz, 100 mV rms, 50 MHz to 100 MHz. Gate time: 1 ms or 1 sec., with auto. reset. **Input impedance:** 1 megohm, shunted by less than 15 pF. **Maximum input voltage:** 140 V rms at 400 Hz decreasing to 3 V rms @ 100 MHz. **Maximum dc input 200 V.** **External standard input:** 1 MHz, 2.5 V rms to 6.5 V rms, sine or square wave, approx. 2.5 k ohms, 70 pF. **Time base (after 30 min. warmup):** 1 MHz. **Time base stability (after 30 min. warmup):** Better than ± 3 PPM between 17° C and 32° C. Better than 1 PPM/month after 30 days operation. Better than ± 20 PPM between 0° C and 40° C. **Front panel indications:** 5 10-numeral cold-cathode tubes, 4 neon lamps for overrange, gate, MHz and kHz. **Rear panel:** Input sensitivity control, time base osc. adjust, BNC external standard input (1 MHz), TP level control, TP output terminal, removable 3-wire line cord. **Front panel:** Power off/on switch, range MHz/kHz switch, BNC input connector. **Power requirements:** 120/240 VAC, 50/60 Hz, 15 W. **Dimensions:** 3 3/8" H x 8 1/4" W x 9" D.



229⁹⁵
NO MONEY DOWN

You can build your IB-1101 in approximately 10 hours. All components mount neatly on one double-sided fiberglass board.



Heathkit IB-1100 resolves 1 Hz with 100 mV sensitivity

The Heathkit IB-1100 puts a 1 Hz to over 30 MHz counter in everybody's price range. And gives a full 5-digit readout, with 8 digit capability, in the bargain. Switch the kHz/MHz switch to MHz and you read to the nearest kHz. Put it in the kHz position and read down to the last Hz. The lighted Overrange indicator makes misreading virtually impossible. The all solid-state digital circuitry eliminates blinking readout. Cold-cathode readout tubes come on instantly. The custom-designed time-base circuitry assures rigid stability, accuracy better than ± 3 ppm from 22° to 37°C. A diode-protected J-FET gives improved triggering over inputs from 100 mV rms to 150 V rms — and also never needs adjusting. Input impedance is 1 megohm, shunted by 20 pF, to minimize loading. The Heathkit IB-1100 — it's the best value we've ever offered in a frequency counter.

Kit IB-1100, 6 lbs., mailable \$169.95



IB-1100 SPECIFICATIONS — Frequency range: 1 Hz to over 30 MHz. Accuracy: ± 1 digit \pm time base stability. Sensitivity (after 30 minute warmup): 100 mV rms typical, 200 mV rms max. Gate time: 1 msec. or 1 sec; with automatic reset. **Input impedance:** 1 megohm shunted by less than 20 pF. **Max. input voltage:** 150 V rms to 100 kHz. Derate 48 V per decade above 100 kHz. (Maximum dc input 200 V). **Time base frequency:** 1 MHz. **Time base stability (After 30-min. warmup):** Less than ± 3 ppm between 22°C and 37°C. Less

than 1 ppm/month after 30 days operation. Less than ± 20 ppm between 10° and 40°C. **Front panel indications:** Five 10-numeral, cold-cathode tubes, plus neon lamp for Overrange. **Rear panel:** Time Base Osc adjustment, TP Level control, TP Output terminal. **Ambient temp. range:** Storage -55°C to +80°C. Operating 10°C to 40°C. **Power requirements:** 120/240 VAC, 50/60 Hz, 15 W. **Dimensions:** 3 1/8" H x 7 1/4" W x 8 7/8" D.

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

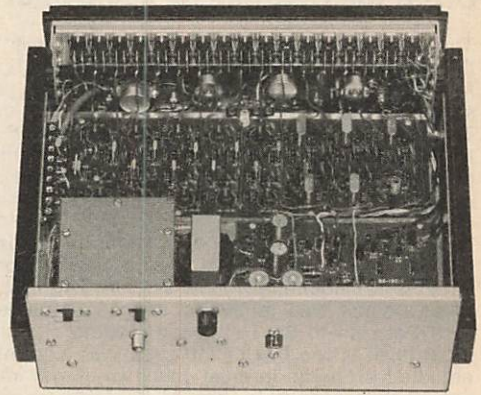
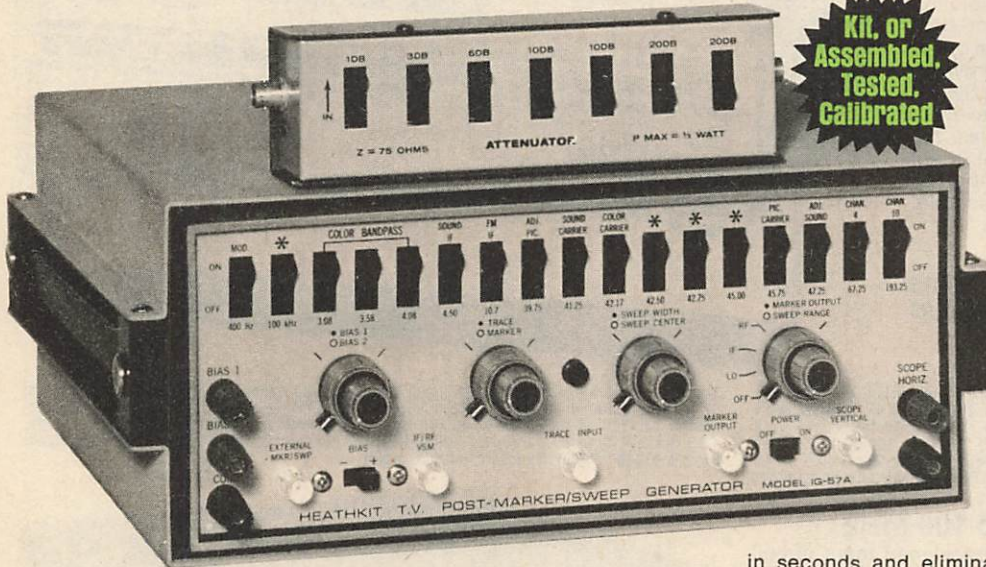
Top-quality professional alignment & service

Heathkit Post-marker/Sweep Generator

- 15 crystal-controlled markers
- Three sweep oscillators
- Compact size

139⁹⁵
NO MONEY DOWN

**Kit, or
Assembled,
Tested,
Calibrated**



You can complete any alignment job quickly and successfully with a scope, a VTVM and the IG-57A. That's all you need to align virtually any B&W or color receiver on the market. You can check the overall receiver frequency response from the antenna terminals through the tuner, IF strip, video detector, to the color bandpass amplifier outputs. New circuitry provides sweep-modulated picture carriers — not only at 45.75 MHz for the tuner mixer input, but also 67.25 MHz for the antenna terminal output. The exclusive Heathkit external attenuator enables you to set bandwidth accurately

in seconds and eliminates guessing at important 6 dB amplitudes. There are 15 crystal-controlled markers — four for color bandpass, one for FM IF, eight for TV IF frequencies from 39.75 to 47.25 MHz — plus markers for channels 4 & 10 picture and sound carriers. Now you accurately locate picture and sound carriers, 6 dB points and trap locations. Three Sweep Oscillators in stable Colpitts circuits produce five ranges using harmonics for color bandpass, FM IF, Video IF bandpass, VHF channels 4 & 10. Just the right size for the job, the IG-57A measures only 13 3/8" W x 5 1/2" H x 12" D — doesn't waste valuable bench space. The front panel controls are easy to read, easy to use. It utilizes quick-disconnect BNC connectors and comes complete with four coaxial cables, four test leads and a demodulation probe.

IG-57A SPECIFICATIONS — Marker frequencies: 100 kHz. Marker frequencies, crystal-controlled: 3.08, 3.58, 4.08, and 4.50 MHz $\pm 0.1\%$. 10.7, 39.75, 41.25, 42.17, 42.50, 42.75, 45.00, 45.75, 47.25, 67.25 and 193.25 MHz $\pm 0.005\%$. Modulation frequency: 400 Hz. Input impedance: External Marker/Sweep, and Attenuator — 75 ohms. Trace in — 220 k ohms. Output impedance: Marker Output, Sweep Output, and Attenuator — 75 ohms. Scope Vert. — 1 k ohms. Bias voltage: Two individually adjustable supplies; Positive or negative polarity. Type of marker: Birdie. Controls: Bias controls; Marker/Trace — dual concentric; Sweep Width/Sweep Center — dual concentric; Marker Out — concentric with Sweep Range switch; and Phase. Switches: Rocker type — separate switch for each of the above listed frequencies; Blanking, On/Off; Trace Reverse; Modulation On/Off. Sweep frequency ranges and output voltage: LO Band — 2.5 to 5.5 MHz ± 1 dB at 0.5 volts RMS (min.) fundamentals, and 10.7 MHz on harmonics. IF Band — 38 to 49 MHz ± 1 dB, at 0.5 volts RMS (min.) fundamentals. RF band — 64 to 72 MHz ± 1 dB at 0.5 volts RMS (min.) fundamentals and 192 to 198 MHz on harmonics. Attenuator: Total of 70 dB of attenuation in seven steps — 1 dB, 3 dB, 6 dB, 10 dB, 10 dB, 20 dB and 20 dB. Power requirements: 120 V, 60 Hz AC at 4.5 watts.

Kit IG-57A, 15 lbs., mailable 139.95
Assembled IGW-57A, 16 lbs., mailable 199.00

Heathkit IG-37 for fast, easy alignment of FM/FM Stereo equipment

The Heathkit IG-37 FM Stereo Generator has all the signals you need for quick alignment of FM/FM Stereo equipment. There's an audio or composite stereo signal for multiplex adapter adjustments . . . an RF carrier modulated by these signals for tuner and receiver adjustments . . . a "phase test" function for accurate adjustment of sub-carrier transformers . . . a variable-level crystal-controlled 19 kHz (± 2 Hz) pilot signal to check the lock-in range of stereo receivers . . . and built-in sweep and marker signals for overall RF and IF alignment. Carrier signal is adjustable up to 2 MHz above or below its normal frequency to permit alignment on a clear portion of the FM band.

New front panel and controls are "human engineered" and "technician proven" for maximum utility. Select either right or left channel signals or the special "phase test" from the front panel — no balancing required for equal right and left channel modulation level. Provides switch-selected frequencies, either direct or modulated RF, of 400 Hz, 1000 Hz, 5000 Hz, 19 kHz, and one of two special SCA (subscription service) frequencies (65 kHz or 67 kHz), to provide a versatile system for aligning even the most advanced-design tuners. Complete with leads.

Kit IG-37, 12 lbs., mailable 79.95



79⁹⁵
NO MONEY DOWN

IG-37 SPECIFICATIONS — RF signal frequency: 100 MHz adjustable by approx. ± 2 MHz. Pilot modulating frequency: 19 kHz ± 2 Hz. FM modulation: Left channel (stereo), right channel (stereo), Phase Test (left plus right channel in phase), Monophonic FM. Deviation: Adjustable to 75 kHz. Sweep rate: (used for RF and IF alignment) 60 Hz. Sweep width: (used for RF and IF alignment). Adjustable to 750 kHz. RF attenuator range: 60 dB in 20 dB steps. Crystal-controlled markers: 10.7, 90.95, 96.30, 101.65 & 107 MHz. Composite signal output: Left channel (stereo); Right channel (stereo). Phase test (left plus right channels in phase). Audio output: 400, 1000 & 5000 Hz; 19 kHz (± 2 Hz); 38 kHz & SCA (65 or 67 kHz). Distortion: (At 400, 1000, & 5000 Hz) Less than 5%. Power requirements: 120/240 VAC, 50/60 Hz, 35 W. Dimensions: 5 1/2" H x 13 1/2" W x 9" D.

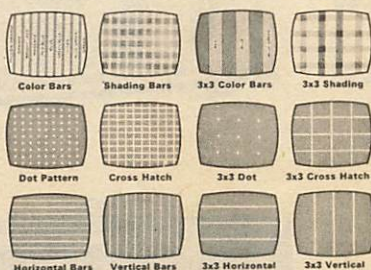
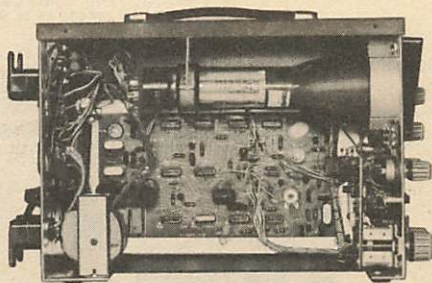
Built-in Heathkit self-service features save you money

equipment at direct-to-you Heathkit savings

Heathkit Vectorscope/Color Generator

- Standard 9x9 or exclusive Heath 3x3 display
- Solid-state circuitry assures stability and reliability

124⁹⁵
NO MONEY DOWN



The IO-101 produces 12 patterns plus a clear raster for purity adjustments. All patterns are available at the turn of a knob, either in the familiar 9x9 or the exclusive Heath 3x3 display.

A good tech knows his instruments inside and out — and we make it easy with the Heathkit IO-101. You build it on your own bench and the manual is full of circuit descriptions, schematics and theory of operation data. You mount the solid-state circuitry on two boards, wire-up the controls and our exclusive 3-in. flat-face CRT. Ten ICs, comprising 15 J-K flip-flops and eight gates, and the crystal-controlled clock in the divider chain eliminate extensive final adjustment while increasing overall accuracy and stability.

The vector pattern indicates the ten color bars generated, amplified and demodulated by the color receiver circuitry — accurately represents the chroma signal fed to the CRT guns. Shows at a glance missing or weak colors — proper adjustment of burst phase transformer, reactance coil, oscillator coil and bandpass transformer. Color demodulation angle can also be checked.

A grid cathode switch on the rear panel enables all vector patterns to be displayed regardless of how the CRT is driven. There are front panel controls for tuning channels 2 through 6; selecting plus or minus going video signals, sync output, and 4.5 MHz crystal-controlled sound carrier.

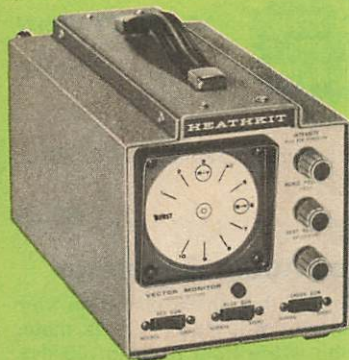
Other features include shielded leads for fast connection of RF signal to antenna terminals or video signals to video circuits; gun shorting switches; lead-piercing grid jacks, and two 500 watt grounded AC receptacles for test gear or TV.

Kit IO-101, 12 lbs., mailable . . . 124.95

IO-101 SPECIFICATIONS — PATTERNS — Purity: Produces a snow-free raster for purity adjustments. **Dots*:** 9x9 produces a display of 110 small dots. 3x3 produces a display of nine dots for convergence adjustments. **Crosshatch*:** 9x9 produces a display of 11 vertical and 10 horizontal lines. 3x3 produces a display of three vertical and three horizontal lines for convergence and linearity adjustments. **Horizontal Lines*:** 9x9 produces a display of 10 horizontal lines. 3x3 produces a display of three horizontal lines for vertical linearity and pin-cushion adjustments. **Vertical Lines*:** 9x9 produces 11 vertical lines. 3x3 produces a display of 3 vertical lines for horizontal linearity and convergence adjustments. **Color Bars*:** 9x9 produces a display of ten standard color bars. 3x3 produces a display of three standard color bars. A visual fingerprint (voltage pattern) of all ten color bars in the form of a petal pattern is

displayed for color circuit servicing. **Gray Scale:** Provides a wide bar crosshatch pattern with six shades of brightness for color gun level adjustments. **OUTPUT SIGNALS — Video:** Greater than ± 1 volt peak-to-peak composite signal for composite signal injection beyond the video detector. **RF:** Variable to approximately 25,000 μ V output, channels 2 through 6, for composite signal injection into the TV receiver antenna input terminals. **Sync:** Greater than 3.5 volts peak-to-peak signal for servicing sync circuits without video, or sets having separate video and sync demodulator phase adjustments. **GENERAL — Power Requirements:** 105-125 or 210-250 VAC, 50/60 Hz, 20 Watts. **Cabinet Dimensions:** 9 $\frac{1}{4}$ " H x 6 $\frac{3}{4}$ " W x 14 $\frac{1}{2}$ " D.

*The number of dots, lines, and bars indicated for a 9x9 display is the number displayed if the receiver under test has no overscan.



Heathkit TV Vector Monitor

The IO-1128 uses our exclusive 3-in. flat-face tube and associated circuitry from the Heathkit Vectorscope mounted in a separate cabinet. Designed for use with the IG-28 Color Bar & Dot Generator or similar unit, the IO-1128 displays "rainbow" (offset carrier) color bar patterns. Helps you perform fine tuning, static and dynamic convergence, purity, 3.58 oscillator, reactance coil,

phase detector transformer, demodulator angle check, and chroma bandpass adjustments. Indicates all color bars generated, amplified and demodulated by the color TV — represents exactly the color signals being fed to CRT guns. Operates from 120/240 VAC, 50/60 Hz, has low flux leakage power transformer to eliminate disruption of TV under test.

Kit IO-1128, 10 lbs., mailable . . . 49.95

IO-1128 SPECIFICATIONS — Switches: Power on-off, red gun, blue gun, green gun on front panel. Chroma switch on rear panel. **Controls:** Intensity, horizontal position, vertical position, focus (screwdriver adjust), astigmatism (screwdriver adjust). **Graticule with radial pattern:** For use with all colorbar generators which produce vertical color bars (offset carrier). **Cathode ray tube:** 3RP1A, flat-faced CRT (green trace on white background). **Power requirements:** 120/240 VAC, 50/60 Hz, 10 W. **Dimensions:** 6 $\frac{1}{2}$ " H x 5 $\frac{3}{4}$ " W x 12 $\frac{1}{4}$ " D.

Heathkit Color Bar/Pattern Generator

A few hours of your time can give you the color bar and dot generator capabilities of the Heathkit Vectorscope — at a nice kit-form price. The reliable solid-state circuitry with 10 ICs assembles quickly and easily on two roomy boards. Has 12 patterns plus raster: dots, cross hatch, vertical and horizontal bars, color bars and grey scales in either the familiar 9x9 display or the exclusive Heath 3x3. The crystal-controlled master oscillator and IC logic circuitry provide a minimum-adjustment, rock-stable divider chain.

Kit IG-28, 8 lbs., mailable . . . 79.95
Assembled IGW-28, 10 lbs., mailable . . . 114.95

IG-28 SPECIFICATIONS — Output signals: Video — Greater than ± 1 V peak-to-peak composite signal for composite signal injection behind the video detector. **RF** — Variable to 50,000 μ V output, channels 2 through 6, for composite signal injection into the receiver antenna input terminals. **Sync.** — Greater than 3.5 V peak-to-peak signal for servicing sync circuits without video, or sets having separate video and sync demodulators. **Control Grids (3)** — Individual red, blue, and green control grid signals for viewing chroma signal demodulator phase adjustments. **Power supply:** Transformer operated, full-wave zener diode regulated. **Input** — 120/240 VAC, 50/60 Hz. **Output** — 3.6 VDC, 500 mA, zener diode regulated. **Dimensions** — overall: 5 $\frac{1}{2}$ " H x 13 $\frac{1}{2}$ " W x 8" D.



Heathkit test gear - professional quality at low cost

Heathkit Solid-State Sine-Square Wave Generator

- 1 Hz to 100 kHz sine wave & 5 Hz to 100 kHz square wave
- Both outputs floating

69⁹⁵

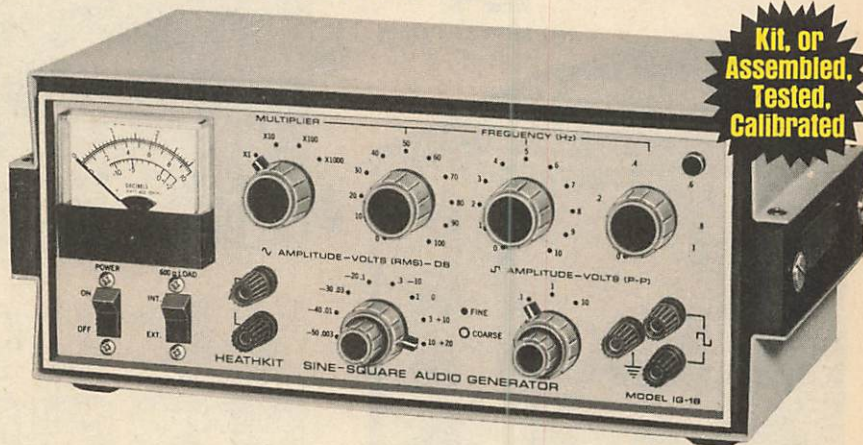
NO MONEY DOWN

The Heathkit IG-18 is designed for lab use as well as for service and testing. It is ideal for applications such as testing audio amplifiers for gain and frequency response, as a signal source for harmonic distortion measurements, or as an external modulator for an RF signal generator. It provides 1 Hz to 100 kHz sine wave output at 5% accuracy, with less than 0.1% distortion from 10 Hz to 20 kHz. Square wave output is from 5 Hz to 100 kHz, less than 50 ns rise time. Both outputs are floating and available simultaneously. Switch-selected internal/external load. 120/240 VAC, 50/60 Hz. 5½" H x 13¼" W x 7" D.

Kit IG-18, 12 lbs., mailable **69.95**

Model SG-18A, factory-assembled & calibrated version of the IG-18 in handsome black & white styling (not shown), 10 lbs., mailable **99.50**

IG-18 PARTIAL SPECIFICATIONS - GENERAL: Frequency selection: 0-100 switch (steps 10), 0-10 switch (steps of 1), 0-1 control (vernier) & multiplier switch (x1, 10, 100, 1000). **SINE WAVE OUTPUT:** Output voltage: 8 ranges, 0.003 to 10 Vrms (full scale) with 10 K ohm or higher external load. 6 ranges, 0.003 to 1 V (full scale) with 600 ohm internal or external load. **dB ranges:** -62 dB to +22 dB, -12 dB to +2 dB on meter and -50 to +20 dB on amplitude switch in 10 dB steps. +2 dB to +2 dB on meter and 0 dB = 1 mW in 600 ohm. **Output variation:** ±1 dB 10 Hz to 100 kHz. **Output indications:** Two voltage and one dB scale on meter. **Output impedance:** 10 V range: 0-1000 ohm; 3 V range: 800-1000 ohm; 1 V range and lower: 600 ohm. **Meter accuracy:** ±5% of full scale with proper load termination. **SQUARE WAVE OUTPUT:** Output voltage (peak-to-peak): .1, 1, 10 V into 200 ohm load or higher. **Output impedance:** .1V and 1 V ranges: 52 ohm; 10 range: up to 220 ohm.



A)

67⁵⁰

NO MONEY DOWN

IM-58



C)

69⁹⁵

NO MONEY DOWN

IG-42



E)

32⁹⁵

NO MONEY DOWN

IG-102

B)

69⁹⁵

NO MONEY DOWN



IM-48

D)

49⁹⁵

NO MONEY DOWN



IG-72

Kit, or Assembled, Tested, Calibrated

A) Heathkit Harmonic Distortion Meter

Measures harmonic distortion as low as 1% full-scale reading from 20-20,000 Hz. Measures noise down to -60 dBm. Meter calibrated in volts rms, % distortion and dB. Requires audio generator such as the Heathkit IG-72 for alignment, 120/240 VAC, 50/60 Hz, 30 W. 8½" H x 13" W x 7" D.

Kit IM-58, 13 lbs., mailable **67.50**

B) Heathkit Audio Intermodulation Analyzer

Combines AC VTVM, wattmeter and IM analyzer in one. Has built-in high and low signal sources for IM tests, load resistors for 4, 8, 16 & 600 ohms. 120/240 VAC, 50/60 Hz, 20 W. Measures 8½" H x 13" W x 7" D.

Kit IM-48, 13 lbs., mailable **69.95**

C) Heathkit Precision RF Generator

Adjustable to ±3% frequency calibration accuracy from 100 kHz to 30 MHz with RF output voltage adjustable from 5 to 100,000 μV in five attenuated steps, with 10:1 variable attenuation. RF output can

be modulated from 0-50% with 5% accuracy: 120/240 VAC, 50/60 Hz. 8½" H x 13" W x 7" D.

Kit IG-42, 15 lbs., mailable **69.95**

D) Heathkit Low Distortion Audio Generator

Produces near-perfect waveform with less than 0.1% distortion from 20-20,000 Hz. Switch selects frequencies from 10 Hz to 100 kHz, meter monitors output in volts and dB to within ±5% from 10 Hz to 100 kHz. 120/240 VAC, 50/60 Hz, 40 W. 6½" H x 9½" W x 5" D.

Kit IG-72, 8 lbs., mailable **49.95**

Assembled IGW-72, 9 lbs., mailable **74.95**

E) Heathkit General Purpose RF Generator

Covers 100 kHz to 200 MHz in 6 bands with 2% tuning accuracy. Large accurately calibrated dial scales. Factory wired and aligned coil and bandswitch assembly. Modulated or unmodulated RF output. 400 Hz signal modulation and 400 Hz audio output for audio tests. 9½" H x 6½" W x 5" D. 120 VAC, 50/60 Hz.

Kit IG-102, 6 lbs., mailable **32.95**

Top Value Heathkit power supplies for every service need

Heathkit Regulated Low Voltage Power Supply

- Regulated DC voltage from 0.5 to 50 volts
- Overload protection

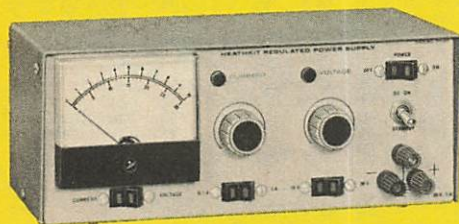
79⁹⁵
NO MONEY DOWN

One of the finest low voltage supplies Heath has ever offered. Regulated DC voltages are selected in 5 volt increments on the 10 position Coarse Voltage Range switch with exact values made possible by the Fine Voltage control. Output current limiting is also selected in 4 fixed ranges by the Coarse Current switch and the Fine Current control is used for exact, vernier adjustments (meter scales are color matched to range switch markings). Panel meter may be switched from voltage to current. The relay is protected from short circuits and overloads. For higher outputs, several IP-27 supplies may be connected in series or parallel. Put the IP-27 to work for you now.

Kit IP-27, 16 lbs., mailable **79.95**
Assembled IPW-27, 15 lbs., mailable **125.00**



69⁹⁵
NO MONEY DOWN
IP-17



49⁹⁵
NO MONEY DOWN
IP-28



21⁹⁵
NO MONEY DOWN
IP-18



62⁹⁵
NO MONEY DOWN
IP-12

A) Variable 0-400 VDC Regulated Supply

Hundreds of uses for experimenters, servicemen, physics and chemistry labs.

Kit IP-17, 21 lbs., mailable **69.95**
Assembled IPW-17, 21 lbs., mailable **110.00**

IP-17 SPECIFICATIONS — Output: 0-400 V regulated DC at 0-100 mA continuous, 125 mA intermittent, 0 to -100 VDC at 1 mA variable bias voltage, 6.3 VAC at 4 amps., 12.6 V at 2 amps. (25 VA max. AC load), filament voltage. Regulation: Output variation less than 1% from no load to full load. Output variation less than 1% for a ±10 V change at 117 VAC input. Ripple: Less than 10 millivolts RMS, ripple, jitter and noise. Output impedance: Less than 10 ohms, DC to 1 MHz. Meters: Voltmeter 0-400 V or 0-150 V; Milliammeter 0-150 mA. Power requirements: 120/240 VAC, 50/60 Hz, 150 W max. Dimensions: 5½" H x 13¼" W x 11" D.

B) Solid-State 1-15 VDC Regulated Supply

Versatile supply for solid-state applications.

Kit IP-18, 5 lbs., mailable **21.95**

IP-18 SPECIFICATIONS — Voltage output: 1-15 VDC, continuously adjustable. Load regulation: Less than 50 mV variation from no load to full load. Line regulation: Less than 50 V change in output voltage for a 10% change in line voltage. Ripple and noise: Less than 5 mV. Current output: 500 mA maximum continuous load. Current limiting: Adjustable from 10 mA to over 500 mA. Transient response: 25 microseconds. Output impedance: .5 ohm or less to 100 kHz. Power requirements: 120/240 VAC, 50/60 Hz, 15 W at full load. Dimensions: 4¾" H x 5½" W x 5¾" D. Programming: AC or DC, 5000 ohm input resistance.

C) Solid-State 1-30 VDC Regulated Supply

Ideal low-voltage source for transistor work.

Kit IP-28, 9 lbs., mailable **49.95**

IP-28 SPECIFICATIONS — Voltage output: 2 ranges: 1-10 and 1-30 VDC, continuously adjustable. Load regulation: Less than 50 mV variation from no load to full load (at front panel terminals) without remote sensing. Less than 20 mV variation from no load to full load at front or rear panel terminals when using remote sensing. Line regulation: Less than 25 mV variation in output voltage for 10% change in line voltage. Ripple & noise: Less than 5 mV. Current output: 1A maximum continuous load (0.75A max. continuous load below 5 V). Current limiting: 2 ranges: 10-100 mA & 10 mA-1A, continuously adjustable. Transient response: 25 μs. Output impedance: 0.3 ohms or less to 100 kHz. Meter accuracy: 3% of full scale. Meter ranges: One switch determines voltage or current reading. 2 voltage ranges: 0-10 V, 0-30 V, 2 current ranges: 0-100 mA, 0-1A. External programming: AC or DC programming. 5000 ohm load on DC. Power requirements: 120/240 VAC, 50/60 Hz, 50 W, at full load. Dimensions: 6½" H x 10¾" W x 4¾" D. overall.

D) 6 & 12 VDC Variable Battery Eliminator

Doubles as a battery charger.

Kit IP-12, 18 lbs., mailable **62.95**

IP-12 SPECIFICATIONS — Continuously variable output: 6 V range: unfiltered, 10 amp continuous, 15 amp maximum; filtered, 5 amp continuous, less than .3% ripple. 12 V range: unfiltered, 5 amp continuous, 7.5 amp maximum; filtered, 5 amp continuous, less than .3% ripple. Power requirements: 120 VAC, 50/60 Hz at 200 W. Dimensions: 8½" H x 13" W x 7" D.

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

Heathkit quality measures up to the best for less

Heathkit 12-speed 10" Chart Recorder

- Push-button selection of 12 chart speeds
- Two input ranges — 1 mV & 10 mV

Fast push-button selection of 12 different chart speeds from 5 seconds per inch to 200 minutes per inch gives the versatility you need for a wide variety of measurement problems. Chart drive uses the incoming line frequency as a standard...digital logic provides accuracy equal to complex & expensive gear trains. Two input ranges permit accurate voltage measurements of 1 millivolt and 10 millivolts full scale. High input Z minimizes circuit loading and possible error. The 3-terminal floating input is highly useful for monitoring signals when the recorder and source are at different potentials.

Other features include versatile pen holder which will accept virtually any writing instrument...especially useful for obtaining multi-colored plots. The hinged top makes paper loading simple and fast.

Kit IR-18M, 15 lbs., mailable 149.95
IRA-18-1, 3 rolls chart paper (140 ft/roll), 5 lbs., mailable 9.95

IR-18M SPECIFICATIONS — Chart paper: Grid width, 10". Length, 140 ft. roll. Markings, 0-100 right to left. Chart speed: 12 speeds, pushbutton selected. 5, 10, 20, 50, 100, 200 sec/inch and 5, 10, 20, 50, 100, 200 min/inch. Chart span: Two fixed ranges; 1 mV and

149⁹⁵
NO MONEY DOWN



10 mV full scale. Pen: Standard cartridge-type fountain pen. Balancing time: Approximately 0.1 sec/inch, 1 second full scale (10"). Input circuit: Self-balancing potentiometer. Input resistance: Essentially infinite at null. Line frequency rejection: (input shorted.) 130 dB in common mode. Floating input: ±100 VDC maximum with respect to ground. Overall error: Less than 1% of full scale. Power requirements: 120/240 VAC, 60 Hz, 14 W or 120/240 VAC, 50 Hz, 16 W. Dimensions: 6" H x 15" W x 9 3/8" D.

Low Cost Heathkit Tube Checker

An essential instrument for Radio & TV servicing. Saves valuable time by eliminating doubt and guesswork as to tube quality before further circuit investigations are made. Tubes are quickly tested for quality on the basis of total emission, for shorts, leakage, open elements, and filament continuity. A fast, positive evaluation of tube quality. The relative quality is read on a multicolored "bad-?-good" scale and a neon bulb indicator shows filament continuity and leakage or shorts between elements.

Kit IT-17, 12 lbs., mailable 72.50

IT-17 SPECIFICATIONS — Tests: Emission, short, leakage, open element, filament continuity. Sockets: 4-pin, 5-pin, 6-pin, 7-pin combination and pilot light, 7-pin miniature, octal, loctal, 10-pin miniature, 9-pin novar, 9-pin miniature, 12-pin compactron, 5-pin nuvistor, 7-pin nuvistor. Meter: 1mA BAD-?-GOOD scale, illuminated. Line voltage adjustment: Step type. Roll chart mechanism: Constant tension, free-rolling, thumbwheel operation, illuminated. Filament voltage: .63, 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 VAC. Element test voltages: 30, 100, 250 VAC. Power requirements: 120 VAC, 50/60 Hz. Dimensions: 8 1/2" H x 13" W x 5 1/2" D.

Heathkit Mutual-Conductance Tube Tester

No finer tube tester in kit form anywhere. Versatile switching facilities accommodate virtually all tube types. Sure protection against obsolescence. The TT-1A provides quick and accurate tests of mutual conductance (Gm) from 0 to 3,000 micromhos, with multipliers to extend this range to 24,000 micromhos. In addition there are an ultra-sensitive grid current test, a life test, hybrid test, a direct-reading ohmmeter leakage test, and more. A disconnect switch removes all voltages from the selector switches to protect both tubes and tester against possible damage during setup. "Cathode buss," "plate buss," and "grid buss," switches allow testing of both sections of a twin triode individually, with only one group of selector switch settings for extra operating convenience.

Kit TT-1A, 33 lbs., mailable 199.50

Updated Tube Chart Subscription Service for all Heathkit Tube Checkers includes new chart plus two supplements per year for only \$5.

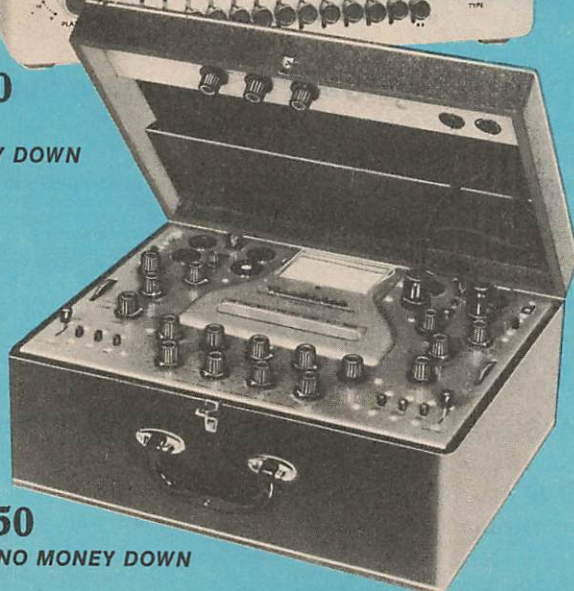
Write: Heath Tube Data Service, P.O. Box 377, Hewlett, Long Island, New York 11557.

TT-1A SPECIFICATIONS — Power requirements: 120 VAC, 60Hz, 10-60 W. Testing Circuits: Gm: mutual conductance for amplifiers, 0-24,000 μmho. Emission: rectifiers & diodes. Leakage: direct reading ohmmeter. Grid current, 1/4 μA sensitivity. Voltage regulator: firing voltage and regulation tolerance. Low power thyatrons: grid characteristics, conduction capabilities. Eye tubes: control grid characteristics. Line voltage adjustment: Continuously variable. Roll chart mechanism: Constant tension illuminated. Dimensions: 13 1/2" H x 17 3/4" W x 8" D.



IT-17

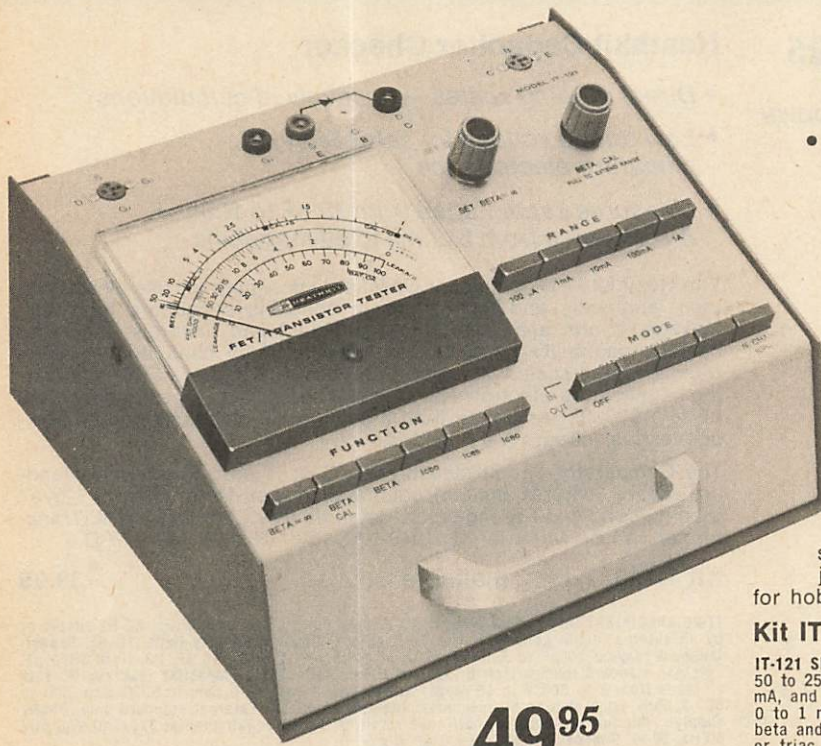
72⁵⁰
NO MONEY DOWN



TT-1A

199⁵⁰
NO MONEY DOWN

Professional test gear with built-in savings



49⁹⁵

NO MONEY DOWN

Heathkit In-Circuit FET/Transistor Tester

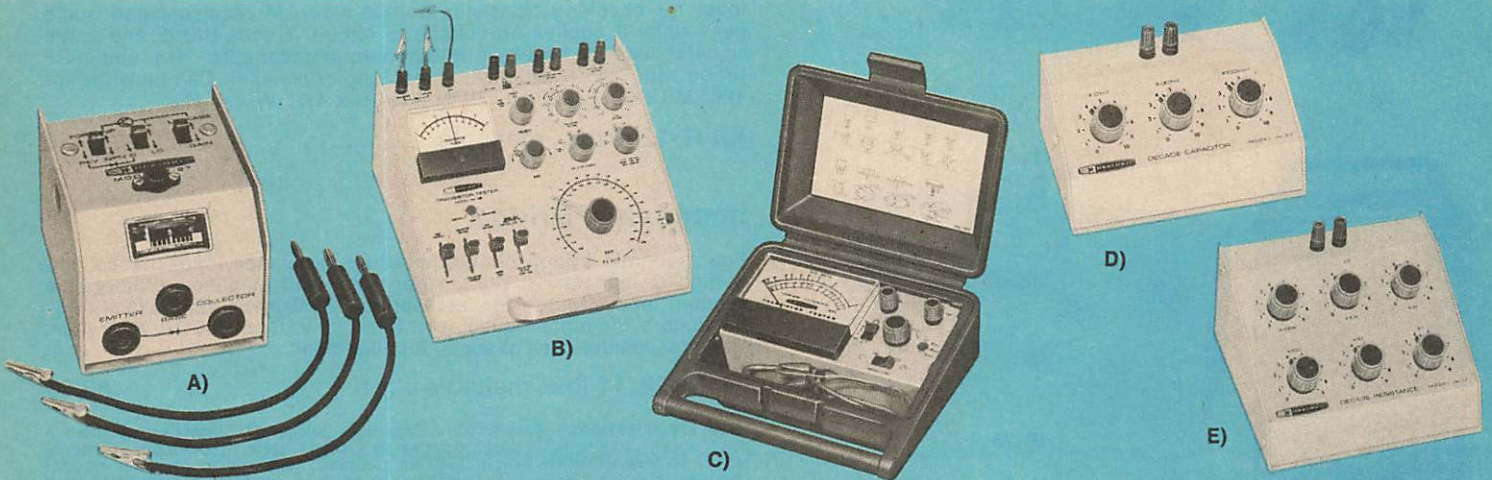
- Tests transistors, diodes, FETs, SCRs, Triacs, Unijunction Transistors — in or out of circuit
- 5 current ranges — measure leakage as low as $1\mu\text{A}$ and collector currents as high as 1 A

The Heathkit IT-121 In-Circuit FET/Transistor Tester is a top-quality instrument designed for quick, accurate tests of conventional (bipolar) transistors, diodes, FETs, SCRs, triacs, and unijunction transistors. Gain (DC Beta), transconductance (GM), and leakage values are read directly on the large easy-to-read meter. Devices can easily be tested either in-circuit using color-coded test leads supplied, or out-of-circuit using the built-in transistor and FET sockets. The IT-121 provides special circuitry to balance out in-circuit impedances.

Convenience features include a special battery testing circuit providing a meter indication of the self-contained power supply (batteries not included); a color-coded front panel design — black lettering for conventional (bipolar) transistors, and red lettering for FETs (field-effect transistors). Single circuit board design makes the IT-121 an enjoyable two-evening project to assemble. It's a great little tool for hobbyists, experimenters, and techs alike—order yours today.

Kit IT-121, 6 lbs., mailable 49.95

IT-121 SPECIFICATIONS — DC Beta: 1 to 5000 in ranges of 1 to 50, 5 to 250, 10 to 500, 50 to 2500, 100 to 5000. Collector currents available: 1 mA, 5 mA, 10 mA, 100 mA, 500 mA, and 1 A. Gm: 0 to 50,000 μmhos . Leakage measurements: Five ranges, 0 to 100 μA , 0 to 1 mA, 0 to 10 mA, 0 to 100 mA, 0 to 1 A. Out-of-circuit accuracy: $\pm 5\%$ for DC beta and leakage. In-circuit accuracy: Indicates good or bad transistor, FET, diode, SCR or triac. Diode test: Tests for forward conduction and blocking. Unijunction transistor test: Measures $V_{eb,s}$, R_{bb} , and emitter current (out-of-circuit). Power requirements: Two $1\frac{1}{2}$ V cells (alkaline for best performance). Dimensions: 5" H x $9\frac{1}{4}$ " W x $8\frac{3}{8}$ " D.



A) Transistor/Diode Checker

Checks high & low power transistors both NPN & PNP, for shorts, leakage, opens, and current gain. Checks forward and reverse current on diodes. Also serves as continuity checker. Uses two 1.5 V "C" cells (not supplied). $3\frac{1}{8}$ " W x $3\frac{3}{4}$ " D.

Kit IT-27, 2 lbs., mailable 6.95

B) Lab Transistor Checker

Checks transistors up to 15 amps and diodes up to 1.5 amps. Tests shorts, DC gain (Beta 0-200 & 200-400), leakage (I_{cbo} , I_{ceo}), diode forward and reverse current. Seven 1.5 V "D" batteries (not included) provide power. $5\frac{1}{2}$ " H x $10\frac{3}{4}$ " W x $10\frac{1}{4}$ " D.

Kit IM-36, 9 lbs., mailable 67.50

C) In-Circuit Transistor Tester

Checks transistors in or out of circuit. Measures transistor DC Beta out of circuit, range 2-100, 20-1000. Measures leakage out of circuit, range 0-5000 μA . Tests diodes in or out for opens and shorts and identifies unknown leads. Matches and identifies NPN and PNP tran-

sistors. Can't harm circuits. Not for use with high power or switching transistors. $4\frac{1}{2}$ " H, 200 μA meter. Battery powered circuit.

Kit IT-18, 4 lbs., mailable 25.95

IT-18 SPECIFICATIONS — D. C. Beta: x1 range — 2 to 100, x10 range — 20 to 1000. Out-of-circuit accuracy: $\pm 5\%$. In-circuit accuracy: Indicates good or bad (accuracy depends upon circuit being tested); I_{ceo} (out-of-circuit only) — 0-5000 μA ; I_{sbo} (out-of-circuit only) 0-5000 μA diodes; forward or reverse current — 0-5000 μA . Power: One standard "D" cell (not supplied). Dimensions: $4\frac{1}{2}$ " H x $8\frac{1}{2}$ " W x $7\frac{1}{8}$ " D (including handle).

D) Decade Capacitance Box

Kit IN-27, 3 lbs., mailable 19.95

SPECIFICATIONS — Range: 100 pF to 0.111 μF increments of 100 pF. Voltage rating: 350 VDC continuous; 500 VDC intermittent; 1000 VDC instantaneous test. Accuracy of incremental capacity: $\pm 1\%$. Stray capacitance: 10 to 15 pF at terminals. Dimensions: 4" H x $7\frac{3}{8}$ " W x 5" D.

E) Decade Resistance Box

Kit IN-17, 4 lbs., mailable 29.95

SPECIFICATIONS — Range: 1 ohm to 999,999 ohms in 1 ohm steps. Resistors: Precision $\frac{1}{2}\%$ accuracy, 1 W. Minimum DC resistance: .25 ohms or less at terminals with all switches at zero. Dimensions: 5" H x $7\frac{1}{2}$ " W x $6\frac{5}{8}$ " D.

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

Heathkit test gear values for lab or bench

39⁹⁵
NO MONEY DOWN

Heathkit Capacitor Checker

- Direct reading scales — no involved calculations
- Low bridge voltage for safe testing of miniature electrolytics
- Measures capacitance from 10 pF to 1000 μ F & resistance from 5 ohms to 50 megohms

The Heathkit IT-28 Capacitor Checker is designed for use by servicemen, engineers and technicians in checking capacitors for value, leakage, shorts and opens. Fast, efficient and accurate, the IT-28 has the capability for complete analysis of all capacitor types on direct-reading scales. A low bridge voltage is provided for safe testing of miniature electrolytics. Capacitance can be measured from 10 pF to 1,000 μ F, resistance from 5 ohms to 50 megohms and 16 leakage testing voltages are provided.

The Comparator circuit measures L, C or R with an external standard. Other features include calibrated power factor control, "eye" tube null and leakage indicator. Requires VTVM for alignment. Transformer can be wired for 120/240 VAC. 9½" H x 6½" W x 5" D.

Kit IT-28, 7 lbs., mailable **39.95**

IT-28 SPECIFICATIONS — Test circuit: AC bridge, powered by an internal 60 Hz supply or by an external audio generator with 10 V output. Upper frequency limit: 10 Hz. Capacitance: 5 ranges: 10 pF to .005 μ F, .001 μ F to .5 μ F, .1 μ F to 50 μ F, 20 μ F to 1000 μ F. External standard (comparison bridge; maximum ratio 25:1). Capacitor leakage: DC test voltages from 3 to 600 V in 16 steps. Resistance: 4 ranges: 5 ohm to 5000 ohm, 500 to 500 k ohm, 50 k ohm to 50 megohms. Inductance check: External standard only. Power supply: Transformer-operated, half-wave rectifier. Power requirements: 120/240 VAC 50/60 Hz, 30 W. Dimensions: 9½" H x 6½" W x 5" D.

Visual-Aural Signal Tracer

Ideal for checking transistor & tube-type AM receivers and audio gear since it applies no voltage to circuit. Traces RF, IF and audio signals, locates noisy or intermittent components. Has audio/RF probe with switch, doubles as test amp or speaker. Can be wired for 120/240 VAC, 50/60 Hz, 25 W. 7½" H x 4½" W x 4" D.

Kit IT-12, 6 lbs., mailable **25.95**

Impedance Bridge

Four separate bridge circuits measure resistance, capacitance, low & high Q inductance. Built-in generator and amplifier; battery-type vacuum tube circuitry for fast warmup. ½% resistors & silver-mica capacitors for higher accuracy. 120/240 VAC, 50/60 Hz operation. Requires headphones or scope for alignment.

Kit IB-28, 11 lbs., mailable **89.95**

IB-28 SPECIFICATIONS — Circuit: 4-arm impedance bridge. DC Measurements: Built-in power supply. Binding posts provided for external supply. Meter: 100-0-100 microampere meter. AC Measurements: Built-in 1000 Hz generator. Terminals on panel for external generator at other frequencies. Detector: Vacuum tube detector and amplifier, using built-in meter. Terminals provided for external detector. Resistance: 0.1 ohm to 10 megohm. Capacitance: 100 pF to 100 μ F. Inductance: 0.1 mH to 100 H. Dissipation Factor: (D) 0.002 to 1. Storage Factor: (Q) 0.1 to 1000. Accuracy: ½% decade resistors used. Tube Complement: (2) 1U4, (2) 1L4. Power Supply: Transformer and silicon rectifier. Power Requirements: 105-125 V. or 210-250 V., 50/60 cycles, 10 watts. Dimensions: 8" H x 17" W x 6" D.

Resistor Substitution Box

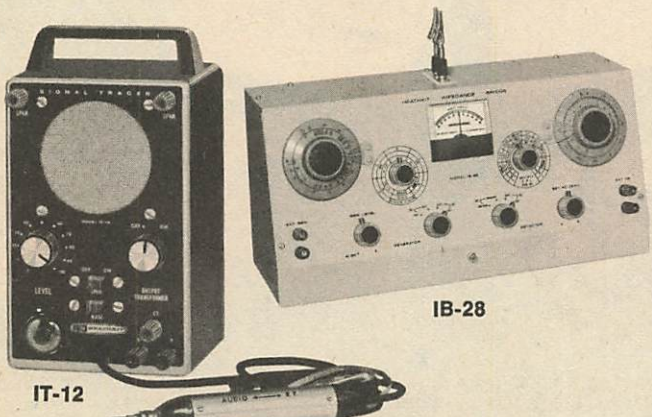
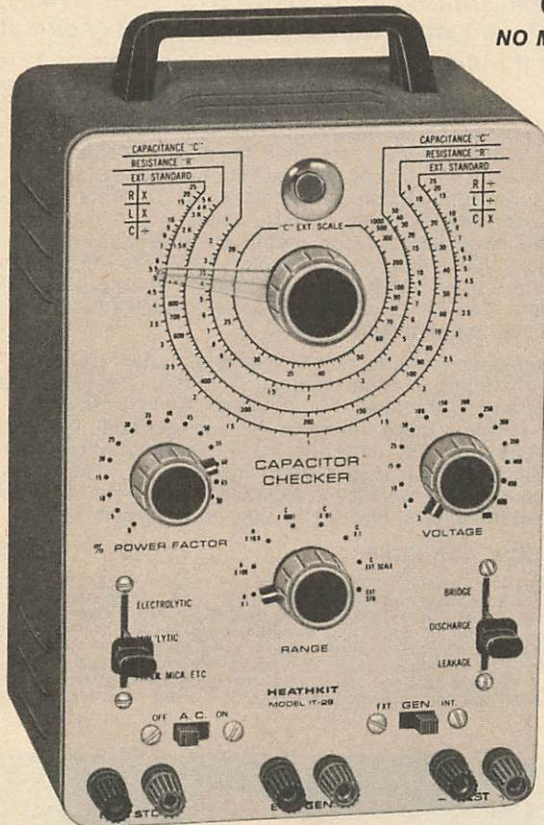
Provides switch selection of any one of 36 EIA standard 10% 1-watt resistors, from 15 ohms to 10 megohms. Hi/Lo switch. Case is 5½" H x 3½" W x 3" D.

Kit IN-37, 2 lbs., mailable **7.95**

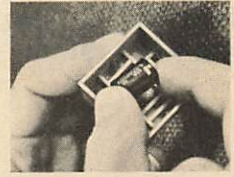
Capacitor Substitution Box

Select any of 18 EIA standard capacitors from 100 pF to .22 μ F. All rated at 600 V except three lowest and two highest values, 500 & 400 V respectively. 5½" H x 3½" W x 3" D.

Kit IN-47, 2 lbs., mailable **7.50**



Learn while building - with Heath Educational Kits



Actual components mount inside modules carrying the component's schematic symbol.

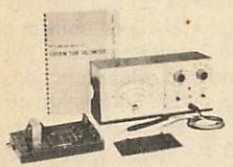
Heathkit Jr. Electronic Workshop "36"

The Electronic Workshop "36" presents 36 interesting and educational experiments for a complete introduction to basic electronics: continuity tester, 1½-volt battery tester, 6-volt battery tester, transistor tester, wheatstone bridge, diode tester, capacitor bridge, code flasher, timing device, earphone code oscillator, rain alarm, electronic flasher, metronome, sound level meter, public address amplifier, siren, loudspeaker code oscillator, experimental multivibrator, electronic organ, capacity switch, field strength meter, two-transistor receiver, three-transistor receiver, code transmitter, voice transmitter, light meter, listening device, intercom, electronic target hit alarm, light sensing alarm, L.D.R. flasher, L.D.R. oscillator, voice indicator, four-transistor receiver, automatic radio, burglar alarm. Kit includes master and remote control consoles, four working platforms.

Kit JK-1033, 10 lbs., mailable **19.95**

19⁹⁵
NO MONEY DOWN

Kit courses for every electronic interest — educational, useful and fun to build



How to understand and use your VTVM. Theory and applications of the vacuum tube voltmeter. A build-it-yourself power supply with text lets you learn by doing. For beginner or professional.
Kit EF-1, text and power supply (for VTVM owners), 3 lbs., mailable **10.95**
Kit EF-1-5, includes EF-1 and IM-18, 13 lbs., mailable **39.95**
Kit EF-1-6, includes EF-1 and IM-28, 15 lbs., mailable **49.95**
Manuals Only for EF-1, (single copy) 5.00; (10 or more) ea. 3.00



Kit EF-3-2, includes EF-3 and IG-102, 17 lbs., mailable **44.95**
Manuals Only for EF-3 (single copy) 5.00; (10 or more) ea. 3.00

Basic electricity kit/course. Learn about electricity and electronic theory, do interesting experiments to demonstrate basic principles, and build a handy DC volt-ohm milliammeter.
Kit EK-1, 4 lbs., mailable **24.95**



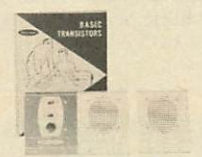
How to understand and use your oscilloscope includes an experimental chassis for constructing many different circuits. Change circuits easily with special solderless spring-clip connectors. Large 150-page textbook for future reference.
Kit EF-2, text, special chassis and parts, 4 lbs., mailable **11.95**
Manuals Only for EF-2, (single copy) 5.00; (10 or more) ea. 3.00



Basic radio — 2 parts kit/course. Start by building a simple crystal receiver. Follow the text and improve it chapter by chapter. Result: a regenerative tube-type receiver! In Part II you learn more advanced electronic circuits and build a 2-band superheterodyne receiver. Requires EK-1 meter or equivalent...EK-2A required for completion of EK-2B.
EK-2A, part I, 7 lbs., mailable **21.95**
EK-2B, part II, 5 lbs., mailable **21.95**
AK-8, cabinet for radio, 3 lbs., mailable **3.95**



How to understand and use your signal generator. Text covers theory and use of RF and AF generators. The textbook is a valuable reference.
Kit EF-3, text, test chassis and parts, 4 lbs., mailable **14.95**



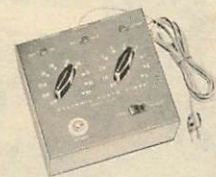
Basic transistors kit/course. Provides a simple, thorough introduction to solid-state electronics. No difficult math involved. Builds a handy two-station intercom.
Kit EK-3, 4 lbs., mailable **21.95**

Heathkit darkroom aids take the guesswork out of photography



Heath/Mitchell Colorval II Computer...Enlarger light passes through scan pack on top of probe, reflection of area under study is seen in small mirror. This spot is compared to adjustable neutral reference light around it, and rendered neutral by adjusting enlarger printing pack. Includes permanent scan filter, visual color-integrating scrambler, exposure probe, 35 mm test negative.

Kit PM-17A, includes color wheel, 8 lbs., mailable **99.95**



Heathkit Electronic Photo Timer...A prerequisite to any well-equipped darkroom. Provides you with accurate exposure control of all contact and enlarging operations. Two switch-selected ranges — up to 99 sec. in 1-sec. steps, 9.9 sec. in 0.1 sec. steps. Repeatable to 2%. AC outlets for enlarger and safelight.

Kit PT-15, 4 lbs., mailable **34.50**

Stereo components for your car at Heathkit savings

Heathkit Stereo FM Tuner/Cassette mobile system

3-Way System Flexibility — Choose FM Stereo, Stereo Cassette, or both — buy what you like to hear



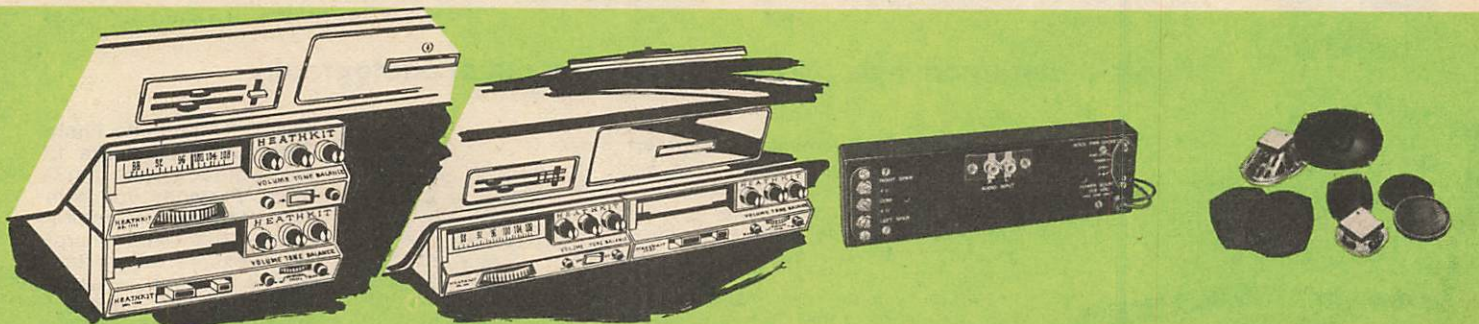
The Heathkit CR-1000 FM Stereo Tuner brings living-room fidelity in stereo broadcasting to the privacy of your own automobile. And simplified circuit board assembly plus a factory-assembled & aligned FM tuning unit make it all an enjoyable four-evening project. Performance specifications rival those of many costly home stereo tuners: less than 2% THD; frequency response ± 1 dB, 30 Hz to 15,000 Hz; 3 μ V sensitivity; 60 dB selectivity; 40 dB min. separation. Ten transistors, 4 ICs and 4 diodes make up the reliable solid-state tuner circuitry.

Advance-design features include a muting circuit for noise quieting between stations; automatic frequency control (AFC) for locking-in FM stations. Front-panel convenience features include large Tuning, Volume, Tone and Balance control knobs; on-off rocker switch; high-visibility stereo indicator light and center-tune indicator light... all designed to give you fingertip control of FM stereo programming without taking your eyes off the road. All hardware supplied for under-dash or transmission hump mounting. 2½" H x 8" W x 7" D (8" D with CRA-1000-1).

The CT-1001 Stereo Cassette Deck puts high fidelity stereo cassette entertainment — as well as single-channel dictation — right in your front seat. And it's a fun kit to build — with printed circuit boards and preassembled tape transport simplifying assembly. To use, simply insert a cassette cartridge into the front-panel slot and the unit starts to play. An electronic shut-off circuit automatically ejects the cartridge when tape plays through. An automatic "record interlock" protects prerecorded tapes from being accidentally erased.

Three knobs give you fingertip control of Volume, Tone and Balance, while another control and indicator lamp give you peripheral-vision control of recording level. A single 3-way Reject Bar performs fast-forward, rewind and reject functions. Microphone plugs into side panel. Solid-state circuitry and regulated motor deliver 30 Hz to 10 kHz response; 45 dB S/N; 0.3% wow & flutter; 2% THD; and 30 dB channel separation. Hardware supplied for under-dash or transmission hump mounting. Microphone included. 2½" H x 8" W x 8" D (9¾" D with CRA-1000-1). Add the amp and speakers and you're ready to go — The CRA-1000-1 Power Amp fits on the back of either the FM Tuner or Cassette Deck. One amp powers both units in tandem installations. Power output is 3.5 watts minimum per channel into 4 ohms; response ± 1 dB, 30-15,000 Hz; less than 0.5% THD. Operates on 12V battery only. For door panel installation choose the 4½" speakers. Select 6" x 9" speakers for rear-deck installation. Any way you match them — Heathkit Mobile Components put magnificent stereo on wheels.

- Kit CR-1000, Tuner only, 6 lbs., mailable 64.95
- Kit CT-1001, Cassette Deck only, 9 lbs., mailable . . . 89.95
- Kit CRA-1000-1, Power Amplifier, (for use with CR-1000 & CT-1001 only) 3 lbs., mailable 29.95
- CRA-1000-2, 4½", 4-ohm door-mount hi-fi speakers for Radio or Cassette (including grilles, adapter plates for most speaker size openings and 24" speaker lead) 6 lbs., mailable (pair) 19.95
- CRA-1000-5, 6" x 9" 4-ohm rear deck mount hi-fi speakers for Radio or Cassette (including grilles and 24" speaker lead). 7 lbs., mailable (pair) 19.95



Units may be stack mounted on transmission hump or under dash.

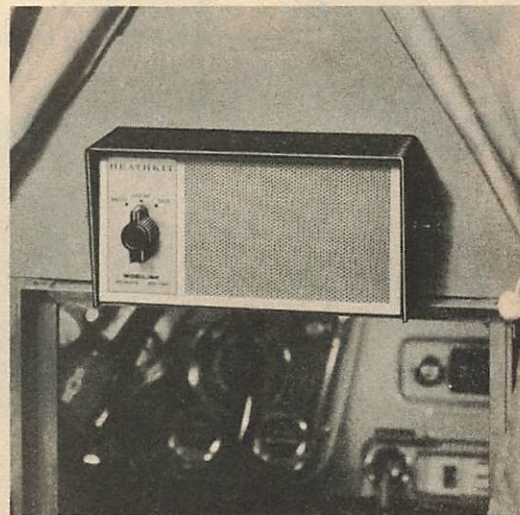
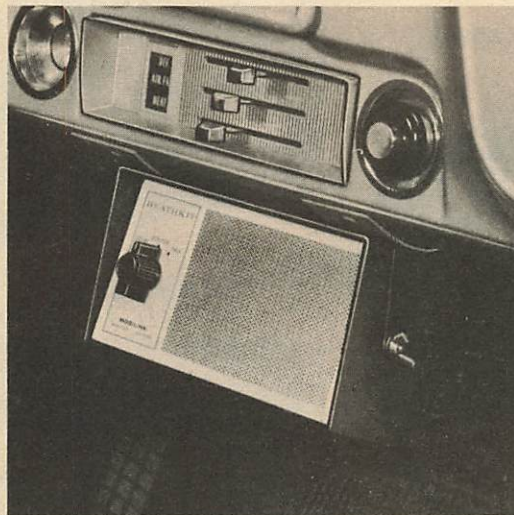
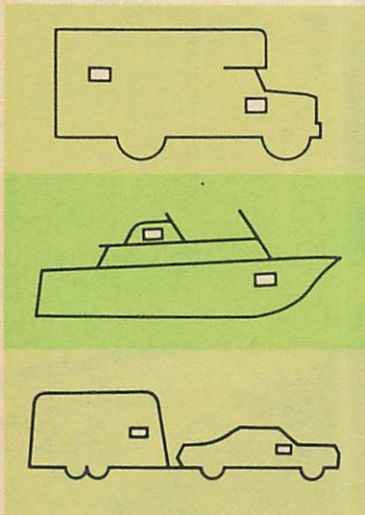
Units may be mounted side by side under dash.

One CRA-1000-1 Power Amp, is all you need to power either the FM car Tuner, or Cassette, or both.

Choice of 4½" speakers for door panel installation or 6" x 9" rear-deck models.

Heathkit assembly manuals are famous for their simplicity and completeness

Heathkit value-leaders in auto communication



The Heathkit "Mobilink"

- An economical, easy-to-build kit that puts quality 2-way communication in your camper, boat or trailer.

The Heathkit "Mobilink" provides instant 2-way communication between camper and cab, car and trailer, ship's bridge and cabin, or for any other mobile application where a 12-volt, 250 milliamp DC power source is available. The 3-position switch on the Master unit selects "Stand-By", "Monitor" and "Talk" modes of operation. If the nippers are napping in the camper, you can monitor every noise from the cab in the "Monitor" position. When noise in the camper gets a bit too much, you can shut it out by moving the Master control to "Stand-By." A push of the switch to the spring-loaded "Talk" position puts you in instant voice communication with the Remote unit. The Remote unit has a "Radio" position which brings entertainment

into the camper direct from the cab radio...as well as "Stand-By" and "Talk" positions. The "Talk" position on both Master and Remote units overrides all other functions, so either station can initiate a call. Battery power is drawn only when units are in "Talk" or "Monitor" positions. Both units are ruggedly constructed to take the toughest mobile use and abuse in stride. Mounting brackets are included for installing both units on either horizontal or vertical surfaces. A 15' five-conductor cable also is furnished for connecting the Master unit to the Remote. The optional quick-disconnect accessory plug features a chrome-plated 5-prong plug and socket allowing removal of the camper from the cab without disturbing the interconnecting cable.

- Kit GD-160, Master, Remote and cable, 5 lbs., mailable **25.95**
- GDA-160-1, Accessory Plug, 1 lb., mailable **2.50**



For automobiles with a mission — Heathkit Siren/PA System

The Heathkit GD-18 Siren/PA System assembles in only two evenings...and offers you performance that compares with the best, at a fraction of the cost. Functions as an electronic siren at a full 55 watts, with adjustable pitch. Functions as a PA system with 20 watts for booming voice communication. Functions as a radio call alert by letting you hear calls away from your vehicle. Choice of speakers, concealed or exposed horn. Concealed speaker requires 4½" x 4½" x 13" behind grille. *Note: Since this product is a kit, it is often not included in type-acceptance listings for individual municipalities and states. Please check the required standards for mobile sirens in your area.*

- Kit GD-18, Siren/PA Amplifier, 6 lbs., mailable **59.95**
- Assembled GDA-18-1, exterior horn, 10 lbs., mailable **49.95**
- Kit GDA-18-2, concealed horn, 11 lbs., mailable **49.95**
- GD-18A (GD-18 & exterior horn), 16 lbs., mailable **104.95**
- GD-18B (GD-18 & concealed horn), 16 lbs., mailable **104.95**



You're never out of touch with the Heathkit 5-watt CB Rig

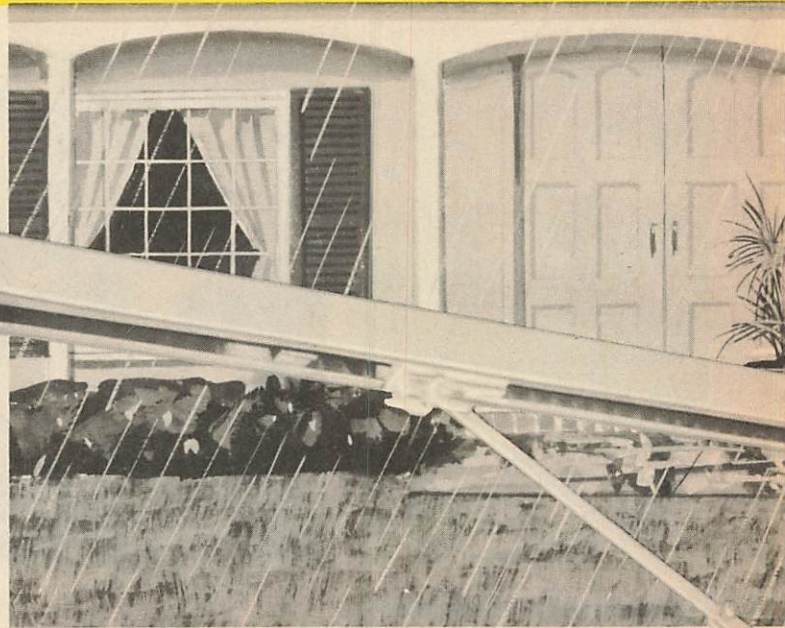
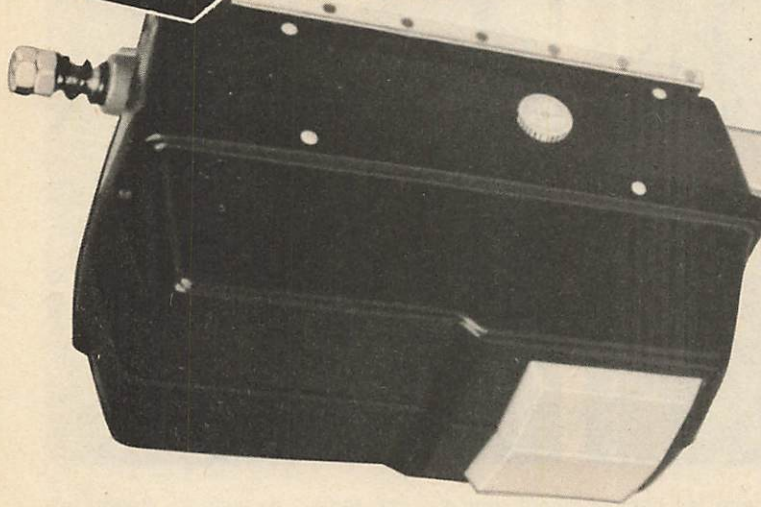
Anyone can build this one and enjoy instant, reliable 2-way communication from car to car, home to office. The GW-14A offers you 23-channel capability with crystal-controlled reliability. Solid-state circuit provides instant operation, long life, minimum battery drain. Draws only 0.75A in transmit mode, 0.12A on receive. Husky 3W RF minimum output for reliable communication over maximum range. 12 to 14 VDC operation.

- Kit GW-14A, 8 lbs., less crystals, mailable **89.95**
- GWS-14A System: GW-14A plus 23 channel crystal pack, 9 lbs., mailable **159.95**
- Kit GWA-14-1, AC power supply, 5 lbs., mailable **14.95**
- GWA-14-2, 23 channel crystal pack, 1 lb., mailable **79.95**

NEW

Build your own Heathkit Garage Door Opener

139⁹⁵ NO MONEY DOWN



New Heathkit Deluxe Screw-Driver Opener

- **New rugged 1/3 hp motor** to lift the heaviest residential doors with power to spare
- **New dual-direction safety feature** — automatic reversing if obstructed while closing, plus adjustable slip clutch for opening safety
- **Self-locking mechanism** — makes your garage as secure as Fort Knox
- **Quiet running**, permanently lubricated, maintenance-free screw drive mechanism
- **Time-delay light** — sees you safely inside at night, then shuts off automatically
- **Assemble & install it over a weekend** — famous Heathkit assembly manuals make it easy

The New Heathkit GD-3209 System offers you the comfort and convenience you want and the reliability and safety you need in a deluxe radio-controlled garage door opener. Just a touch of the button on the wireless transmitter in your car and your garage door opens and the light turns on inside the garage. After you drive inside, another touch of the button and the door closes quietly, securely — and the light stays on long enough for you to enter your home before automatically shutting itself off. No more getting out of your car in bad weather to lift a heavy door. No more groping in the dark for the light switch. Here's convenience and safety the whole family will appreciate.

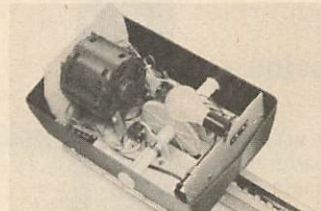
The giant 8 1/2' long self-lubricating screw mechanism coupled with the husky 1/3 hp motor are your assurance of many years of dependable, maintenance-free operation. A new dual-safety feature is "safety-engineered" for children, pets, toys, etc. Door travel reverses, returns to the full open position and stops if obstructed while closing. And an adjustable slip clutch is provided for opening safety. There's no need to worry about snow or ice build-up causing the door to reverse, either. The built-in Snow Safety takes over a short distance from the floor to compensate for this.

Equally impressive as its operation is the ease with which the new Heathkit Deluxe Garage Door Opener goes together. You'll assemble it easily in one evening. And with no soldering. Every lead is cut to length and connectors are factory installed at each end. All you do is mount the mechanical and electrical parts and interconnect them by pushing the various leads on the connecting terminals. And you'll find installing the opener an equally easy task you can accomplish the next morning. Adjustable mounting bracket and universal hanger straps are included. Once the unit is installed, just mount the door bracket and quick-release door arm, install the push-button switch

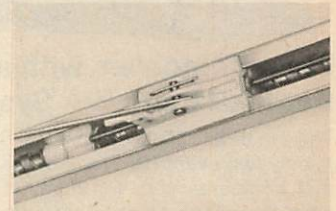
at the house entrance to the garage, adjust the travel-limit cams with the two dials on the housing and you're in business. The pocket-size transmitter and solid-state receiver both come preassembled and ready to use. Don't miss this outstanding value in a deluxe garage door opener. Order yours now.

- Kit GD-3209A**, system with 1 transmitter, 66 lbs., Express/Frt. **139.95**
- Kit GD-3209B**, system with 2 transmitters, 66 lbs., Express/Frt. **154.95**
- Kit GDA-3209-1**, mechanism only, 61 lbs., Express/Frt. **104.95**
- Kit GDA-3209-2**, adaptor for jamb & pivot doors, 3 lbs., mailable **7.95**
- GDP-99**, transmitter, 1 lb., mailable, specify frequency **17.95**
- GDP-119**, 1 transmitter, 1 receiver, 2 lbs., mailable **39.95**
- GDP-129**, 2 transmitters, 1 receiver, 2 lbs., mailable **54.95**

KIT MECHANISM SPECIFICATIONS: 120" L x 12" H x 9" W. 117 VAC 1/4 HP. Open and Close Time: Approx. 11 seconds. **Safety:** Door travel reverses, returns to full open position, and stops if obstructed while closing. **Mounting Clearance:** 2 1/2" above highest point of door travel. **Safety Lamp:** 75 watt max., automatically turns on when mechanism is activated. Delay circuit keeps lamp on for approx. 90 sec. after motor stops. **UHF TRANSMITTER SPECIFICATIONS:** Powered by standard 9-volt transistor type battery. **RF Frequencies:** 290 to 320 MHz. **Useful Temperature Range:** -50°F. to +140°F. **UHF RECEIVER SPECIFICATIONS:** Powered by 24 VAC from opener mechanism. Usable on any mechanism having 24 volt AC NEC class II circuit. **R.F. Frequencies:** 290 to 320 MHz. **Useful Temperature Range:** -55°F. to +140°F.



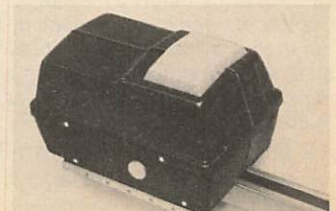
Powerful new 1/3 hp motor opens the heaviest residential doors with power to spare.



New self-lubricating screw drive mechanism for quiet, reliable, maintenance-free operation.



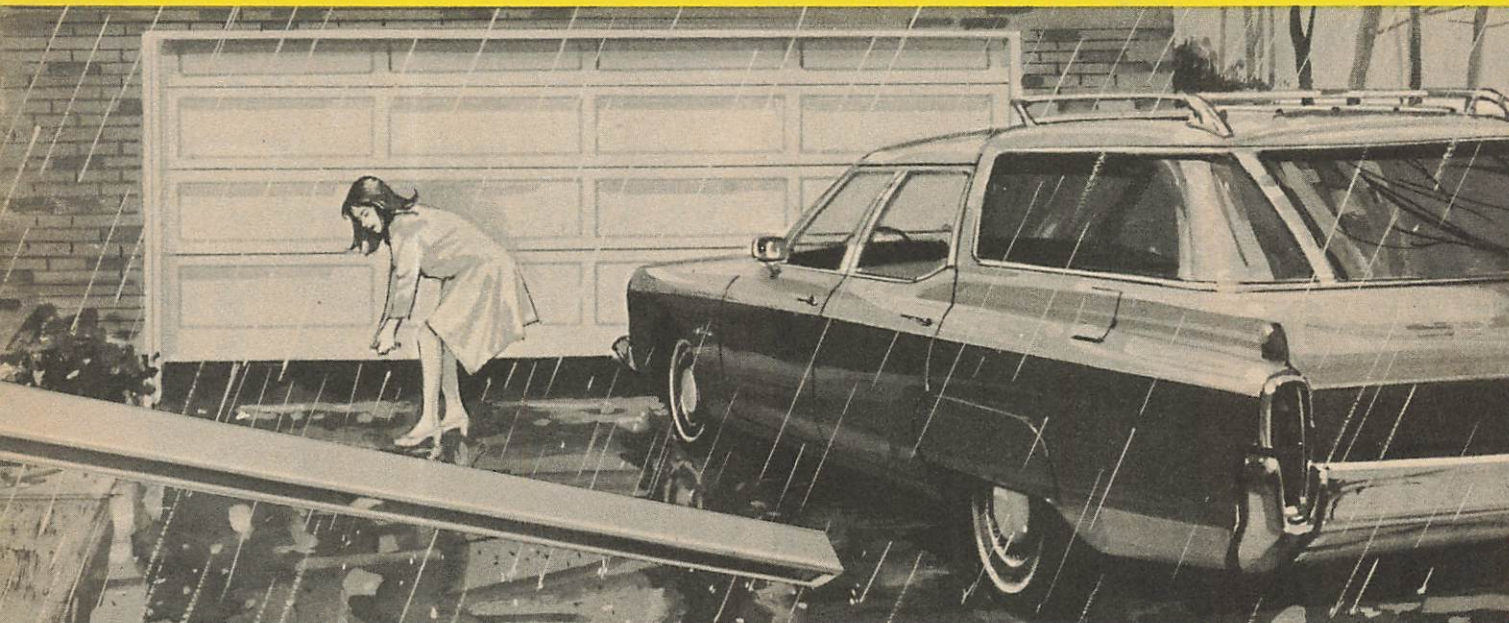
New permanently-installed up/down-limit adjusters provide easy adjustment with no need for special tools.



New handsomely-styled rugged plastic cabinet features built-in time-delay safety light.

Heathkit assembly manuals are famous for their simplicity and completeness

for greater safety, convenience, security & value



99⁹⁵
NO MONEY DOWN

Assemble this Heathkit "Economy" Chain-Drive Garage Door Opener...and save!

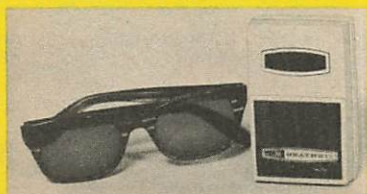
Operates standard 7½' track doors, jamb and pivot doors with GDA-309-2 adaptor, or "California" style doors with GDA-309-3 Speed Reducer Adaptor. Self-locking, automatic reversing. Quick-release pin. Factory-assembled receiver has adjustable tone coding to prevent interference from neighboring units. Solid-state transmitter is preassembled, operates door from up to 150 feet away. Fits in your pocket or clips to your visor.

- Kit GD-309A, system with 1 transmitter, 51 lbs., mailable **99.95**
- Kit GD-309-B, system with 2 transmitters, 51 lbs., mailable . . . **114.95**
- Kit GDA-309-1, mechanism only, 52 lbs., mailable **69.95**

- Kit GDA-309-2, adaptor for jamb & pivot door, 3 lbs., mailable . . . **3.95**
- Kit GDA-309-3, adaptor for "California" style doors, 4 lbs., mailable **9.95**
- GDP-99, transmitter, 1 lb., mailable, specify frequency **17.95**
- GDP-119, 1 transmitter, 1 receiver, 2 lbs., mailable **39.95**
- GDP-129, 2 transmitters, 1 receiver, 2 lbs., mailable **54.95**

SPECIFICATIONS: Door Size and Type: Overhead residential garage doors up to 7' high. (Max. travel of opening mechanism 8½"). Control: Wall-mounted, doorbell-type push-button switch, or optional devices (transmitter-receiver, key switch, etc.). Opening Force: 100 lbs. Closing Force: Adjustable up to 100 lbs. Maximum Door Opening or Closing Time: Approx. 9 seconds (on 7' high door). Safety: Door travel reverse, returns to fully open position, and stops if obstructed while closing. Overhead Mounting Clearance: 2½" above highest point of door travel. Safety Lamp: 60-watt, lamp automatically turns on when the door starts to open and stays on until door is fully closed. Motor: 120 VAC, 60 Hz, ¼ hp, capacitor-run, 1500 rpm. Power requirements: 120 VAC, 60 Hz, 660 W (excluding lamp). Dimensions: 123" L x 10" H x 8½" W.

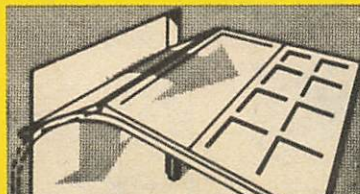
Plus values you'll find in every Heathkit Garage Door Opener



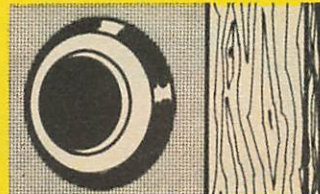
Portable transmitter is your personal electronic key. Fits pocket, purse, clips on sun visor. Operates door from up to 150' away. Comes factory-assembled, ready to use.



Solid-state UHF Receiver comes factory assembled & adjusted — takes just minutes to install. Selectable tone coding prevents interference with neighboring units. Operates on 290 to 320 MHz.



Universal operation — mechanisms operate overhead & jamb or pivot type doors up to 7½' high. Requires just 2½" clearance above highest point of door travel.



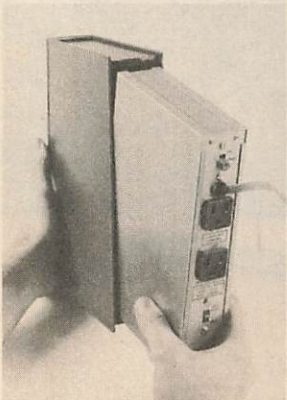
Manual operating switch, supplied with each door opener, can be connected anywhere inside your house — permits opening the garage door without use of the transmitter in your car.

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

Heathkit home protection systems offer you pride



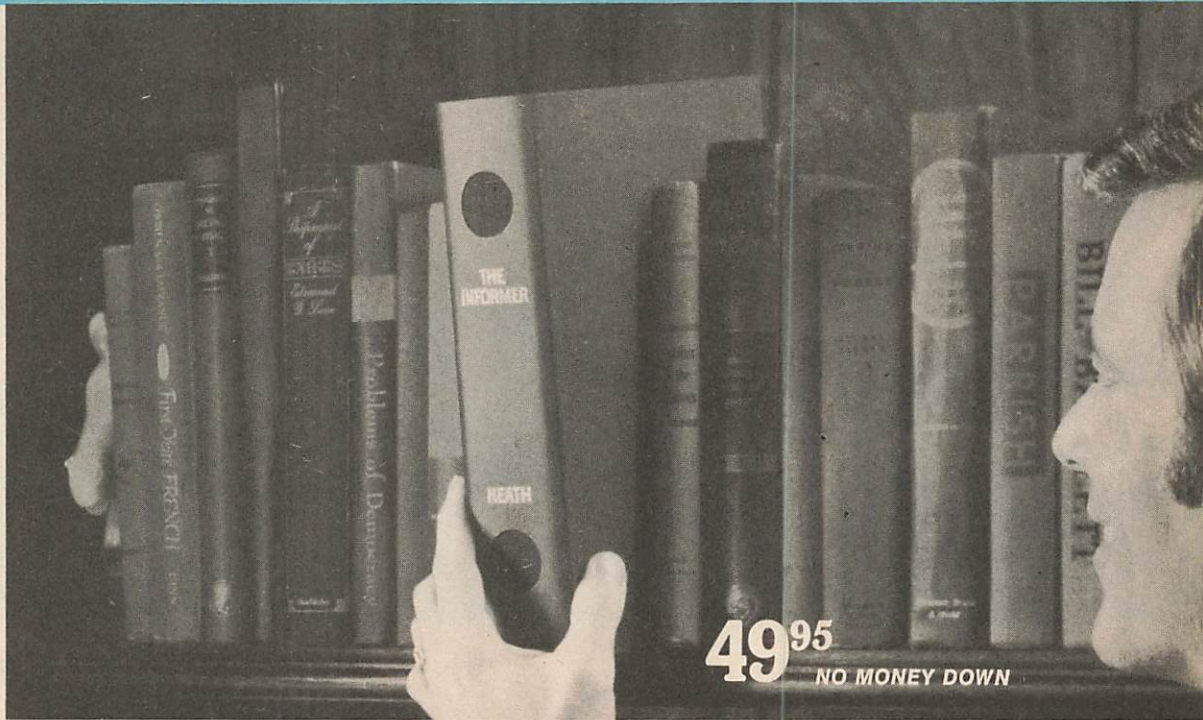
Outdoor Alarm Bell. 6" bell has loud clear ring (83 dB at 10'). Dustproof, enclosed mechanism. Plugs into back of Intrusion Alarm, measures 7" x 7" x 3 5/8". Mounting plate included.



The simulated book cover leaves rear panel exposed for easy access to switches and plug outlets. Unit can be used without cover if desired.



Indoor Alarm. Produces loud, buzzer sound. Plugs into GD-39, can be hidden away from view. Measures 2 1/8" H x 3 5/8" W x 3 7/8" D.



49⁹⁵
NO MONEY DOWN

The Heathkit "Informer" — Ultrasonic Intrusion Alarm

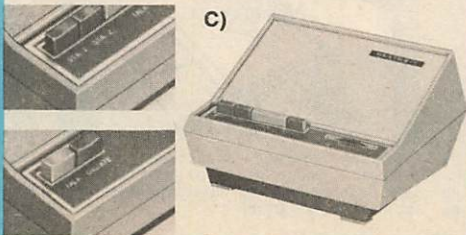
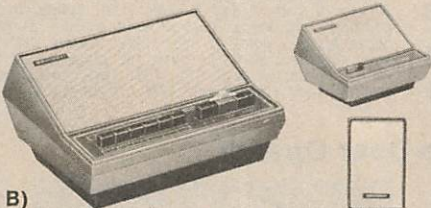
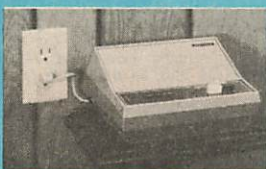
Disguised as your copy of "The Informer", the Heathkit intrusion Alarm unobtrusively sits on a table or shelf. But behind the two decorative circles on the spine is a sophisticated solid-state ultrasonic transceiver. Flip the out-of-sight switch to activate the system, and the transmitter disperses a soundless signal through the room. This signal bounces off walls and returns to the internal receiver where it is monitored for any change. Any movement within the field of surveillance produces a change in the signal that is perceived by the receiver, which then triggers the lamp outlet, followed approximately 30 seconds later by the alarm outlet. This built-in delay time between light and alarm allows you to enter the room and deactivate the Intrusion Alarm without tripping the audible signal. A second hidden switch lets you set the lamp and alarm for automatic reset after the alarm has sounded for 25 seconds. Or this switch can be left in the normal position and the alarm will stay on until manually reset.

The Heathkit Intrusion Alarm also can do double duty as an automatic light switch in a dark hallway or sick room, or alert parents to night-walking children. Here is reliable home protection in an inconspicuous, easy-to-install package. Order one or more for your home. Note: As the GD-39 Ultrasonic Alarm operates in the same frequency range as Ultrasonic TV Remote Controls, interference between the two is possible.

- Kit GD-39, 5 lbs., mailable 49.95**
- GDA-39-1, indoor buzzer alarm, 3 lbs., mailable 9.95**
- GDA-39-2, outdoor bell, 6 lbs., mailable 26.95**

GD-39 SPECIFICATIONS — **Operating range:** Varies with installation. Typical maximum range is 25 ft. **Operating times:** Turn-on delay: Approximately 10 sec. Alarm delay: 20 to 30 sec. (lamp-on time). Automatic reset delay: 20 to 30 sec. (alarm-on time). **Ultrasonic frequency:** Approximately 41 kHz. **Power outlets:** Two AC sockets: One for Lamp, one for Alarm. **Power outlet current:** Three amperes total for both. **Power requirements:** 110-130 VAC, 50/60 Hz, 1 1/2" W. **Dimensions:** Chassis only, 2" W x 9 1/4" H x 7" D (approximately). In book-style cover, 2 3/8" W x 10 1/8" H x 7 1/2" D (approximately).

Outstanding values in Heathkit



A) Heathkit "Wireless" Intercom... 29.95 each

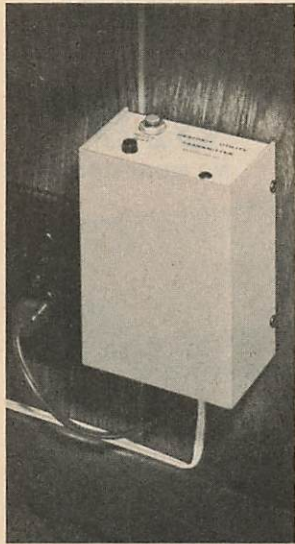
Easy installation. Just assemble the intercoms you need, plug them into your home electrical outlets. That's all there is to it. You can move units at will.

Each intercom has three channels. In a three-unit installation one station can talk to another without disturbing the third. In a six-intercom system, you can carry on three separate conversations at the same time. Pushbuttons provide channel selection. "Talk" mode, and "Dictate" position to hold channel open for extended one-way conversation. Linear slide controls volume, and internal squelch adjustment suppresses noise when no signal is present. Each GD-113 uses about as much current as an electric clock, so you leave them plugged in all the time. Attractive light green cabinet measures 4 1/8" H x 8 1/2" W x 6 3/4" D.

Kit GD-113, 4 lbs., mailable (each) 29.95

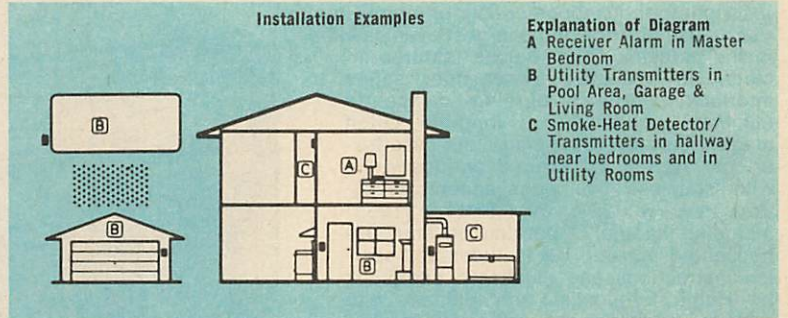
You can build any Heathkit with no prior knowledge or experience. We won't let you fail

of accomplishment and real security



B
C

A



Installation Examples

Explanation of Diagram
A Receiver Alarm in Master Bedroom
B Utility Transmitters in Pool Area, Garage & Living Room
C Smoke-Heat Detector/Transmitters in hallway near bedrooms and in Utility Rooms

Heathkit Home Protection System

- Alerts you to dangers of fire, smoke or intrusion
- "Wireless" operation — your house wiring system transmits the warning signals
- "Fail-safe" circuitry — a built-in battery triggers alarm in case of power failure

Here's the complete home protection system in modular form, so buy as much or as little as you need. Just plug the sensors into the transmitter. Then plug transmitter into any wall outlet. Your home wiring carries the alert signal to the remote receiver alarm which can be placed anywhere it's most effective.

(A) Early-Warning Receiver Alarm. For use with the Heathkit Fire Detector/Transmitter and Utility Transmitter to alert your family to intrusion, fire, freezing, power failure, etc. Emits piercing tone to raise the soundest sleeper. Has "fail-safe" continuously charged nickel-cadmium battery to trigger alarm in case of power failure. Just plug into 110 VAC, no other wiring needed to receive signals.

Kit GD-77, 4 lbs., mailable 49.95

(B) Fire detector/transmitter triggers Receiver Alarm upon detecting very low density smoke or 133°F. heat. "Fail-safe" circuit, adjustable sensitivity. Remote heat sensors can be added. Uses AC line to transmit signal to GD-77 receiver.

Kit GD-87A, 4 lbs., mailable 49.95

(C) Utility transmitter accepts any switch or sensor that produces a closed circuit, such as Heathkit GDA-97-1 miniature magnetic-reed switch or GDA-97-2 miniature micro switch for doors and windows, or new, improved easily-mounted heat sensor switch GDA-97-4 (135°F).

"Fail-safe" circuit. Uses AC line to transmit signal to GD-77 receiver.

Kit GD-97, 3 lbs., mailable 35.95

GDA-97-1, 1 lb., mailable 1.80

GDA-97-2, 1 lb., mailable 2.00

GDA-97-4, 1 lb., mailable 2.95

home communication

B) Heathkit Indoor/Outdoor Intercom

GD-110 master functions include "All Call", "Talk", "Dictate" and volume control...plus monitoring of up to four Remotes. Individual Indoor Remotes can be rendered private to shut out monitoring. GD-110 and GD-120 have light green cabinets, measure respectively 4½" H x 8½" W x 6¾" D and 3¾" H x 6" W x 5¾" D. GD-130 has weatherproof crinkle finish cabinet, measures 5¾" H x 3¾" W x 2¾" D.

Kit GD-110, Master Station, 5 lbs., mailable 39.95

Kit GD-120, Indoor Remote, 2 lbs., mailable 12.95

Kit GD-130, Outdoor Remote, 2 lbs., mailable 9.95

GDA-110-2, 100' 4-conductor indoor cable, 2 lbs., mailable 5.95

GDA-110-4, 100' 2-conductor outdoor cable, 2 lbs., mailable 2.95

C) Heathkit 2-Station Intercom System... 29.95 complete

Master station accommodates up to two remotes. Either remote can initiate "private" only calls to Master. Master can call either or both remote stations. Master controls include Sta. 1, Sta. 2, Talk, Dictate, & Volume. Remotes have Talk & Dictate controls. Both Master and remotes feature big 3" x 5" combination microphone-speakers for crisp, clear sound reproduction. Low-profile cabinets come with plastic feet for desk, shelf or tabletop use, as well as mounting holes for wall mounting if desired. For a home intercom that's sure to cause a lot of talk, order your Heathkit GD-140 today. Measures 3¾" H x 6" W x 5¾" D.

Kit GD-140, one Master, one Remote, 4 lbs., mailable 29.95

Kit GDA-110-2, 100 ft. 4-conductor cable, 2 lbs., mailable 5.95

Kit GD-120, one extra Remote, 2 lbs., mailable 12.95

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

More-for-your-money Heathkit kitchen-aids

Heathkit Big-Capacity Microwave Oven

- One of the largest ovens available
- Cuts cooking time up to 70%
- 2 year warranty on tube
- "What you build, you can service" — another Heathkit "plus-value"

Get Mom away from the kitchen fast with the amazing Heathkit Microwave Oven. Just pop in the food, set the timer and you have meals in minutes. A baked potato in 7 minutes, a 5-lb. roast in 45! And while the Heathkit Microwave Oven is just right for houseboat, cruiser or mobile home use, it also has one of the largest oven cavities in the industry. Other deluxe features include an exclusive 3-way door safety interlock; warm-air purging device to eliminate condensation; long-life Litton magnetron tube; vinyl-clad steel case luxuriously styled in textured antique white with "stainless" front panel accents. Measures 15 1/8" H x 25 1/2" W x 14 3/4" D (15 13/16" including handle). Operates on standard household current. Kit includes self-service instructions and illustrated cookbook by Home Economist Ann Balcum with recipes and timing charts for your favorite dishes. Cut cooking time up to 70% ... put a Heathkit microwave oven in your kitchen, camper, or boat today. Magnetron tube warranted two full years. NOTE: The GD-29 complies with all requirements of the Performance Standard for Microwave ovens (42 CFR 78.212) as set forth by the U.S. Dept. of Health, Education & Welfare. If at any time during the life of your oven, you wish to check its operation, it will be tested free of charge at any Heathkit Electronic Center or at the factory.

GDA-29-1, cart of hardwood solids, walnut finish, sturdy 3/8" x 1" tubing & sealed in disc casters, 31 5/8" H x 27" W x 15 5/8" D, 25 lbs., Exp./Frt.27.50



379⁹⁵
NO MONEY DOWN



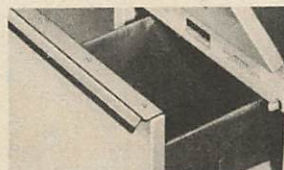
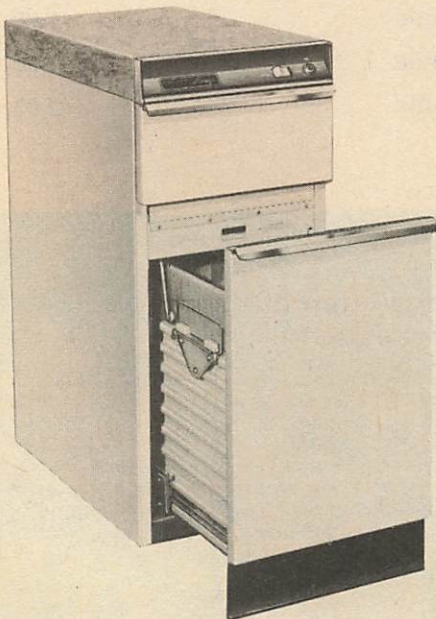
Kit GD-29, 98 lbs., Exp./Frt.379.95

The Heathkit Minimizer makes neat work of trash... 179.95

Today's most modern refuse handling method in easy-to-assemble kit form! And since you build it, you can service it should the need ever arise. The Heathkit Minimizer lets you throw out the unsightly waste baskets and garbage cans for the latest in clean, convenient, odor-free disposal. The Minimizer handles all normal household trash — glass and plastic containers, tin cans, wrappings, boxes, floor sweepings, light bulbs, etc. The packing ram descends with 2000-lb. force to reduce refuse to almost 1/4 of its original size, packaging the material in a neat disposable bag — one bag holds an entire week's trash for an average family of four! When the bag's full, simply fold over the top and remove a neat, dry package for normal rubbish pickup. And the Minimizer deodorizes the contents each time the drawer is opened and closed. The sanitation man will love Minimizer, too!

Your Heathkit Minimizer can be built-in under the kitchen counter or left free-standing. Its bright white enamel finish with marble-tone vinyl-clad top complements any decor. And you can build it yourself in 6 to 10 hours. The check-by-step manual has complete operational, servicing and troubleshooting instructions. Has long-life 1/3-hp. motor, plugs into 110-120 VAC conventional household outlet. Kit includes 5 plastic-lined bags, one can of deodorant. Let the Minimizer take over your chores. Measures 34 3/8"-35 1/8" H x 15" W x 25 1/2" D.

Kit GU-1800, 210 lbs., Express/Frt.179.95
GUA-1800-1, 15 plastic-lined bags, 10 lbs., mailable4.99



Accepts up to 1 week's trash before emptying.



Safety key-lock switch.



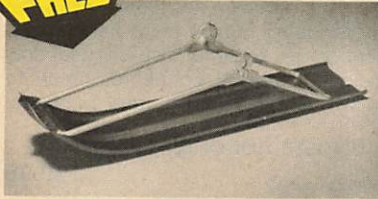
Built-in deodorizer.



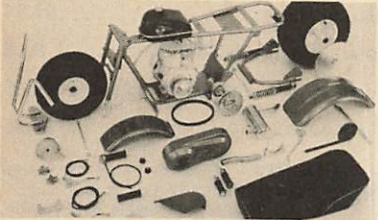
Bag lock-folds for neat disposal.

Heathkit Hilltopper - now with free ski accessory

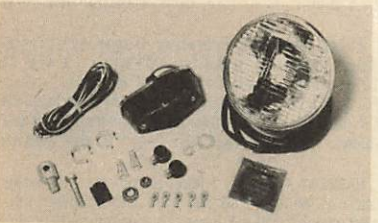
FREE



FREE ski accessory with your GT-101



Kit supplied with engine mounted to frame.



Optional head & tail light kit

Assemble it over a weekend — for year 'round outdoor fun

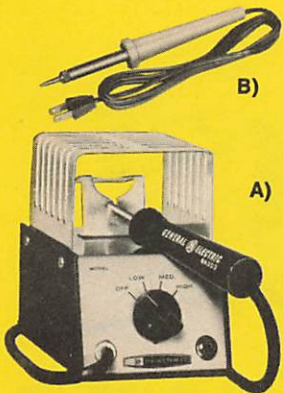
The few hours it takes you to put together the Heathkit Hilltopper pays off in season after season of family fun and adventure. Heavy duty 13-gauge tubular steel frame, powerful drive train and sophisticated suspension form a two-wheeler that eats up the roughest trails, yet gets you there and back in comfort. And the bike is portable at heart, with fold-down handlebars, fold-up footpeg for easy stowing in camper, trailer or truck. Gutsy performance — A Tecumseh 5 hp, 4-cycle engine gives you lively going, and you don't have to pre-mix oil and gasoline.

Built-in alternator powers optional running lights. Forestry approved spark arresting muffler takes the worry out of timberland travel. Power is transmitted via a load sensing automatic torque converter for no shift going in the rough, or for speeds up to 35 mph on the straightaway. Big bike suspension with 16-in. telescoping front fork and adjustable rear shocks smooth your way over the toughest terrain. Huge 18x8.50x8 low pressure flotation-type rear tire gives sure-gripping traction over hills, rocks, sand, even snow. Oversized 5.30x4.50x6 front tire has rounded contours for positive steering, maximum stability in the turns. Other features are handlebar-mounted twist throttle, ignition-off switch, front & rear brake handles; seal-vent 4 1/3 qt. gas tank to run you about 3 hours at 80 mpg; heavy gauge wrap-around fenders; optional running lights and, for snow going, an option front-wheel ski. Bike is styled in bronze with white engine, sports a 44" wheel base, measures 39" high & 24" wide at handlebars, 27 3/4" high at seat. Order now, and take advantage of this Free ski offer!



249⁹⁵
NO MONEY DOWN

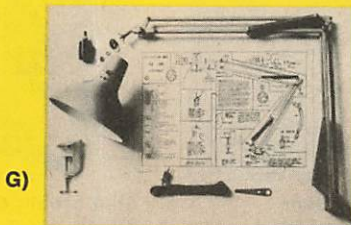
Kit GT-101, 180 lbs., Exp./Frt. 249.95
GTA-101-1, ski accessory, 12 lbs., Exp./Frt. Free with your order for the GT-101, a reg. 19.95 value.
GTA-101-2, running lights, 4 lbs., mailable 19.95



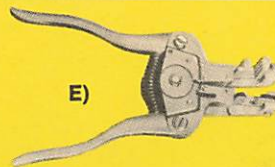
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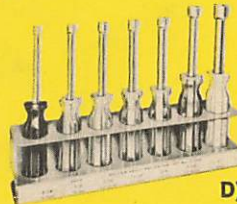
B)



C)



D)



E)



F)



G)

Top values in Heathkit-building Tools

A) Heathkit 3-heat soldering iron kit The handy stand with metal cage keeps the iron safe and secure when not in use. Three heat ranges; low, medium and high, give versatile performance for all types of circuit work. Comes with a six foot cord and runs on 117 VAC.
Kit GH-17A, 5 lbs., mailable 15.95
Replacement Heater Tips for GH-17A:

GDP-317, 1/4" chisel, 1 lb., mailable 5.45
GDP-327, 3/16" pyramid, 1 lb., mailable 5.75
GDP-337, 3/16" chisel, 1 lb., mailable 5.75

B) Weller W-PS 25-watt pencil soldering iron Lightweight and convenient . . . an ideal kitbuilder's companion. Develops 860° heat fast, ready to go to work in seconds. U.L. and C.S.A. Approved.
Model GDP-207, 1 lb., mailable 5.50

C) New Heath solder / de-solder set Weller W-PS 25-watt pencil soldering iron that develops 860-degree heat fast. Includes de-solder squeeze-bulb with heat and solder-resistant nozzle.
GDP-1009, 1 lb., mailable 6.95

D) Vaco hollow shaft nut driver set Seven drivers accommodate most commonly used nut sizes; 3/16", 1/4", 5/16", 3/8", 1/2", 5/8", and 3/4".

Plastic handles are color-coded for quick, easy identification. Convenient self-supporting rack included.

Model GDP-204, 3 lbs., mailable 7.95

E) Speedex wire & cable stripper A rugged, dependable, precision-made tool that takes the guesswork and nicks out of wire stripping. Graduated jaws accept No. 10, 12, 14, 16 and 22 wire.
Model GDP-663, 2 lbs. (mfrs. list \$9.95), mailable 6.50

F) Kit builders tool set Set includes combination wire stripper and diagonal side cutter; midget long-nose pliers; three screwdrivers (3/32", 1/8", 3/16"); Weller W-PS soldering iron; five nut drivers (3/16", 1/4", 5/16", 3/8", 1/2"); nut starter; soldering aid; solder, and information-packed "Kit-Builders Guide."
Model GH-25, 4 lbs., mailable 19.95

G) Workbench extension lamp kit The extension arm comes already assembled. All you do is attach the socket, shade and cord. Lamp features a 45" reach and 360° sweep; vented shade, and movable base clamp. U.L. Approved. Incandescent bulb not included.
Kit GDP-202, 5 lbs. (mfrs. list \$14.50), mailable 12.95

H) Heathkit motor speed control Saves power, blades, bits, saws, etc. You can use a large drill to cut through steel at slow speed without overheating the motor. Ideal for use with portable drills, sabre saws, food mixers, sewing machines, etc.
Kit GD-973A, 2 lbs., mailable 17.95

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

For the ultimate in high-flying fun build one of these

When you build your own Heathkit R/C System you know it's built right, you can service it yourself, and you get more for your money!

The Heathkit GD-405 series transmitters put eight independent channels in a package no larger than most 4-channel units. An exclusive Heath-designed IC encoder in the transmitters and 8-channel decoder IC in the receiver keep the size and weight to a minimum — while substantially increasing reliability. And there are special system prices for both new transmitters when ordered with receiver, battery pack and your choice of four Miniature or Sub-Miniature Servos. Each system includes all inter-connections and batteries.

The new GDA-405-S Single-Stick Transmitter provides one-hand simultaneous control of three independent channels. The stick utilizes a gimbal coupling to actuate two functions, while the third is controlled by the return-to-center knob at the top of the stick.

The GDA-405-D Dual-Stick Transmitter provides two-hand control of four independent channels. A friction adjust permits removing the spring from one function at each stick to retain the control in any desired position. And both transmitters have positive trim adjust tabs for neutralizing channel action without affecting stick position. A relative power meter monitors radiated signal.

Secondary controls common to both 8-channel transmitters include: A two-position switch that's perfect for landing gear; finger adjust tabs for any auxiliary functions you have in mind. But that's just the beginning. Each transmitter is equipped with two coin-switch selected adjacent channels (except when 75.640 is specified). Trainer jacks accommodate the new Heathkit Trainer Link (shown opposite) for interconnecting two transmitters for beginner training purposes. Internal circuitry and an external jack let you charge both the transmitter battery and the receiver battery pack simultaneously with no more than an inter-connecting line cord and 120 VAC source. Eight range controls, one for each channel, provide a method of adjusting servo travel for a given amount of transmitter control movement.

The new GDA-405-2 super lightweight receiver has been given the same exacting attention to detail. Weighing in at a mere 2.5 ounces, it has its own on-off switch, features an external two-channel frequency switch, plus a newly designed internal connector block to take the wasted space and time out of servo and battery hookups.

Kit GDA-405-S, single stick transmitter only,
4 lbs., mailable **139.95**

Kit GDA-405-D, dual stick transmitter only,
5 lbs., mailable **119.95**

Kit GDA-405-2, receiver only, 1 lb., mailable **54.95**

Kit GDA-405-3, receiver battery pack only, 1 lb., mailable **9.95**

GDA-405-44, one new miniature servo, 1 lb., mailable **24.95**

GDA-505-44, one new sub-miniature servo, 1 lb., mailable **24.95**

GDA-405-S & GDA-405-D SPECIFICATIONS — TRANSMITTER — RF carrier frequency: Crystal controlled on 27 MHz, 53 MHz, and 72 MHz. **Frequency stability:** Within $\pm 0.005\%$ on 27 MHz band. Within $\pm 0.002\%$ on 53 and 72 MHz bands. **Temperature range:** 0 to 160 degrees F. **RF output circuit:** Pi network. **RF input power:** 500 mW Min. **Modulation:** On-Off carrier keying. **Approx. current drain:** 100 mA on all bands. **Controls:** Eight channels, four with trim. On-Off switch. Frequency selector switch. Trainer push button. **Power Supply:** Internal 9.6V 500 mA AH nickel-cadmium battery. Rechargeable simultaneously with receiver battery at 35 to 400 mA from 120 volt power line. **Dimensions:** 7" H x 7" W x 2" D. **Net weight:** w/battery, 2 $\frac{3}{4}$ lbs.

GDA-405-2 SPECIFICATIONS — RECEIVER — Local oscillator operating frequency: Crystal controlled on 27 MHz, 53 MHz and 72 MHz. **Frequency stability:** .003% on 53 and 72 MHz bands. **Temperature range:** 0 to +160 degrees F. **Sensitivity:** 5 μ V or better. **Selectivity:** 6 dB down at \pm kHz; 30 dB down at ± 9 kHz. **Current Drain:** 10 mA. **Intermediate frequency:** 453 kHz. **Power supply:** 4.3 V Battery Pack GDA-405-3. **Controls:** ON-OFF switch. Frequency selector switch. **Dimensions:** 1 $\frac{1}{2}$ " H x 1 $\frac{3}{4}$ " W x 2 $\frac{1}{4}$ " D. **Net weight:** 2.5 ozs.

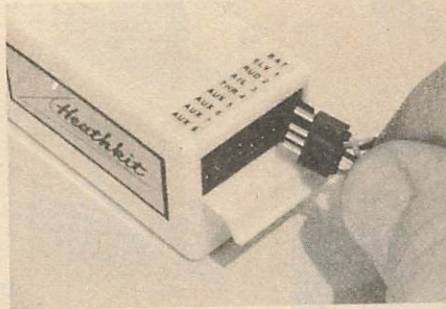
GDA-405-3 SPECIFICATIONS — RECEIVER BATTERY — Type: Nickel-cadmium. Rechargeable simultaneously with the transmitter batteries at 35 to 40 mA from 120 V power line. **Voltage:** +2.4 V and +4.8 V outputs. **Current rating:** 500 mA hours. **Dimensions:** 1 $\frac{1}{4}$ " H x 1 $\frac{1}{4}$ " W x 2 $\frac{3}{4}$ " D. **Net weight:** 3.8 oz.

FREQUENCY COMBINATIONS AVAILABLE — Adjacent channels: 27 MHz: 26.995/27.045, 27.095/27.145, 27.145/27.195. 53 MHz: 53.1/53.2, 53.3/53.4, 53.4/53.5. 72 MHz: 72.08/72.24, 72.16/72.32, 72.40/72.96. Available only as single channel: 75.640.



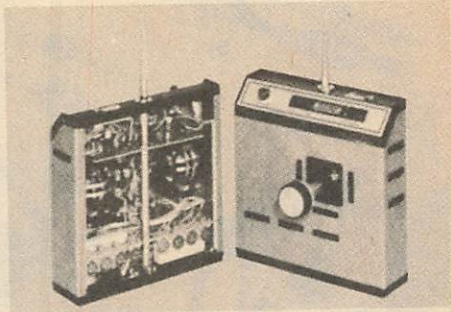
Unmistakable channel identification

A complete set of frequency identification decals is supplied with each GD-405 series Transmitter. The coin slot frequency selector switch on the transmitter makes it impossible to accidentally actuate adjacent channel.



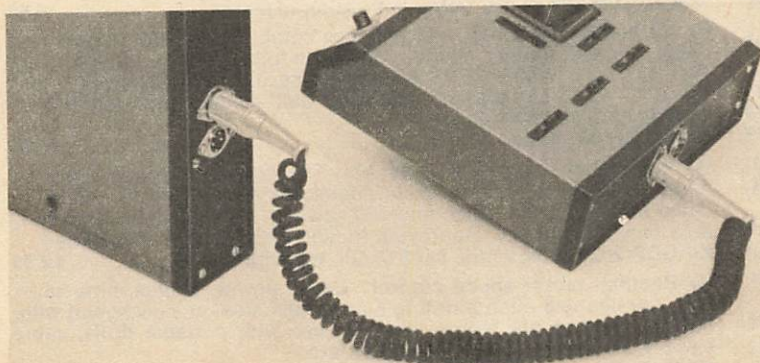
Hook-up's easier, neater than ever

The newly-designed 8-channel connector block on the GDA-405-2 receiver is built right into the case. In-line connectors that add weight and clutter to your model are a thing of the past.



Slim profile design

Heathkit GD-405 transmitters sport super-thin profile cases, with a heft and feel that make for hours of fatigue free flying. The removable back panel lets you get at everything for quick adjustment in the field.



Help a fledgling with this handy Trainer Link

Six-foot coiled cord connects any two GDA-405 transmitters for "buddy system" dual-control in-flight instruction. Simply plug the link into receptacles at the bottom of the transmitters and one becomes a master control module and the other a "slave". When master transmitter operator depresses the trainer button on his unit, the student freely controls the receiver in the model. If the instructor feels it advisable to take-over control he simply releases the trainer button.

GDA-405-6, 1 lb., mailable **7.95**

Heathkit Dual-frequency 8-channel RC systems

Save 34⁷⁰

Buy the system

Order GDA-405-S Single Stick Transmitter with GDA-405-2 Receiver, GDA-405-3 Battery Pack, any combination of four GDA-405-44 Miniature Servos or four GDA-505-44 Sub-Miniature Servos... pay only **269.95** Includes all batteries (up to \$39 retail value). **NO MONEY DOWN**

Save 34⁷⁰

Buy the system

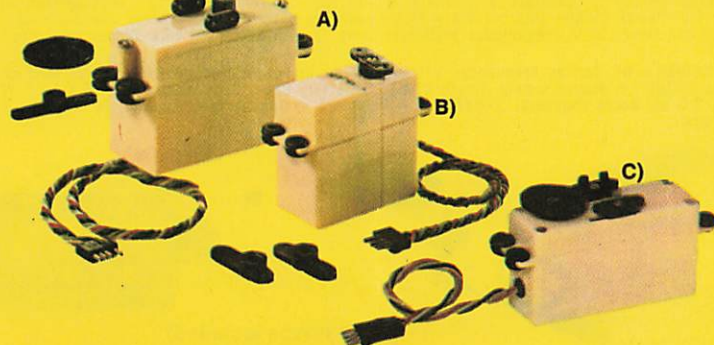
Order GDA-405-D Dual-Stick Transmitter with GDA-405-2 Receiver, GDA-405-3 Battery Pack, any combination of four GDA-405-44 Miniature Servos or GDA-505-44 Sub-Miniature Servos... pay only **249.95** Includes all batteries (up to \$39 retail value). **NO MONEY DOWN**



Low cost, high quality servo kits

A) Heathkit Sub-Miniature Servo. Use with GD-405, -57 and -19 systems (-57 and -19 users request free modification kit GDM-1957 and #432-104 when ordering).

Kit GDA-505-44, 1 lb., mailable **24.95**



GDA-505-44 SPECIFICATIONS — Input signal: Pulse, 1-2 msec. wide; 4 V P-P. Thrust: 4 lbs. min. at rotor. Travel time: 0.5 sec. Rotary output travel: 90° rotation. Temperature range: 0°-160° F. Power requirements: Battery, 4.8 VDC; idle current, 15 mA maximum; stall current, 450 mA nominal; no load current, 80 mA. Mechanical output: 1 large rotary arm, 1 small rotary arm, 1 offset rotary arm, 1 rotary wheel. Position accuracy: 1.0%. Dimensions: 1 1/2" H x 2 3/8" W x 1 7/8" L (length includes mounting ears, height includes the outputs). Net weight: 1.25 oz.

B) Heathkit Miniature Servo. Use with GD-405, -57 and -19 systems (-57 and -19 users request free modification kit GDM-1957 connectors when ordering).

Kit GDA-405-44, 1 lb., mailable **24.95**

GDA-405-44 SPECIFICATIONS — Input signal: Pulse 1-2 msec wide, 4 V P-P. Thrusts: 4 lbs. min. at racks and rotor. Travel time: 0.5 sec. Linear output travel: 1/2" end to end. Rotary output travel: 90° rotation. Temperature range: 0°-160° F. Power requirements: Battery — 4.8 VDC. Idle current — 15 mA. Stall current — 450 mA; no load current, 80 mA. Gear train backlash: Less than .002". Mechanical output: 1 rotary arm; 1 rotary wheel; 2 linear racks. Position accuracy: 1.0%. Dimensions: 1 3/8" H x 7/8" W x 2 1/2" L (length includes mounting ears; height includes outputs). Net weight: 1.75 oz.

C) Heathkit Standard Servo. (for use with Heathkit GD-57 & GD-19 systems only)

Kit GDA-19-4, 1 lb., mailable **19.95**

GDA-19-4 SPECIFICATIONS — SERVO — Thrust: 3 lbs., minimum. Transit time for 5/8" travel: 0.7 sec. Linear output travel: 5/8" end-to-end, 1/2" nominal. Rotary output travel: 0 to +100°. Mechanical output: 1 — rotary arm, 1 — rotary wheel, 2 — linear arms. Dimensions: 1 3/4" H x 1 1/8" L (length includes mounting ears; height includes arms). Net weight: 2.5 oz.

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

Heathkit 3, 4 and 5 Channel RC Systems

The 3-channel system that converts to 4 when you're ready

Available at special system prices, compatible with all Heathkit Servos

The new Heathkit GDA-1057 3-Channel System, quickly and economically becomes 4 channels with the addition of an optional conversion kit. Order 3 now, add the fourth later. It's a system designed to grow as your plans do.

The Heathkit GDA-1057 System uses the flight proven circuitry found in the popular Heathkit GD-19. The GDA-1057-1 3-Channel Transmitter comes with a 2-axis stick assembly. Add the GDA-1057-4 conversion kit and you put 3 channels on the stick with the fourth controlled by a thumb tab. The GDA-1057-1 Transmitter is available on all R/C frequencies, and is housed in a slender new case for positive one-hand action during launch or engine adjustment. Other top-flight features include all nickel-cadmium battery packs with external charging unit, vinyl-covered front panel, adjustable hand-strap, telescoping whip antenna, and relative power output meter that doubles as a battery-charging indicator. The new compact GDA-1057-2 3-Channel Receiver has a molded nylon case and connector block for servos and receiver battery pack. It's compatible with all Heathkit servos, and the GDA-1057-4 conversion kit converts it to 4-channels also.

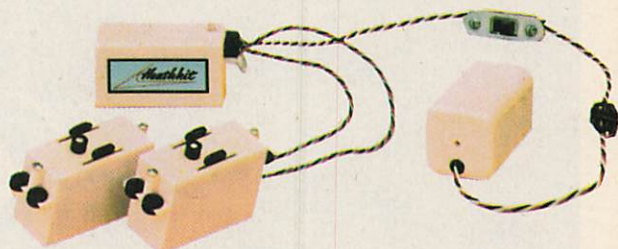
SPECIAL SYSTEM PRICE #1 — Order 3-Channel Transmitter, Receiver, Receiver Battery, two GDA-19-4 Standard Servos, \$139.95.

SPECIAL SYSTEM PRICE #2 — Order same system as above, substituting GDA-405-44 Miniature Servos, \$149.95.

SPECIAL SYSTEM PRICE #3 — Order same system as above, substituting GDA-505-44 Sub-miniature Servos, \$149.95.

SPECIFY FREQUENCY WHEN ORDERING

- Kit GDA-1057-1, 3-channel transmitter, 4 lbs., mailable **74.95**
- Kit GDA-1057-4, 4-channel conversion pack for both transmitter and receiver, 1 lb., mailable **19.95**
- Kit GDA-1057-2, 3-channel receiver, 1 lb., mailable **34.95**
- Kit GDA-405-3, receiver battery, 1 lb., mailable **9.95**
- Kit GDA-19-4, standard servo, 1 lb., mailable **19.95**
- Kit GDA-405-44, miniature servo, 1 lb., mailable **24.95**
- Kit GDA-505-44, sub-miniature servo, 1 lb., mailable **24.95**



GDA-1057-1 SPECIFICATIONS — TRANSMITTER — RF Carrier Frequency: One frequency, crystal-controlled on 27 MHz, 53 MHz or 72 MHz bands. Operating temperature: 0°-160° F. Controls: 3 channels (two with trim); ON-OFF switch. Optional fourth channel. Power supply: Internal 9.6V, 500 mA hours, nickel-cadmium battery. Rechargeable simultaneously with receiver battery at 50 mA from external charger. Frequencies available: 27 MHz (11 meters) — 26.995, 27.045, 27.095, 27.145 & 27.195. 53 MHz (6 meters) — 53.100, 53.200, 53.300, 53.400, 53.500. 72 MHz (4 meters) for R/C planes only — 72.080, 72.240, 72.400, 75.640. (All Models) — 72.160, 72.320, 72.960. Dimensions: 9½" H x 3¼" W x 2¼" D.

GDA-1057-2 SPECIFICATIONS — RECEIVER — RF Carrier Frequency: One frequency, crystal-controlled on 27 MHz, 53 MHz or 72 MHz. Operating temperature: 0°-160° F. Power supply: 4.8V; Battery Pack GDA-405-3. Dimensions: 1½" H x 1¼" W x 2¼" D. Net receiver weight: 2.5 oz. Servo channels: 3 (4 with option). **GENERAL** — Complete airborne system weight: with 2 GDA-505-44 servos: 8.8 ozs.

Earn your kitbuilder's wings with this economical 3-channel system



Step up from the "store bought" league with the Heathkit GD-57 System. It gives you a powerful 500 mW transmitter with factory-assembled and aligned RF section, safety switch lock and trim control that leaves sticks centered; miniature receiver with ceramic IF filters and rugged nylon case; nickel cadmium batteries (GDA-19-3 for receiver); two standard servos; cables, connectors, charging cord.

- System Kit GD-57**, specify frequency, 8 lbs., mailable **129.95**
- Kit GDA-57-1, transmitter, battery, charging cord; specify freq., 5 lbs., mailable **54.95**
- Kit GDA-57-2, receiver only, specify freq., 3 lbs., mailable **34.95**

GD-57-1 SPECIFICATIONS — TRANSMITTER — RF Carrier Frequency: One frequency, crystal-controlled on 27 MHz, 53 MHz or 72 MHz. Operating temperatures: 0°-160° F. Controls: 3 channels: 2 with trim on front panel and 1 without trim on rear panel for easy hand operation. Power supply: Internal 9.6 V nickel-cadmium battery. Rechargeable simultaneously with receiver battery at 40 to 50 mA from 120 V. Frequencies available: Same as with GD-19 systems. Dimensions: 6½" H x 6¼" W x 2¼" D.

GDA-57-2 SPECIFICATIONS — RECEIVER — RF Carrier Frequency: 1 frequency crystal-controlled on 27 MHz, 53 MHz or 72 MHz. Operating temperature: 0°-160° F. Power supply: Heath GDA-19-3 Battery Pack. Dimensions: 1½" H x 1¼" W x 2¼" L. Net receiver weight: 2.0 oz. Servo channels: 3. **GENERAL** — Complete system weight: 12.0 oz. (1 receiver, 1 receiver battery, 1 switch, 2 servos).



(2 servos included)

Let modelers handcraft their electronics



Build your own "full house" system

Why not move up to that "full house" system you have always wanted. This build-it-yourself Heathkit System makes it easy. And in quality and performance it's comparable to R/C systems costing up to \$100 more.

The GD-19 dual-stick system utilizes GDA-19-4 servos to give you a low 16.6 oz. flight weight. The slim-line transmitter has factory-assembled high output RF stage, Kraft sticks for precise control, built-in charging circuit that charges both transmitter and receiver batteries with one cord. Also includes Heathkit miniature receiver with three ceramic IF filters for increased selectivity & reliability without bothersome alignment, double tuned front end, RF amplifier and dual AGC for interference-free reception, and high impact nylon case. Four servos and nickel cadmium batteries for both transmitters & receiver complete the package. See frequencies below.

System Kit GD-19, with standard servos, specify frequency desired.

10 lbs., mailable **199.95**

Kit GDA-19-1, transmitter, battery, charging cord, specify frequency; 6 lbs., mailable ... **86.50**

Kit GDA-19-2, receiver only, specify frequency; 1 lb., mailable **49.95**

Kit GDA-19-3, receiver battery pack only; 1 lb., mailable **9.95**

Kit GDA-19-4, one standard servo only; (see pg. 8), 1 lb., mailable **19.95**

GDA-19-1 SPECIFICATIONS - TRANSMITTER - RF Carrier frequency: 1 channel, crystal controlled on 27, 53 or 72 MHz. Frequency stability: $\pm 0.005\%$ on 27 MHz, $\pm 0.002\%$ on 53 and 72 MHz. Temperature: 0° to $+160^\circ\text{F}$. RF Output Circuit: Pi-network. Modulation: On-off carrier keying. Approximate current drain: 100 mA. Controls: 5 channels; 4 with trim, on-off switch. Power supply: Internal 9.6 volt nickel-cadmium battery. Rechargeable simultaneously with receiver battery at 35 to 40 mA from 120V. Dimensions: $6\frac{3}{8}''$ H x $6\frac{3}{4}''$ W x $2\frac{1}{4}''$ D. Net weight: $2\frac{3}{4}$ lbs. with battery.

GDA-19-2 SPECIFICATIONS - RECEIVER - Frequency: 1 channel, crystal controlled on 27, 53 or 72 MHz. Frequency stability: $.003\%$ on 27 MHz, $.002\%$ on 53 and 72 MHz. Temperature range: 0° to $+160^\circ\text{F}$. Sensitivity: $5 \mu\text{V}$ or better. Selectivity: 6 dB at ± 4.0 kHz, 30 dB at ± 9.0 kHz. Approximate current drain: 6 mA. Intermediate frequency: 453 kHz. Power supply: Heath GDA-19-3 battery pack. Controls: On-Off switch. Dimensions: $2\frac{1}{2}''$ H x $2''$ W x $2\frac{1}{2}''$ D. Net receiver weight: 2.3 oz.

GDA-19-3 SPECIFICATIONS - RECEIVER BATTERY - Type: Nickel-cadmium. Rechargeable. Voltage: $+2.4$ and $+4.8$ V outputs. Dimensions: $\frac{5}{8}''$ H x $2\frac{1}{8}''$ W x $2\frac{3}{8}''$ D. Net weight: 3.9 oz. Frequencies Available: 27 MHz (11 meters) -26.995, 27.045, 27.095, 27.145 & 27.195, 53 MHz (6 meters) -53.100, 53.200, 53.300, 53.400, 53.500, 72 MHz (4 meters) for R/C planes only -72.080, 72.240, 72.400, 72.960, & 75.640. (NOTE: An amateur radio operator's license is required for 6 meter operations. Class C Citizen's Band license required for 27 and 72 MHz.)



Most popular kit car on the RC circuit

Kit includes snap-on high-impact body, chassis, coil-spring suspension (independent at front wheels), wheels and special formula rubber locking tires, fuel tank, oil-proof, dustproof, R/C equipment case, 5.5:1 gears, axles (adjustable for caster and toe-in at front), servo linkages, all hardware, decals.

Kit GD-101, R/C car only, 11 lbs., mailable **29.95**

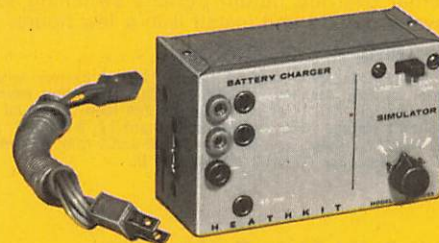


Heathkit Thumb Tach for super tuning

Two rpm ranges: 0-5000, 0-25,000. Ideal for needle valve adjustments, selection of glow plugs, gears and props - permits for rpm change peaking engine you can't hear.

Kit GD-69, 2 lbs., mailable .. **19.95**

See Heathkit Servos on page 73



Our new Servo Simulator

Improved version of the popular GD-206. The new GD-1053 Servo Simulator replaces transmitter and receiver for making adjustments on all Heathkit servos and a wide variety of others. Operates servos from 120 VAC line or optional internal battery. When plugged in, also serves as charger for receiver and glo-plug batteries. New long-life indicator bulb shows battery condition. Includes adaptor cable for new Heathkit GD-405-series servos.

GD-1053, 3 lbs., mailable **19.95**

Kit GDA-19-3, optional battery pack, 1 lb., mailable **9.95**

Our most popular auto tune-up tools are now available



Heathkit Tach/ Dwell/Volt Meter

**Kit, or
Assembled,
Tested,
Calibrated**

29⁹⁵ kit

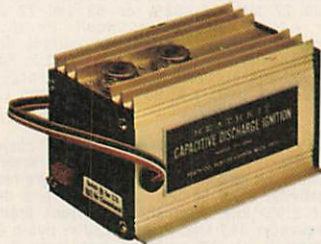
42⁹⁵
assembled

Three automotive test instruments in one. Measures dwell on most 4-cycle 3, 4, 6 and 8-cylinder engines having conventional (Kettering) ignitions. Shows RPM on two scales — 0-1500 and 0-4500. Checks voltage from 0 to 15 volts. It can be used with both 6 and 12-volt systems having either positive or negative ground. It has just two leads and uses no batteries since the engine provides both signal and power. Requires no calibration when switching between jobs. All-solid-state, 3% accuracy. Completely portable snap-lock carrying case that's unaffected by water, oil, gasoline and most acids.

Kit ID-29, 5 lbs., mailable 29.95

Assembled WM-5102, 5 lbs., mailable 42.95

ID-29 SPECIFICATIONS — Dwellmeter: Four direct reading scales; 8 cyl. — 0-45 degrees; 6 cyl. — 0-60 degrees; 4 cyl. — 0-90 degrees; 3 cyl. — 0-120 degrees. **Tachometer:** Two RPM ranges; Low range — 0-1500 RPM; High range — 0-4500 RPM. **Voltmeter:** Direct reading scale, 0-15 VDC. **Power requirements:** 10mA approximate average current. **Meter:** 4 1/2", 1 mA (100 degree movement). **Accuracy:** ±3% of full scale. **Dimensions:** 4 1/4" H x 8 1/2" W x 7 1/4" D (including handle).



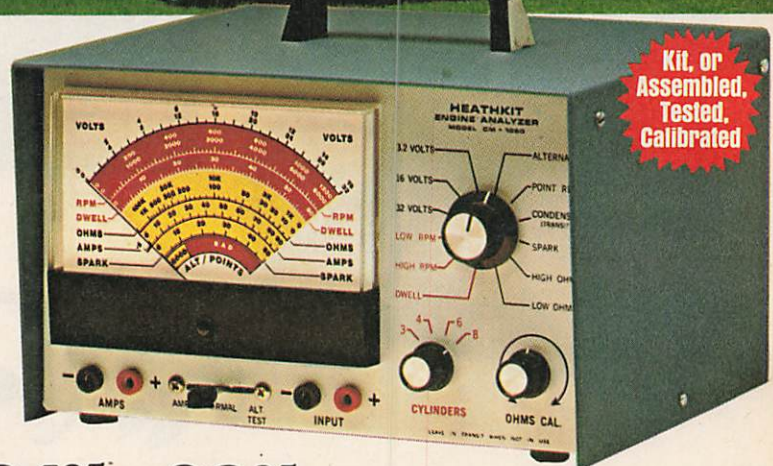
39⁹⁵ kit only

Heathkit CD Ignition

Better performance, up to 50,000 miles between tune-ups. That's what the Heathkit Capacitive Discharge Ignition System can do for any car, truck or marine engine with conventional (battery, generator/alternator) negative ground system. It delivers higher voltage to the plugs for more complete combustion; automatically varies the spark duration, giving a longer firing on cold-morning starts, shorter firing for high rpm running; puts very little current through the points, reducing heat that causes pitting and burning. An external override button permits switching to conventional system. Build and install it in a few hours.

Kit CP-1060, 4 lbs., mailable 39.95

CP-1060 SPECIFICATIONS — Nominal input: 12-14-V battery with generator or alternator system. Maximum input: 18 VDC. Triggering source: Ignition points or generator capable of switching 40 ohm load to ground ±1 V. Typical open circuit voltage with standard coil: Cranking, 8-V input; greater than 26 kV, 500 rpm, 12-V input; greater than 38 kV, 6,000 rpm, 14-V input; greater than 40 kV. **Dimensions:** 3 1/8" H x 3 3/4" W x 6" D.



**Kit, or
Assembled,
Tested,
Calibrated**

64⁹⁵ kit **99⁹⁵** assembled

Heathkit Portable Engine Analyzer

This professional-grade instrument tests conventional, magneto, transistor, and most capacitive discharge ignition systems, regardless of voltage or grounding, on any 3, 4, 6 or 8-cylinder engine. It permits rapid servicing of storage battery, generator or alternator, voltage regulator, starter, distributor, ignition circuit (points, condenser and coil), accessories and all electrical wiring. The large 6" meter is color coded for easy-reading.

Unlike most other analyzers, there is no need to recalibrate between functions. Accuracy is ±3% on all ranges over a wide temperature range. Three C cells supply power, with no drain unless leads are hooked up. All necessary leads and accessories included.

Kit CM-1050, batteries not included, 8 lbs., mailable 64.95

Assembled WM-5100, includes batteries, 8 lbs., mailable 99.95

CM-1050 SPECIFICATIONS — Voltmeter ranges: 0-3.2 V DC, 0-32 V DC, ±3% of full scale. Ohmmeter: Two ranges: R x 1 (100 Ω center scale), R x 100 (10 kΩ center scale, ±3° arc). **Tachometer:** Two ranges: 0-1200 rpm, 0-6000 rpm, ±3% of full scale. **Dwell meter:** Two ranges: 0-45° (on 0-60° scale), 0-60°, ±3% of full scale. **Amperes:** —5 to +90 amperes DC, ±3% of full scale. **Spark output:** 0-50. **Point resistance:** Good/Bad. **Alternator:** Good/Bad. **Condenser:** 0.22 μF, 10%. **Accuracy:** ±3% of full scale. **Temperature coefficient:** Tref=77°F; Change less than ±5% of full scale over the temperature range of 32°-120°F (except Alternator — 65°-83°F). **Operating temperature range:** RPM and Dwell: 0-140°F with alkaline batteries. 32°-140°F with zinc-carbon batteries. All other functions: 0-140°F. **Battery Life:** 100 hours average (with intermittent use of Low Ohms function). **Meter:** 6", 200 μA, 105° movement. **Cables supplied:** Two 8' two-conductor test cables. One 2' alligator to alligator lead. One 2' alligator to push-on connector lead. One calibration cable. **Accessories supplied:** 90-ampere shunt. 0.25 Ω resistor assembly. One insulation-piercing alligator clip. Two #10 solder lugs. #14. For use to 0°F: Three 1.5-V, C-cell, alkaline batteries (NEDA #14A). **Dimensions:** 7 1/2" H x 10 1/2" W x 8 3/4" D.

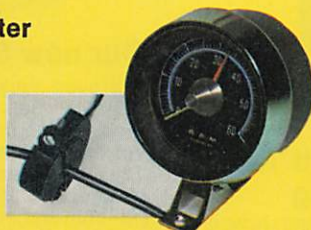
Heathkit Solid-State Tachometer

Wide angle 250° edge lighted dial with white indicator, adjustable pointer, non-scratch glass face. Available with black and chrome case, or for panel mount. Triggers from breaker points or inductive pickup.

Kit MI-18-1, panel model, 3 lbs., mailable 29.95

Kit MI-18-2, with case, 3 lbs., mailable 32.95

M-18 SPECIFICATIONS — Trigger Sensitivity (Minimum Requirements): Pickup Coil, 25 mA peak, 2 μS rise time. **Tach Connection:** 30 V negative pulse, 20 μS rise time. **Meter Range:** 0-6000 rpm or 0-9000 rpm. **Engine Capability:** 1 to 6 cyl., 2 cycles; 2 to 8 cyl., 4 cycles. **Accuracy:** ±3% at calibrating temperature (when calibrated at full scale). ±5% from 0°F. to +120°F. **Power Requirements:** 10.5 to 17.5 V DC. 25 mA at 12 V DC. 125 mA with lamp. **Dimensions:** Model MI-18-1: 3 3/4" hole, 2 1/4" over-all case depth. Model MI-18-2: 3 3/4" overall face diameter, 4 1/4" high, 3" overall case depth.



3-in-1 Hanson Basic Tester Set

The Hanson Basic Tester Set brings you three fundamental tools used in all automotive tune-up work. Set includes Model 714 Remote Starter Switch with new squeeze-handle starter operation; Model 715 Deluxe Compression Tester with push-button pressure release, ±2% accuracy, easy-to-read English & metric calibrations; Model 709 Vacuum & Fuel Pump Tester for testing valves, fuel pump, intake manifold, compression, carburetor adjustment, rings, cylinder walls, spark plug, etc.

CGP-1036, 3 lbs., mailable 10.95



in kit form or factory assembled, ready to use!



Kit, or Assembled, Tested, Calibrated

129⁹⁵ kit

199⁹⁵ assembled

Heathkit Solid-state Ignition Analyzer

The Heathkit CO-1015 Solid-State Ignition Analyzer can be used with any standard, transistorized or capacitive discharge system on three, four, six or eight-cylinder engines to detect shorted spark plugs, bad points, defective wiring, worn distributor parts, incorrect dwell time, coil, condenser or transistor or CD circuitry problems. It features a built-in tachometer, constant pattern width circuitry. You select four different patterns — primary or secondary, in either parade or superimposed displays. For detailed analyses, horizontal sweep can be expanded 10 to 1, vertical sweep 2 to 1. The optional 12-volt inverter mounts permanently to the unit's rear panel.

- Kit CO-1015, 21 lbs., mailable **129.95**
- Kit COA-1015-1, 12V Inverter, 4 lbs., mailable **24.95**
- Assembled WO-5104, 22 lbs., mailable **199.95**
- Assembled WOA-5104-1, 12V Inverter, 4 lbs., mailable **32.95**

CO-1015 SPECIFICATIONS — Power Requirements: 120/240, 50/60 Hz, 16 W. RPM Range: 400-5000. Cylinders: 3, 4, 6 or 8. Ignition Systems: Standard, Transistorized or Capacitive Discharge. Displays: Parade or superimposed on both primary and secondary waveforms. Vertical Expand: Approx. 2 to 1. Horizontal Expand: Approx. 10 to 1. Sweep Length: (Referenced to Calibrate Position) ±5% over entire RPM range. Intensity: Fixed. Presets: Focus, Astigmatism, Trigger Adjust, Tac Cal. Connection Cables: 12' pick-up clamp; ground and secondary clip leads extend 2' beyond pick-up clamp. Front Panel Controls: Vertical Position; Vertical Expand (Pull Vert. Pos.); Horizontal Expand; Horizontal Position; Parade/Superimposed (Pull Horiz. Pos.); Power On/Off; Function Switch — Standard ignition primary, secondary; Calibrate; Capacitive Discharge primary, secondary. Tac Hi/Low, Tac 6/8 cyl. (pull Horiz. Exp.). Tachometer: 0-1000 RPM, 0-5000 RPM ±5% of full scale. Dimensions: 7" H x 10½" W x 17½" D.



Heathkit Solid-State Timing Light

Provides a flash that won't wash out even in direct sunlight. Connect one cable to the car's battery, the other to spark plug. Adapter is included for distributor cap hook-up. Charcoal green, insulated housing. Circuit protected against reversed polarity.

Kit CI-1020, 3 lbs., mailable .. **19.95**

CI-1020 SPECIFICATIONS — Useful light range: Up to 2 feet in daylight. Engine speed range: Full flash brightness up to 2000 rpm. Triggering requirements: Direct connection to number one spark plug of engine ignition system. Connecting cables: Battery cable with clips (7 feet). High voltage cable with clip (5 feet). Adapter/connector: Connects to either a spark plug or distributor. Power requirements: Automotive storage battery or separate 15 volt DC power supply. Size: 6½" H x 10" L x 2" W.

Heathkit Timing Light with Inductive pickup

29⁹⁵ kit

39⁹⁵ assembled

assembled



Kit, or Assembled, Tested, Calibrated

Hooks-up to the battery terminals, and inductive pickup snaps around the wire to the #1 spark plug. Rugged insulated blue plastic housing. Circuit protected against reversed polarity.

- Kit CI-1040, 4 lbs., mailable **29.95**
- Assembled WD-5105, 4 lbs., mailable **39.95**

CI-1040 SPECIFICATIONS — Useful light range: Up to 2 ft. in daylight. Engine speed range: Full flash brightness up to 2000 rpm. Triggering: Current pickup coil. Connecting cables: 7-ft. battery cable with clips. 5-ft. trigger pickup cable with clips. Power requirements: 12 VDC automotive storage battery or separate 15 VDC power supply with 1.5 amp capacity. Dimensions: 6½" H x 2" W x 10" D.



New Heathkit Small Engine Analyzer

Here's the solid-state tune-up tool for all your 1 to 4 cylinder, 2 and 4 cycle engines. Now you can set-up your garden tractor, lawn mower, motorcycle, outboard, trail bike, snowmobile, etc. with the same accuracy obtainable on a V-8 engine. The new Heathkit CM-1045 is a completely portable instrument that tests volts, ohms, dwell

and continuity — in many cases permits checking the entire ignition system on a small engine without tearing down to get to the ignition points behind the flywheel. Plus, there's a built-in tachometer with snap-on inductive pickup and 0-3000 and 0-15000 rpm ranges.

The CM-1045 is powered by three 1.5 volt C batteries (not supplied) and is self-contained in a snaplock oil-gas-water-resistant case. There's no neater meter for the price, and you can assemble it easily in two evenings.

Kit CM-1045, 5 lbs., mailable **39.95**

CM-1045 SPECIFICATIONS — Voltmeter: 0-20 V DC. Ohmmeter: 0 to 100 kΩ (10 kΩ center scale). Tachometer: Two ranges: 0-3000 rpm, 0-15000 rpm. Dwell meter: Four scales: 1 cylinder; 90°-360°; 2 cylinder; 40°-180°; 3 cylinder; 30°-120°; 4 cylinder; 20°-90°. Continuity: Lamp indicator. Operating temperature range: 0° F-140° F with alkaline batteries. 32° F-140° F with zinc-carbon batteries. Meter accuracy: Ohmmeter: ±3 degrees arc at 76° F, ±5 degree arc at 0° F and 140° F. Other functions: ±3% at 76° F, ±5% at 0° F and 140° F. Power source: Three 1.5 V C batteries. Dimensions: 9½" H x 9¾" W x 5¼" D.

Heathkit 10-Amp Automatic Battery Charger

For 12 VDC lead-acid batteries. Will not start unless it's correctly connected. Won't overcharge no matter how long it's hooked up. When battery reaches full charge, the GP-21 shuts itself down, maintaining just enough current to compensate for leakage.

Kit GP-21, 13 lbs., mailable **29.95**

GP-21 SPECIFICATIONS — Charge rate: 10 amperes maximum at 120 VAC line, decreasing to leakage rate of battery. Output voltage: Between 13.2 VDC and 13.6 VDC depending on battery condition. Power requirements: 105-130 VAC; 60 Hz, 200 watts maximum (at 10 amperes charge rate.) Dimensions: 5½" H x 9" W x 6¾" D.

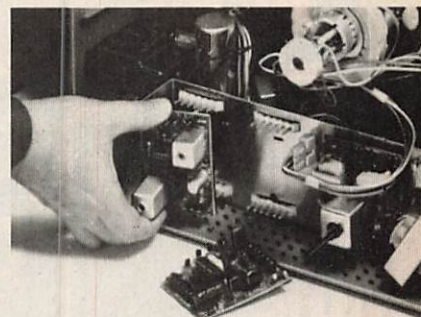


charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

Here's proof that all B&W Portables are NOT alike!



GRA-403-18.
Roll-around Cart with
walnut finished wood and
pale brass accents. 27" W x 15 5/8"
D x 22" H. 23 lbs.,
Express/Frt. 19.95



Most circuitry mounts on 4 plug-in circuit boards for easy assembly and at-home servicing.



Sophisticated solid-state circuitry includes 23 transistors, 13 diodes and two integrated circuits (ICs).



179⁹⁵ includes cabinet
NO MONEY DOWN

Simulated TV Pictures

The incomparable Heathkit 19V Solid-State B&W "Portable" TV — more features than others — superior performance — and hand crafted by you so you know it's built right.

- **Solid-State Circuitry (just 2 tubes; picture & high voltage) — a rarity in 19 in. diagonal sets — for cooler running, long life and dependability in a set that can take the knocking-around of room-to-room portability**
- **Solid-State Modular design — just 4 plug-in boards make this set a satisfying experience to build, and a snap to keep running at peak performance**
- **Total Detent Tuning convenience — on all 70 UHF and 12 VHF channels — a Heathkit "first"**
- **"Instant-on" — sound and picture at a touch**
- **New Ultrarectangular picture tube — for full 184 sq. in. viewing area**
- **Automatic Vertical Linearity — for rock-steady pictures, a feature usually found only in expensive color sets**
- **Dual-Controlled AGC — for improved picture/noise ratio, another "big-set" plus value!**
- **Extra-wide Video Bandwidth — for theater-quality pictures**
- **Traditional Heathkit quality throughout — for long life and dependable, trouble-free performance**

With the GR-1900, Heath meets the growing demand for a big screen portable black & white TV set incorporating the famous Heathkit quality, performance and dependability found in its color TV sets. The Heathkit GR-1900 is every inch a quality set, incorporating advanced design features never before available in B&W TV. For instance, you'll find detent tuning on all 70 UHF channels... another

Heathkit "first". It makes tuning your favorite UHF channel as precise and as convenient as VHF. Other convenient front panel controls include fine tuning for both VHF and UHF; off/on/volume; brightness; contrast, master on/off; vertical hold; AGC; and height. Adjustments are provided on the back panel for horizontal hold.

The new ultra-rectangular tube has straighter sides resulting in a picture that looks even bigger than its generous 19-inch viewable diagonal measurement.

Plug-in circuit boards are used in the GR-1900, just like our color sets. Most circuitry mounts on four of these circuit boards, keeping chassis wiring to a minimum and making assembly an easy 7-evening project, even for the novice kit builder. Makes troubleshooting and at-home self-service a snap, too. Four circuits (most sets have only 3) in the grounded-base VHF tuner assure superior cross-modulation rejection in dense station areas. And both VHF and UHF tuners come completely preassembled, aligned and ready for installation.

Other features include the latest-design integrated circuit (IC) for signal processing, combined with gated AGC and noise limiting to give you rock-steady pictures: integrated circuit sound system; wide-band video amplifier for top picture detail and crispness; three video IF amplifiers provide plenty of reserve gain for excellent picture contrast; hefty high voltage power supply prevents picture blooming; built-in whip VHF antenna and UHF loop antenna for local reception. Twenty-three transistors, thirteen diodes, two ICs, a high-voltage rectifier tube, conservatively rated components, and built-in arc protection all add up to long life and trouble-free performance. The handsome plastic cabinet included is color styled in muted gray and brown to complement any home decor.

For creative satisfaction, for performance satisfaction, build the incomparable 1900.

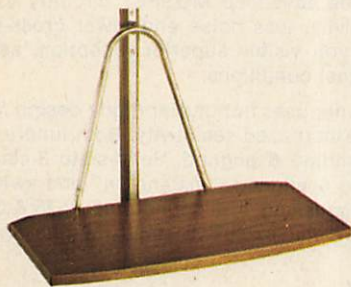
Kit GR-1900, 67 lbs. Express/Frt. 179.95

GR-1900 SPECIFICATIONS: Picture Size: 184 sq. in. Deflection: Magnetic, 114 degrees. Focus: Electrostatic. Antenna Input Impedance: 300 ohm balanced. Tuning Range: VHF TV channels 2 through 13 (memory-type Fine Tuning). UHF TV channels 14 through 83. (Detent-type tuner.) Picture IF Carrier: 45.75 MHz. Sound IF Carrier: 41.25 MHz. Sound IF: 4.5 MHz. Video Response: Greater than 3.5 MHz. Audio Power Output: 1 watt into 8 ohm load (speaker impedance — 8 ohm). Front Panel Controls: UHF Coarse Tuning, UHF Fine Tuning, VHF Coarse Tuning, VHF Fine Tuning, Off/On/Volume, Brightness, Contrast, Master On/Off, Vertical Hold, AGC, Height. Rear Chassis Coll: Horizontal Hold. Power Requirements: 110-130 volts AC 60 Hz at .58 amperes (70 watts). Dimensions: 16 3/4" H x 22 3/8" W x 12 3/8" D.

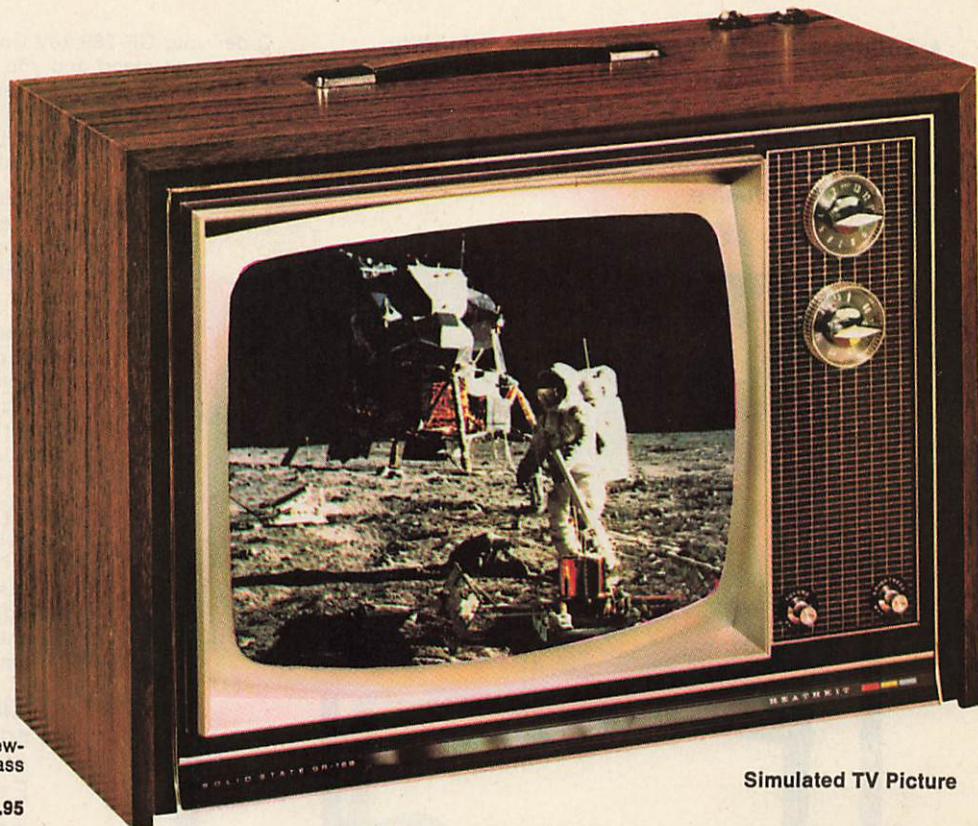
Unbeatable value in a 14V Solid-State Color kit!



299⁹⁵ includes cabinet
NO MONEY DOWN



Handy Swivel Wall Shelf for Your GR-169
Mounts on any wall, swivels for most convenient viewing angle. Platform finished in walnut; pale brass plated tubing. Platform 24" W x 15 1/2" D.
GRA-169-1, 15 lbs., Exp./Frt.18.95



Simulated TV Picture

Enjoy the unmatched satisfaction of building a quality Color TV "Portable" — the Heathkit GR-169

- **Solid-State Circuitry** — for cool running, long life and dependable operation
- **Modular plug-in circuit board design** — for enjoyable kit assembly and easier maintenance & self service
- **Built-in VHF & UHF antennas** — for outstanding reception wherever you take this plug-in portable
- **Complete front-panel secondary controls** — for fingertip convenience
- **Total self-service capability** — another exclusive Heathkit "plus-value" — includes convergence contrast and built-in dot generator plus a volt-ohm meter to make periodic checks

Built for unrivaled performance at home or away! Unlike so-called "bargain-price" portables, the Heathkit GR-169 color receiver is designed around the same advanced solid-state circuitry and quality components that account for the superior picture and sound in Heathkit consoles. The GR-169 incorporates all the secondary controls found in the best of the big sets: Color, Tint, Contrast, Horizontal & Vertical Hold, Height, AGC, Color Killer, Dots and Screen adjustments. And they're all up front for fast, precise tuning. Plus, there's front-panel switch-controlled degaussing so you can quickly demagnetize your GR-169 after moving it from one location to another.

Heathkit solid-state design sets the GR-169 apart from any other color portable you've seen. A total of 48 transistors, 45 diodes, 3 Cs and just 2 tubes (picture and high voltage rectifier) form the basic circuitry. What's more, the GR-169 utilizes a high resolution

circuit & adjustable noise limiting; exclusive FET solid-state VHF tuner for lower noise, better cross modulation rejection in multi-station areas for cleaner pictures, and far greater sensitivity. The solid-state 3-stage IF provides increased gain for a better overall picture.

Plug-in circuit boards, transistors and ICs permit fast, trouble-free assembly. And the famous Heathkit manual makes the project a joy, detailing each operation, step by step. The GR-169 kit includes a handy volt-ohm meter, built-in dot generator and the comprehensive manual with supplementary troubleshooting procedures so you can perform normal periodic adjustment and servicing. And the circuit board modules are covered by Heath's 48-hour warranty, too.

Kit GR-169, 69 lbs., Express/Frt. 299.95

GR-169 SPECIFICATIONS — Picture Size: 102 sq. in. viewing area. Deflection: Magnetic, 90°. Focus: Electrostatic. Convergence: Magnetic. Antenna Input Impedance: VHF — 300 ohm balanced or 75 ohm unbalanced; UHF — 300 ohm balanced. Tuning Range: VHF — Channels 2-13; UHF — Channels 14-83. Picture IF Carrier: 45.75 MHz. Sound IF Carrier: 41.25 MHz. Color IF Subcarrier: 42.17 MHz. Sound IF Frequency: 4.5 MHz. Video IF Bandwidth: 3.58 MHz. Audio Output: Power — 1 watt, Impedance — 8 ohms. Power Requirements: 110-130 VAC 130 watts. Dimensions: 16" H x 20 1/2" W x 16" D.

New Expedited 48-Hour No-Charge Warranty Service Plan for Solid State TV Modules!

Special service facilities have been established at the factory and all Heathkit Electronic Centers to expedite service and return of Solid-State TV circuit modules within two working days (plus mailing time). During the 90-day warranty period, TV modules will be serviced or replaced with no charge for labor or parts. After the initial 90-day warranty period expires, TV modules will be serviced or replaced at a fixed charge of \$5.00 per module for labor and parts for the life of the set. All picture tubes warranted for two full years.

Heathkit 18V Color TV - our lowest cost big screen set

- **Solid-state modular design** — for reliability, easy assembly and self-service
- **Automatic fine tuning** — for perfect picture & sound at a touch
- **Swing-out self-service chassis** — a Heathkit exclusive

Order your GR-269 18V Color Television with the table-topping cabinet and roll-around stand and you can cart your entertainment off to the porch or patio when the hot weather sets in. Or get it with the contemporary cabinet for permanent installation anywhere indoors. Either way, the GR-269 is a beautiful kit to build, an incomparable set to see — and at this low price the GR-269 is an unbelievable value.

You get solid-state modular circuitry that makes this kit a pleasure to build. And like all Heathkit TVs, the GR-269 gives you a full complement of alignment and self-service equipment — dot generator, convergence board, troubleshooting meter and the troubleshooting book.

The factory assembled & aligned AFT module gives you perfect picture and sound automatically at just a push of the front panel button. The exclusive Heath designed VHF tuner uses advanced MOSFET circuitry to assure higher sensitivity, less noise and lower cross-modulation...gives you visibly superior reception, especially under marginal conditions.

The UHF tuner uses hot-carrier diode design for lower noise and increased sensitivity. Both tuners are factory assembled & aligned. Solid-state 3-stage IF is assembled & aligned. "Instant-On" and switch-controlled degaussing, hi-fi sound output; 75 & 300 ohm antenna inputs; exclusive Heath Magna-Shield are standard.

Kit GR-269, all parts including chassis, 180 sq. in. picture tube, mask, VHF & UHF tuners, AFT, speaker, 100 lbs., Express/Frt. **349.95**

GRA-403-18. Roll-around Cart with walnut finished wood and pale brass accents. 27" W x 15 5/8" D x 22" H. 23 lbs., Express/Frt. **19.95**

GR-269 SPECIFICATIONS: Picture Size: 180 sq. in. viewing area. Tube-type: Non-etched. Deflection: Magnetic, 90°. Focus: Electrostatic. Convergence: Magnetic. Antenna Input Impedance: VHF — 300 ohm balanced or 75 ohm unbalanced; UHF — 300 ohm balanced. Tuning Range: VHF — Channels 2-13; UHF — Channels 14-83. Picture IF Carrier: 45.75 MHz. Sound IF Carrier: 41.25 MHz. Color IF Frequency: 4.5 MHz. Video IF Bandwidth: 3.58 MHz. Audio Output Power: 1 watt, 8 ohm impedance. Power Requirements: 110-130 VAC, 140 watts. Dimensions: See "cabinets" for installed dimensions. For custom installation clearances & detailed dimensions, write for free spec. sheet.



349⁹⁵ less cabinet
NO MONEY DOWN

Simulated TV Pictures



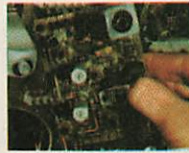
Assembled **GRA-401-18**. Striking contemporary cabinet finished in hand-rubbed oiled walnut. 29" H x 28 1/4" W x 18 1/4" D. 41 lbs., Express/Frt. **59.95**



Assembled **GRA-402-18** walnut-grained vinyl clad wood cabinet 16 1/2" H x 25" W x 11" D (17 7/8" D. incl. cup), 27 lbs., Express/Frt. **29.**

Heathkit GR-271 - our best TV features in 21V size

- **Famous GR-900 performance features in a compact 21 in. diagonal screen size**
- **Detent power tuning on both UHF & VHF — just like its big brother, the GR-900**
- **Reliable modular solid-state circuitry — for ease of assembly, long trouble-free performance, fast servicing**
- **Self-service built-ins — including exclusive Heathkit "check-out" meter, swing-out chassis and programmed troubleshooting procedure manual**



Modular design with plug-in circuit boards.



Socket-mounted transistors & ICs.



Exclusive Heathkit check-out meter included.



New programmed troubleshooting procedure manual.

The Heathkit GR-271 is simply the famous GR-900 in a slightly smaller package. The only difference is the screen size — 21 inches viewable diagonal — and new "space-saver" cabinet options. All the other great features are the same. The GR-271 lets you pre-select any of 12 UHF channels, 14 through 83. Then you can detent-scan in both directions either with push-button power tuning or remote control. Controls for presetting the 12 UHF positions are conveniently located on the tilt-out convergence panel. The new angular tint control is also featured, to reduce tint and flesh tone variations when switching channels or when stations change from one program to another.

The GR-271 gives you all of the famous state-of-the-art engineering features found in the GR-900, including: ultra-rectangular matrix tube; solid-state modular circuitry with 46 transistors, 57 diodes, and four ICs; three-stage solid-state high gain IF; high sensitivity varactor UHF tuner; MOSFET VHF tuner; automatic chroma control; adjustable video peaking; adjustable noise limiting with gated AGC; "Instant On" with defeat switch; automatic fine tuning, and adjustable tone control.

Built-in dot generator & tilt-out convergence panel, volt-ohm meter and new step-by-step programmed instructions make assembly and servicing easy. Experience the great satisfaction of building a superior set for yourself — order your GR-271 today.

Kit GR-271, TV less cabinet, 121 lbs., Express/Freight 499.95

GR-271 SPECIFICATIONS — Viewing Area: 226 sq. in. All other specifications same as GR-900, page 3.



499⁹⁵ less cabinet
NO MONEY DOWN



Table Model Cabinet



Shown with optional cart. Ruggedly constructed of attractive walnut-grained Marlite. Measures 20 $\frac{3}{4}$ " H x 31 $\frac{3}{8}$ " W x 12 $\frac{3}{4}$ " D (17 $\frac{1}{8}$ " D incl. cup). **Assembled GRA-501-21, 33 lbs., Exp./Frt. 54.95**

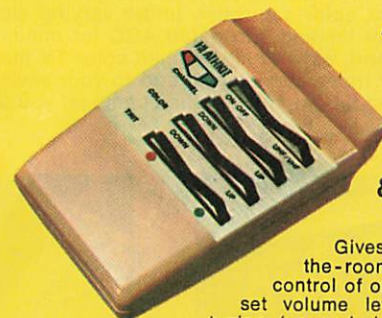
GRA-204-20, roll-around cart, vinyl covered steel shelves and handles, satin finish steel legs, swivel casters, top shelf 14" high, 19 lbs., Exp./Frt. **19.95**

Mediterranean Cabinet



Hand crafted of furniture grade hardwoods and solids, beautifully finished in rich pecan. Measures a space-saving 26 $\frac{1}{4}$ " H x 34 $\frac{1}{4}$ " W x 18 $\frac{3}{8}$ " D (21 $\frac{1}{4}$ " incl. cup).

Assembled GRA-504-21, 85 lbs., Exp./Frt. 119.95



Armchair Wireless Remote Control for GR-900 & GR-271

Gives you across-the-room 8-function control of on/off; 3 preset volume levels; power tuning (up and down); color; tint; UHF/VHF channel selection. Build and install it in three evenings — even faster if you assemble it as you build your TV.

Kit GRA-900-6, 8 lbs., mailable 79.95

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

The most exciting color TV you can build or own

Heathkit GR-900 25V Solid-State Color TV

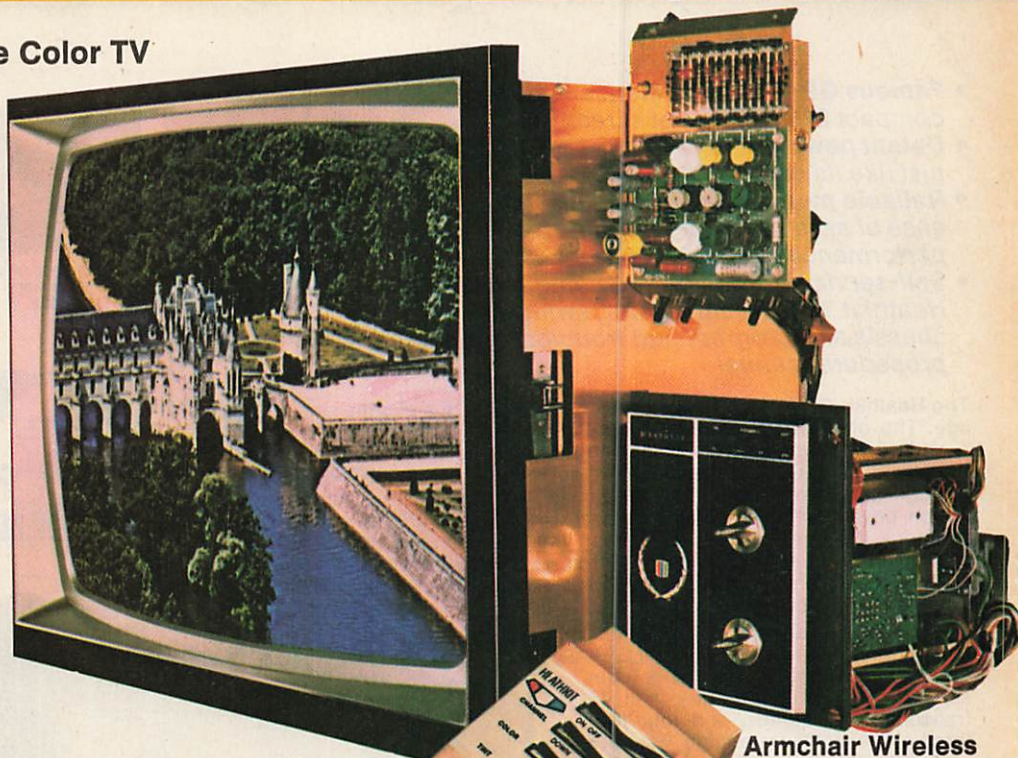
- **25V ultrarectangular screen** — no bigger picture, anywhere!
- **Solid-state modular design** — for long, dependable service, easier kit assembly, and self-service
- **Power tuning** — on 12 preset UHF and 12 VHF channels, plus full remote control capability on UHF & VHF
- **A rewarding kitbuilding experience** — that pays off in the best feature per-dollar value on today's market

The Heathkit GR-900 lets you preselect any 12 of your favorite UHF channels 14 through 83. Then you scan in both directions either with push-button power tuning or the remote control option. Detent tuning zeroes in on each channel with the precision you're accustomed to on regular VHF. The GR-900 also has a new angular tint control switch giving you selection of "normal" or "wide angle" color demodulation to reduce tint and flesh tone change when switching channels or when stations change from one program source to another.

The GR-900 comes to you with the exclusive Heath MTX-5 ultra-rectangular tube — the largest color picture tube available to the industry, with a full 25 in. diagonal or 135 sq. in. viewing area. You see the transmitted image in its entirety, with nothing hidden from view. A specially etched face plate cuts glare, increases contrast without sacrificing brightness, while a matrix screen around the phosphor dots stops reflected light.

Other features include "Instant On" with override for normal operation, Automatic Fine Tuning for perfect picture and sound at a touch; adjustable tone control; an output for playing the TV audio through your stereo/hi-fi system for the ultimate in sound reproduction.

At the heart of the GR-900's outstanding performance, long-life and reliability is the solid-state modular circuitry including 46 transistors, 57 diodes and four ICs containing another 54 transistors and 15 diodes. Picture tube and high voltage rectifier are the only tubes used. Assembly, service, and adjustments are simplified through the use of individual plug-in glass epoxy circuit boards containing major circuit functions. Better fringe-area reception, increased sensitivity, lower noise and cross-modulation are the result of a specially designed solid-state VHF tuner with MOS Field Effect Transistor. Sensitivity is further enhanced by the RF amplifier and hot-carrier diode design of the varactor tuner. Other features are a three-stage solid-state high-gain IF for improved picture quality; Automatic Chroma Control for consistent color saturation under varying signal conditions; adjustable noise limiting and gated AGC for minimizing pulse-type interference. And, as with all Heathkit color TV models, the GR-900 is designed for home servicing to add to your savings. The built-in dot generator and tilt-out convergence panel let you perform the periodic



599⁹⁵
NO MONEY DOWN

Simulated TV Pictures

Armchair Wireless Remote Control for GR-900 & GR-271

Gives you across-the-room 8-function of on/off; 3 pre-set volume levels; power tuning (up and down); color; tint; UHF/VHF channel selection. Build and install it in three evenings — even faster if you assemble it as you build your TV.

Kit GRA-900-6, 8 lbs., mailable . . . **79.95**

adjustments required of all color TV sets. A volt-ohm meter is also included, along with complete new step by step programmed troubleshooting instructions. Versatile installation flexibility is yours in the GR-900, too. Install it in the new Heathkit electronic hide-away TV wall mount (next page); your choice of luxurious preassembled cabinets; or in your own custom mount.

For the ultimate in color TV entertainment and convenience, plus a richly satisfying kitbuilding experience, order your Heathkit GR-900 today.

Kit GR-900, TV less cabinet, 125 lbs., Express/Frt. 599.95

GR-900 SPECIFICATIONS — Viewing area: 315 sq. in. Picture tube high voltage: 25,000 V. Deflection: Magnetic, 90°. Focus: Electrostatic. Convergence: Magnetic. Antenna input impedance: VHF: 300 ohm balanced or 75 ohm unbalanced. UHF: 300 ohm balanced. Tuning range: VHF TV channels 2 through 13. UHF TV channels 14 through 83, pre-settable in each of 12 detent positions. Picture IF carrier: 45.75 MHz. Sound carrier: 41.25 MHz. Color sub-carrier: 42.17 MHz. Sound frequency: 4.5 MHz. Video bandwidth: 3.58 MHz. Hi-Fi output: Output impedance: 2200 ohm. Frequency response: ±1 dB 50 Hz to 15 kHz. Harmonic distortion: less than 1% at 1 kHz. Output voltage: 1.0V rms nominal. Audio output: Output impedance: 4 ohm or 8 ohm. Output power: 2 W. Power requirements: 110 to 130 VAC, 60 Hz, 240 W. Dimensions: See "cabinets" for installed dimensions. For custom installation clearances & detailed dimensions, write for free spec. sheet.



convenient UHF preselection controls



New programmed Troubleshooting Procedure manual



Front panel pushbuttons for fingertip control



Exclusive Heathkit varactor UHF tuner

is the finest we've ever offered! Heathkit GR-900

Heath engineers don't design ordinary TV sets. They design better sets, with features and performance specifications that normally exceed that of any comparable TVs on the market. Then they go a step beyond by designing-in such exclusive Heathkit convenience and self-service features as modular plug-in solid-state circuit boards; an easy-access swing-out chassis; tilt-out convergence & secondary control

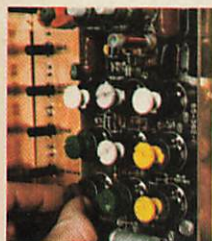
panel. Finally, we demand that every part and component put into your Heathkit Color TV set deliver long life and dependable performance — and follow up on that demand with rigid quality control standards.

But, more features and better performance for your television dollar are only part of the plus-values built into every Heathkit Color TV set.

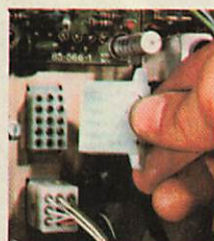
Equally important to you is the sense of pride and personal satisfaction that comes from creating something of true value with your own hands. The feeling of intense pleasure you get when, after hours of enjoyable assembly, you turn the set on — and it works — is a benefit that can't be measured in mere dollars and cents.

Another point. When you purchase your Heathkit color set, you also receive this commitment from us: "We won't let you fail."

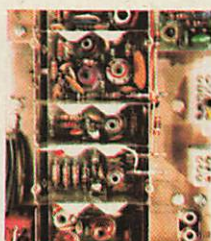
Should you encounter trouble anywhere along the way, a trained staff of technical consultants is only a phone call or letter away, here at the plant or at Heathkit Electronic Centers in all major cities from coast to coast — both ready and able to help you at no cost. Complete service facilities are also available at all locations should the need arise. And, there's the lifetime warranty service on solid-state plug-in circuit boards, the 90-day service and parts warranty and the 2-year picture tube warranty, all of which are described in detail on page 83.



Easy-access convergence/secondary control panel



Plug-in wiring harness



3-stage IF & built-in AFT, factory assembled



Modular design with Plug-in circuit boards



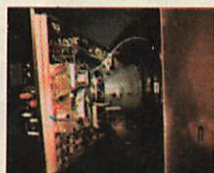
Exclusive Heathkit Check-out meter



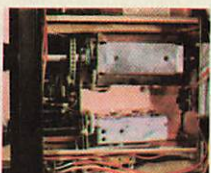
Built-in dot generator



Transistor & IC sockets



Swing-out chassis



Solid-state tuners, factory assembled

Top-value preassembled cabinets for your GR-900



Assembled GRA-405-25, Mediterranean console with hide-away doors and rich grained pecan veneers on hand rubbed furniture grade hardwoods. Measures 29 $\frac{3}{4}$ " H x 46 $\frac{1}{4}$ " W x 22 $\frac{3}{8}$ " D (25 $\frac{1}{2}$ " D incl. cup), 100 lbs., Exp./Frt. **179.95**

Assembled GRA-404-25, Mediterranean cabinet of furniture grade hardwoods & solids finished in pecan. 30 $\frac{7}{8}$ " H x 48 $\frac{3}{4}$ " W x 20 $\frac{3}{8}$ " D (23 $\frac{1}{2}$ " D incl. cup), 87 lbs., Exp./Frt. **139.95**



Assembled GRA-401-25, contemporary walnut cabinet of hardwood solids & veneers with oil-rubbed walnut finish. 30 $\frac{3}{8}$ " H x 37 $\frac{1}{8}$ " W x 19 $\frac{7}{8}$ " D (22 $\frac{3}{4}$ " D incl. cup), 62 lbs., Exp./Frt. **81.95**

Assembled GRA-403-25, Early American cabinet in classic Salem Maple, constructed of fine hardwoods & veneers. 32 $\frac{1}{2}$ " H x 38 $\frac{1}{2}$ " W x 19 $\frac{3}{4}$ " D. (22 $\frac{5}{8}$ " D incl. cup), 75 lbs., Exp./Frt. **122.95**



Hide your GR-900 away in the Heathkit Electronic Wall Mount

Push the button or optional Wireless Remote Control and the tambour doors glide open to reveal your TV picture. Picture and sound come on automatically when doors are opened. Another touch of the button (or remote) and doors slide closed. An easy-slip clutch transmits power from electric motor to doors. Doors also may be operated manually. Assembly slides out for TV maintenance. Measures 23 $\frac{1}{8}$ " H x 38 $\frac{1}{8}$ " W x 22 $\frac{3}{8}$ " D. Frame is 26 $\frac{1}{8}$ " H x 39 $\frac{1}{8}$ " W x 1 $\frac{1}{8}$ " D.

Kit GRA-402-25, walnut finish, 50 lbs., Exp./Frt. **114.95**

Kit GRA-407-25, unfinished, 50 lbs., Exp./Frt. **109.95**

charg-a-kit — No money down on any kit — up to 2 years to pay — see page 46 for details.

Heathkit products are on display at all of these Heathkit Electronic Sales and Service Centers:

ARIZONA

Phoenix, 85017
2727 W. Indian School Rd.
Phone: 602-279-6247

CALIFORNIA

Anaheim, 92805
330 E. Ball Rd.
Phone: 714-776-9420

El Cerrito, 94530
6000 Potrero Ave.
Phone: 415-236-8870

Los Angeles, 90007
2309 S. Flower St.
Phone: 213-749-0261

Pomona, 91767
1555 N. Orange Grove Ave.
Phone: 714-623-3543

Redwood City, 94063
2001 Middlefield Rd.
Phone: 415-365-8155

San Diego (La Mesa, 92041)
8363 Center Dr.
Phone: 714-461-0110

Woodland Hills, 91364
22504 Ventura Blvd.
Phone: 213-883-0531

COLORADO

Denver, 80212
5940 W. 38th Ave.
Phone: 303-422-3408

CONNECTICUT

Hartford (Avon, 06001)
395 W. Main St. (Rte. 44)
Phone: 203-678-0323

FLORIDA

Miami (Hialeah, 33012)
4705 W. 16th Ave.
Phone: 305-823-2280

GEORGIA

Atlanta, 30305
5285 Roswell Rd.
Phone: 404-252-4341

ILLINOIS

Chicago, 60645
3462-66 W. Devon Ave.
Phone: 312-583-3920

Chicago (Downers Grove, 60515)
224 Ogden Ave.
Phone: 312-852-1304

INDIANA

Indianapolis, 46220
2112 E. 62nd Ave.
Phone: 317-257-4321

KANSAS

Kansas City
(Mission, 66202)
5960 Lamar Ave.
Phone: 913-362-4486

MARYLAND

Baltimore, 21234
1713 E. Joppa Rd.
Phone: 301-661-4446

Rockville, 20852
5542 Nicholson Lane
Phone: 301-881-5420

MASSACHUSETTS

Boston (Wellesley, 02181)
165 Worcester Ave.
Phone: 617-237-1510

MICHIGAN

Detroit, 48219
18645 W. Eight Mile Rd.
Phone: 313-535-6480

E. Detroit, 48021
18149 E. Eight Mile Rd.
Phone: 313-772-0416

MINNESOTA

Minneapolis
(Hopkins, 55343)
101 Shady Oak Rd.
Phone: 612-938-6371

MISSOURI

St. Louis, 63123
9296 Gravois Ave.
Phone: 314-638-5100

NEW JERSEY

Fair Lawn, 07410
35-07 Broadway (Rte. 4)
Phone: 201-791-6935

NEW YORK

Buffalo (Amherst, 14226)
3476 Sheridan Dr.
Phone: 716-835-3090

Jericho, Long Island, 11753

15 Jericho Turnpike
Phone: 516-334-8181

New York, 10036
35 W. 45th St.
Phone: 212-765-4590

Rochester, 14626
1384 Long Pond Rd.
(Long Ridge Plaza)
Phone: 716-227-4750

OHIO

Cincinnati (Woodlawn, 45215)
10133 Springfield Pike
Phone: 513-771-8850

Cleveland, 44129
5444 Pearl Rd.
Phone: 216-886-2590

PENNSYLVANIA

Philadelphia, 19149
6318 Roosevelt Blvd.
Phone: 215-288-0180

Pittsburgh, 15235
3482 Wm. Penn Hwy.
Phone: 412-824-3564

RHODE ISLAND

Providence
(Warwick, 02886)
558 Greenway Ave.
Phone: 401-738-5150

TEXAS

Dallas, 75201
2715 Ross Ave.
Phone: 214-826-4053

Houston, 77027
3705 Westheimer
Phone: 713-623-2090

WASHINGTON

Seattle, 98121
2221 Third Ave.
Phone: 206-682-2172

WISCONSIN

Milwaukee, 53216
5215 Fond du Lac
Phone: 414-873-8250

Watch for new stores opening in New Orleans, Tampa, Philadelphia #2, Columbus, O., White Plains, N.Y. and Louisville

Index

AIR PURIFIER: Electronic	5
AMATEUR RADIO: SSB, CW, 2-Meter FM & Novice gear, accessories	35-43
AUTOMOTIVE: CD ignition system, ignition analyzers, timing lights, tachometer, battery charger, tune-up meters	76-77
Intercom, CB transceiver, siren/PA system, stereo tuner & cassette recorder, garage door opener	64-67
CALCULATORS: electronic	7
CITIZENS BAND	65
CLOCK: electronic	6
CHART RECORDER	60
DEPTH SOUNDERS	32-33
EDUCATIONAL: Heathkit Jr. Electronic Workshop, basic electricity, radio & transistor courses, "how-to-use" VTVM, signal generator, scopes ..	63
FISH SPOTTERS, THERMOMETER	9

FREQUENCY COUNTERS: scaler	54-55
GARAGE DOOR OPENERS: screw & chain drive	66-67
GENERATORS:	56-58
GUITAR AMPLIFIERS: accessories	78-79
HEATHKIT ELECTRONIC CENTERS	2
HOME PROTECTION: Intrusion alarm, security systems	68-69
INTERCOMS: indoor, outdoor	68-69
Cab-to-camper	65
LAMP DIMMER: electronic light switch	3
MARINE: depth sounders, foghorn/hailer, vapor detector, power inverter	32-33
METAL LOCATORS:	8
METRONOME:	79
METERS: VTVM, VOM, digital, FET	51-53
ORGANS: electronic	78-79
OSCILLOSCOPES: probes	48-50
Audio-scope	15
OVEN: Microwave	70
PHONOGRAPHS: portable stereo	10
PHOTOGRAPHY: color computer, timer	63
POWER SUPPLIES:	59
PRESIDENT'S LETTER & HEATH NEWS	2
RADIOS, GENERAL: AM & FM table & clock radios, portables	11

SHORTWAVE LISTENING: Stationary & portable, shortwave, police & aircraft monitor receivers, SWL accessories	31-34
R/C MODELING: single & dual stick systems, servos, tach, accessories	72-75
SCIENTIFIC INSTRUMENTS	47
STEREO/HI-FIDELITY:	15
AUDIO-SCOPE	22
System Guide	23
Cabinets	23
Separate speakers	30
Changers	26-27
Speaker systems	28-29
Cassette decks, cartridge player	25
Tape recorders	24
Receivers, amplifiers, tuners, 4-channel	13-21
Car tuner/cassette recorder/amp	64
Compacts	12
TELEPHONE: amplifier	4
TELEVISION: solid-state color, B&W portable, antennas & accessories	80-87
TESTERS, CHECKERS:	60-62
TOOLS: soldering iron, de-solder sets, hand tools, accessories	71
TRAIL BIKE:	71
TRASH COMPACTOR	70

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