

heathkit

over 350 fun-to-build
kits for Spring

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HEATH
charg-a-
REVOLVING CHAIR

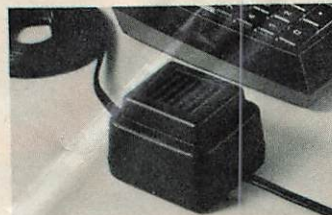
See p. 42

Factory Mail Order Catalog 8
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SEE INDEX ON BACK C

NEW

NEW Heathkit Pocket Calculator

SHOWN
ACTUAL
SIZE



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

The exciting new Heathkit IC-2009 Pocket Calculator has all these features and more. It's both a self-contained portable and a desk-top unit. The internal Nickel-Cadmium battery gives 4 to 8 hours of use before recharging. Or, leave the IC-2009 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 full floating decimal point for both entry and result is automatically positioned, protecting the most significant digits in event of overflow. Chain operations can be performed without sub-totalling. The IC-2009 has true credit-balance capability with display of both positive and negative results. A constant key (K) simplifies single factor repetitive multiplication or division operations, and also allows quick determination of reciprocals and powers. 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 extreme left-hand digit appears as an L to indicate a low battery condition, with plenty of reserve remaining for completion of additional calculations. Individual lighted symbols also register for entry and result overflow and negative numbers. 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 new Heathkit 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 IC-2009 Pocket Calculator in just two or three 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.

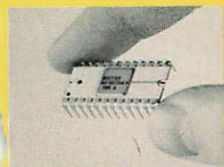
92⁵⁰
NO MONEY DOWN



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

3-digit capacity • 4 arithmetic processes • Full floating decimal
• Constant key • Chain operation • Clear-entry key • Entry and total overflow indicators • Negative answer indicator • Battery-saver circuitry • Low battery indicator • Weighs just 11 ounces • Permanent rechargeable batteries • Tactile-feedback keyboard for positive entry "feel."

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. Charge 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.



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



A black Cyclocac® top panel can be left as is or dressed up with the Burma K vinyl included in the



54⁹⁵
NO MONEY DOWN



Assembly is an easy two evening project.



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

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

2
EVENING
KIT

NEW



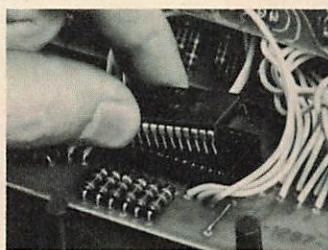
NEW desk top calculator kit computes to great savings

79⁹⁵
NO MONEY DOWN

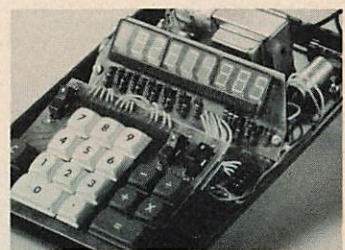
• New lightweight low profile cabinet • Sloped keys, human engineered for fast, effortless operation • 8-digit capacity • 4 arithmetic processes • Floating and fixed decimal • Constant key • Performs chain calculations • Clear display key • Entry and result overflow indicators • Negative number indicator • One of the largest, most legible readouts in the industry • Easy to build. The new 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



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.

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 two 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.

The electronic clock with true digital circuitry and readout

The new Heathkit Electronic Clock makes every clock you've ever seen obsolete. It sits unobtrusively on the mantelpiece or nightstand, silently counting out and displaying each passing second, minute and hour. The soft orange readout tubes are easily readable from across the room — from almost any angle. Accuracy is as reliable as the 60-cycle line voltage coming into your home.

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.

Prefer to run your day the military way? 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.

Build it in two evenings — 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. The manual shows you how and, of course, keeps everything simple. Put the Heathkit Electronic Clock anywhere you need an accurate highly visible timepiece. The black Cyclolac® 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. The Heathkit GC-1005 is certainly the ideal kit for those who will treasure a totally different, reliable, and accurate timepiece.

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: 2 1/2" H x 7" W x 4 3/4" D.

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

Finished cabinets for the GR-900
(can also be used with GR-371MX
Color TV).



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 $\frac{5}{8}$ " D (25 $\frac{1}{2}$ " D incl. cup), 100 lbs., Exp./Frt. 179.95



Heathkit TV Wall Mount with electronic doors

Push the "on" button on the frame or on your remote control unit and the doors glide open. Turn the set off and they close. Kit includes everything you need for installing your GR-900 flush in a wall or closet door. Trim frame, tambour doors, motor assembly and enclosure complete with tilt-out speaker baffle & convergence panel. Assembly slides out for TV maintenance. Measures 23 $\frac{3}{8}$ " H x 28 $\frac{1}{8}$ " W x 22 $\frac{3}{8}$ " D. Frame is 26 $\frac{1}{8}$ " H x 39 $\frac{3}{8}$ " W x 1 $\frac{3}{8}$ " D.

Kit GRA-402-25, walnut finish, 50 lbs., Express/Freight 114.95
Kit GRA-407-25, unfinished, 50 lbs., Express/Freight 109.95



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 $\frac{5}{8}$ " 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 $\frac{3}{4}$ " H x 37 $\frac{1}{8}$ " W x 19 $\frac{3}{4}$ " 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

Heathkit Total-Tuning TV convenience



599⁹⁵ NO MONEY DOWN

The most advanced 25V color TV you can build

New tuning convenience — The GR-900 lets you preselect any 12 of your favorite UHF channels 14 through 83. Then you can scan in both directions either with pushbutton power tuning or remote control, while the exclusive Heath detent tuning feature "clicks" in on each channel with the precision you're accustomed to on regular VHF. Controls for presetting the 12 UHF positions are mounted on the tilt-out convergence panel for easy access. Other state-of-the-art convenience features include a new angular tint control to reduce tint and flesh tone change when switching channels or when programs change; "Instant-On" with override switch; automatic fine tuning; automatic chroma control; adjustable video peaking; adjustable noise limiting with gated AGC; adjustable tone control, and hi-fi audio outputs.

Heath-exclusive MTX-5 matrix tube — 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 315 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.

Solid-State reliability — A specially designed MOSFET VHF tuner, and varactor UHF tuner highlight the advanced, perfect-picture circuitry. Plug-in glass epoxy modules contain 46 transistors, 57 diodes and four ICs. The picture tube and high voltage rectifier are the only tubes used. And sensitivity is further enhanced by a three-stage solid-state high gain IF.

Built-in self-service savings — The built-in dot generator and tilt-out convergence panel let you perform the periodic adjustments required of all color TV sets. A volt-ohm meter is also included, along with complete new step by step programmed trouble-shooting instructions.

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, presettable 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



Exclusive Heathkit varactor UHF tuner



Exclusive MOSFET solid-state VHF tuner



New angular Tint Control Switch

All TV picture tubes are warranted for 2 full years.

now in two screen sizes-25V & 21V



499⁹⁵

NO MONEY DOWN

Simulated TV Pictures

Now, 21V Color TV with "Total Tuning"

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.

State-of-the-art tuning convenience — The GR-271 lets you preselect any of 12 UHF channels, 14 through 83. Then you can detent-scan in both directions either with pushbutton 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 on the GR-271 to reduce tint and flesh tone variations when switching channels or when stations change from one program to another.

Quality engineering throughout — 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.

Traditional Heathkit service-it-yourself savings...common to all Heathkit TVs, are yours also in the new GR-271. Built-in dot generator & tilt-out convergence panel, volt-ohm meter and new step-by-step programmed instructions make troubleshooting a snap. Install it in either of the attractive preassembled cabinet options shown on page 4 — or save even more by installing it in your custom mount.

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, opposite.

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.



Modular design with plug-in circuit boards.



Socket-mounted transistors & ICs.

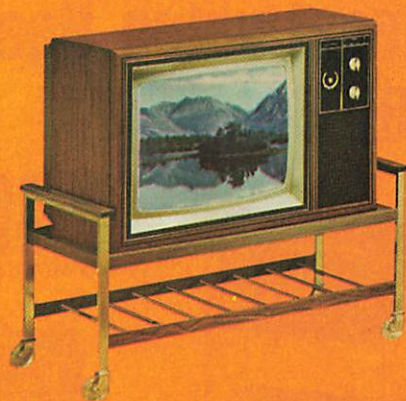


Exclusive Heathkit check-out meter built-in.



New programmed troubleshooting procedure manual.

Factory Assembled Cabinets for your GR-271



"Space-Saver" Table Model Cabinet

Shown with optional roll-around cart. Gives you the "big picture" in a space-saving package that tucks neatly into quarters where space is at a premium. Perfect for apartments, bedrooms, dens, etc. Ruggedly constructed of attractive walnut-grained Marlite. Measures a compact 20 $\frac{3}{4}$ " H x 31 $\frac{1}{4}$ " W x 12 $\frac{3}{4}$ " D (17 $\frac{1}{8}$ " D incl. cup).

Assembled GRA-501-21, 33 lbs., Exp./Frt. 54.95

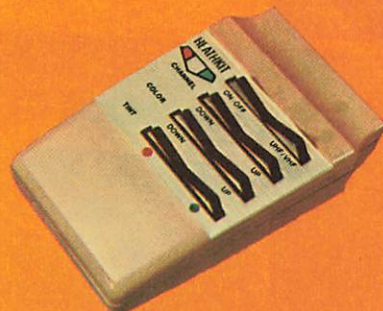
GRA-204-20, roll-around cart, vinyl covered steel for strength and beauty, walnut finished shelves and handles, satin finish steel legs, swivel casters, top shelf 14" high, 19 lbs., Exp./Frt. 19.95



"Ultra-Compact" Mediterranean Cabinet

Luxuriously designed to complement the finest Mediterranean home decor . . . yet conservatively sized to unobtrusively blend with your existing furnishings. Hand crafted of furniture grade hardwoods and solids, beautifully finished in rich pecan. Measures a space-saving 26 $\frac{7}{8}$ " 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 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

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

Save \$50-Build this great value Heathkit 18V Color TV

349⁹⁵ less cabinet
NO MONEY DOWN



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



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.29.95



Simulated TV Pictures

Brighten the day for the kitbuilder in your family — or start someone out on a life-long electronic hobby — with the Heathkit GR-269 Color TV. It's a beautiful kit to build, an incomparable set to see — and at the new low price the GR-269 is an unbelievable buy. 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.

State of the art performance features — 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.

Was 399.95, now only 349.95

Assembled GRA-401-18. Striking contemporary cabinet (right above) finished in hand-rubbed oiled walnut. 29" H x 28 1/4" W x 18 1/4" D. 41 lbs., Express/Frt. 59.95

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.



14V Color TV Now Only **299⁹⁵** includes cabinet NO MONEY DOWN



Build-up 10 circuit boards, prepare the chassis, terminals and connectors. Install and solder the wiring harness and point-to-point conductors. Assembling the Heathkit GR-169 is not a one evening project, but the work itself is just that easy. The end result is a 14 inch diagonal color portable with picture purity, and brightness that puts it at the top of its class. And thanks to the exclusive Heathkit built-in maintenance equipment, you keep it that way. If it ever needs service, plug-in modular circuit boards and the troubleshooting meter and data book help you fix it at home. The GR-169 is really a big little TV, with all the secondary controls found in our larger models. Color, tint, contrast, horizontal and vertical hold, height, AGC, color killer, switch-controlled degaussing. Carry it from room to room or across the country. This is the portable that bounces back with console-like performance. Cabinet is included.

Kit GR-169, 69 lbs., Express/Frt.
Was 349.95, now only 299.95

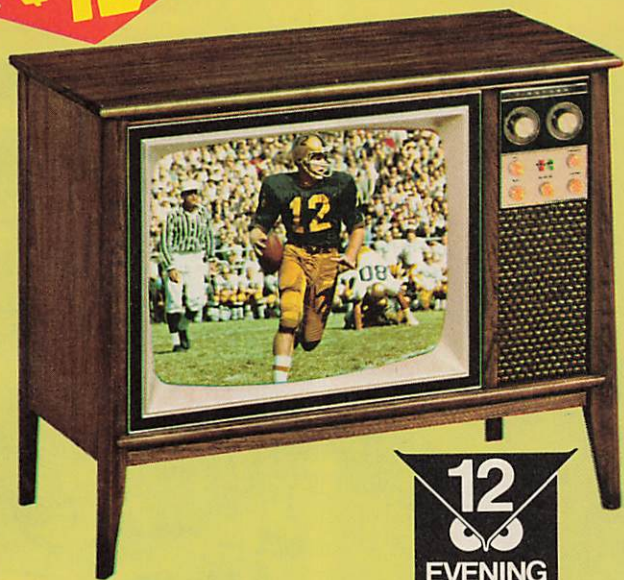
GRA-169-1, Swivel Wall Shelf . . . mounts on any wall, swivels for most convenient viewing angle. 24" W x 15 7/8" D, 15 lbs., Express/Frt. 18.95

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. Sound IF Frequency: 4.5 MHz. Video IF Bandwidth: 3.58 MHz. Audio Output: Power — 1 watt. Impedance — 8 ohms. Power Requirements: 120 VAC, 130 W. Dimensions: 16" H x 20 1/2" W x 16" D.

All TV picture tubes are warranted for 2 full years.

SAVE \$70

Last call on this big 23V Heathkit Color TV



12
EVENING
KIT

Last Call Special **329⁹⁵** less cabinet
NO MONEY DOWN



Assembled GRA-303-23. Early American cabinet factory assembled of hardwoods & veneers, finished in Salem Maple; 29 $\frac{3}{4}$ " H x 37 $\frac{1}{4}$ " W x 19 $\frac{3}{4}$ " D (22 $\frac{5}{8}$ " D incl. cup), 73 lbs., Express/Frt. **119.95**

Assembled GRA-304-23. Mediterranean cabinet. Made from furniture grade hardwoods & luxurious veneers; 30 $\frac{1}{8}$ " H x 47 $\frac{1}{2}$ " W x 20 $\frac{5}{8}$ " D (23 $\frac{1}{2}$ " D incl. cup), 95 lbs., Express/Frt. **139.95**

Simulated TV Pictures

Big 23-in. screen (diagonal measurement)...295 square inches of Heathkit color. We've never sold so much television enjoyment for so little. And traditional Heath thoroughness and tube-type design makes it one of the easiest TV kits you can build.

Features found on the finest sets — With your GR-200 you get as standard: Automatic fine tuning for locked-in picture reception at the touch of a button. Non-etched 23 inch (measured diagonal) tube for extra bright mirror-image picture. Automatic degaussing to eliminate problems caused by magnetic interference, keep colors pure. Three-stage audio IF strip for reduced interference, improved reception. Dynamic pincushion correction circuit to keep all edges straight, eliminate distortion. Built-in 6" x 9" speaker, and two hi-fi outputs for super sound. Plus the exclusive Heath self-service built-in's — That's the Heathkit GR-200 — a budget-minded color television that doesn't skimp on design. Order now, get started on your kit soon.

Kit GR-200, all parts, incl. chassis, picture tube, mask, tuners, AFT and spkr., 133 lbs., Express/Frt. **Was 399.95** **Now Just 329.95**

Assembled GRA-301-23, contemporary walnut cabinet (main illus.). Constructed of fine veneers and solids with an oil-rubbed walnut finish; 29 $\frac{5}{8}$ " H x 35 $\frac{7}{8}$ " W x 19 $\frac{7}{8}$ " D (22 $\frac{5}{8}$ " D incl. cup), 60 lbs., Express/Frt. **81.95**

Wireless Remote Control for your GR-200.

Kit GRA-295-6, 9 lbs., mailable **54.95**

GR-200 SPECIFICATIONS — Picture Size: Rectangular viewing area 295 sq. in. Deflection Magnetic 90°. Focus: Electrostatic. Convergence: Magnetic and dynamic. Antenna Input Impedance: 300 ohm balanced, or 75 ohm unbalanced (VHF). Picture IHF Carrier Frequency: 45.75 MHz. Sound IF Carrier Frequency: 41.25 MHz. Color Subcarrier: 42.17 MHz. Video IF Bandpass: 3.58 MHz. Sound IF Frequency: 4.5 MHz. Tuning Range: VHF channels 2-13, UHF channels 14-83. Sound Cathode Follower: Output impedance, 3K. Audio Output: Output impedance, 8 ohms. Power requirements: 120 VAC, 60 Hertz AC, 330 W. Dimensions: See "cabinets" for installed dimensions. For custom installation clearances and detailed dimensions, write for free spec sheet.

This 12V B&W TV works anywhere

This is the kit-form TV even a beginner can build. And this 12 in. diagonal b&w TV is the ultimate portable. At home, it plugs into any standard 120 VAC outlet, in the car, boat or camper it operates off 12 VDC. For outdoor use, there's an optional rechargeable battery-pack base and snap-on sun shield. The GR-104B features shell bond picture tube, automatic gain control, front panel speaker, three video IF amplifiers, four circuit VHF "memory" tuner, double circuit breaker protection. The high-impact plastic cabinet takes plenty of abuse — cleans easily with a damp cloth.

Kit GR-104B, 35 lbs., mailable **129.95**

Kit GRA-104-3, rechargeable battery pack and sun shield, 9 lbs., mailable **42.95**

GRA-104-2, sun shield only, 1 lb., mailable **1.95**

GR-104B SPECIFICATIONS: Picture Size: 74 sq. in. viewing area, picture diagonal 12". Deflection: Magnetic, 110 degrees, 20 mm neck. Focus: Electrostatic. Antenna Input Impedance: 300 ohm balanced. Tuning Range: VHF TV Channels 2 thru 13, UHF TV Channels 14 thru 83. Picture IF Carrier: 45.75 MHz. Sound Carrier: 41.25 MHz. Sound IF Carrier: 4.5 MHz. Video Response: To 3.5 MHz. Audio Power Output: 500 milliwatts into 24 ohm load. Controls (front panel): UHF coarse tuning; UHF fine tuning, VHF channel selector, VHF fine tuning, OFF/ON volume, brightness, contrast, vertical hold, horizontal hold. Controls (rear panel): Height, low voltage adjust, AGC. Tube & Semi-conductor Complement: 27 transistors, 16 diodes, 1 IC, 1 picture tube. Power Requirements: 110-130 volts, AC, 40 watts; 12 volts DC @ 24 watts. Overall size: 11 $\frac{1}{2}$ " H x 15 $\frac{3}{4}$ " W x 9 $\frac{1}{8}$ " D.

6
EVENING
KIT

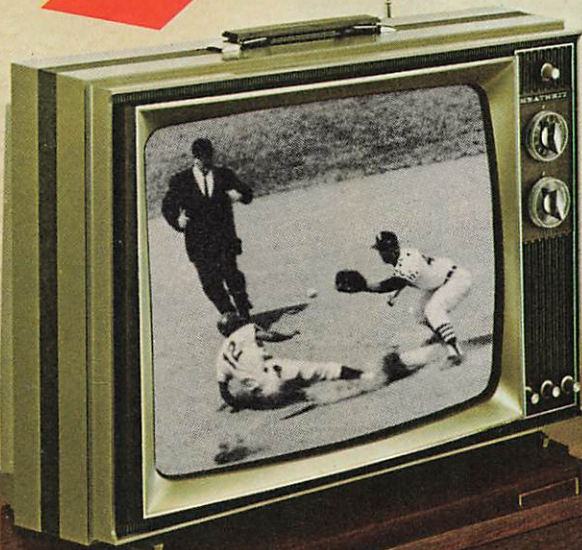


129⁹⁵ includes cabinet
NO MONEY DOWN

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

NEW

An extraordinary B&W TV in the most popular tube size



NEW Heathkit 19-in. diagonal Solid-State B&W Portable TV

Solid-State "Modular" design —
4 plug-in boards

Dependable Solid-State Circuitry —
just 2 tubes; picture & high voltage

Total Detent Tuning convenience —
on all 70 UHF and 12 VHF channels

"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 on expensive color sets

**Dual-Controlled AGC for improved
picture/noise ratio —** another "big-
set" bonus feature

Extra-wide Video Bandwidth —
for theater-quality pictures

**Traditional Heathkit quality
throughout —** dependable long life

With the introduction of GR-1900, Heath meets the growing demand for a big screen black & white TV set incorporating the famous Heathkit quality, performance and dependability found in its color TV sets.

Definitely no "loss-leader" bargain set, 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.

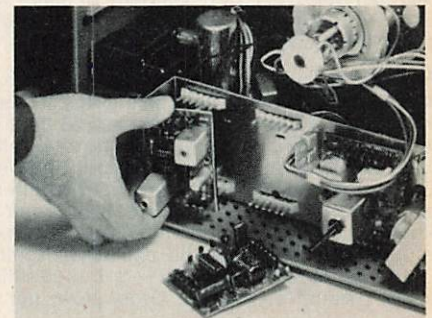
Plug-in circuit boards are used in the GR-1900, just like our color sets. Most circuitry mounts on four of these circuit boards, keeping chassis wiring to a minimum and making assembly an easy 7-evening project, even for the novice kit builder. Makes troubleshooting and at-home self-service a snap, too. 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.

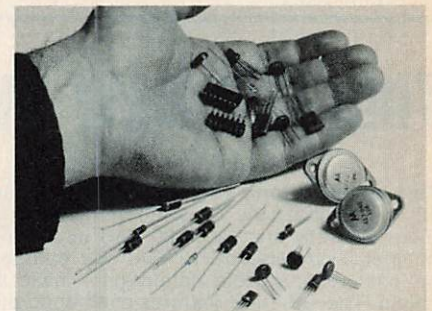
For the one-set family, the GR-1900 offers the perfect second set for carrying room to room as the need arises — or as an up-to-the-minute replacement for an older black and white set. The handsome plastic cabinet included is color styled in muted gray and brown to complement any home decor.

Kit GR-1900, 56 lbs. Express/Frt. . . . 179.95

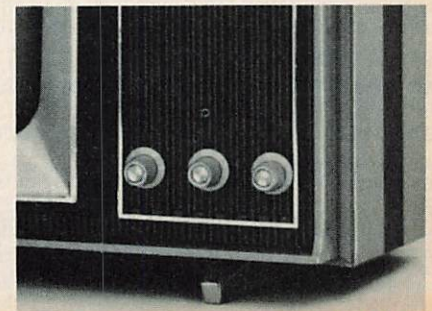
GR-1900 SPECIFICATIONS: Picture Size: 184 sq. in. Deflection: Magnetic, 114 degrees. Focus: Electrostatic. Antenna Input Impedance: 300 ohm balanced. Tuning Range: VHF TV channels 2 through 13 (memory-type Fine Tuning). UHF TV channels 14 through 83. (Detent-type tuner.) Picture IF Carrier: 45.75 MHz. 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 Coil: Horizontal Hold. Power Requirements: 110-130 volts AC 60 Hz at .58 amperes (70 watts). Dimensions: 16 1/8" H x 22 3/4" W x 12 3/4" D.



Most circuitry mounts on 4 plug-in circuit boards for easy assembly and at-home troubleshooting.



Sophisticated solid-state circuitry includes 23 transistors, 13 diodes and two integrated circuits (ICs).

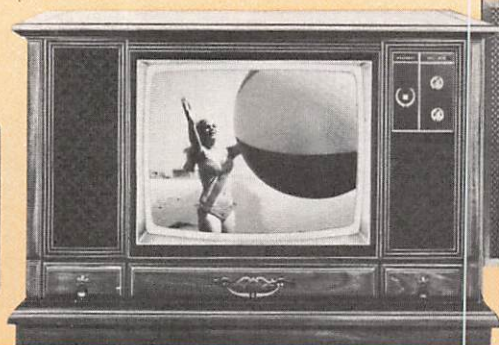


Front panel controls include UHF/VHF detent & fine tuning, brightness, contrast, vert. hold, AGC, height, volume, "instant" & Master off/on.

Heathkit assembly manuals are famous for their simplicity and completeness

LEARN FOR THE FUN OF IT.

Enjoy building a solid-state Heathkit Color TV, B&W TV, or Stereo System—learn Servicing, too!



Included in Master Course in B & W TV and Radio Servicing: Heath GR-104B B & W Receiver.

(Simulated TV reception). You also build and keep: Heath VOM IM-17, AM-SW Radio, Solid-State Radio, Electronic Tube Tester, and Signal Generator.

Included in Master Course in Color TV Servicing: Heath GR-900 Color Receiver.

(Simulated TV reception, furniture cabinet not included). You also build and keep: Heath VOM IM-17, AM-SW Radio, Solid-State Radio, and Electronic Tube Tester.

Included in Audio Electronics Servicing: Heath AR-1302 Stereo Receiver and Heath AS-37-A Speakers.

You also build and keep: Heath VOM IM-17, Heath IT-18 In-Circuit Transistor Tester, and Solid-State Radio. (Receiver cabinet not included.)

FOR DETAILS, SEE PAGES IN THIS CATALOG WHERE THESE HEATH UNITS ARE DESCRIBED.

Your additional training kits!

Heath VOM IM-17



AM-SW Radio



Electronic Tube Tester



Solid-State Radio

Heath IT-18 In-Circuit Transistor Tester



Signal Generator



APPROVED FOR VETERAN TRAINING

If you have been in Service since 1955, or are still in Service, check special box in enrollment application.

ACCREDITED MEMBER:

National Association of Trade & Technical Schools, National Home Study Council.

NATIONAL TECHNICAL SCHOOLS

Resident and Home Study Schools
World-Wide Training Since 1905
Dept. HKQ, 4000 So. Figueroa St., Los Angeles, California 90037

SEE OTHER SIDE FOR COURSE INFORMATION

National Technical Schools
Dept. HKQ, 4000 South Figueroa Street
Los Angeles, California 90037

NTS ENROLLMENT APPLICATION

Gentlemen: Please enroll me in the course checked. I will make my payments to National Technical Schools as indicated in Payment Plan which I have chosen. I understand I am entitled to complete instruction, all materials and services of this course, as I progress with my studies. I understand I will receive all privileges extended to me as a member of the NTS Student Body. I may advance as fast as my time will permit (limited only by the payments I have made.) I will be allowed up to 4 years to complete my course should I need that much time.

Enclose your down payment or full payment with your enrollment. Send remittance by money order or check payable to National Technical Schools, Dept. HKQ, 4000 South Figueroa, Los Angeles 90037. Send currency registered mail only . . . for your protection.

This agreement is subject to regulations respecting Trade Schools in force in state or province in which the student lives. Students in Canada and foreign countries assume payment of custom duties and any difference in exchange rates.

CHECK COURSE AND PAYMENT PLAN BELOW:

- MASTER COURSE IN COLOR TV SERVICING.**
COMPLETE HEATHKIT GR-900 COLOR SET AND OTHER EQUIPMENT DESCRIBED ABOVE WITH THIS COURSE.
PLAN A \$20.00 down \$25.00 per mo. Total: \$995.00
PLAN B \$20.00 down \$35.00 per mo. Total: \$977.00
PLAN C \$959.00 Cash (Save \$36.00)
- MASTER COURSE IN B&W TV AND RADIO SERVICING.**
COMPLETE HEATHKIT GR-104B BLACK & WHITE SET AND OTHER EQUIPMENT DESCRIBED ABOVE WITH THIS COURSE.
PLAN A \$10.00 down \$10.00 per mo. Total: \$389.00
PLAN B \$25.00 down \$15.00 per mo. Total: \$374.00
PLAN C \$34.00 down \$25.00 per mo. Total: \$359.00
PLAN D \$345.00 Cash (Save \$44.00)
- AUDIO ELECTRONICS SERVICING.**
COMPLETE HEATHKIT AR-1302 STEREO RECEIVER AND OTHER EQUIPMENT DESCRIBED ABOVE FOR THIS COURSE.
PLAN A \$15.00 down \$15.00 per mo. Total: \$595.00
PLAN B \$15.00 down \$20.00 per mo. Total: \$575.00
PLAN C \$555.00 Cash (Save \$40.00)
- COLOR TELEVISION SERVICING FOR ADVANCED TECHNICIANS.**
COMPLETE HEATHKIT GR-900 COLOR TV SET AND VOM IM-17 WITH THIS COURSE.
PLAN A \$45.00 down \$45.00 per mo. Total: \$940.00
PLAN B \$908.00 Cash (Save \$32.00)

FILL IN OTHER SIDE

BOTH TV MASTER COURSES INCLUDE ALL THIS:

MORE THAN 90 LESSONS, covering TV-Radio Servicing, Color and B&W Principles, advanced Color and B&W Servicing, and Stereo Sound Systems.

PLUS UP TO 32 KIT MANUALS, a Tube Manual, Electronics Dictionary, 7 Shop Manuals, Pix Display Trouble-Shooting Guide, 27 Job Sheets.

YOU WILL LEARN basic principles about the theory of television, the principle of scanning, and how the television camera converts the televised scene into a picture signal. We introduce you to various sections of the TV receiver and point out the similarities and differences between TV and radio receivers. Section by section, you learn to test each part of the entire TV receiver. You cover low voltage power supply, picture tube troubles and rejuvenation, installation and repair of television antennas.

IN BOTH COURSES, you receive specialized training in color television. You learn about light, color, color mixing, hues, brightness and saturation. You're introduced to the color camera — how it works. The color killer circuit and color balance adjustment are included, as well as adder and output circuits and chrominance channel. Color TV Servicing lessons include a complete receiver analysis and alignment study. You receive a valuable service reference guide listing the symptoms, probable causes, and circuit locations of common troubles encountered in color TV receivers.

NTS PRE-PAYS shipping charges on all kits except Color TV picture tube.

AUDIO ELECTRONICS SERVICING INCLUDES ALL THIS

111 LESSONS, covering the full range of sound systems, from basic principles of radio and hi-fi to stereo multiplex systems and ultra-sonics, plus electronics dictionary.

YOU WILL LEARN basic principles about the theory of sound — how it works in everything from radio to car tape decks to sophisticated home stereo component systems. You cover the structural components composing high fidelity in detail. You learn how to set up a properly matched Hi-Fi music system using microphone, record, tape, and tuner inputs.

YOU FIRST RECEIVE a solid foundation in the laws of electricity, circuit analysis, electron tubes, semi-conductors, power supplies, current, transistors, etc. You then progress to single and multi-channel sound, stereo and binaural sound, signal sources, stereo tape, tape heads, cartridges, transport mechanisms, stereo discs, and the problems of installation.

YOUR NTS COURSE will also fully cover fidelity sound and distortion, stereo techniques, program-source equipment, amplification and control, loudspeakers, loudspeaker baffles and enclosures, plus system design, selection, and installation.

COLOR TV SERVICING FOR ADVANCED TECHNICIANS is an advanced course for technicians with prior radio training and experience. Covers B&W and Color TV Servicing.

18 TRAINING KITS

Build and keep the Heath GR-900 & Heath VOM IM-17.

79 LESSONS AND KIT MANUALS

ALL NTS COURSES MAKE IT EASY TO LEARN ELECTRONICS

You can begin an NTS course with no previous experience in electronics . . . and you'll finish with all the background necessary to install and maintain an array of home entertainment equipment.

Lessons are fully illustrated and easy to understand. First, you'll be introduced to basic electronic principles — the fundamental scientific laws that apply to your area. Then, at your own pace, you'll not only learn the "how" of assembling your kits, but also the "why" — what makes them work.

All kits are carefully integrated with lesson material so that you learn by doing. Your progress is checked by

men who are both instructors and service technicians. They help you every step of the way, providing assistance as needed.

Once you complete your NTS course, you'll be ready to handle any service problem in your field of electronics. You'll be able to repair your own equipment. Go to work for a service company. Or even start up a business!

NTS, established in 1905, is one of the oldest and largest home study schools in the world. Well over 100,000 men have graduated to go on to careers as technical specialists in various fields.

COURSE TITLE	A Deferred Payment Price (Time Payment Tuition Price)	B Cash Price	C Less Cash Down Payment	D Amount Financed (Unpaid Balance of Cash Price)	E Finance Charge	F Annual Percentage Rate %	G Amount & Number of Monthly Payments	H Plus Final Payment
Master Course in Color TV Servicing	\$995	\$959	\$20	\$939	\$36	2¼%	39 @ \$25 ea.	\$—
	\$977	\$959	\$20	\$939	\$18	1¾%	27 @ \$35 ea.	\$12
Master Course in B&W TV and Radio Servicing	\$389	\$345	\$10	\$335	\$44	7¾%	37 @ \$10 ea.	\$ 9
	\$374	\$345	\$25	\$320	\$29	8½%	23 @ \$15 ea.	\$ 4
	\$359	\$345	\$34	\$311	\$14	7¾%	13 @ \$25 ea.	\$—
Audio Electronics Servicing	\$595	\$555	\$15	\$540	\$40	4½%	38 @ \$15 ea.	\$10
	\$575	\$555	\$15	\$540	\$20	3%	28 @ \$20 ea.	\$—
Color Television Servicing for Advanced Technicians	\$940	\$908	\$45	\$863	\$32	4¼%	19 @ \$45 ea.	\$40

NAME (Please Print)

NAME (Please write your name plainly)

ADDRESS

DATE






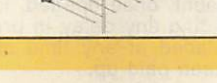
CITY & STATE

ZIP CODE

CHECK FOR VETERANS FORM

ADDRESS ALL CORRESPONDENCE TO DEPT. HKQ, NATIONAL TECHNICAL SCHOOLS, 4000 S. Figueroa Street, Los Angeles, Calif. 90037

Heathkit Antennas for every need, every area

	RECEPTION AREA	GAIN	FRONT TO BACK RATIO	ELEMENTS	LENGTH	WIDTH	TURNING RADIUS	MODEL NO.
 "SUPER ANTENNA" FOR OPTIMUM RECEPTION	Deepest Fringe (Includes 300 to 75 ohm antenna mounted matching balun)	VHF Low 23 dB, High 23 dB, UHF 12 dB	VHF Low 23 dB, High 23 dB, UHF 24 dB	VHF 13 driven, 13 parasitics; UHF 1 driven, 4 passive	196"	166"	116"	GD-750, 23 lbs., (less mast & coaxial cable), Express/Frt. . . . 79.95
 DEEP FRINGE VHF-UHF-FM COAXIAL	Deep Fringe	Low 6½ dB, High 12 dB, UHF 11 dB	20 dB	VHF 9 active, 14 passive; UHF 1 active, 27 passive	112¾"	106"	87½"	GD-650, 17 lbs., (less mast & coaxial cable), Express/Frt. . . . 49.95
 FRINGE/NEAR FRINGE VHF-UHF COAXIAL	Fringe & near-fringe	Low 5½ dB, High 8½ dB, UHF 9 dB	Low 18 dB, High 17 dB, UHF 20 dB	VHF 8 active, 9 passive; UHF 1 active, 15 passive	118¾"	106"	77½"	GD-450, 13 lbs., (less mast & coaxial cable), Express/Frt. . . . 39.95
 CITY-SUBURBAN VHF-UHF-FM COAXIAL	Cities & Suburban areas	Low 5 dB, High 8½ dB, UHF 8 dB	Low 14 dB, High 15 dB, UHF 20 dB	VHF 7 active, 7 passive; UHF 1 active, 13 passive	106¾"	102"	76"	GD-550, 10 lbs., (less mast & coaxial cable), Express/Frt. . . . 29.95
 CITY-SUBURBAN UHF-COAXIAL	UHF reception in cities & suburban areas. (Includes 300 to 75 ohm antenna mounted matching balun)	12 dB	19 dB	11 active, 8 passive	46"	8"	44"	GD-188, 4 lbs., (less mast & coaxial cable), Mailable . . . 9.95
 FM ANTENNA	100 miles	7 dB	20 dB	9	101"	66"	62"	GD-1043, 7 lbs., Express/Frt. . 21.50

Special accessories to round out your system

A) Coaxial Distributor for 4-room TV/FM network — Distribution amp takes single coax input from any all-channel antenna, amplifies & feeds 4 wall outlets. Everything supplied . . . 200' coax cable, connectors, crimping tool, 4 matching transformers / frequency splitters.

GD-248, 14 lbs., mailable 89.95

Reception Proven Coax For Color TV

GD-228, 50' coax, w/connectors and antenna boot installed, 3 lbs., mailable 7.95

GD-238, 75' coax, w/connectors and antenna boot installed, 4 lbs., mailable 9.95

GD-328, 100' coax, w/connectors and antenna boot installed, 5 lbs., mailable 11.95

B) 75-300 Ohm Matching Transformer/Splitter — Matches one all-channel 75-ohm download to separate 300-ohm VHF and UHF TV inputs. With hardware, instructions.

GD-298, 1 lb., mailable 4.95

C) New All-Channel Matching Transformer — Matches one all channel 75-ohm download to one set of 300-ohm VHF, UHF or FM antenna inputs.

GD-1056, 1 lb., mailable 2.65

D) 75 Ohm Mixer-Splitter To Operate Two Sets — Operates two sets from one coax download, or combines two 75 ohm antennas into one lead. 12 dB isolation, instructions, hardware included.

GD-318, 1 lb., mailable 7.95

E) All Channel Coupler With FM Tap — For taking FM signal off coax line ahead of distribution system or TV set. 2.25 dB insertion loss, 12 dB isolation. Includes hardware, instructions.

GD-308, 1 lb., mailable 10.95

F) New All-Channel Antenna Matching Transformer — Snaps on VHF, UHF, FM or all-channel antenna, converts 300 ohms to 75 ohms needed for coax download.

GD-1054, 1 lb., mailable 3.60

G) FM Band Rejection Filter — Reduces FM input signal strength by a minimum of 18 dB. Recommended where local FM stations cause overload. Insertion loss to VHF/UHF TV channels is 1 dB. 75 ohm impedance.

GD-250, 1 lb., mailable 9.95

H) New Fully Automatic Antenna Rotator — Solid-state single-knob control. Synchronization is automatic — unaffected by wind, ice, snow, variations in line voltage or age. Rugged, high-tensile aluminum construction for extra strength, light weight.

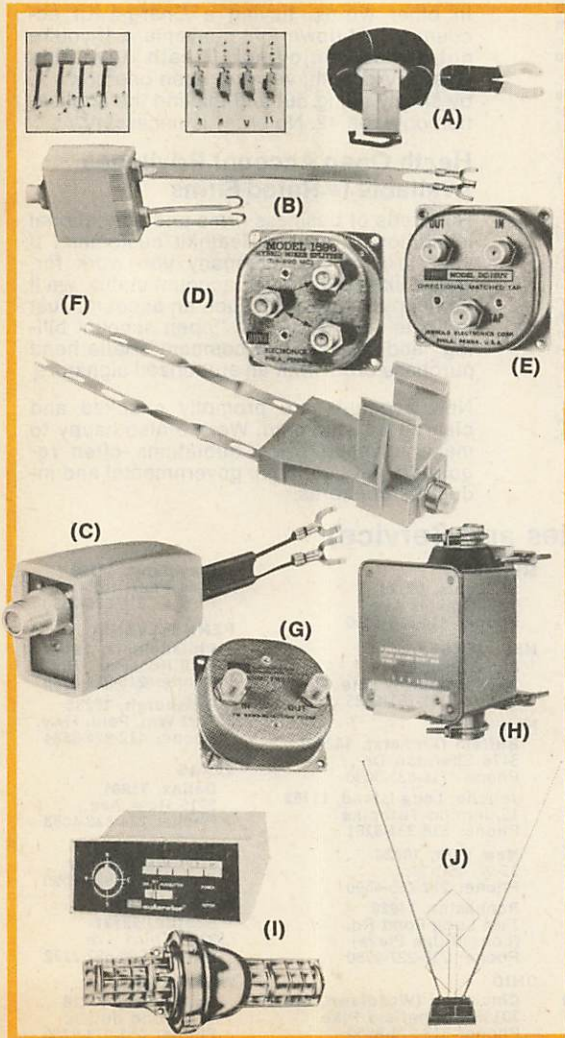
GDP-1016, 8 lbs., mailable 39.95

I) Cornell-Dubulier AR-33 Antenna Rotator — Solid-state control operated by dial or set-and-forget pushbuttons. ±1° accuracy, heavy duty rotor, instructions included. (5-wire cable not supplied).

GDP-258, 16 lbs., mailable 49.95

J) New 82-Channel/FM Indoor Antenna — Has exclusive Double Diamond UHF element, adjustable phase control for peak VHF, 12-position selector. Gives superb FM reception, too.

GD-301, 3 lbs., mailable 10.95





Dear Friends:

Can a person who has never before held a soldering iron, doesn't know a resistor from a capacitor... and could care less... successfully build a kit?

Equally important, would this individual have fun in putting the "pieces and parts" together?

On page 14 you will see our AM portable radio which was designed with this thought in mind. All parts go on one circuit board and there is a minimum of point-to-point wiring. Even so, there is a challenge to the construction as the finished product is small and the soldering has to be a little tight in several areas.

Anyway, my better half built the GR-1008 radio last weekend. No help from me was offered, nor requested, for that matter.

Came the moment of suspense. The radio was turned on. A local station came in clear and strong. With a minor adjustment for alignment Chicago stations came in equally well.

Assembly time was a little longer than estimated. This was due to my wife stopping short of final assembly to tell anyone who would listen of her experience as a kit builder. Perhaps one day we can go back to listening to our AR-1500.

Sincerely,

D.W. Nurse

David Nurse, President

EMPLOYMENT OPPORTUNITIES AT HEATH

Electrical Engineers: for design and development in all Heath product lines. Background should include B.S. in Electrical Engineering, and solid-state circuit design experience with consumer products.

Electronic Service Technicians: Applicants must have an Associate Degree in Electronics, or experience in either military electronics or consumer electronics. A 1st. or 2nd. Class FCC Commercial license is desirable.

Send complete resume and salary requirements to: Personnel Director, Heath Company, Benton Harbor, Michigan 49022.

AN EQUAL OPPORTUNITY EMPLOYER

Need help ...

With a technical or kit-building question, or ordering a kit?



Call us anytime ...

day, night, weekends, or holidays. During business hours (8 AM to 4:30 PM EST), your call will be answered by either a Technical Consultant or Order Editor who can provide you with immediate assistance. During non-business hours, your call will be answered in person and help sent on its way to you at the start of the next working day.

Heath's "Plain Language" warranty stands firmly behind your Heathkit purchase:

Your Heathkit Warranty . . . During your first 90 days of ownership, any parts which we find are defective, either in materials or workmanship, will be replaced or repaired free of charge. And we'll pay shipping charges to get those parts to you — anywhere in the world. If we determine a defective part has caused your Heathkit to need other repair, through no fault of yours, we will service it free — at the factory, at any retail Heathkit Electronic Center, or through any of our authorized distributors.

This protection is exclusively yours as the original purchaser. Naturally, it doesn't cover damage by use of acid-core solder, incorrect assembly, misuse, fire, flood or acts of God. But, it does insure the performance of your Heathkit anywhere in the world — for most any other reason.

After-Warranty Service . . . What happens after warranty? We won't let you down. If your Heathkit needs repairs or you need a part, just write or call the factory, your nearest retail Heathkit Electronic Center, or any Heathkit authorized overseas distributor. We maintain an inventory of replacement parts for each Heathkit model at most locations — even for models that no longer appear in our current product line-up. Repair service and technical consultation are available through all locations.

We hope you'll never need our repair or replacement services, but it's nice to know you're protected anyway — and that cheerful help is nearby.



Heath Charg-a-Kit Revolving Charge Account offers you many advantages

To begin with, a Heath Revolving Charge Account makes ordering your favorite Heathkit products a whole lot easier. Once your account has been opened, a phone call or letter will send your order on its way to you. No cash is required. And the shipping charges are automatically added to your account, saving you the trouble of figuring them out. Add-on purchases, of course, can be made at any time. You receive a complete summary of your account with each monthly statement. There are no finance charges if your account is paid in 30 days, and there are no early repayment penalties.

Here's another advantage that lets you tailor your payments to fit your budget: in addition to the regular one-year repayment plan, extended terms are available for larger orders to keep your monthly payments to an absolute minimum. Also, you are billed *only* after each model ordered is actually shipped. And your account, once opened, is permanent — eliminating any delay in processing your orders placed at any time after your account has been paid up.

In other words, having a Charg-a-Kit account is just downright convenient. If you're not already enjoying a Heath Revolving Charge Account, why not open one now . . . by simply filling out and mailing the application on page 42. No order is necessary.

Heath Open Account Privileges Available to Rated Firms

Hundreds of business firms and educational institutions are also Heathkit customers. If your firm, or the company you work for, would like 30 day open account status, we'll be happy to establish such an account. Just indicate your desire for "open account billing" and include your company's letterhead purchase order with an authorized signature.

New accounts are promptly checked and cleared for shipment. We are also happy to make advance price quotations often required by educational, governmental and industrial concerns.

HEATHKIT ELECTRONIC CENTERS (Sales and Service)

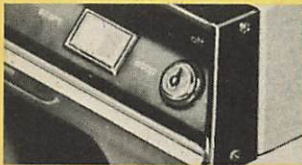
ARIZONA Phoenix, 85017 2727 W. Indian School Rd. Phone: 602-279-6247	COLORADO Denver, 80212 5940 W. 38th Ave. Phone: 303-422-3408	KANSAS Kansas City (Mission, 66202) 5960 Lamar Ave. Phone: 913-362-4486	MISSOURI St. Louis, 63123 9296 Gravois Ave. Phone: 314-638-5100	Cleveland, 44129 5444 Pearl Rd. Phone: 216-886-2590
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 Orange Grove Ave. N. 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	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 St. Phone: 317-257-4321	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 St. 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	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	PENNSYLVANIA Philadelphia, 19149 6318 Roosevelt Blvd. Phone: 215-288-0180 Pittsburgh, 15235 3482 Wm. Penn Hwy. Phone: 412-824-3564 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, La., Providence, R.I., and Tampa, Fla.

You can service Heathkit home appliances



Bag lock-folds for neat disposal.



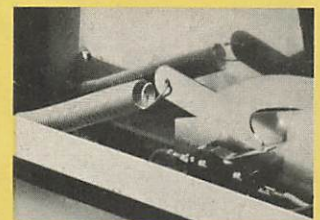
Safety key-lock switch.



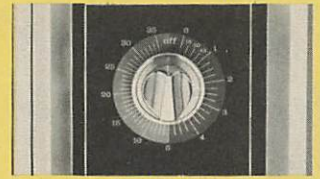
Built-in deodorizer.



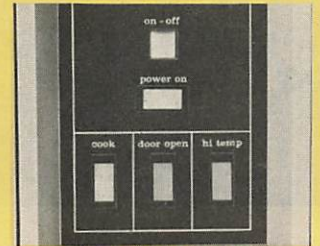
Accepts up to 1 week's trash before emptying.



Patented door safety interlock.



Automatic Timer.



Front panel lights.

ATTENTION HEATHKIT ELECTRONIC OVEN OWNERS
If your present GD-29 cookbook has only three (3) index pages, you can now add 94 new recipes and 65 pages to put more exciting variety into your electronic cooking. Order part No. 500-35, priced at only 1.75 plus 25¢ handling.

Heathkit Minimizer Trash Compactor

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!

Simple, safe operation! To use, merely insert a Minimizer plastic-lined bag in the drawer and push the start button. In less than a minute the ram forces down the trash, returns to its normal position, and the Minimizer shuts itself off. For maximum safety, the Heathkit Minimizer uses a key lock switch and an interlock which automatically turns unit off if drawer is not fully closed or is accidentally opened during cycling.

Goes where it does the most good! 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.

Kit GU-1800, 210 lbs., Express/Frt. **179.95**

GUA-1800-1, 15 plastic-lined bags, 10 lbs., mailable **4.99**

GU-1800 SPECIFICATIONS — ELECTRICAL: Motor: 1/3 hp., 120 VAC, thermally protected. Power requirements: 120 VAC, 60 Hz, 10 ampere. **MECHANICAL:** Ram force: 2,000 lbs., approximately. Reduces waste to approximately 1/4 of its original size. Cycle time: 60 seconds. Net weight: 175 lbs. Size: 34 3/8" minimum height to 35 1/8" maximum height x 15" W x 25 1/2" D. Bag: Disposable plastic-lined paper bag. Deodorizer spray: 9-oz. can.

Heathkit Microwave Oven

The Heathkit GD-29 prepares meals in minutes. No pre-heating — just pop the food in the oven, set the timer, and cook. You have a baked potato in 4 minutes, baked beans in 7, a 5-lb. roast in 45! For entertaining — or fixing leftovers — dishes prepared earlier can be quickly reheated. Frozen foods can be defrosted in 2-3 minutes per pound, and often left to cook in their original containers! Invisible microwaves, similar to radar waves, instantly pass through foods, agitating the molecular structure and cooking with extreme speed. Included with each oven is a helpful, illustrated 152-page cookbook, written for Heath by Home Economist Ann Balcum...providing 162 recipes and timing charts for your favorite dishes.

Stays home in style, or goes along! The handsome, low-profile cabinet sits neatly on a countertop, beneath cupboards — yet the oven cavity is one of the largest in the industry! And the Heathkit Microwave Oven goes anywhere there's a 120 VAC outlet.

Feature for feature, gives you more! Only the Heathkit GD-29 has the patented 3-way safety door interlocks; 2 electrical, 1 mechanical. The oven stops cooking when the door is opened, and the door cannot be opened unless interlocks are functioning! Front panel lights indicate "hi-temp", "cook" and "door-open" conditions. Other features are: a warm air purging device to eliminate condensation; vinyl-clad steel case; vapor-venting door, and long-life Litton magnetron tube.

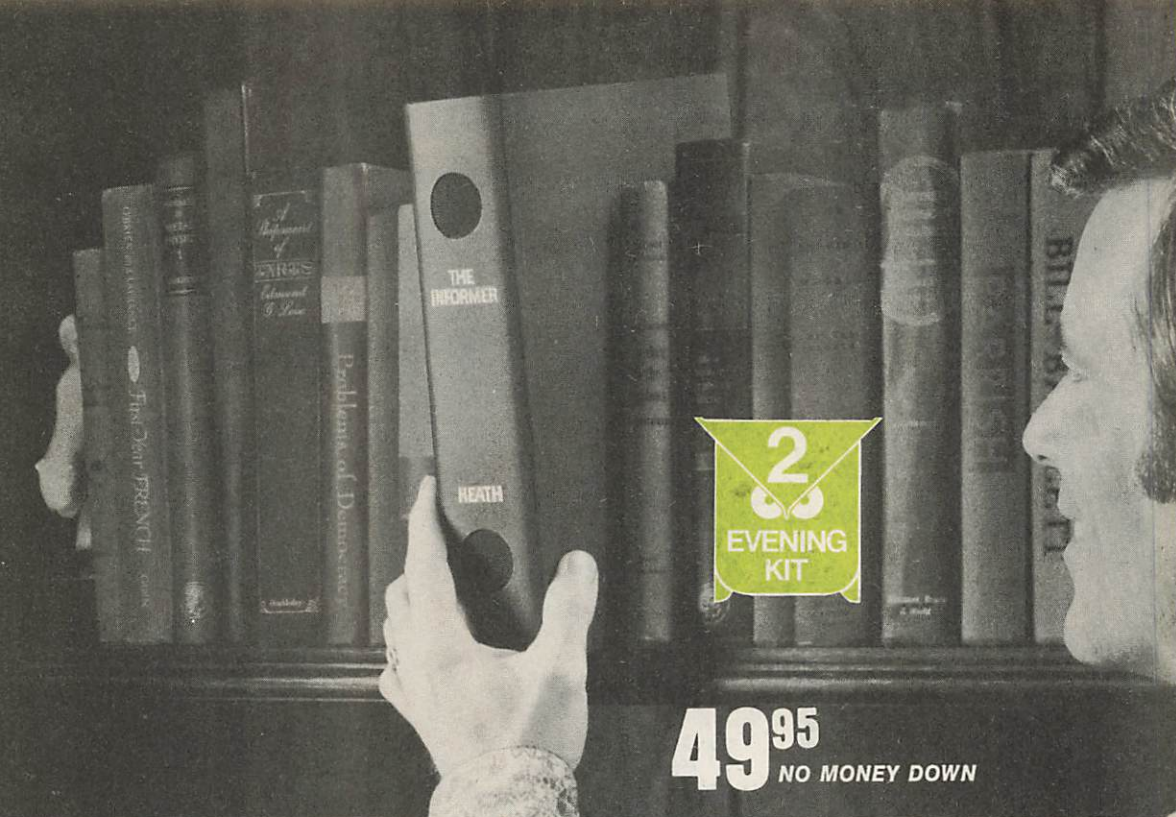
Kit GD-29, 98 lbs., Express/Frt. **379.95**

GDA-29-1, Cart of hardwood solids, walnut finish, 5/8" x 1" tubing, disc casters, 31 5/8" H x 27" W x 15 5/8" D., 25 lbs., Express/Frt. **27.50**

GD-29 SPECIFICATIONS — Power output: 650 watts minimum at 120 volts AC, 60 Hz. Frequency: 2450 MHz ±50 MHz. Microwave leakage: 1 mw/cm² or less. Magnetron tube: Litton Industries, type L-5201. Stirrer: 3-blade, rotates at approximately 65 rpm. Interlocks: Door guide microswitch, door latch switch. Timer: 0-35 minutes range split scale; 0-5 minutes in one-minute steps; 5-35 minutes in five-minute steps. Cooling: Forced air. Oven lamp: Fluorescent type F8T5/WW. Cooking space: 7 1/4" H, including glass tray, 15 1/2" W x 14" D. Power requirements: 110-120 VAC, 60 Hz, 15 amperes. Outside dimensions: 15 1/8" H, 25 1/2" W, 14 3/4" D (15 1/4" D including handle).

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.

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



49⁹⁵
NO MONEY DOWN



Outdoor Alarm Bell. Heavy duty 6" bell has loud clear ring (83 dB at 10'). No mechanical clatter, no adjustments. Shock-proof die-cast housing with gray bonderized finish. Dust-proof, enclosed mechanism. Plugs into back of Intrusion Alarm, measures 7" x 7" x 3 5/8". Universal mounting plate included.
Kit GDA-39-2, 6 lbs.,
mailable26.95



The simulated book cover leaves rear panel exposed for easy access to switches and plug outlets. Unit can be used without cover if desired.

NEW 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 41 kHz signal through the room. This signal bounces off walls and returns to the internal receiver where it is monitored for any change in amplitude. 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, 4 lbs., mailable49.95

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 or 220-260 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).

Heathkit "Wireless" Home Security System

(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 10 VAC, no other wiring needed to receive signals.

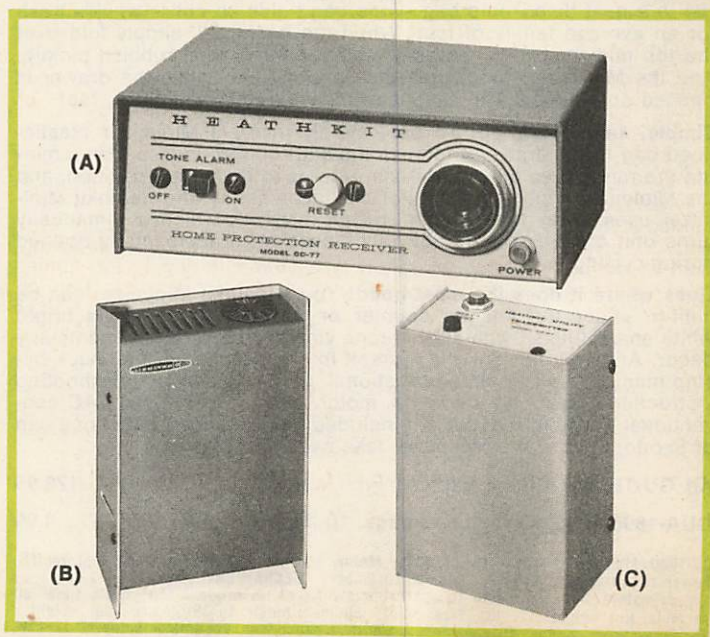
Kit GD-77, 4 lbs., mailable49.95

(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., mailable49.95

(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 switches GDA-97-4 (135°F) and GDA-97-5 (175°F). "Fail-safe" circuit. Uses AC line to transmit signal to GD-77 receiver.

- Kit GD-97, 3 lbs., mailable35.95
- GDA-97-1, 1 lb., mailable1.80
- GDA-97-2, 1 lb., mailable2.00
- GDA-97-4, 1 lb., mailable2.95
- GDA-97-5, 1 lb., mailable2.95



Built-in Heathkit self-service features save you money

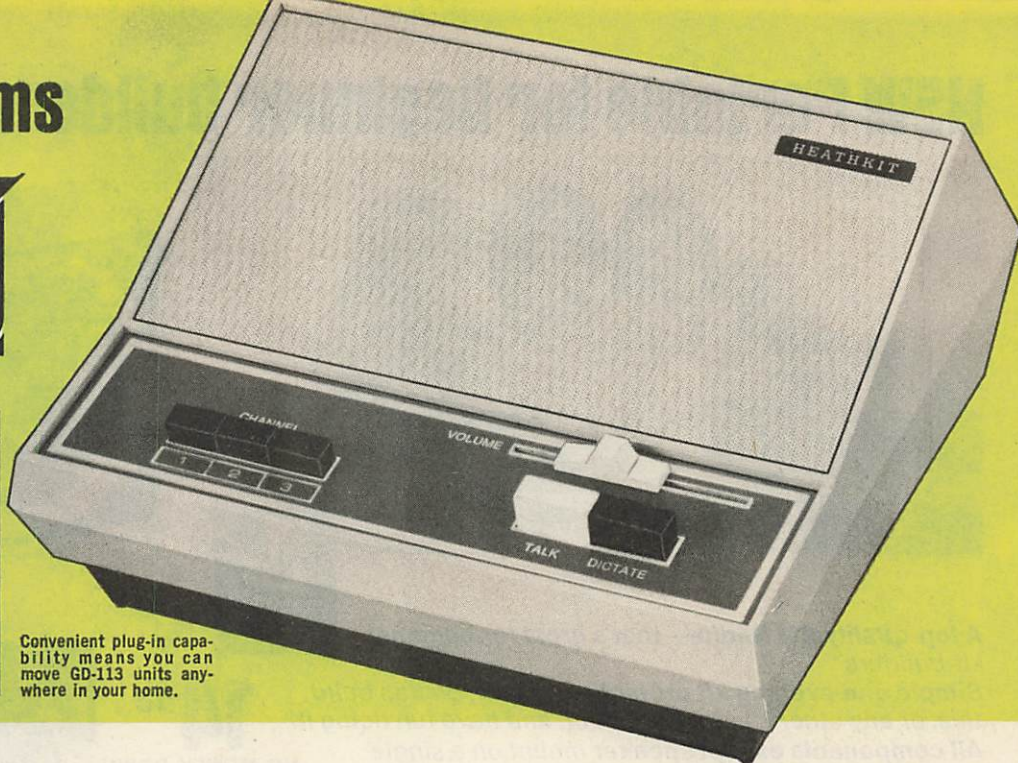
Heathkit Intercoms

29⁹⁵

NO MONEY DOWN



Convenient plug-in capability means you can move GD-113 units anywhere in your home.



Heathkit "Wireless" Intercom

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, 5 lbs., mailable (each) **29.95**



Indoor Remote features "Talk" & "Dictate"

Outdoor Remote identifies front-door visitors.

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 4 1/2" H x 8 1/2" W x 6 3/4" D and 3 3/4" H x 6" W x 5 3/4" D. GD-130 has weatherproof crinkle finish cabinet, measures 5 3/8" H x 3 5/8" W x 2 5/8" D.

Kit GD-110, Master Station, 5 lbs., mailable **39.95**

Kit GD-120, Indoor Remote, 3 lbs., mailable **12.95**

Kit GD-130, Outdoor Remote, 3 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**

Your "best buy" in a home intercom is this Heathkit 2-Station System ... and it's easy to build.

This Heathkit Home Intercom System is a "natural" for the first-time kit builder. Simple, step-by-step instructions make the assembly an easy weekend project! And the low price means that the novice kit-builder can enjoy the convenience of a quality home intercom system ... on a budget. And what convenience! You get step-saving room-to-room communication or babysitter monitoring in the home. Great at the office, too, for paging, interoffice communication or "hands-off" dictation.

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.

Kit GD-140, one Master, one Remote, 5 lbs., mailable **29.95**

Kit GDA-110-2, 100 ft. 4-conductor cable, 2 lbs., mailable **5.95**

Kit GD-120, one extra Remote, 3 lbs., mailable **12.95**



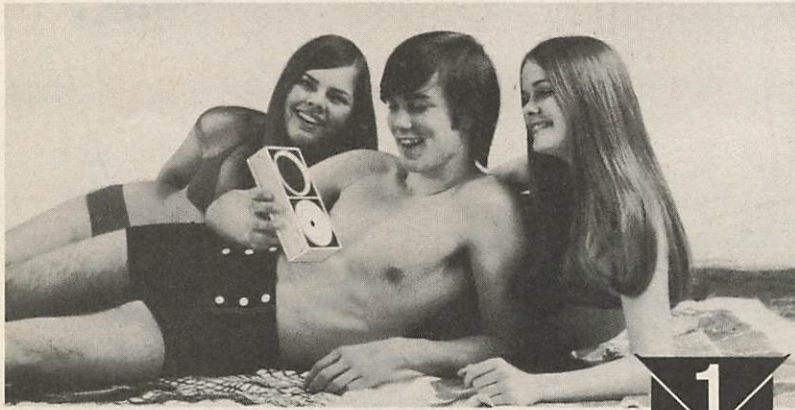
29⁹⁵

NO MONEY DOWN

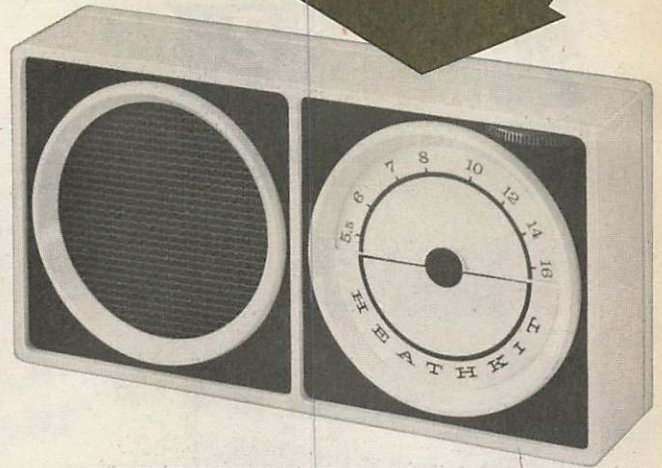
charg-a-kit — No money down on any kit — up to 2 years to pay — see page 42 for details.

NEW Portable for beginner builders

NEW



1
EVENING
KIT



A top-quality AM Radio — that's great for beginner kit builders

Simple one-evening kit project — proves you can build this, or any other Heathkit product, and have fun doing it!

All components except speaker mount on a single circuit board for simplified assembly

14⁹⁵

NO MONEY DOWN

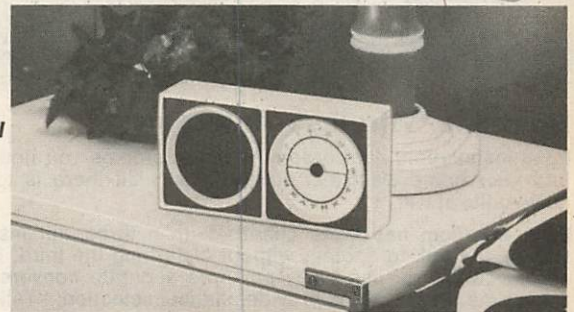
Here's the ideal way for the first time kitbuilder to get started on a rewarding and exciting Heathkit hobby! Even a youngster can build it, yet the new Heathkit GR-1008 definitely is no toy. It's every inch a quality AM portable receiver capable of pulling in signals from far and wide over the complete 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 single evening of kit-building fun and you're enjoying your own personal, portable AM entertainment.

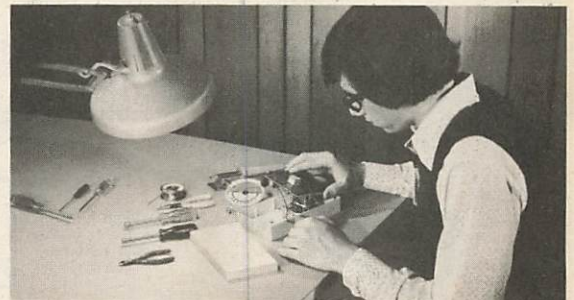
The all solid-state circuitry consists of eight transistors and four diodes for long life and dependable performance. The big 3½" speaker offers unusual fidelity for the size of the set. An RF amplifier stage, not usually found in low cost portables, pulls in distant or weak stations loud and clear, 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

GR-1008 SPECIFICATIONS — Tuning Range: 535 to 1605 kHz. **Intermediate Frequency:** 455 kHz. **Sensitivity:** 100 microvolts per meter for 10 dB signal-to-noise ratio. **Audio Output Power:** 200 milliwatts. **Speaker:** 3½" round, 16 ohm voice coil. **Power Requirements:** 9-volt transistor battery, NEDA type 1604. **Battery Drain:** normal listening, 15 ma. **Dimensions:** 4" H x 7¾" W x 2" D.



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



All components but the speaker mount on a single circuit board for simple one-evening assembly by first-time kitbuilders.

Fun to build, fun to use-



AM/FM Solid-State Portable

Get the best of both FM and AM worlds in a battery-powered portable that plugs in, too, with the optional converter/charger below. AFC, collapsible 34" whip antenna, three IF stages and an amazing 5 uV sensitivity combine to give you sharp, accurate FM reception. The brown simulated leather case measures ¾" H x 8¾" 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 Portable

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 8¾" W x 3¾" D.

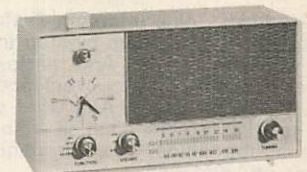
Kit GR-24, 5 lbs., mailable . . . 29.95



Beginner's AM Portable

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" speaker, pre-aligned coil and IF transformer, built-in antenna, tan simulated leather case.

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



Solid-state AM/FM Clock Radio

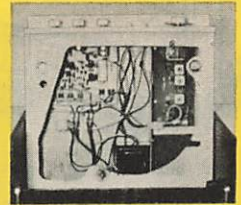
"Snooze Alarm" wakes you to music in the morning, 10 minutes before the alarm goes off. Auxiliary clock-controlled 120 watt socket on rear panel for perking coffee in the morning. Back-lighted clock dial. Built-in AM and FM antennas. AGC on AM; AFC on FM. Fast, easy circuit board assembly. Compact powder blue cabinet measures just 5¾" H x 10" W x 4¾" D.

Kit GR-58, 6 lbs., mailable . . . 49.95



Spring Special!
Beautiful music
for only 59⁹⁵

NO MONEY DOWN



Easy-to-build
18-watt amplifier

**Deluxe Portable Stereo Phono/
AM Radio Combo**

The Heathkit GD-111 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., mailable 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, 25 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 phono 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.

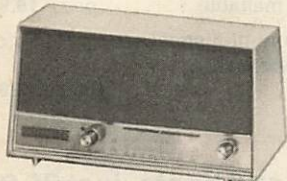
Kit GD-109, 46 lbs., mailable **79.95**

79⁹⁵

NO MONEY DOWN

GD-109 SPECIFICATIONS — CHANGER — Speeds: 16, 33½, 45 & 78 RPM. Record sizes: 7", 10" & 12". Stylus: 0.7 mil diamond, 3 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.

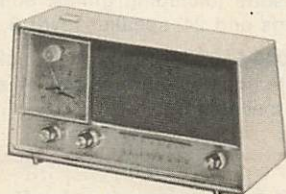
Heathkit music makers



**Solid-state AM/FM
Radio**

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. 5¼" H x 10" W x 4⅞" D.

Kit GR-48, 5 lbs., mailable . . . **39.95**



**Solid-state AM
Clock Radio**

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, 5⅞" H x 10" W x 4⅞" D.

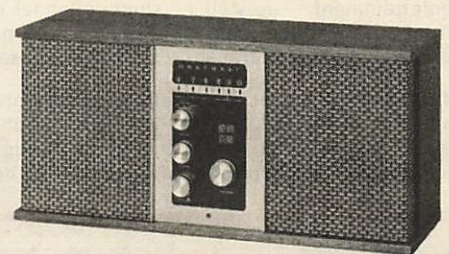
Kit GR-38, 6 lbs., mailable . . . **32.95**



**Solid-state
AM Radio**

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 5¼" H x 10" W x 4⅞" D.

Kit GR-28, 5 lbs., mailable . . . **24.95**



**Solid-state FM
Stereo Radio**

Brings you FM entertainment via two 5¼" wide range speakers. Features stereo-indicator light; adjustable phase control for maximum stereo separation; automatic frequency control; 5 uV sensitivity; adjustable tone control; preassembled and aligned front end for easier assembly. Walnut finish wood cabinet measures 9¼" H x 19" W x 6½" D.

Kit GR-36, 24 lbs., mailable . . . **69.95**

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



Choice of 5" cone speakers for door panel installation or 6"x9" rear-deck models.



One CRA-1000-1 Power Amp. is all you need to power either the FM car Tuner, or Cas-sette, or both.

Component-quality stereo for your car

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 uV 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.

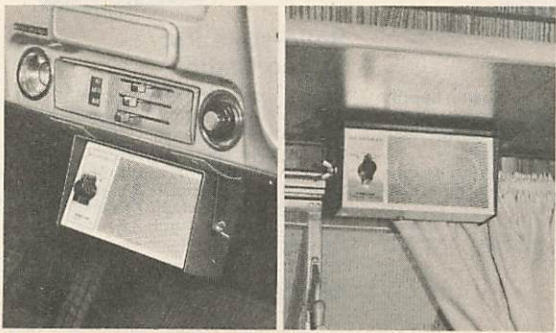
The CT-1001 Stereo Cassette Deck puts high fidelity stereo cassette entertainment — as well as single-channel dictation — right in your front seat. And it's a fun kit to build — with printed circuit boards and preassembled tape transport simplifying assembly.

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.

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 5" 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, 5" cone, 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"x9" 4-ohm rear deck mount hi-fi speakers for Radio or Cassette (including grilles and 24' speaker lead). 7 lbs., mailable (pair) **19.95**



2-Way Intercom for campers, trailers, and boats, just 25.95

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 with a 12-volt, 250 milliamp DC power source. The 3-position switch on the Master selects "Stand-By", "Monitor" and "Talk" modes. The Remote also has a "Radio" position which brings entertainment into the camper direct from the cab radio. The "Talk" position on both Master and Remote overrides all other functions, so either station can initiate a call. Mounting brackets and a 15' five-conductor cable are furnished. Optional plug features chrome-plated 5-prong plug and socket allowing removal of camper from cab without disturbing the interconnecting cable.

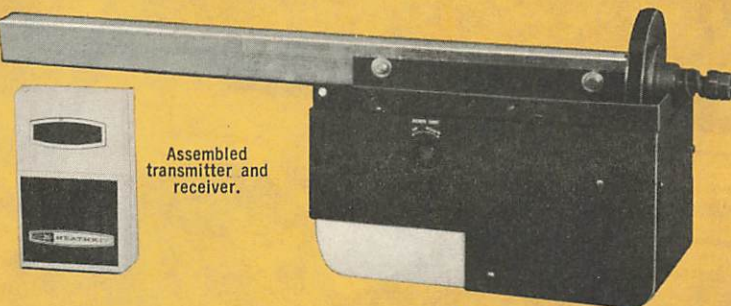
- Kit GD-160, Master, Remote and cable, 5 lbs., mailable **25.95**
- GDA-160-1, Accessory Plug, 1 lb., mailable **2.50**

Radio-controlled garage door openers



139⁹⁵ System GD-209A

NO MONEY DOWN



Assembled transmitter and receiver.



All wiring has plug-in connectors to make assembly quick and easy.



Our deluxe opener with quiet screw-drive — you can't build a better value

Assemble the GD-209 system in an evening, install it the next day. The easy-to-follow sequence of operations in the Heathkit manual takes you start-to-finish without a hitch. A husky ¼-hp motor drives the quiet, virtually maintenance free screw-drive mechanism. Has self-locking feature, time-delay light for extra security. Operates standard 7½' track doors, jamb and pivot doors with GDA-209-2 adaptor, or "California" style doors with GDA-209-3 adaptor.

- Kit GD-209A, system with 1 transmitter, 66 lbs., Express/Frt. **139.95**
- Kit GD-209B, system with 2 transmitters, 66 lbs., Express/Frt. **154.95**
- Kit GDA-209-1, mechanism only, 61 lbs., Express/Frt. **104.95**
- Kit GDA-209-2, adaptor for jamb & pivot doors, 3 lbs., mailable . . . **7.95**
- Kit GDA-209-3, "California" door adaptor, 4 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 ¼ 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: 3" 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.



System GD-309A

99⁹⁵

NO MONEY DOWN

Assembled transmitter and receiver.



Heathkit Economy Chain-Drive Opener

Build and install your Heathkit GD-309 system in a weekend. Just follow the step-by-step operations in the manual, compare your installation with the detailed illustrations and you have a ¼-hp chain drive opener for a great price. 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 . . . with self-locking security, automatic reversing if obstructed, quick-release pin to disengage mechanism in the event of power failure. The factory-assembled solid-state UHF receiver has adjustable tone coding to prevent interference from neighboring units. The solid-state transmitter also comes to you preassembled. It operates your door from up to 150 feet away. Fits in your pocket or clips to your visor . . . becomes your own personal electronic "key."

- 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 8'2"). 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.

Heathkit Mobile Siren/PA System

Function as an electronic siren at a full 55 watts, with adjustable pitch. Functions as a PA system with 20 watts of 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. For emergency vehicle use only.

- 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, 10 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**



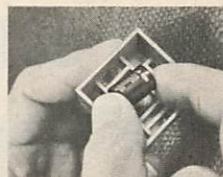
Note: Since this product is a kit, it is often not included in type-acceptance listings for individual municipalities and states. Please check the required standards for mobile sirens in your area.

Heathkit Fixed or Mobile 5-Watt CB Rig

Reliable 2-way communication from car to car, home to office. Full 23-channel capability with crystal-controlled reliability. Solid-state circuit for 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**



Actual components mount inside modules carrying the component's schematic symbol.

19⁹⁵
NO MONEY DOWN



Heathkit Jr. Electronic Workshop "36"

The Electronic Workshop "36" has 36 interesting and educational experiments: 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**

Electronic kit-courses

How to understand and use your VTVM. Theory and applications of the VTVM. Power supply and text let you learn-by-doing. For beginner or professional. 10.95

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

How to understand and use your oscilloscope includes experimental chassis for constructing many different circuits. Change circuits as desired... 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

How to understand and use your signal generator. Text covers theory, and use of RF and AF generators. Textbook a valuable reference.

Kit EF-3, text, test chassis and parts, 4 lbs., mailable **14.95**

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 principles, and you build a handy DC volt-ohm milliammeter.

Kit EK-1, 4 lbs., mailable **24.95**

Basic radio — 2 parts kit/course. Start by building a simple crystal receiver...improve it chapter by chapter. Result: a regenerative tube-type receiver! In Part II you learn more advanced 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**

Basic transistors kit/course. 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 negatives, filter mosaics.

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**

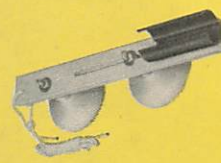
Heathkit Dual-Range Audible Alarm Fish Spotter®



Controls for range and alarm depth.



Built-in audible alarm signals fish-find.



Portable transducer bracket supplied with kit.



2
EVENING KIT

SUPER-BRIGHT FLASH

99⁹⁵

NO MONEY DOWN

New circuitry features exclusive Heathkit dual-range selection — 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 present depth. The Super-bright long-life neon flasher gives you precise depth reading. Also doubles as an accurate and reliable depth sounder. A special Heath 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: ±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, ±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 μV 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.

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 right for even greater fishing convenience.

Kit MI-2900, 9 lbs., mailable **69.95**

Kit MIA-2900-1, 4 lbs., mailable **12.95**

MI-2900 SPECIFICATIONS: Range: 0 to 240 feet on hard bottom. Accuracy: ±2% @ 240 rpm. Sounding: Rate: 20 times per second. Frequency: 200 kHz ±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 μV nominal at 200 kHz. Depth Indication: 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. Dimensions: 7" H x 6" W x 11" D.

Scanning Transducer Bracket for MI-2901 & MI-2900 Fish Spotters®. "C" clamp mounting; scans 360°; locks in any position; accepts any 1 3/8" cylindrical transducers.



SUPER-BRIGHT FLASH

69⁹⁵

NO MONEY DOWN

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. Lievens; 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.

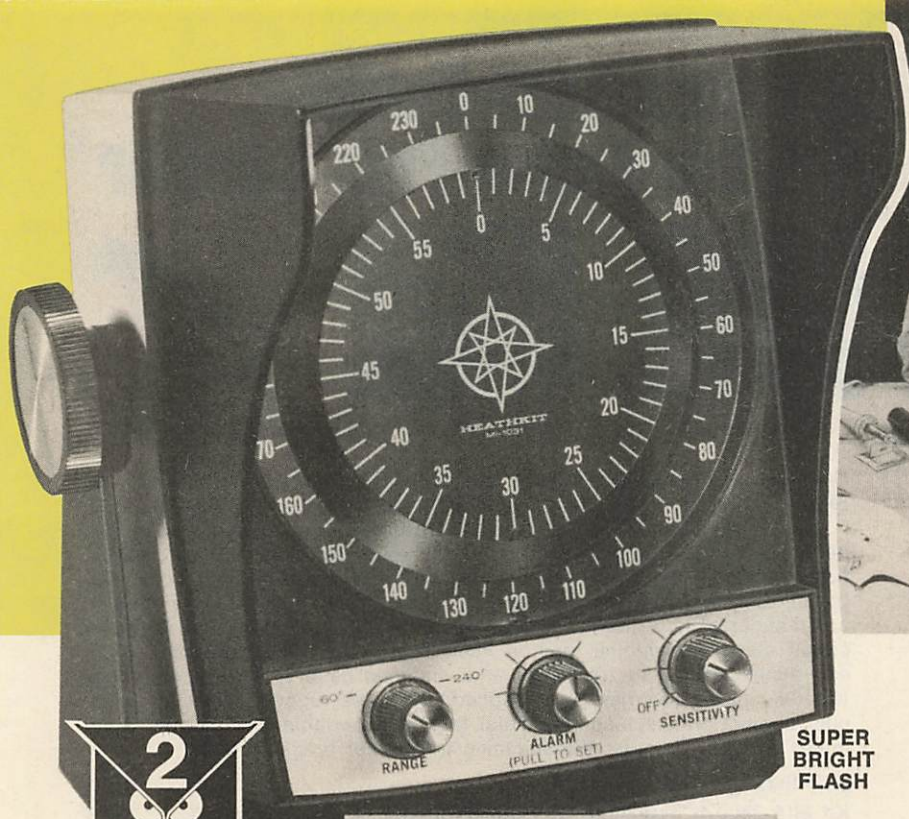
Kit MI-104, 3 lbs., mailable **24.95**



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

24⁹⁵

NO MONEY DOWN



Heathkit Dual-Range Visible/Audible Depth Sounder

Sounds depths to 240 ft. — with presettable tone 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.

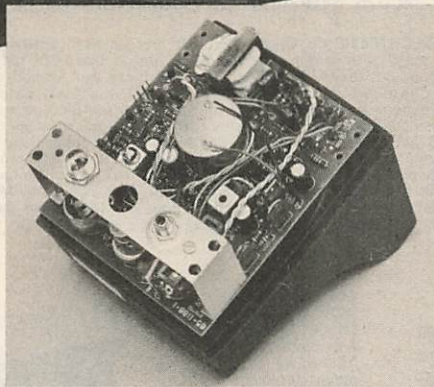
The state-of-the-art design features all-transistor circuitry with electronically controlled silent-running motor and built-in fixed noise rejection circuit to eliminate ignition interference. Diode protection against accidental reversal of polarity when connecting to your ship's 12 VDC system. The marine-white 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).

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**

99⁹⁵
NO MONEY DOWN

Solid state circuit-board design makes kit building an easy 2-evening project



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.



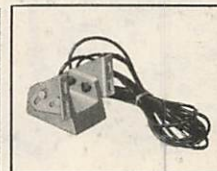
"Economy" Flasher-Type Sounder 69.95

Reads to 240 feet with less than 2% error. 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.

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**

MI-1030 SPECIFICATIONS — Range: 0-240' on hard bottom. Scale: 0-120'. Sounding: Rate, 1200/min. or 20/sec. Frequency, approx. 200 kHz. Accuracy: Within 2% of actual depth. Depth indication: Neon lamp flashes at zero and again at the indicated depth from the object. Transducer: Barium Titanate ceramic element encased in watertight housing. Controls: Sensitivity with on-off switch. Transistor & diode complement: 16 transistors, 7 diodes. Power requirements: 125 mA @ 11-15 VDC. Dimensions: 6½" H x 5¾" W x 7¼" D.



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.

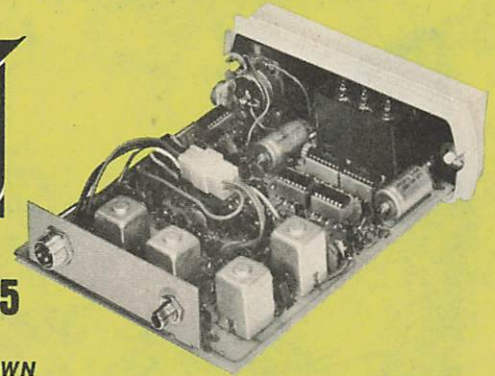


Digital Depth Sounder

3
EVENING
KIT

139⁹⁵

NO MONEY DOWN



Now you can enjoy the latest solid-state-of-the-art development in depth sounders at kit-form savings. 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 Cylolac® 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 (see facing page); 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 & -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: 2¼" H x 6¾" W x 8½" D (less gimbal hardware).

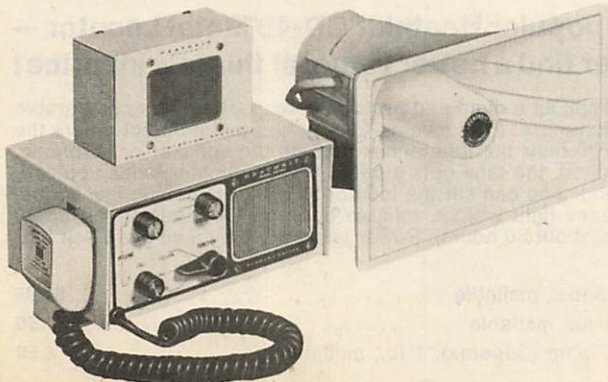
For greater safety afloat...the Heathkit Multifunction Foghorn/Hailer... 89.95

One of the most versatile pieces of electronic gear you can have aboard. 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 the season.

Kit MD-19A, with horn speaker, 16 lbs., mailable **89.95**

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

MD-19A SPECIFICATIONS — Output power: 55 W peak. Boat horn frequency: Approx. 530 Hz. Foghorn frequency: Approx. 390 Hz. Foghorn rate: Approx. 2-90 sec., variable. Foghorn duration: Approx. 2-20 sec., variable. Speaker: 8 ohm weather resistant horn. Microphone: Ceramic with push-to-talk switch. Controls: Call volume; Listen volume; Station select; Function; Foghorn rate and duration. Power requirements: 12 VDC nominal, 4.5 A max. Idle current: 750 mA or less. Dimensions: 4¾" H x 9¾" W x 7¼" D. Color: White wrinkle and dark blue.



Low-Cost Heathkit Power Inverter . . . 34.95

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. Features an all-transistor circuit and two receptacles for plugging-in appliances. Build it in one or two easy evenings.

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.



Heathkit Visible/Audible Alarm Fuel Vapor Detector . . . 47.95

The Heathkit MI-25 Fuel Vapor Detector gives 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: 2¼" H x 5¼" W. Depth: 5". Detector head size: 1½" round x 2½" long. Length of interconnecting cable supplied: 15'. Color: Marine white & black. Material: Aluminum. Temp. range: -30°C. Audio alarm: 2500 Hz.



Search under water at depths up to 2 feet. Not recommended for extended salt water immersion.



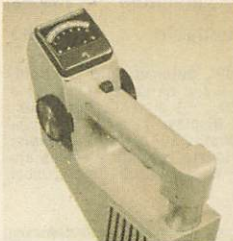
89⁹⁵
NO MONEY DOWN

Deluxe Metal Locator

Professional features at do-it-yourself savings—The Heathkit GD-348 offers you accurate, sensitive metal detecting capabilities comparable to detectors costing far in excess of this low kit price. With easy check-by-step instructions and simplified circuit board solid-state design, two evenings puts it all together . . . and you're ready for treasure hunting the next day. 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 pinpoints your "find." Built-in jack is provided for use with optional headphones. The null and ten-turn sensitivity controls are conveniently located on the carrying handle for precision fingertip setting. 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, enabling you to search under water in depths up to two feet. 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 (at left). 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**



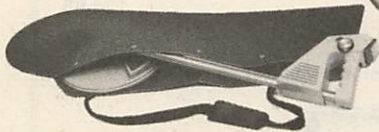
Convenient handle-mounted controls



Easy, two evening circuit board assembly

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.



The popular Heathkit GD-48 Metal Locator — you'll never find a better value, at this low kit price!

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

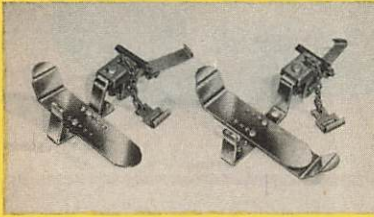




Kit supplied with engine mounted to frame.



Optional head & tail light kit



Optional bumper carrier



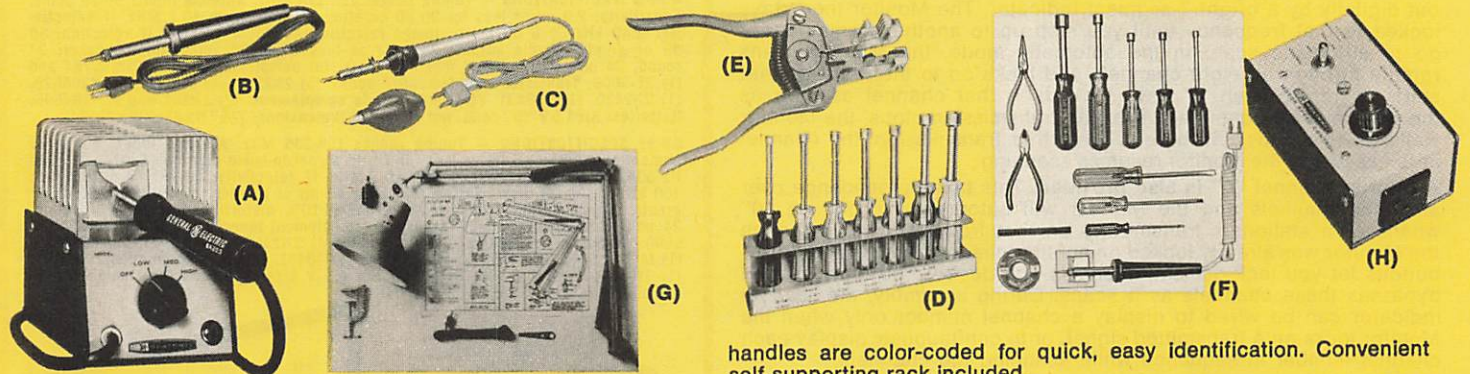
249⁹⁵
NO MONEY DOWN

The Heathkit Hilltopper

Here's the gutsy-goer you'll have assembled in only two evenings . . . simple instructions and large pictorials combine to make the "Hilltopper" one of the most easily-assembled kits ever. Features include a tubular steel frame, Tecumseh 5 hp engine, built-in alternator and a load-sensing automatic torque converter for no shifting in the rough . . . or for speeds up to 35 mph. Other features are front & rear suspension, oversize front & rear tires for great traction and stable steering, front & rear brakes, steel skid pan, crash bar assembly, cycle-type twist throttle, ignition-off switch, optional lights and ski. Bike is bronze

with white engine, 44" wheel base, 39" H x 24" W at handlebars, 27³/₄" H at seat. For cycle-style looks and handling at a minibike price — order your Hilltopper today.

- Kit GT-101, 180 lbs., Exp./Frt. **249.95**
- GTA-101-1, ski accessory, 12 lbs., Exp./Frt. **19.95**
- GTA-101-2, running lights, 4 lbs., mailable **19.95**
- GTA-101-3 bumper carrier, 24 lbs., mailable **22.95**



For the Kitbuilders' Tool Chest . . .

- 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 19.95**
Replacement Heater Tips for GH-17A:
GDP-317, 1/4" chisel, 1 lb., mailable **5.45**
GDP-327, 3/8" pyramid, 1 lb., mailable **5.75**
GDP-337, 3/8" 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, 2 lbs., mailable 6.95**
- D) Vaco hollow shaft nut driver set** Seven drivers accommodate most commonly used nut sizes; 3/16", 1/4", 5/16", 11/32", 7/16" and 1/2". 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-Builder's Guide." **Model GH-25, 4 lbs., mailable 19.95**
- G) Z-Lyte 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**

Public Safety Monitor kits

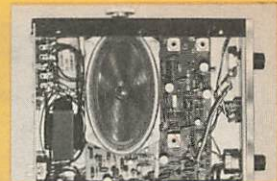


119⁹⁵
NO MONEY DOWN

4
EVENING
KIT



Crystal OSC/Mixer Signal Source simplifies alignment.



Modular circuit-board design simplifies assembly.



NEW Heathkit Band-Scanning Monitor

Here it is . . . the Heathkit Scanning Monitor you've been waiting for. The GR-110 brings you all the local action . . . listening 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. These are the frequencies used by your local public service organizations, like police and fire departments, ambulance services, marine, rescue services, etc. You can choose up to eight separate crystals to cover the active VHF frequencies used in your particular locality (check your state and local laws regarding use of monitors in vehicles in your area).

The GR-110 features either manual or automatic scanning. In the manual mode, you simply depress the front panel "manual" switch to step to any desired controlled channel 0 through 7, which is read out digitally by a bright 7-segment indicator. The Monitor then stays locked to that frequency until you step up to another frequency, 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. . . if there is no further transmission, the channel is released and the Monitor resumes scanning.

A priority channel "0" is also provided. This takes precedence over all other channels and the Monitor will automatically lock on "0" whenever a station is transmitting on that frequency, even though the Monitor was already locked on another channel. Front panel push-buttons let you lock-out any channels you desire. The Monitor then bypasses these channels as it scans. During assembly, the readout indicator 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 the channels.

The Monitor works at home or on the road. Two line cords and plugs are provided — one for operating from 120 VAC 50/60 Hz power and one for operating from your 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. Modular circuit board design and check-by-step manual make assembly an enjoyable 4-evening project. Manual gives complete instructions on alignment procedure and how to order crystals. Order your GR-110 now . . . and tune in all the local action in your area the easy way.

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

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 3/4" W x 9 3/4" D.

Portable Fire, Weather, Police & Aircraft Monitors . . . 49.95

Both 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.

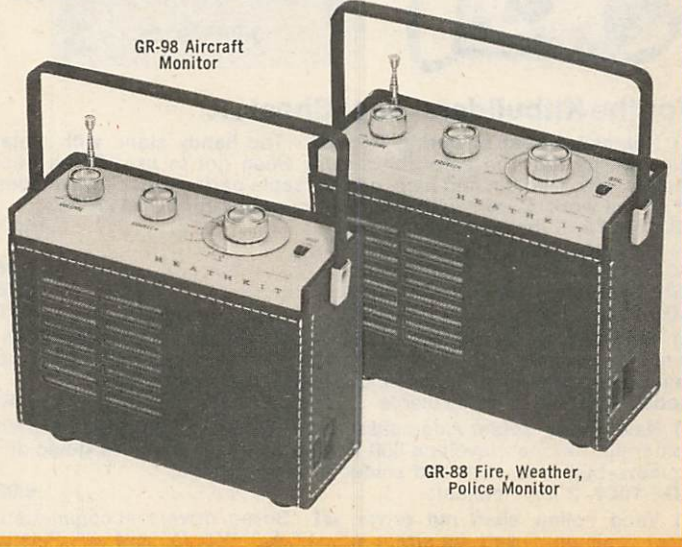
Kit GR-88, Fire, Weather, Police Monitor, 5 lbs., mailable . **49.95**

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 1.5V "C" cells, not supplied. Dimensions: 7 1/2" H x 8 3/4" W x 3 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 1/2" H x 8 3/4" W x 3 1/2" D.



GR-98 Aircraft Monitor

GR-88 Fire, Weather, Police Monitor

NEW



still only
24⁹⁵ ea.
NO MONEY DOWN

Improved Heathkit R/C Miniature & Subminiature Servos

Better than ever at the same low price. The new Heathkit Miniature and Subminiature Servos feature improved integrated circuits for faster response time, less dead-band, and better resolution to yield extremely accurate positioning and centering. New bridge-type output prevents failure due to dead or shorted battery cell, and provides at least 33 1/3% increase in torque or thrust. Even the gear train has been beefed up. Tough nylon cases and epoxy circuit boards; same super-light fly weights. Use with GD-405, -57, and -19 systems (-57 & -19 users request free modification kit GDM-1957 when ordering these servos).

- Kit GDA-505-44, 1 sub-mini servo, 1 lb., mailable 24.95
 - Kit GDA-405-44, 1 miniature servo, 1 lb., mailable 24.95
 - Modification Kit GDM-1957, required for use of above servos with GD-57 or GD-19 systems no charge
- GDA-505-44 and GDA-405-44 SPECIFICATIONS: see second column of page 27.

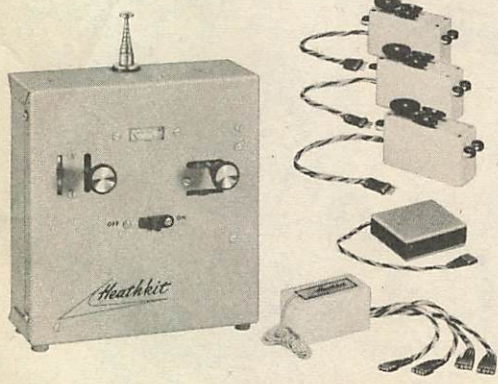
The Heathkit 3-Channel System . . . only 129.95

GD-57 System 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 frequency, 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: 6 1/2" H x 6 3/8" W x 2 1/4" D.

GD-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: 1 1/8" H x 1 3/4" W x 2 3/8" 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).

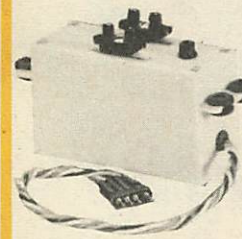


Heathkit Standard Servo

(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 1/4" L (length includes mounting ears; height includes arms). Net weight: 2.5 oz.



A) The popular Heathkit Spectre

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

B) Veco .19 Engine

For R/C-car side-winder mounting. Has solid aluminum hemispherical head, coupled exhaust/intake throttle control linked to carburetor for smooth idle. Includes glow plug.

- Assembled GDA-101-2, 1 lb., mailable 29.95

C) "Thumb Tach"

Two rpm ranges: 0-5000, 0-25,000. Ideal for needle valve adjustments, selection of glow plugs, gears and props — permits peaking engine for rpm change you can't hear.

- Kit GD-69, 2 lbs., mailable 19.95

D) Servo Simulator

Replaces transmitter and receiver for making servo adjustments — just plug in servo — runs from either optional internal battery or 120 VAC line. Can also be used to charge both receiver and glow plug batteries from 120 VAC line.

- Kit GD-206, 2 lbs., mailable 19.95
- Kit GDA-19-3, receiver battery pack only; 1 lb., mailable 9.95

29⁹⁵
NO MONEY DOWN (A)

19⁹⁵
NO MONEY DOWN (C)

29⁹⁵
NO MONEY DOWN (B)

19⁹⁵
NO MONEY DOWN (D)

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**

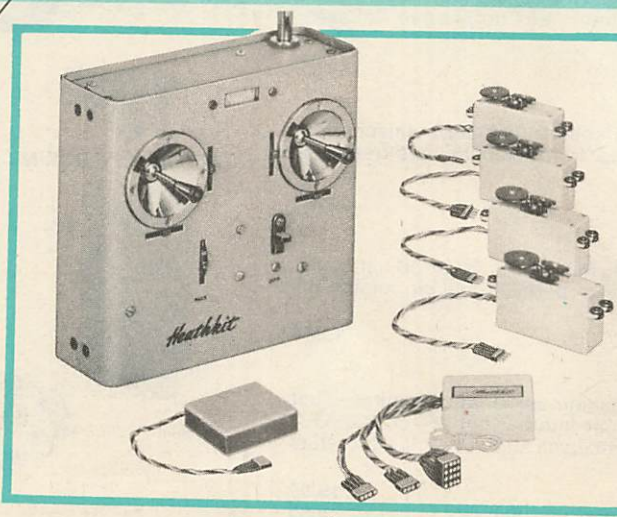
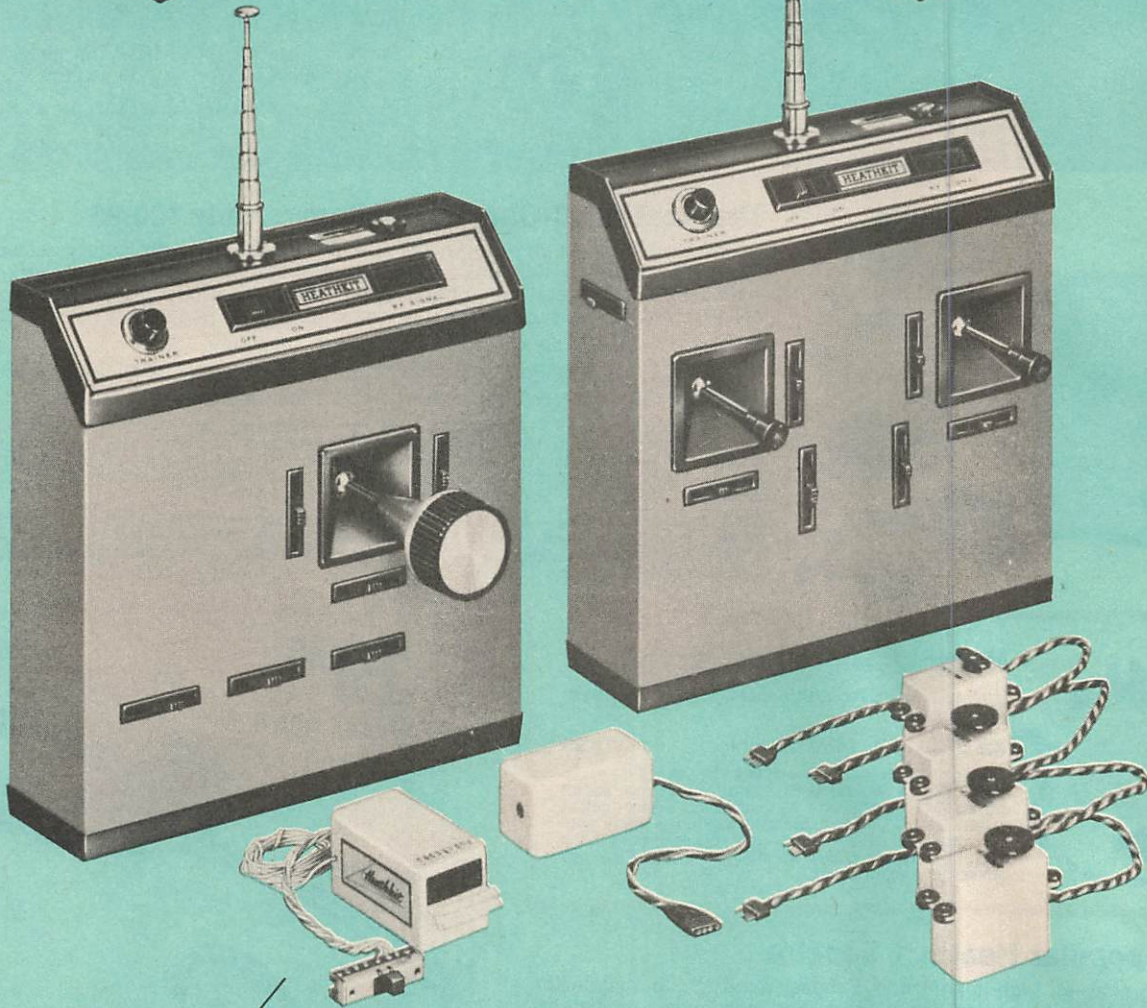
Includes all batteries (up to \$39 retail value).
NO MONEY DOWN

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



Heathkit GD-19 5-channel R/C System

Uses GDA-19-4 servos for low 16.6 oz. flight weight. Transmitter has factory-assembled RF stage, Kraft sticks, built-in charging circuit charges transmitter and receiver batteries with one cord. Heathkit miniature receiver has three ceramic IF filters for increased selectivity & reliability without alignment, double tuned front end, dual AGC for interference-free reception,

Buy your Heathkit R/C gear as a system...and save!

Heathkit 8-channel R/C gear Now with new, improved servos



- Choose single or dual stick control
- Switch selection of adjacent channel
- Thin-profile, super light transmitters
- Receiver has built-in connector block

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.

When ordering either GD-405 system, you may select either the new GDA-405-44 Miniature Servos or the new GDA-505-44 Sub-Miniature Servos. With receiver, battery pack and four miniature servos airborne weight is 13.3 oz. Substituting four Sub-Miniatures brings system weight down to 11.3 oz. Servo specs. below; description top of page 25.

- 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 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 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:** 4.8V Battery Pack GDA-405-3. **Controls:** ON-OFF switch. Frequency selector switch. **Dimensions:** 1 1/2" H x 1 3/4" W x 2 1/4" D. **Net weight:** 2.5 ozs.

GDA-405-3 SPECIFICATIONS — RECEIVER BATTERY — Type: Nickel-cadmium. Rechargeable simultaneous 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 1/4" H x 1 1/4" W x 2 3/4" D. **Net weight:** 3.8 oz.

GDA-405-44 SPECIFICATIONS — Input signal: Pulse 1-2 msec wide, 4 V P-P. **Thrusters:** 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.

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 3/2" W x 1 7/8" L (length includes mounting ears, height includes the outputs). **Net weight:** 1.25 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.



Trainer Link Accessory

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

and high impact nylon case. Four servos and nickel cadmium batteries for both transmitter & receiver. 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. 28), 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° F. **RF Output Circuit:** Pi-net-

work. **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 3/8" H x 6 3/4" W x 2 3/8" D. **Net weight:** 2 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° F. **Sensitivity:** 5 μ 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:** 3 5/2" H x 2" W x 2 5/2" 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:** 5/8" H x 2 1/8" W x 2 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.)

Start a Heathkit Shortwave Hobby



Heathkit 6-Band SWL Portable

Modular circuit board design makes the GR-78 an enjoyable six-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 μ V — 10 μ V 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



129⁹⁵
NO MONEY DOWN

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 $\frac{1}{4}$ " H x 11 $\frac{1}{2}$ " W x 9" D.

*Signal level for 10 dB signal + noise/noise ratio.

Our finest shortwave rig — the Heathkit SB-313 9-Band Receiver

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-311-2, 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



339⁹⁵
NO MONEY DOWN

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 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 $\frac{3}{8}$ " H x 12 $\frac{1}{4}$ " 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 three 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); BFO; Main Tuning; Bandspread Tuning; ANL on/off. Transistor Complement: 40673, Mixer



59⁹⁵
NO MONEY DOWN

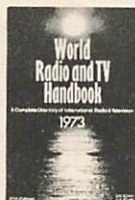
& RF amplifier; 2N3393, Audio preamplifier; 2N5232A, IF amplifier, AGC amplifier; 2N5308, IF amplifier; MPF105, oscillator; S2090, final audio amplifier; S2091, final audio amplifier; X29A829, Audio driver. Power Supply: Transformer operated; full-wave bridge rectifier. Voltage Requirements: 120/240 VAC, 50-60 Hz, 8 W. Dimensions: 5 $\frac{1}{8}$ " H x 14 $\frac{3}{8}$ " W x 8" D.



Superox headphones

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

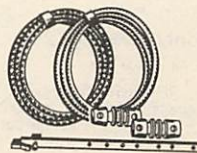
GD-396, 1 lb., mailable 4.50



SWL guide

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

GDP-315, 2 lbs., mailable 6.95



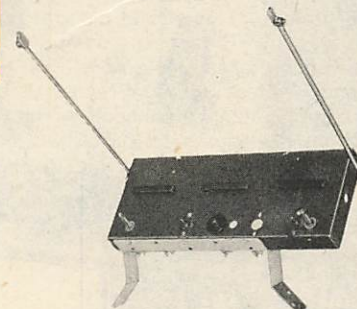
Long-wire antenna

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

GRA-72, 2 lbs., mailable .. 2.95

Order your HW-101 along with the Heathkit SB-650 Digital Frequency Display and save \$30! See details on page 34.

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NO MONEY DOWN



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

Heathkit HW-101 — your best buy in a 5-band SSB transceiver

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; 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:** 6 1/4" H x 14 1/4" W x 13 3/8" D.

*Triple Action Level Control

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

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 37); 2 kHz dial calibration, ALC input; S-meter; VOX & PTT. Order your favorite model, today.

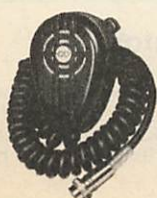
- Kit HW-12A, 80-meter, 15 lbs., mailable **112.50**
- Kit HW-22A, 40-meter, 15 lbs., mailable **112.50**
- Kit HW-32A, 20-meter, 15 lbs., mailable **112.50**
- Kit HRA-10-1, plug in 100 kHz crystal calibrator, 1 lb., mailable **9.95**
- Kit HP-13B, DC Power Supply, 8 lbs. **69.95**
- Kit HP-23B, AC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



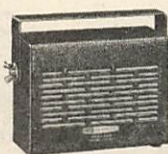
Mobile PTT Mike

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



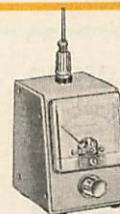
Mobile Speaker

Rugged 8 ohm mobile speaker in steel forest green cabinet. Gimbal mount included. 6 1/4" W x 4 3/4" H x 2 1/2" 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**



Work the world with 3 watts

69⁹⁵
NO MONEY DOWN

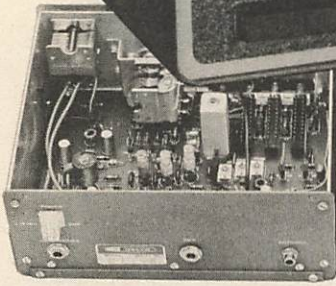


Heathkit 3-Band QRP CW Transceiver

Experienced amateur, QRP fan, or novice, you'll appreciate the dependability and versatility 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 uV 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.

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**



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



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

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.



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 uV 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.

99⁹⁵
NO MONEY DOWN

Heathkit Solid-State Electronic Keyer

39⁹⁵
NO MONEY DOWN



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**

The quality parts used in Heathkit products assure quality performance

Low cost rigs for beginning hams



C) HG-10B 80-2 Meter VFO

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

A) Heathkit DX-60B Phone & CW Transmitter

80-10 Meter Operation — with 90 watts peak input on AM and CW

Operates at Reduced Power for Novice Class

Low Pass Filter — reduces television interference

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 above 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.



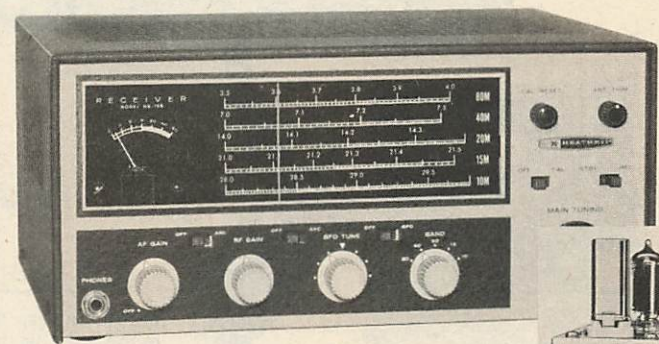
100 kHz crystal calibrator

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



A)



B)

Optional plug-in Crystal Calibrator.

B) Heathkit HR-10B 5-Band Receiver

80-10 Meter Coverage — tunes SSB, AM & CW

Optional Plug-in Crystal Calibrator

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 mc.; 40 Meter Band, 7.0 to 7.3 mc.; 20 Meter Band, 14.0 to 14.35 mc.; 15 Meter Band, 21.0 to 21.5 mc.; 10 Meter Band, 28.0 to 29.7 mc. Intermediate frequency (IF): 1681.0 kc. Sensitivity: 1 microvolt for a 10 dB signal plus noise-to-noise ratio. Selectivity: 3 kc at 6 dB down, 9 kc 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 AF Amplifier; 6EA8 2nd AF 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.



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

NEW Heathkit Amateur 2-Meter Line. Transceiver,

NEW Heathkit 2-Meter Transceiver

179⁹⁵

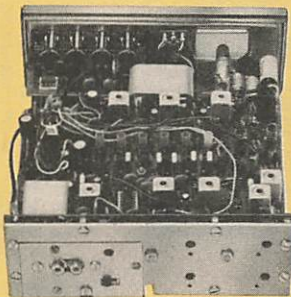
NO MONEY DOWN
less Encoder



HW-202 shown above
with Tone Burst
Encoder installed.

Push-to-talk
mike included

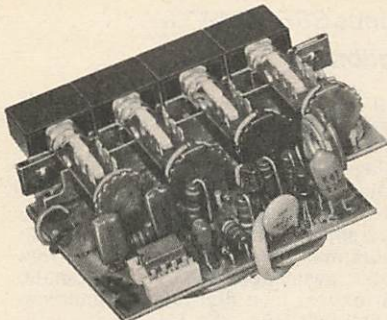
NOTE: due to the unusually high demand for this transceiver, please allow 45 to 60 days for delivery.



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.



NEW Heathkit Tone Burst Encoder

The HWA-202-2 Tone Burst Encoder mounts behind a removable bezel on the front panel of the transceiver; provides four tone select buttons. Can be preset for any tones between 1800 Hz and 2500 Hz, with individual burst duration adjustable

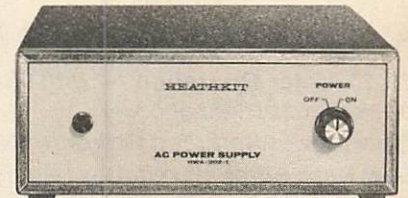
from 0.25 second to continuous. Frequency stability is $\pm 1\%$, -30° to $+50^\circ$ C. Encoder can be disengaged by placing all buttons in the off position. Build it and install it in a couple of hours. All components mount on one glass epoxy board for easier assembly.

Kit HWA-202-2, 1 lb., mailable24.95

NEW Heathkit Regulated AC Power Supply

Styled to match the new Heathkit HW-202 2-Meter Transceiver, the HWA-202-1 AC Supply makes for a great-looking base station.

It produces a 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.

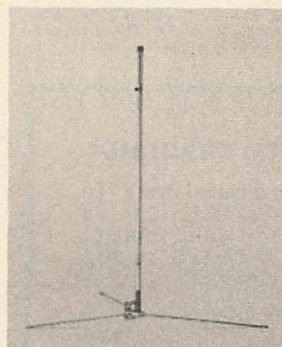


Kit HWA-202-1, 7 lbs., mailable29.95

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

Master 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

Amplifier, Accessories . . . all at kit-form savings.

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 transceiver the ham world has been waiting for is ready for delivery now! And we think you'll agree it was worth waiting for. 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 new 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.

10-15 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-202-2 Tone Burst Encoder becomes an integral part of your transceiver, providing four presettable pushbuttons for instant repeater access. Fixed station operation is as easy as adding 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 $\frac{1}{2}$ -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**

HW-202 SPECIFICATIONS — RECEIVER — Sensitivity: 12 dB SINAD* (or 15 dB of quieting) at .5 μ V or less. Squelch threshold: 3 μ V or less. Audio output: 2 W at less than 10% total harmonic distortion (THD). Operating frequency stability: Better than $\pm 0.0015\%$. Image rejection: Greater than 55 dB. Spurious rejection: Greater than 60 dB. IF rejection: Greater than 75 dB. First IF frequency: 10.7 MHz ± 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 $\pm 0.0015\%$. 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: -10° to 122° F (-30° to $+50^{\circ}$ C). Operating voltage range: 12.6 to 16.0 VDC (13.8 VDC nominal). Dimensions: 2 $\frac{3}{4}$ " H x 8 $\frac{1}{4}$ " W x 9 $\frac{3}{8}$ " D.
 *SINAD = $\frac{\text{Signal} + \text{noise} + \text{distortion}}{\text{Noise} + \text{distortion}}$



NEW Heathkit VHF Wattmeter

29⁹⁵

NO MONEY DOWN

Tune-up tool for 2-meter gear — built-in SWR bridge

50 to 160 MHz range — covers commercial, aircraft and ham

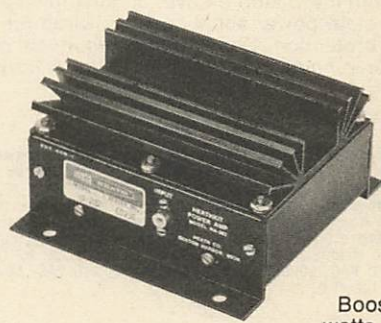
NOTE: due to unusually high demand please allow 60 days for delivery.

A terrific buy. 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**

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 $\frac{1}{4}$ " W, 5 $\frac{1}{8}$ " H and 6 $\frac{1}{2}$ " D, assembled as one unit.
 *Using a 50 Ω noninductive load.



NEW Heathkit 40 Watt 2-Meter Amplifier

69⁹⁵

NO MONEY DOWN

Boost your mobile output to 40 watts (nominal), while pulling a maximum of 7 amps from your car's 12-volt battery. Mount anywhere it's convenient — in the trunk or under dash-board. Use it with the HW-202 or with any 2-meter exciter delivering 5-15 watts drive. An internal antenna relay and sensing circuitry provide automatic transmit-receive switching. The solid-state design features rugged, emitter-ballasted transistors, combined with a highly efficient heat sink. Tuned input/output circuits provide a low spurious content yet cover any 1.5 MHz segment of the 2-meter band without readjustment. All components mount on one circuit board for easy 4-hr. assembly. Align it with either a VOM or VTVM. The manual shows you how. 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**

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.

Heathkit RF Load/Wattmeter

NEW

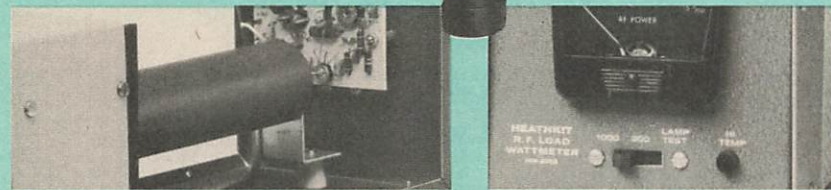
50-Ohm Non-Inductive Load — with less than 1.2:1 SWR for frequencies of 1.8 to 30 MHz

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. Circuit board design and famous Heathkit check-by-step instructions make the HM-2103 an enjoyable one-evening project. Put this handy new Heathkit accessory in your ham shack, now.

59⁹⁵
NO MONEY DOWN



Rugged 50-ohm non-inductive air-cooled load resistor eliminates need for oil coolant in the HM-2103.

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

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

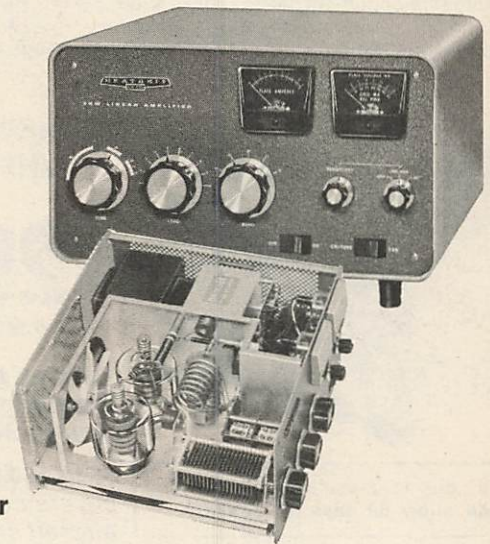
HM-2103 SPECIFICATIONS — Frequency Range: 1.8 to 30 MHz. Wattmeter Range: 0-200 and 0-1000. Wattmeter Accuracy: $\pm 10\%$ of full-scale reading. Power Rating: 175 watts continuous, 1000 watts maximum. Overload Indication: Thermal switch activated (requires 9 volt battery, NEDA #1604). SWR: Less than 1.2:1. Load Type: Noninductive. Load Impedance: 50 ohms nominal. Connectors: UHF type SO-239. Dimensions: 6" H x 5 3/8" W x 13 3/4" D.

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 plus 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 1/4" H x 14 7/8" W x 14 1/2" D.



Order your Digital Frequency Display along with a Heathkit SB-102 Transceiver, HW-101 Transceiver, or SB-303 Receiver and pay only 149.95 for the SB-650 . . . a \$30 saving!

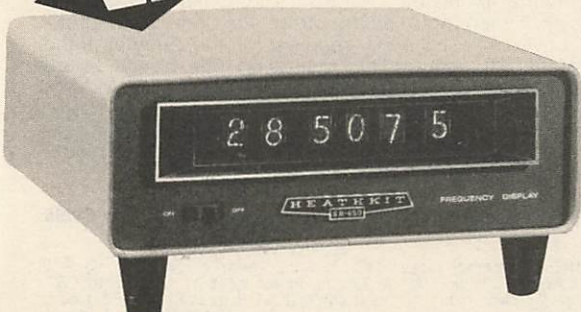
Heathkit Digital Frequency Display

Counts the three different frequencies produced in your receiver, then computes and displays operational frequency to within 100 Hz accuracy. Six bright digital read-out 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, 9 lbs., mailable **179.95**
With combination order (see above) only **149.95**

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 ± 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 uV 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.

SAVE \$30

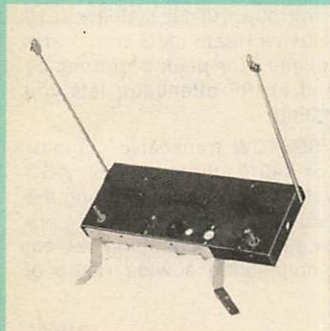


Heathkit SB-102 80-10 Meter Transceiver

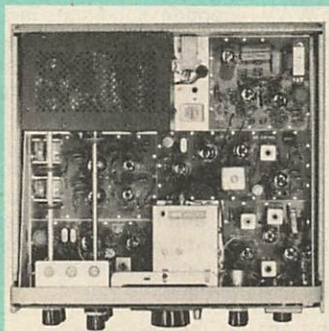
385⁰⁰
NO MONEY DOWN



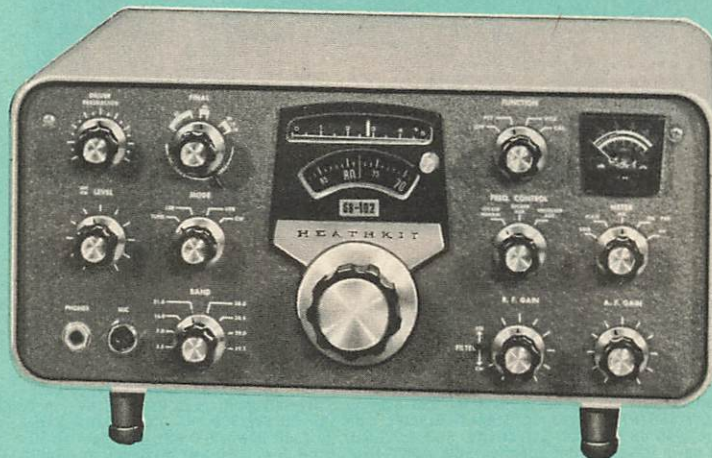
Order your SB-102 along with the Heathkit SB-650 Digital Frequency Display and save \$30! See details on page 34.



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



Top View—Circuit board-wiring harness construction for greater reliability and easier assembly.



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 Preselector; 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 3/8" 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: 6.3 VAC @ 11 amps; 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 3/8" L x 2 3/8" D. All voltages referenced at 13 VDC.

SAVE \$30

Order your SB-303 along with a Heathkit SB-650 Digital Frequency Display and save \$30! See details on page 34.



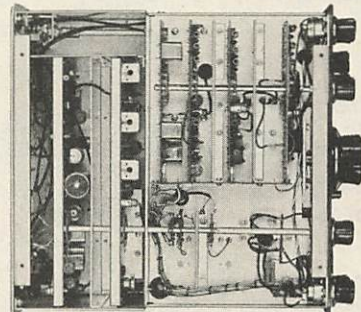
Our finest SSB receiver lets you work the world for a low kit price 319⁹⁵

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 warmup, 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.

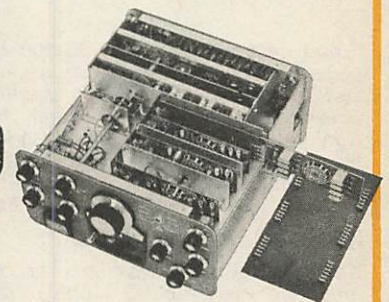
Other standard features are complete SSB/CW transceive compatibility with the famous Heathkit "400" or "401"; three-position AGC (off, fast, slow); 25 kHz and 100 kHz crystal calibrator for spotting the new subbands; antenna & power connections for up to two VHF converters, with front panel switch eliminating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

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 uV for 10 dB S+N/N for SSB operation. **Overall gain:** Less than 1.5 uV 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 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 uV 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:** 6⁵/₈" H x 12¹/₄" W x 13¹/₄" D. **Overall Dimensions** (with knobs & feet installed): 7¹/₈" H x 12¹/₄" W x 14¹/₄" D.

- Kit SB-303, 21 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



Plug-in bandswitch, power supply and IF/audio amplifier circuit boards mount easily and conveniently on the bottom of the chassis.



Exclusive Heath extender boards allow easy Switch-Board and circuit board access for in-circuit voltage and resistance measurements.



299⁹⁵
NO MONEY DOWN

Heathkit SB-401 SSB Transmitter

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 (10-15 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; 14-12.5; 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 ±3 dB. **Power requirements:** 80 W STBY, 260 W key down @ 120/240 VAC, 50/60 Hz. **Dimensions:** 6⁵/₈" H x 14⁷/₈" W x 13³/₄" D.



19⁹⁵
NO MONEY DOWN

Heathkit External Speaker

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 6¹/₂" H x 10" W x 10¹/₂" D.

Kit SB-600, 7 lbs., mailable 19.95



Ham desk mike

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., mailable ... 29.95

Heathkit SB-200 . . . thousands in use worldwide

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., mailable 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, 0-1000 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 $\frac{5}{8}$ " H x 14 $\frac{7}{8}$ " W x 13 $\frac{3}{8}$ " D.



229⁹⁵
NO MONEY DOWN

Heathkit Signal Monitor

Gives accurate display of transmitted and received AM, CW, SSB and RTTY signals. Operates 160-6 meters, 15 W — 1 kW. Shows signal envelope, AF and RF trapezoid patterns. Grey cabinet measures 6 $\frac{5}{8}$ " H x 10" W x 11 $\frac{1}{8}$ " D.

Kit SB-610, 14 lbs., mailable 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 $\frac{5}{8}$ " H x 10" W x 10 $\frac{1}{2}$ " D.

Kit SB-620, 15 lbs., mailable 129.95

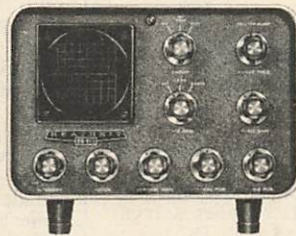
Heathkit Station Console

Four control-monitor units in one. Has 24-hour clock with digital read-out; 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 $\frac{5}{8}$ " H x 10" W x 11 $\frac{1}{8}$ " D.

Kit SB-630, 10 lbs., mailable 89.95

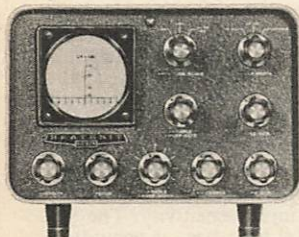
89⁹⁵

NO MONEY DOWN



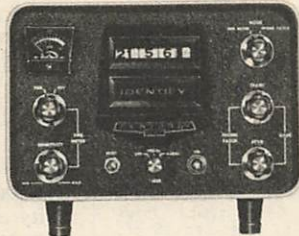
129⁹⁵

NO MONEY DOWN



89⁹⁵

NO MONEY DOWN



(A) Wattmeter/SWR bridge

Two switch-selected ranges measure RF output from 10-200 and 100-2000 W . . . built-in SWR capability for proper tune-up, 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 S0-239. Dimensions: 5 $\frac{1}{2}$ " H x 5 $\frac{1}{4}$ " W x 6 $\frac{1}{2}$ " D.

(B) "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., mailable 10.95

(C) 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

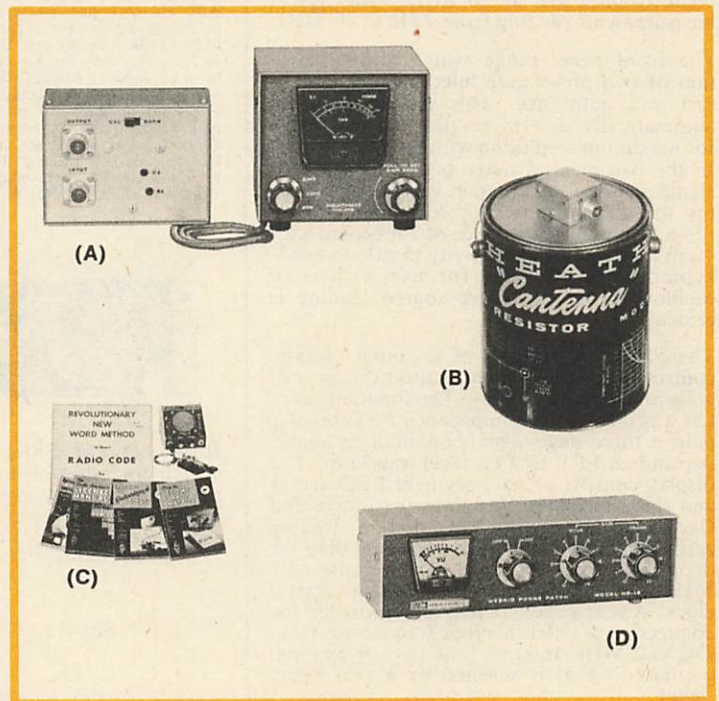
HDP-42, books only, 2 lbs., mailable 2.50

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

(D) 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 $\frac{5}{8}$ " H x 9 $\frac{1}{4}$ " W x 3 $\frac{5}{8}$ " D.

Kit HD-15, 3 lbs., mailable 24.95



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

HEATH

Schlumberger



NEW auto-ranging SM-118A frequency counter

- 5 Hz to 30 MHz range
- Auto-ranging for maximum resolution
- 10 mV guaranteed input sensitivity
- 6-digit LED display
- External oscillator input

The new Heath/Schlumberger SM-118A is a compact, lightweight, auto-ranging counter providing guaranteed frequency measurement from 5 Hz to 30 MHz with typical measurements ranging from 2 Hz to 40 MHz.

The front panel range switch allows selection of two preset gate intervals (1 s and 10 ms) and autorange. This unique function automatically determines the correct range for maximum resolution without overranging. In the two manual range positions, the least significant digit will remain valid even though the most significant digit is beyond display range. An input impedance of 1 megohm with 10 mV guaranteed sensitivity (5 mV to 8 mV typical) proves ideal for use with ± 10 oscilloscope probe where source loading is critical.

The SM-118A consists of an input section, control circuits, display, auto-ranging circuits and a power supply. The input circuitry has a protected high-impedance FET/bipolar pair, a three-stage signal-conditioning amplifier and an ECL to TTL level translator. The display consists of six 7-segment LED arrays and three incandescent lamps for Range and Overrange information. In addition, leading zero blanking is provided when less than six digits of data is displayed. A time base of 1 MHz is produced by a conventional crystal clock. A rear panel connector is provided for connection of external clock frequencies from DC to 2 MHz. Internal time base or external oscillator signal is selected by a rear panel switch.

The power supply operates from either 120 or 240 volts, 50/60 Hz. It supplies a regulated -12 volts DC and +5 volts DC to operate all circuitry.

Rugged compact design and exceptional accuracy combine to make the SM-118A an invaluable tool for the scientist, engineer, experimenter, hobbyist and service technician. While the instrument is excellent in the laboratory, it is rugged enough for use in the field. Low input power of 20 watts facilitates its use with a DC to AC power inverter.

Assembled SM-118A, 7 lbs.\$225.00

SM-118A SPECIFICATIONS: Frequency Range: 5 Hz to 30 MHz guaranteed; 2 Hz to 40 MHz typical. Input Sensitivity: 10 mV guaranteed; 5.5 to 7.5 mV typical. Input Impedance: 1 megohm shunted by less than 15 pF. Maximum Input Voltage: 200 V rms. Time Base: 1 MHz ± 0.1 Hz; ± 10 ppm maximum, 0° to 40° C, referenced to 25° C. Aging rate 1 part in 10⁶ per mo. **EXTERNAL OSCILLATOR** - Frequency: 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 s, MHz - 10 ms. Auto: kHz - 10 s, kHz - 1 s, MHz - 100 ms or MHz - 10 ms (dependent on incoming signal). Readout: Six 7-segment LED displays plus 3 incandescent lamps for Range and Overrange. Display Time: 200 ms plus gate interval. Power Requirements: 105-130 V, 50/60 Hz, 20 watts maximum. Dimensions: 10½" D x 7¼" W x 2¾" H. Net Weight: 4¾ lbs.



Rear view of SM-118A counter showing switch for selection of internal time base or external oscillator signal. A BNC connector is provided for connection of external clock frequencies.

High performance scientific



SM-110-series frequency counters

The Heath/Schlumberger SM-110-series is a group of three high performance frequency counters representing significant breakthroughs in terms of performance and features versus cost. All models share these features: separate inputs . . . 1 megohm and 50 ohm inputs for matching a wide range of signal sources. 7-segment LED arrays provide high-visibility readout up to seven digits plus overrange. All models will resolve down to a tenth of a Hertz. Leading zero blanking is standard. Each model uses a 1 MHz crystal time base, differing only in stability. An external clock input on all models is useful for extremely high precision work and allows frequency-ratio measurements. A front panel pushbutton gives instant reset, and the first new display is always correct . . . a definite convenience on longer time base settings.

The SM-110A provides 1 Hz to 200 MHz range with high input sensitivity. The standard 1 MHz crystal time base is accurate and stable enough for most general design and bench applications. A front panel switch allows fast selection of time bases: 10 seconds (Hz), 1 second (kHz), and 0.1 and 0.01 seconds (MHz).

The SM-110B also features high input sensitivity and 200 MHz range, together with a very high stability TCXO time base allowing very precise measurements. The SM-110B also incorporates remote programming inputs and outputs. Inputs allow total external manual or computer control of Range, Input Select, Reset and Count Inhibit, using standard TTL-level logic. Outputs are 7 digits of BCD information, Overrange flag, Decimal Points, Print Command and 5 V reference and ground to drive all remote programming inputs. The internal 5 V eliminates the need for an external TTL-level supply when in the remote programming mode.

The SM-110C is a high performance frequency counter with the features and capability to handle the most exacting measurements. It includes all the features of the A and B models above, including the high stability TCXO time base and remote programming capability. It also features a 600 MHz prescaler for the high frequency input for measurements into the UHF region. The prescaler can be switched in and out from the front panel.

Assembled SM-110A, 10 lbs., 200 MHz, standard time base, without remote programming capability\$495.00

Assembled SM-110B, 10 lbs., 200 MHz, high stability TCXO time base, remote programming included\$625.00

Assembled SM-110C, 11 lbs., 600 MHz, high stability TCXO time base, remote programming included\$795.00

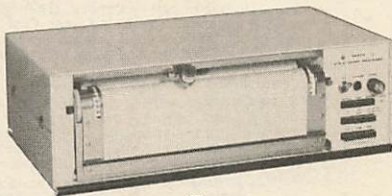
instrumentation at low cost



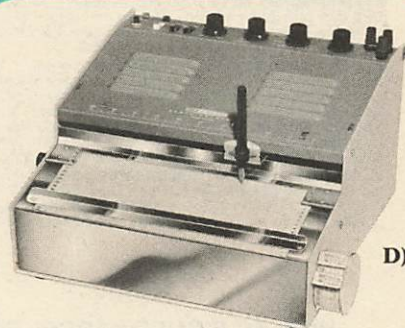
A)



B)



C)



D)



E)

A) 80 MHz frequency counter

A research-grade measurement tool. The SM-104A provides a range of 10 Hz to well over 80 MHz. Five-digit LED readout combined with the kHz/MHz switch provides 8 digit readout capability at the flip of a switch, with ± 1 Hz resolution \pm clock accuracy. Excellent input sensitivity: less than 100 mV to 50 MHz . . . just 250 mV to over 80 MHz, typically 50 mV to 100 MHz. The wide range FET input eliminates input attenuators. Input impedance is 1 megohm/15 pf for minimum circuit loading.

The precision temperature-compensated crystal oscillator provides excellent stability: aging rate is less than 1 part in 10^6 /year. Other features include five digits of TTL-compatible BCD output information available on the rear panel plus overrange, print command and ground.

Assembled SM-104A, 6 lbs. \$375.00

B) 5-digit counter — only \$295

The Heath/Schlumberger SM-105A is the world's best counter value. It offers a range of 10 Hz to well over 80 MHz direct counting with 5-digit LED readout. To read an unknown frequency less than 100 kHz, place the time base switch in the kHz position and read directly, to the nearest Hz. For a frequency greater than 100 kHz, the over-range indicator will flash . . . change the time base switch to the MHz position and read the frequency to the nearest kHz.

The SM-105A counts to 50 MHz with input levels as low as 100 mV . . . counts to over 80 MHz with only 250 mV input . . . typically 50 mV @ 100 MHz. Input impedance of 1 megohm/15 pf provides negligible circuit loading.

Excellent time base stability. The SM-105A uses a 1 MHz crystal oscillator, with overall

time base stability guaranteed to ± 10 ppm or less from 0 to 40 degrees C, referenced at 25 degrees C.

Assembled SM-105A, 6 lbs. \$295.00

C) Combine our mainframe & amplifier modules and you have a 23-speed, 1mV-500 V recorder for only \$595

The Heath/Schlumberger EU-205-11 Multi-speed Recorder Mainframe is basically a 1-volt span, research-quality, true potentiometric servo recorder. The basic Y-span of 1 volt provides maximum compatibility with a wide variety of preamplifiers and signal conditioning circuits that provide 1 volt outputs. Any of 23 chart rates from 30 inches/minute to 0.2 inches/hour can be selected using the six front panel pushbuttons.

A floating Y-input allows the recorder to be used for differential measurements. The unknown voltage at the input is compared to the internal variable reference voltage by a servo system that uses both AC and DC amplifiers and a DC motor in the servo loop. Solid-state choppers in the input amplifier alternately connect the input and reference signals to the input of a phase-lock AC amplifier, and demodulate the AC signal to a proportional DC signal. This special phase-lock amplifier and the combination of AC and DM amplifiers provides a very high rejection of input noise, allowing the recorder to operate accurately even under adverse laboratory conditions.

Assembled EU-205-11 1-volt Recorder Mainframe, including one blue pen and one roll of inch calibrated chart paper, 21 lbs. . . . \$420.00

Potentiometric Amplifier Module provides 1-volt output for any input between 1 mV and 500 V.

Assembled EU-200-01 Module, 8 lbs. \$175.00

D) Multi-speed servo chart recorder

The EU-20W offers a choice of 12 different chart speeds from 12 in./min. to 0.5 in./hr. The digitally driven stepper motor drive, synchronized with the AC line frequency, provides better than 1% accuracy on all ranges; repeatability is better than 0.2%.

Five factory calibrated sensitivity ranges are available: 10, 25, 50, 100 & 250 mV full scale, with all ranges having true potentiometric input. A Range Vernier control can be used to increase sensitivity for each range by a factor of approximately 3. The 3-terminal input permits operation without the chassis being common to the signal.

EU-20W, Multi-Speed Servo Chart Recorder, 26 lbs. \$330.00

E) High voltage power supply

The EU-42A is a regulated high-voltage supply suited for a wide range of applications which include photomultiplier tubes and high-voltage transducers. Output voltage can be set to any value between 150 and 1500 volts DC.

The output voltage can be programmed so a zero to +15 volt input from an operational amplifier or voltage source will provide the full range of supply output voltages.

Assembled EU-42A, 8 lbs. \$130.00

FREE

1973 Heath/Schlumberger Electronic Instrumentation Catalog

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City _____ State _____ Zip _____

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 Hill-top 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 Fee" 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	6
010-069	5	262-278	3	387	5	479-489	2	610-619	5	827	6
070-089	4	279	5	388	5	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	629-669	4	834	6
100-108	5	286-293	4	400-406	3	496-499	3	669-673	5	835-838	6
109	4	294-295	5	407-409	4			680-681	4	840-847	6
110-119	5	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	4	728-768	3		
129	5	304	4	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	541-548	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	800-803	5	961	7
164-165	3	350-352	4	465-466	1	550-566	4	804-805	6	962-976	8
166-199	4	354	5	467-469	2	567	5	806-807	5	977-979	7
		355-359	4	470-472	3	570-572	4	808-816	5	980-987	8
200-232	4	360-361	5	473	3	573-588	5	808-816	6	988-994	8
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 RFD 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	\$0.20
\$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.	\$0.65	\$0.70	\$0.75	\$0.80	\$0.90	\$1.00	\$1.05
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	8.80
38 lbs.	2.70	3.05	3.70	4.80	5.90	7.45	8.90
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	14.15
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	
1 lb.	\$0.55	\$0.57	\$0.60	\$0.62	\$0.65	\$.82
2 "	.60	.64	.69	.74	.80	1.14
3 "	.65	.71	.79	.86	.95	1.48
4 "	.70	.78	.88	.98	1.10	1.78
5 "	.75	.85	.98	1.10	1.25	2.10
6 "	.80	.92	1.07	1.22	1.40	2.42
7 "	.85	.99	1.17	1.34	1.55	2.74
8 "	.90	1.06	1.26	1.46	1.70	3.06
9 "	.95	1.13	1.36	1.58	1.85	3.38
10 "	1.00	1.20	1.45	1.70	2.00	3.70
11 "	1.05	1.27	1.55	1.82	2.15	4.02
12 "	1.10	1.34	1.64	1.94	2.30	4.34
13 "	1.15	1.41	1.74	2.06	2.45	4.66
14 "	1.20	1.48	1.83	2.18	2.60	4.98
15 "	1.25	1.55	1.93	2.30	2.75	5.30
16 "	1.30	1.62	2.02	2.42	2.90	5.62
17 "	1.35	1.69	2.12	2.54	3.05	5.94
18 "	1.40	1.76	2.21	2.66	3.20	6.26
19 "	1.45	1.83	2.31	2.78	3.35	6.58
20 "	1.50	1.90				

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 1½ %* 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.

<i>Account Balance Amount</i>	<i>[Periodic % Rate]</i>	<i>[Annual % Rate]</i>
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	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

Mr. Mrs. Miss (Please Print) NAME (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)



These NEW Heathkit Digital Multimeters save you up to 50%

Heathkit IM-1202 2½-Digit Multimeter

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

79⁹⁵
NO MONEY DOWN



State-of-the-art digital circuitry and readout. Rugged portability and versatility. Unbelievable kit-form savings. The new 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 uA 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. What's more, you'll never again tap a meter to double check that reading. And resolution is 10 mV, 10 uA and 1 ohm. The all solid-state design utilizes a pseudo memory 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 line 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 universally accepted banana jacks.

We've kept this kit simple. 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. Put this great little meter on your bench. It's more instrument for your dollar than you can find anywhere else.

Kit IM-1202, 6 lbs. **79.95**



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):** 7¾" H, 5¼" W x 3½" D.

Heathkit IM-102 3½-Digit Multimeter


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 uV. **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 100uA, 20k with 10uA, 200k with 10uA, 2M with 1uA, 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, ±1 digit @ 0°C. **Overrange capability:** 20% minimum. **AC VOLTMETER (Average responding, RMS calibrated) — 5 ranges:** 200mV, 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-5kHz, ±1.5% ±1 digit for 5kHz-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 40Hz-7.5 kHz on 1000V range. **DC AMMETER — 5 ranges:** 200uA, 2mA, 20mA, 200mA, 2A. **Voltage drop:** 0.2 V (nominal). **Accuracy:** With DC calibrator, ±0.5% ±1 digit for 2A, ±0.3% ±1 digit for other ranges. With lab calibration, ±0.25% ±1 digit for 200uA; ±0.2% ±1 digit for 2mA and 20mA; ±0.3% ±1 digit for 200mA; ±0.5% ±1 digit for 2A. **Resolution:** 100 nanoamperes (200uA range). **Overload protection:** 3 A, any range, by fuse and clamp diodes. **AC AMMETER (40Hz-10kHz) — 5 ranges:** 200uA, 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 200uA, ±0.7% ±1 digit on 2mA and 20mA; ±0.8% ±1 digit on 200 mA; ±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.



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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**

Heathkit IM-18 VTVM the perennial favorite



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 4½" 200 uA 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 & exceptional stability; 120/240 VAC wiring options. Check the specs. You'll see why the IM-18 remains a favorite of thousands. Order yours, today.

Kit IM-18, 5 lbs., mailable **29.95**
Assembled IMW-18, 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: 4½" 200 uA movement. Input resistance DC: 11 megohms (1 megohm in probe) on all ranges. Circuit: Balanced bridge (push-pull) using twin triode. Accuracy: DC ±3%, AC ±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: 7¾" H x 4¼" W x 4¼" D.

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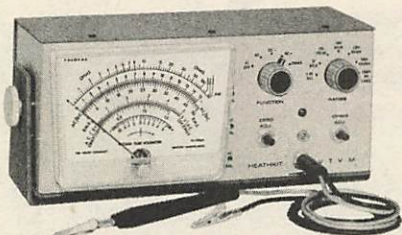
NO MONEY DOWN

Our most popular portable Volt-Ohm-Meter

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 VOLTMETER — Four ranges: 0-1, 10, 100, 1000 V full scale. Input resistance: 11 meg. on all ranges. Accuracy: ±3% of full scale. AC VOLTMETER — Four ranges: 0-1, 10, 100, 1000 V full scale. Input resistance: 1 meg. on all ranges. Accuracy: ±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: 4½" 200 uA, 100° movement. Dimensions: 5¾" H x 9¾" W x 9" D.



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 VOLTMETER — 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: ±3% of full scale. AC VOLTMETER — 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 μf measured at input terminals (200 μf 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 μA movement, polystyrene case. Probe: Combined AC-OHMS-DC switching probe, single jack input for probe and ground connections. Dividers: 1% precision type. Battery: 1½ V, "C" cell. Power Requirements: 120/240 VAC, 50-60 Hz, 10 W. Dimensions: 5" H x 12¼" W x 4¾" D.

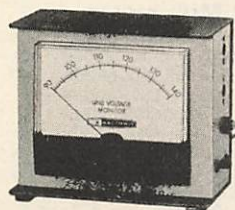
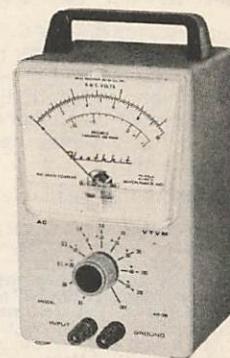
Laboratory AC VTVM

Extended accuracy in measuring low-level AC voltages. Calibrated scale for audio measurements; vu-type ballistic meter damping. Ideal for audio design and development, lab analysis, general servicing.

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 mW 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: 7¾" H x 4¼" W x 4¼" D.

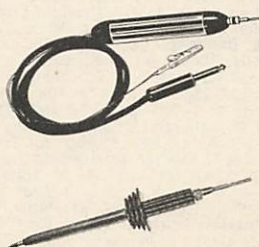


Heathkit Line Voltage Monitor

Gives constant check of AC line voltage. 2% accuracy when calibrated from source of known accuracy. 90-140 VAC range. 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): ±2% when calibrated with a known line voltage. Power requirements: 90-140 VAC, 50-60 Hz, 4.2 W. Dimensions: 5½" H x 6¼" W x 3" D.



Etched Circuit RF Probe — 11 meg input; for RF measurements 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 x100 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**

Every Heathkit product is backed 100% by our "plain-language" warranty

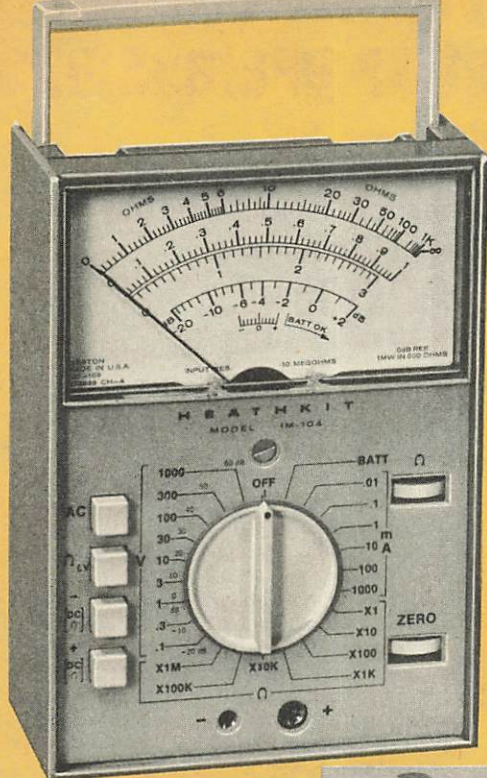


Easy to buy, build & carry-Heathkit FET VOM

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 new IM-104 has low-drift 1% precision metal film and wirewound resistors for exceptional stability. Dual FET meter amplifier circuitry for 10 megohm input impedance and instant operation. And there are 53 ranges on four scales. Nine DCV ACV ranges from 0.1V to 1000V. Six current ranges cover 0.001mA 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 4 1/2" 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.

Kit IM-104, 4 lbs., mailable **79.95**

IM-104 SPECIFICATIONS — DC VOLTMETER — 9 ranges: 0-0.1, 0.3, 1, 3, 10, 30, 100, 300, 1000V. Input resistance: 10 megohm. Accuracy: $\pm 2\%$ 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: $\pm 3\%$ of full scale (meter in horizontal position; 60 Hz sine wave). Response: Average value of 1/2 sine wave. Scale calibrated to indicate rms. Frequency response: 20 Hz to 20 kHz $\pm 3\%$, 20 Hz to 50 kHz $\pm 5\%$ on 0.1 to 30 V. 20 Hz to 10 kHz $\pm 3\%$, 20 Hz to 20 kHz $\pm 5\%$ on 100 and 300 V. 20 Hz to 1.0 kHz $\pm 3\%$, 20 Hz to 2.5 kHz $\pm 5\%$ on 1000 V. **DC MILLIAMMETER — 6 ranges:** 0-0.01, 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: $\pm 2\%$ on 0.01 to 100, $\pm 3\%$ 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, 0.350 on 1000 V. Insertion resistance: Voltage drop divided by full scale. Accuracy: $\pm 3\%$ on 0.01 to 100, $\pm 4\%$ on 1000. (Meter in horizontal position; 60 Hz sine waves) Response: Average value of 1/2 sine wave (DC current must be negligible). Scale calibrated to include rms. Frequency response: 20 Hz to 5 kHz $\pm 3\%$ on 0.01, 20 Hz to 20 kHz $\pm 3\%$ on 0.1, 20 Hz to 50 kHz $\pm 3\%$ on 1 to 1000. **OHMMETER — 7 ranges:** Rx1 (10 ohm center scale), Rx10, Rx100, Rx1K, Rx10K, Rx100K, Rx1M. Accuracy: $\pm 3\%$ of arc on x1, $\pm 2\%$ on x10 to x1M. Test voltage (nominal): 1.55 V on -DC/ohm and -DC/ohm, 0.085 V on ohm LV. **DB RANGE — 9 ranges** (0 dB = 1 mW into 600 ohm): -40 to -18, -30 to -8, -20 to +2, -10 to +12, 0 to +22, +10 to +32, +20 to +42, +30 to +52, +40 to +62. Accuracy: ± 3 dB @ -20 dB to ± 0.3 dB @ +2B. Voltage dividers: 1% precision metal-film resistors. Meter: 4 1/2", 100 uA, 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 pushbutton switch for AC, ohm LV, -DC/ohm, +DC/ohm. Meter temperature coefficient: Maximum of $\pm 0.2\%$ or $\pm 0.2^\circ$ of arc per $^\circ$ C over range of 15 to 35 $^\circ$ C. Operating temperature: 0 to 50 $^\circ$ C. Storage temperature (less batteries): -40 to +80 $^\circ$ C. Batteries: 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.



79.95 NO MONEY DOWN

High-impact Lexan case with self-storing handle. A 95° wide-angle viewing area provides high resolution. Fuse is in-line with input connector for extra protection and convenience. Red and black test leads included with kit.



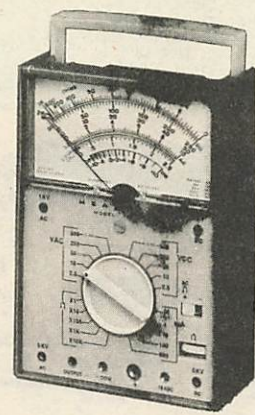
Field Effect Transistor circuitry provides 10 megohm input impedance and instant operation.

The popular IM-105 general purpose VOM

It's an easy, enjoyable one-evening kit — build-up two modular circuit boards and you have it — and you'll be delighted with the results. 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. 95° wide viewing area provides high resolution. Fuse in-line with the input connector is removable from front for extra convenience. Other professional features include calibrating controls, DC polarity reversal switch, ohms zero adjustment by front thumbwheel, self-storing handle. For one of the most versatile meters you can buy, order your new IM-105 now.

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

47.95 NO MONEY DOWN



IM-105 SPECIFICATIONS — DC VOLTAGE RANGES — 0.25, 2.5, 10, 50, 250, 500, 1000 & 5000 V full scale. Accuracy: $\pm 3\%$ of full scale. Input resistance: 20,000 ohms/V. AC VOLTAGE RANGES — 2.5, 10, 50, 250, 500, 1000 & 5000 V full scale. Accuracy: $\pm 4\%$ of full scale. Input resistance: 5000 ohms/V. Input capacity: Less than 20 pF. Frequency response: 2.5, 10 & 50 V ranges: $\pm 5\%$, 10 Hz to 100 kHz; 250, 500 V ranges: $\pm 5\%$, 10 Hz to 50 kHz. DC CURRENT RANGES — 0.05, 1.0, 10, 100, 500 mA & 10 A full scale. Accuracy: $\pm 3\%$ of full scale. Voltage drop: Approximately 0.25 V at full scale. RESISTANCE RANGES — x1 (20 center scale), x10, x100, x1k. Accuracy: ± 3 degrees of arc. Source voltage: x1 through x1k ranges: 1.5V, x10k range: 15 V. DECIBEL RANGES: (0 dB = 1 mW in 600 ohms) -10 to +50 dB. GENERAL — Voltage dividers: $\pm 1\%$ metal film resistors on most ranges. Meter: 4 1/2", 50 uA, ruggedized, taut-band movement. Meter protection: Combined fuse and diode overload protection. Meter temperature coefficient: 15 to 35 $^\circ$ C, $\pm 0.1\%$ (or 0.1 degree of arc) per degree C. Operating temperature range: 0-55 $^\circ$ C. Batteries (not supplied): One 1.5 V "D" cell (NEDA #14); one 15 V (NEDA #20B). Dimensions: 7" H x 5" W x 2 1/4" D. Test Leads: Supplied.

Solid-state volt-ohm meter

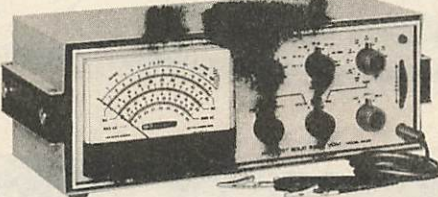
52.50 NO MONEY DOWN



Wide range of scales; battery or line operation; easy assembly. 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: $\pm 3\%$ of full scale. **AC VOLTMETER — 8 Ranges:** 0.5, 1.5, 5, 15, 50, 150, 500, 1500 V. Input resistance: 1 megohm. Accuracy: $\pm 5\%$ of full scale. **OHMMETER — 7 Ranges:** x1 (10 ohm center scale), x10, x100, x1k, x10k, x100k, 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 uA (100° movement). Dimensions: 5 7/8" H x 16 3/8" W x 7 3/4" D.



Deluxe solid-state Hi-Z volt-ohm meter

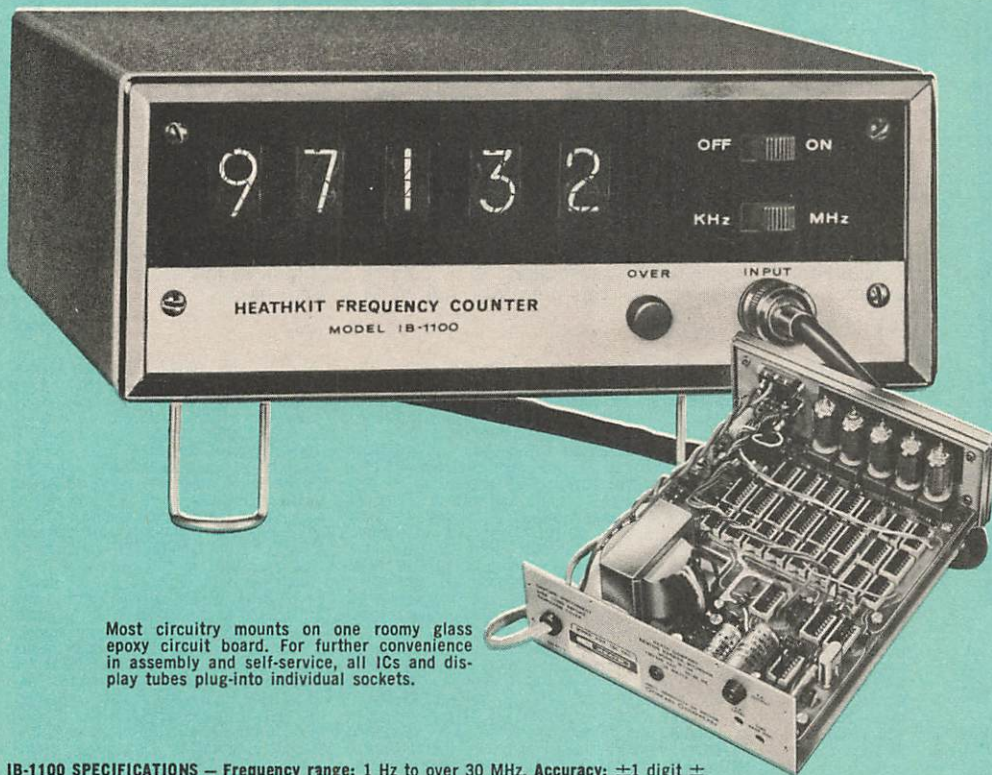
85.00 NO MONEY DOWN

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: $\pm 3\%$ of full scale. **DC MILLIAMMETER — 11 Ranges:** 0-0.015, .05, .15, .5, 1.5, 5, 15, 50, 150, 500, 1500 mA full scale. Input resistance: 0.10 ohm (1500 mA). Accuracy: $\pm 4\%$ 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: $\pm 5\%$ of full scale. Frequency response: ± 2 dB, 10 Hz to 100 kHz. **AC MILLIAMMETER — 11 Ranges:** 0-0.015, .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 (.015 mA). Accuracy: $\pm 5\%$ 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 uA 100° movement. **Power supplies:** Battery operation; "C" cells. Line operation; Transformer operated 1/2 wave circuit, operable on either 120/240 VAC, 50/60 Hz. Dimensions: 5 1/2" H x 13 1/2" W x 6 1/4" D.

Heathkit Frequency Counters offer professional



Most circuitry mounts on one roomy glass epoxy circuit board. For further convenience in assembly and self-service, all ICs and display tubes plug-into individual sockets.

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. Maximum 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. Front panel: Power OFF-ON switch, Range MHz/kHz switch, and BNC Input connector. Ambient temperature 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" Hx7 1/4" Wx8 7/8" D.

30 MHz with 5-digit readout — your best buy ever in counters

169⁹⁵ NO MONEY DOWN

The new 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 IB-1100 goes together like a charm — about seven hours and you're finished. It's housed in a compact aluminum case with zinc diecast front panel, tinted viewing window, BNC input connector and bail feet for setting the counter at a convenient viewing angle. 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



89⁹⁵ NO MONEY DOWN

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 nanoseconds. Fall Time: 10 nanoseconds; 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).

Extend your counter's range to 175 MHz

You can assemble a Heathkit IB-102 scaler in one or two evenings and extend the range of virtually any counter to 175 MHz. In most cases you'll get improved sensitivity across all ranges too. At 100 MHz, for example, 50 mV maximum is all that's needed to trigger. It's ideal for HF & VHF work, two-way radio repair, hams and CB, audio equipment, RF design and R & D.

The IB-102 will divide input frequencies from 2 MHz to 175 MHz with the scaled output fed to any compatible frequency 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. Once the division ratio is selected, just adjust the sensitivity control for a peak meter reading in the green portion of the scale, indicating an input level sufficient to obtain proper results. 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. Add 175 MHz measurement capability to your bench . . . order your new IB-102 scaler today.

Kit IB-102, 8 lbs., mailable 89.95

features and convenience at kit-form savings

Heathkit IB-1102 reads to
120 MHz in 8 digits

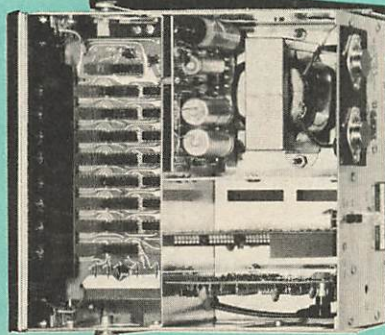
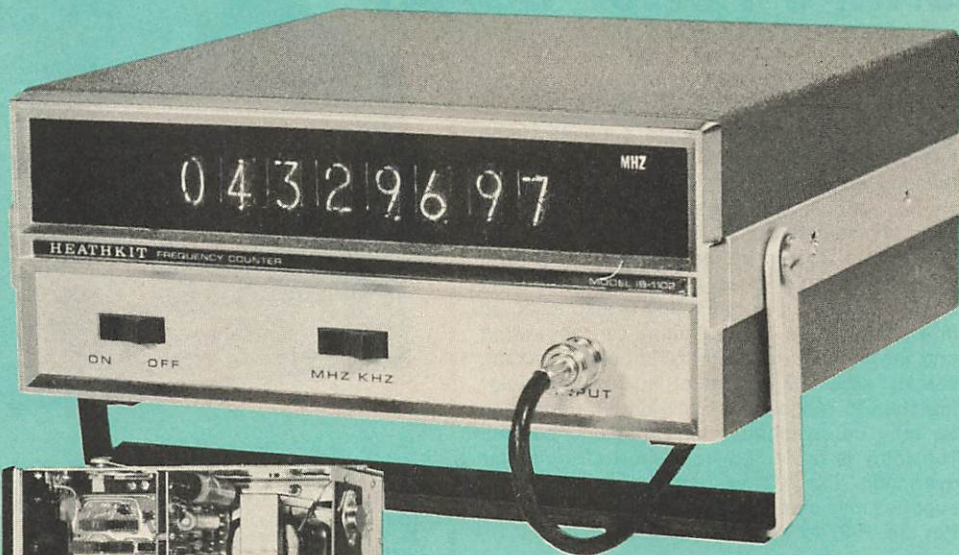
299⁹⁵

NO MONEY DOWN

Our finest frequency counter. The Heathkit IB-1102 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 100 MHz and 125 mV. above. It will accept inputs up to 120 MHz without damage to the instrument. The time base crystal is a temperature compensated TCXO offering ± 1 ppm stability from $+10^\circ$ to $+40^\circ\text{C}$ and 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.

Kit IB-1102, 12 lbs., mailable299.95



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.

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: 45 mV rms to 80 MHz, 50 mV to 100 MHz, and 125 mV to 120 MHz. (Typical response of input amplifier.) Impedance: 1 megohm in parallel with 15 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/year. 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: 1000 Ω . 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: 8 $\frac{1}{2}$ " W x 3 $\frac{3}{4}$ " H x 9 $\frac{1}{4}$ " D.

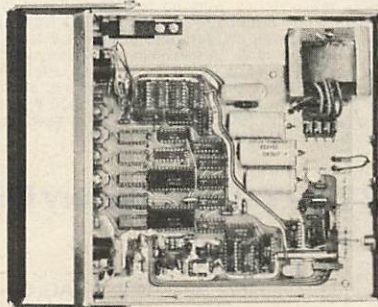
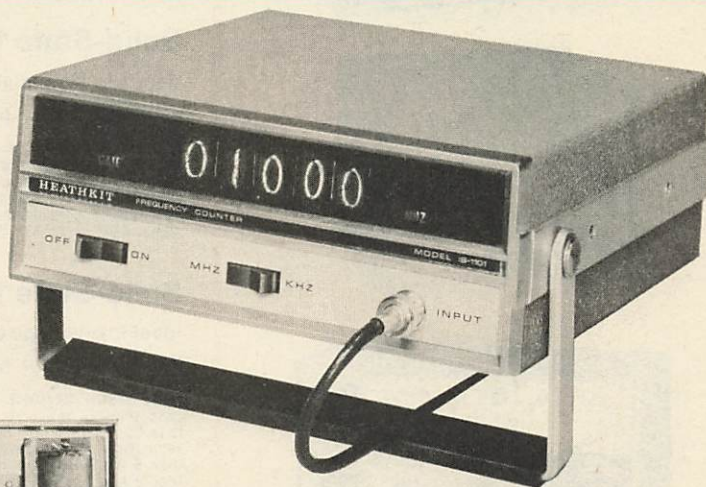
Heathkit 100 MHz Counter with 5-digit resolution

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 . Housed in a lightweight, compact aluminum case with zinc-diecast front panel, tinted viewing window, BNC input connectors and tilt/stand handle.

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

229⁹⁵

NO MONEY DOWN



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

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:** 140V rms at 400Hz 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 $\frac{3}{8}$ " H x 8 $\frac{1}{4}$ " W x 9" D.

Heathkit Solid-State 0.5-50 VDC Regulated Low Voltage Power Supply

One of the finest low voltage supplies Heath has ever offered. Versatility and value are the reasons so many IP-27 supplies are used in shops, schools, and labs. 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**



IP-27 SPECIFICATIONS — Input: 120/240 VAC, 50/60 Hz; 135 W at full load (50 V, 1.5A). Output: 0.5-50 VDC; 1.5 amps max. DC. Load regulation: ± 15 mV, can be adjusted for no change. Line regulation: For a 10% change in line voltage, less than .05 change. Ripple & noise: Less than 250 μ V. Transient response: Less than 25 μ sec. Output impedance: Less than .075 ohms from DC to 10 kHz, less than .3 ohms 10 kHz & up. Overload protection: Current limiter & relay. Meter: 3 1/2", 1 mA, 50 ohm. Current ranges: 50 mA, 150 mA, 500 mA, 1.5 A. Voltage ranges: 5V, 15V, 50V. Front panel controls: On/Off Coarse voltage switch, Fine voltage adjust, Current range switch, Current limit adjust, Meter rocker switch, Reset Standby toggle switch. Output terminals: (3), plus (+), minus (-), chassis ground. Dimensions: 5 1/8" H x 13 1/4" W x 9" D.

79⁹⁵
 NO MONEY
 DOWN

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: 5 1/8" H x 13 1/4" W x 11" D.

Solid-State 1-15 VDC Regulated Supply

Versatile solid-state applications.

Kit IP-18, 5 lbs., mailable **21.95**

IP-18 SPECIFICATIONS — Voltage output: 1-15 VDC, continuously adjustable. Load regulations: Less than 50 mV variation from no load to full load. Line regulation: Less than 50 mV 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: 4 3/8" H x 5 1/2" W x 5 3/4" D. Programming: AC or DC, 5000 ohm input resistance.

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 μ s. 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: 6 1/2" H x 10 3/4" W x 4 3/8" D. overall.

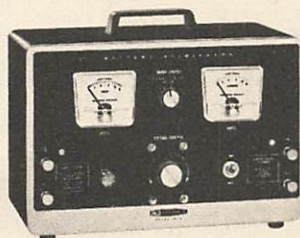
6 & 12 VDC Variable Battery Eliminator

Doubles as a battery charger.

Kit IP-12, 18 lbs., mailable **62.95**

Export model available for 115/230 VAC, 50-60 Hz. Write for prices.

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: 8 1/2" H x 13" W x 7" D.



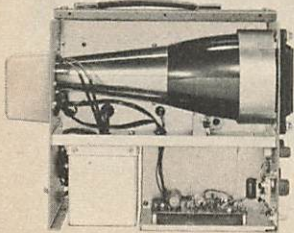
A 5" Solid-State Scope at famous Heathkit savings



If you're looking for a truly outstanding general purpose scope at a sensible price, you need look no farther than the IO-102. A wide band response of DC-5 MHz, fast 80 ns rise time, and a high 30 mV/cm input sensitivity make the Heathkit IO-102 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 for 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. One volt peak-to-peak output provides signal for determination of an unknown voltage. Type 5DEP1 CRT has 6x10 cm ruled graticule and removable bezel for standard camera mount. The transformer-operated supply can be wired for 120 or 240 VAC. Styled in beige and brown cabinet with easy-access side panels. An outstanding general purpose scope value, the IO-102 gains even further versatility when used in combination with the ID-101 electronic switch to obtain full two-channel capability.

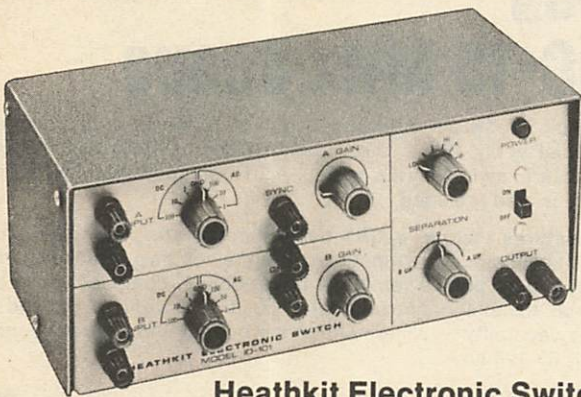
Kit IO-102, 31 lbs., mailable **119.95**
 Assembled IO-102, 31 lbs., mailable **179.95**
 Assembled PKW-101, 1 megohm scope probe, 1 lb., mailable .. **19.95**

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. 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.



119⁹⁵
 NO MONEY DOWN

Wide open layout makes the IO-102 a simple kit to build. The removable side panels make this scope ideal for classroom instruction.



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 frequency. A front-panel mode switch selects one of four frequencies offering the most favorable presentation on the scope — or a single A or B input trace. Can be used with any general purpose scope and many specialized instruments. 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 $\pm 1\frac{1}{2}$ — 3 dB frequency response, 10-times the bandwidth of other similarly priced units. Conventional binding posts permit fast hook-up, or the electronic switch can be left connected to scope at all times.

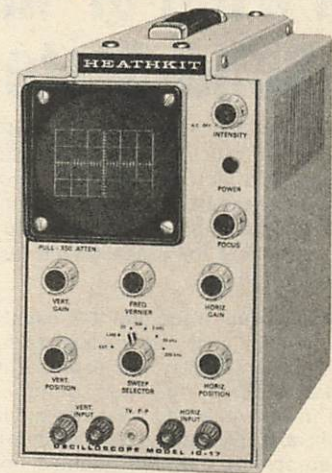
Kit ID-101, 6 lbs., mailable **39.95**

ID-101 SPECIFICATIONS — Signal frequency response: DC-5 MHz $\pm 1\frac{1}{2}$ dB, -3dB. 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 $\frac{3}{8}$ " D.

82⁵⁰

NO MONEY DOWN

Top Value in a 3" Heathkit Scope

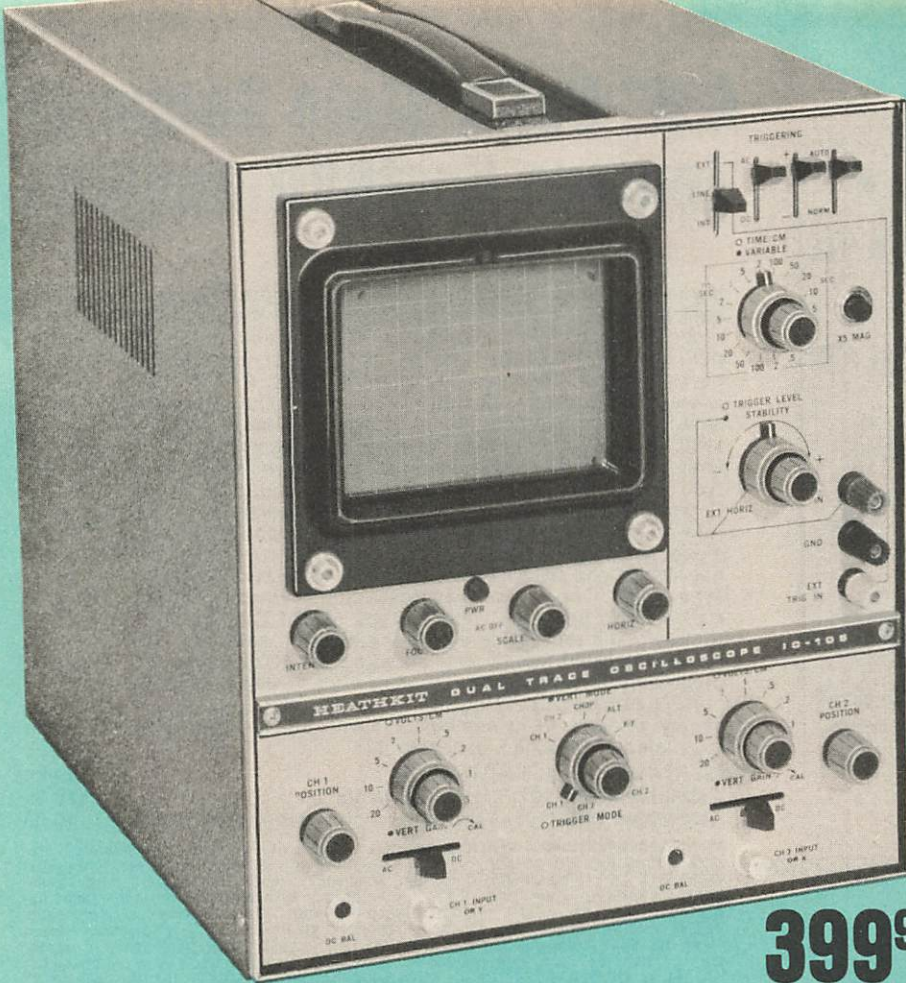


An outstanding dollar value, the IO-17 features wide bandwidth response, good sensitivity and stability for a broad range of general purpose applications.

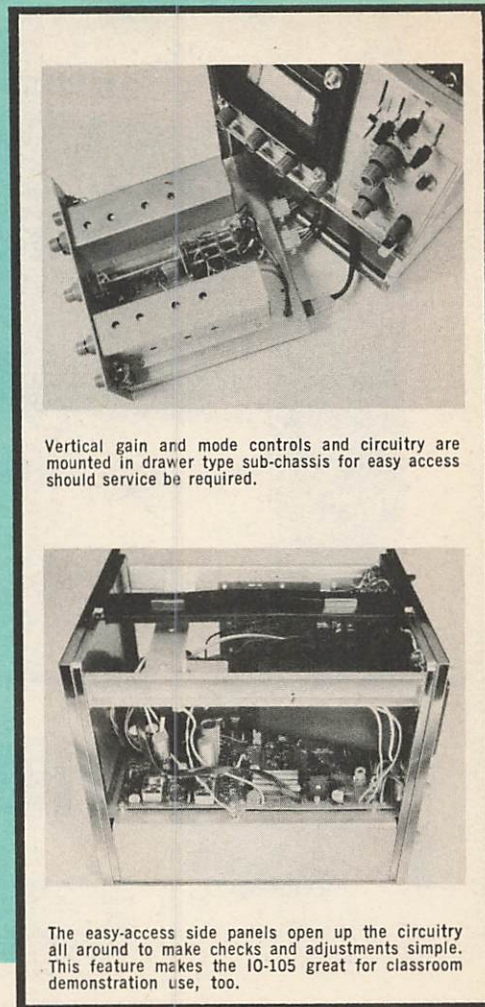
A favorite among TV service men for work in the shop and in the field. Schools find its blend of high performance and low cost ideal in tight equipment budget situations. And hobbyists of all kinds appreciate the IO-17's outstanding performance-per-dollar value — order yours today, and have it on your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

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: 30 mV 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.



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.

Save \$100 or more by building this Solid-State dual-trace DC-15 MHz Scope

Look to Heath for the most sophisticated kit-form oscilloscope you can buy. After all, our first Heathkit product was an incredibly successful scope. And as technology has grown since that time, so has our kit designing expertise. Today, with the Heathkit IO-105 kit and less than seven evenings of your time you have an uncompromising 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.

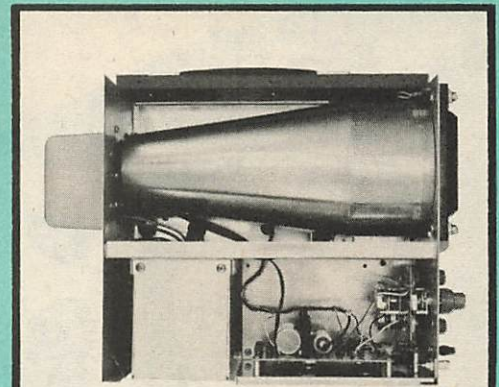
The convenient 18-position time base switch in a 1, 2, 5 sequence provides sweep rates from 100 ms/cm to 0.2 us/cm. The separate vernier control with a calibrated position gives you continuous control between settings, while a x5 magnifier switch allows detailed trace viewing. The DC-15 MHz bandwidth capability and 24 ns rise time make possible analysis of high frequency signals and transient wave-

forms. 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.

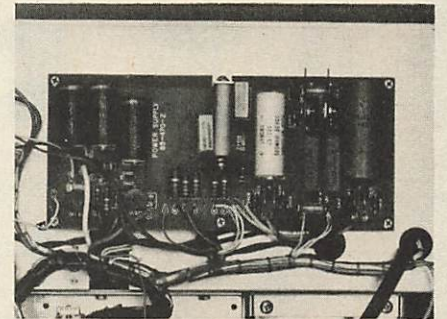
Other features include a CRT bezel incorporating standard camera mount dimensions, flush-mounted handle for easy stacking, easily-removable side panels for quick accessibility, compact 15-in. depth for bench installation instead of cart. If you want to expand your analysis capability — while holding the budget line — order your new Heathkit IO-105 now.

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 us/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 ¼" 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:** 12¾" H x 10½" W x 15" D. **Note:** Specification measured at 25° C with 120 VAC line voltage.



Easy-access cabinet features removable side panels — great for classroom demonstration.



Open-layout design and five printed circuit boards make assembly and maintenance easy.

229⁹⁵
NO MONEY DOWN

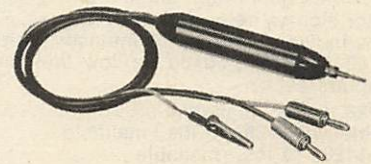
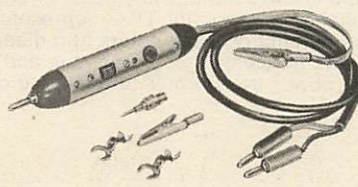
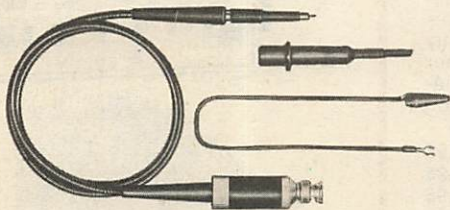
A Solid-State 10 MHz Scope at kit-form savings

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.

Accessory probes for your Heathkit Oscilloscope



High Frequency Compensated Scope Probe. Ideal for use with IO-103 and IO-105 scopes. Features 10 megohm input impedance shunted by 11.5pF; compensation for matching to any 1 megohm scope input shunted by 15-47 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; 3 $\frac{1}{2}$ ' long.

Assembled PKW-101, 1 lb., mailable **19.95**

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.

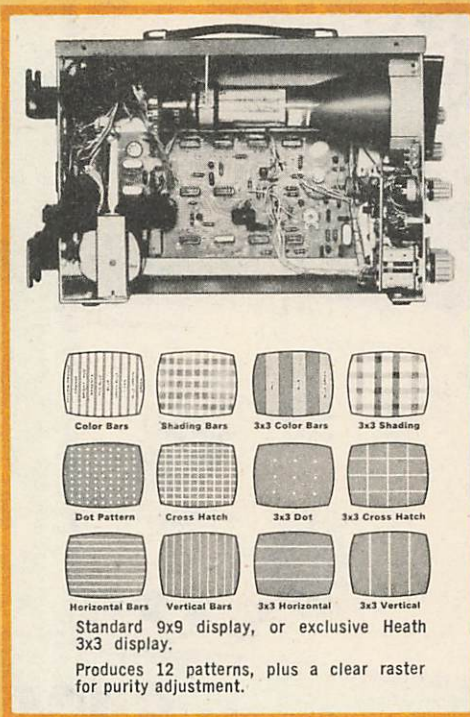
Kit 337-C, 1 lb., mailable **5.00**

Assembled 337-WC, 1 lb., mailable **6.50**



124⁹⁵
NO MONEY DOWN

Heathkit Vectorscope/ Color Generator



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. **Cross-hatch*:** 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.

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**

Heathkit Vectorscope and Color Generator "Separates"

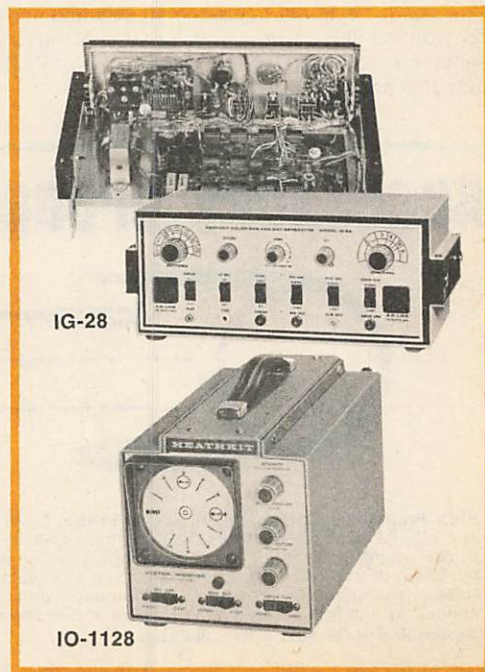
The Heathkit IG-28 and IGW-28 (assembled version) give you all the color bar/pattern generator capabilities of the IO-101 above. The reliable solid-state circuitry with 10 ICs assembles quickly and easily on two roomy boards. Has 12 patterns plus raster: dots, cross hatch, vertical and horizontal bars and shading bars 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.

The Heathkit IO-1128 is the exclusive 3-in. flat-face tube and associated circuitry from the Heathkit Vectorscope mounted in a separate cabinet. You can build the whole thing in a few hours. 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. Shows missing or weak colors at a glance. Other features include controls for intensity, vertical and horizontal position, focus and astigmatism. 120/240 VAC, 50/60 Hz, low flux leakage power transformer to eliminate disruption of TV under test.

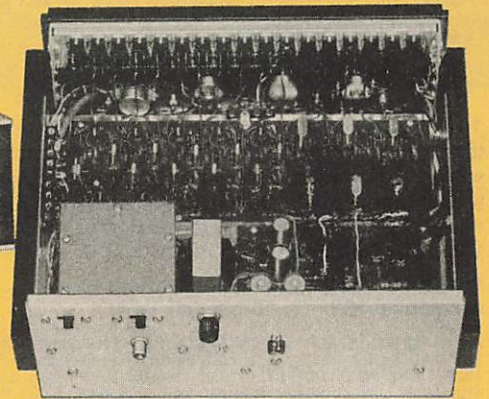
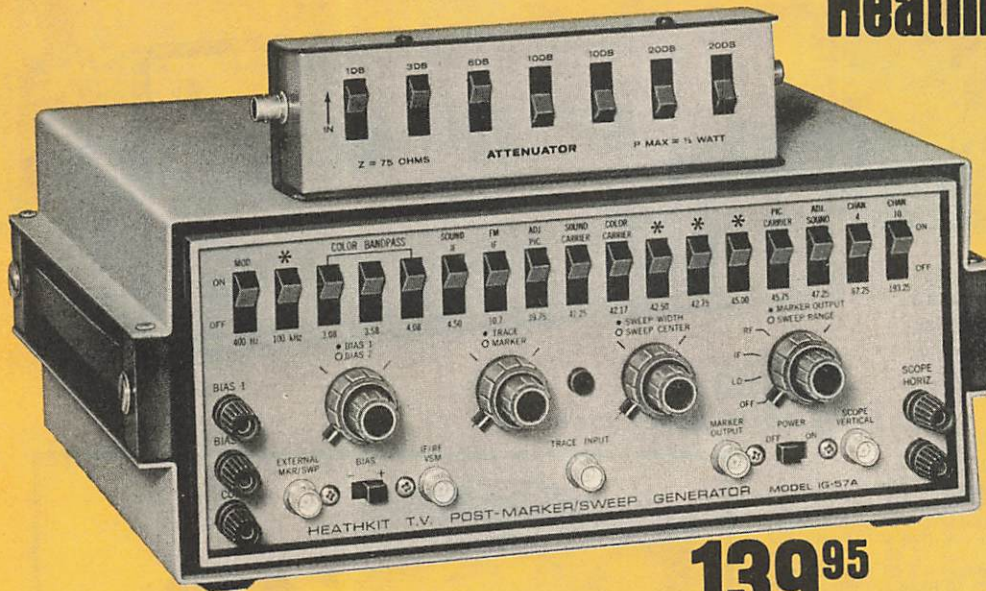
Kit IG-28, 8 lbs., mailable **79.95**
Assembled IGW-28, 10 lbs., mailable **114.95**
Kit IO-1128, 10 lbs., mailable **49.95**

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.

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:** 3RPIA, 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 Post-marker/ Sweep Generator



139⁹⁵
NO MONEY DOWN

Bench build this great solid-state instrument and count up the value-added features as you go. With its low initial cost, all-out performance and built-in self-service features it's a cut above the rest. Plus, the Heathkit IG-57A manual is a comprehensive course in alignment of color and b/w TV and FM IF. It's no wonder the Heathkit IG-57A post marker/sweep generator is the choice of major color TV manufacturers, and thousands of technicians and servicemen. They feel it's the fastest, most economical instrument on the market. 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 input. 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 band-

pass, VHF channels 4 & 10. Just the right size for the job. The IG-57A measures only 13 $\frac{3}{8}$ " W x 5 $\frac{1}{2}$ " H x 12" D — doesn't waste valuable bench space. The front panel controls are easy to read, easy to use. There are no gadgets, gimmicks or graphs to distract you. Put this new total capability Marker/Generator on your bench now and discover what thousands of servicemen already know — that excellent alignment facilities don't have to be expensive. Order your Heathkit IG-57A today. It utilizes quick-disconnect BNC connectors and comes complete with four coaxial cables, four test leads and a demodulation probe.

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

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.

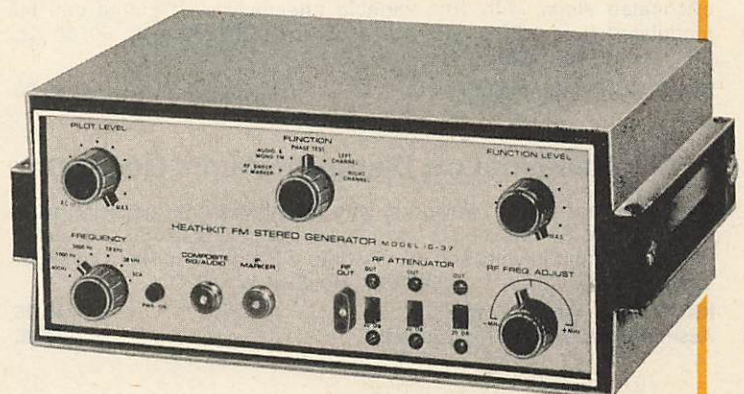
Heathkit FM Stereo Generator ... 79.95

All the signals you need for fast, easy 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 & 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**

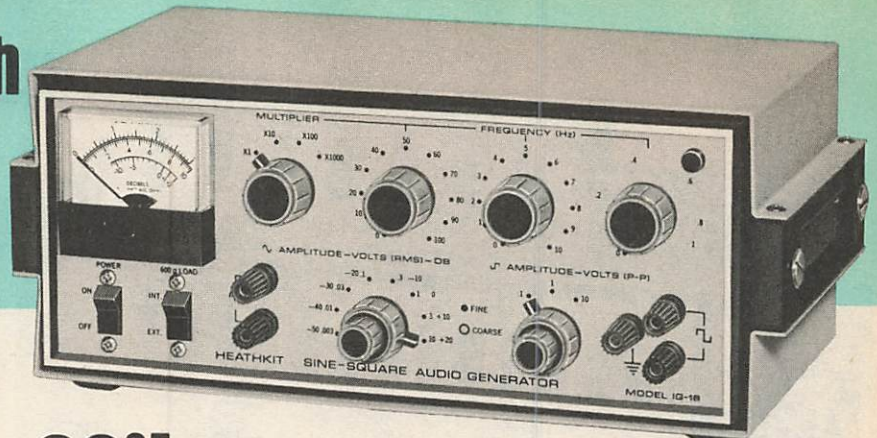
IG-37 SPECIFICATIONS — RF signal frequency: 100 MHz adjustable by approx. ± 2 MHz. Pilot modulating frequency: 19 kHz ± 2 Hz. FM modulation: Left channel (stereo),



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 $\frac{1}{2}$ " H x 13 $\frac{1}{2}$ " W x 9" D.

Build-up savings with Heathkit Test Gear

Heathkit Solid-State Sine-Square Wave Generator



69⁹⁵
NO MONEY DOWN

IG-18

1 Hz to 100 kHz sine wave output at 5% accuracy, less than 0.1% distortion from 10 Hz to 20 kHz. Square wave output from 5 Hz to 100 kHz, less than 50 ns rise time. Both outputs 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
Assembled IGW-18, 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 max into 600 ohm load. (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 V range: up to 220 ohm.

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 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



67⁵⁰
NO MONEY DOWN
IM-58

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

69⁹⁵
NO MONEY DOWN
IM-48



Heathkit Precision RF Generator

Adjustable to ±3% frequency calibration accuracy from 100 kHz to 30 MHz with RF output voltage adjustable from 100,000 uV 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

69⁹⁵
NO MONEY DOWN
IG-42



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

49⁹⁵
NO MONEY DOWN
IG-72



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

32⁹⁵
NO MONEY DOWN
IG-102



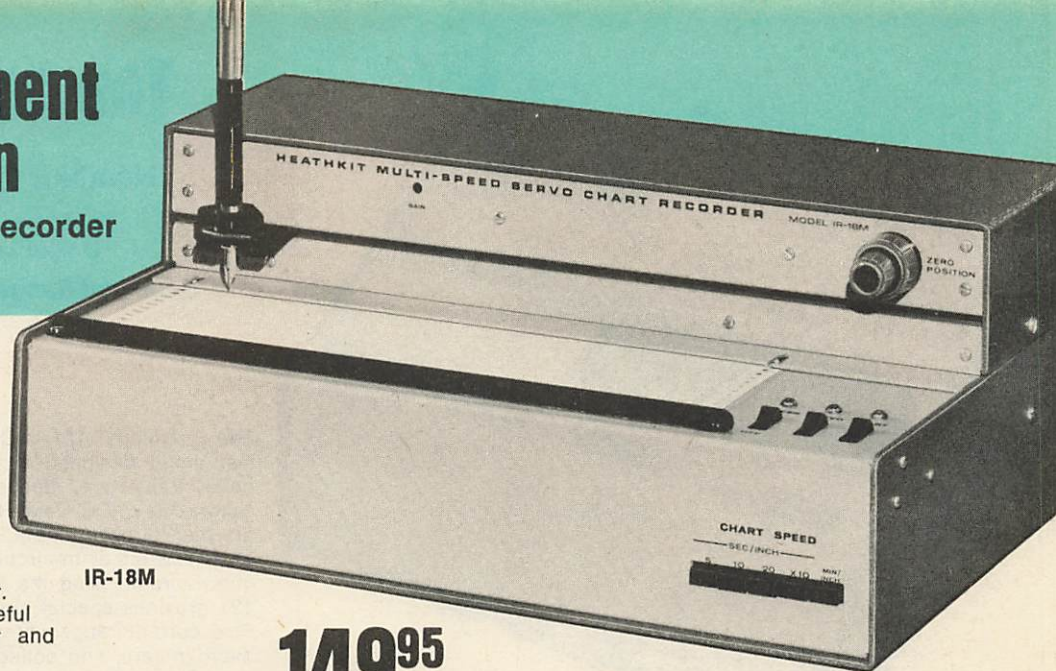
Kit-form equipment you can bank on

Heathkit 12-Speed 10" Chart Recorder

12 different chart speeds give the versatility you need for a wide variety of measurement problems. Fast push-button selection of all speeds from 5 seconds per inch to 200 minutes per inch. 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. The IR-18M can be used to measure and record any phenomena that varies with time by converting to the proper level of DC voltage. Applications include the measurement of temperature, velocity, light intensity, rpm, position and frequency. Put this low cost, high performance recorder to work for you now.

Kit IR-18M, 14 lbs., mailable **149.95**
IRA-18-1, 3 rolls chart paper (140 ft/roll), 5 lbs., mailable **9.95**



IR-18M

149⁹⁵
NO MONEY DOWN

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 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. Maximum recommended source resistance: 100 k ohms. Reference source: Zener regulated supply. Power requirements: 120/240 VAC, 60 Hz, 14 W or 120/240 VAC, 50 Hz, 16 W. Fuse: 1/4 amp slow-blow (120 VAC). Dimensions: 6" H x 15" W x 9 1/2" 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, 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 umho. Emission: rectifiers & diodes. Leakage: direct reading ohmmeter. Grid current, 1/4 uA 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.

72⁵⁰
NO MONEY DOWN



IT-17

199⁵⁰
NO MONEY DOWN



TT-1A

You build-in the savings

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 μ A and collector currents as high as 1 A



IT-121

49⁹⁵

NO MONEY DOWN

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, 1000 mA, and 1 A. Gm: 0 to 50,000 μ hos. Leakage measurements: Five ranges, 0 to 100 μ A, 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_{eb2} , 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 $9\frac{1}{8}$ " W x $8\frac{1}{8}$ " D.

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. Five current ranges provide leakage measurements as low as one microampere, and collector currents as high as one ampere. Push-button-type range, mode and function switches offer convenient and consistent operation.

Other convenience features are 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—orders yours today.

Kit IT-121, 6 lbs., mailable **49.95**

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 (Icbo, Iceo), 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**

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). $3\frac{3}{8}$ " W x $3\frac{3}{4}$ " D.

Kit IT-27, 2 lbs., mailable **6.95**

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 μ A. Tests diodes in or out for opens and shorts and identifies unknown leads. Matches and identifies NPN and PNP transistors. Can't harm circuits. Not for use with high power or switching transistors. $4\frac{1}{2}$ ", 200 μ A 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); Iceo (out-of-circuit only) — 0-5000 μ A; Isbo (out-of-circuit only) 0-5000 μ A diodes; forward or reverse current — 0-5000 μ A. 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).

Decade Resistance Box

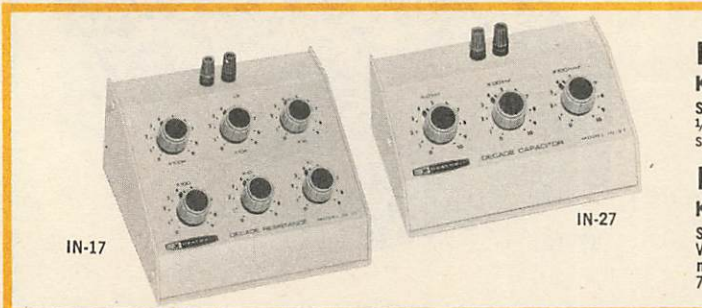
Kit IN-17, 4 lbs., mailable **29.95**

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 $6\frac{1}{8}$ " D.

Decade Capacitance Box

Kit IN-27, 3 lbs., mailable **19.95**

SPECIFICATIONS — Range: 100 μ F to 0.111 μ F increments of 100 μ F. Voltage rating: 350 VDC continuous; 500 VDC intermittent; 1000 VDC instantaneous test. Accuracy of incremental capacity: $\pm 1\%$. Stray capacitance: 10 to 15 μ F at terminals. Dimensions: 4" H x $7\frac{1}{8}$ " W x 5" D.



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Here are just a few of the many cost-saving Heath/Schlumberger instruments in the 1973 Catalog:



Programmable digital frequency counter ... 1 Hz to 600 MHz ... high stability ... BCD output ... \$795*



10 Hz to 80 MHz frequency counter ... 100 mV sensitivity ... stable 1 MHz time base ... BCD output ... \$450*



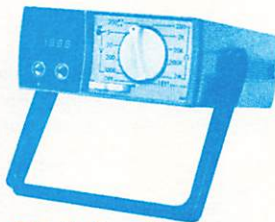
DC to 15 MHz dual-trace scope ... 50 mV/cm sensitivity ... 24 nsec rise-time ... X-Y display capability ... \$595*



Sine, square, triangle function generator ... 0.1 Hz to 1 MHz in 7 ranges ... adjustable DC offset ... built-in VCO ... \$245*



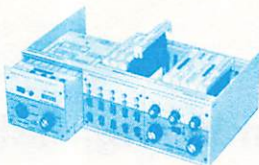
0-15 VDC power supply ... 35-750 mA adjustable current limiting ... output regulated to 0.02% ... \$65*



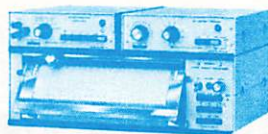
3 1/2 digit multimeter ... LSI circuitry ... auto polarity ... high accuracy and long-term stability ... \$285*



Mini-computer interface between any PDP-8 and any device that has BCD input, output or controls ... \$1250 complete*



A complete self-teaching computer logic training system for schools, researchers and engineers ... \$410*



Programmable strip chart recorder ... 23 chart speeds ... floating input ... 18 switch-selectable ranges ... \$675*

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30-day trial: Try any Heath/Schlumberger instrument for 30 days in your own lab. Just send us your purchase order stipulating that you would like the 30-day trial. If you find that the instrument does not suit your application, just return it within 30 days and pay shipping costs. If you keep it, we'll process your PO after the trial period and bill you. For more information, send for our new Electronic Instrumentation Catalog.

5-day factory service: Service on our instruments is now typically 5 days at the factory, and we're working to make it even faster.

One-year warranty: We will repair or replace any Heath/Schlumberger unit that does not meet published specs and is returned to us within one year of the date of purchase. All parts and labor are included in the warranty.

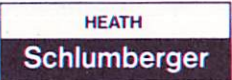
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Attention: Sales Manager

with Heathkit test gear

Heathkit Capacitor Checker

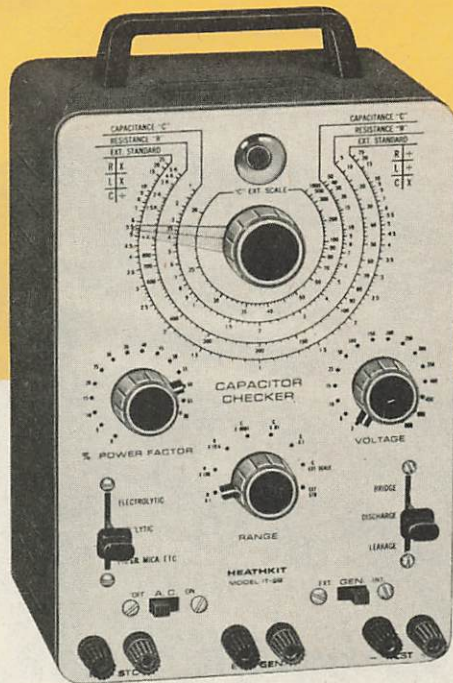
Direct reading scales — no involved calculations
Low bridge voltage — for safe testing of miniature electrolytics
Measures capacitance from 10 pF to 1000 uF — resistance from 5 ohms to 50 megohms

Fast, efficient and accurate, the Heathkit IT-28 Capacitor Checker gives you the capability for complete analysis of all capacitor types on direct-reading scales. Has low bridge voltage for safe testing of miniature electrolytics. 16 leakage testing voltages. Measures capacitance from 10 pF to 1,000 uF, resistance from 5 ohms to 50 megohms.

Compactor circuit measures L, C or R with external standard. Also has calibrated power factor control, "eye" tube null & 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 uF to .005 uF, .001 uF to .5 uF, .1 uF to 50 uF, 20 uF to 1000 uF. 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.



IT-28

39⁹⁵

NO MONEY DOWN

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 uF to 100 uF. 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 uF. 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

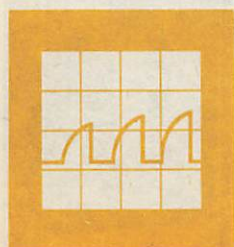


IT-12

IB-28

IN-37

IN-47



HEATHKIT TEST INSTRUMENTS ... OUTSTANDING VALUES

Quality components, careful engineering, and fast, easy assembly put high-performance instrumentation on your bench for a fraction of the cost of comparable wired units. Compare and you'll join the thousands who equip with Heathkit test instruments.



See page 42
for full details

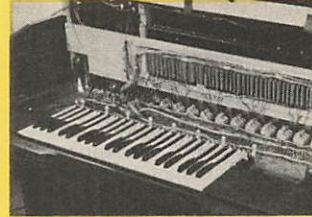
Heathkit/Thomas "Legato" —king of kit-form electronic organs

1495⁰⁰

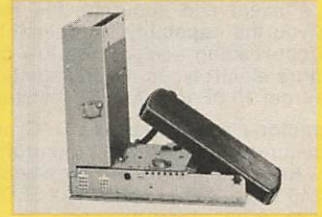
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Manual boards lift for easy access to circuitry



Two all-transistor amps deliver total 200 watts power



Leslie Speaker creates exciting liquid tremolo



Exclusive Color-Glo Keys let you play instantly

Exclusive Thomas Color-Glo keys — light up to show lettered keyboard, color coded for chords

Thomas Organ Course included — has you playing songs in minutes

Designed exclusively by famous Thomas Organ craftsmen, the Legato puts a universe of sound at your fingertips — at hundreds of dollars in savings over comparable organs. Now your whole family can enjoy building and playing this remarkably versatile musical instrument.

Offers 15 manual voices, four pedal voices — any or all at the flip of a tab. Solo has diapason, bass clarinet, trumpet, tibia on 16-ft. stops; English horn, oboe, violin, and tibia on 8-ft. stops; tibia on 4 and 2 ft. Accompaniment has diapason, saxophone, French horn, oboe horn and cello on 8 ft. Pedal offers diapason 16 ft.; major flute, bass clari-

net and string bass on 8 ft. You'll quickly learn a variety of voicing combinations — Spanish guitar, zither, bagpipes, calliope, etc. Musical moods from classical to hard rock, show tunes to religious music.

The separate solid-state amplifiers — one for the Leslie system, one for the main system deliver 200 watts of peak power. "Stereo" sound is possible with the two-speed Leslie plus the two 12-in. main speakers. You add voicing variety playing some voices through the Leslie, others through the main system. And the Leslie lets you create the liquid tremolo of the theater organ.

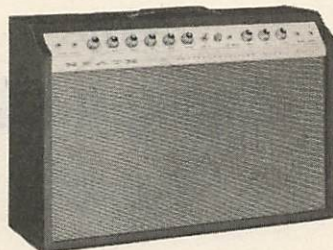
Other features include two 44-note overhanging keyboards; accompaniment manual range 8 ft. — F1 to C5; solo manual 16, 8, 4, and 2 ft. — F1 to C7; 25-note heel & toe pedalboard, range 16 and 8 ft. — C0 to C3; selective repeat percussion, selective attack percussion, keyboard & pedal sustain, variable vibrato, reverb. Stereo headphone jacks, luxurious walnut finish cabinet and bench. Kit includes 29.95-value Thomas Organ Course. Measures 47½" H x 47½" W x 25" D.

Kit TO-101,
282 lbs., Express/Frt. **1495.00**

Heathkit 25-watt Guitar Amp

All solid-state design delivers solid 25 watts EIA music power, 60 watts peak. Has 2 dual-input channels; double spring variable reverb and tremolo with variable rate and depth; 2 foot switches for reverb & tremolo; 2 heavy-duty 12" speakers. Sturdy black vinyl covered ¾" wood cabinet measures 28" W x 9" D x 19¼" H.

Kit TA-16, 48 lbs.,
Exp./Frt. **124.95**

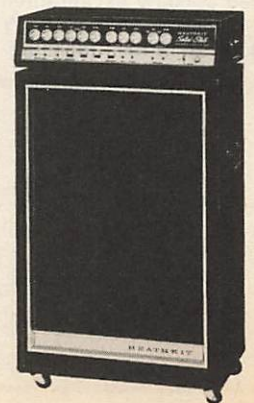


Amp-Speaker Combo

Gives you 120 watts of EIA music power, 240 watts peak. Has harmonic modifier for that "fuzzy" sound; brightness switch; tremolo variable in both rate and depth; separate bass and treble boost; dual spring-type variable reverb; dual foot switch for tremolo and reverb; 3 separate channels with 2 inputs for each. Matching speaker system features two 12-in. woofers and special horn driver. Measures 25⅞" W x 14½" D x 38" H. Includes 20' cable.

Kit TA-17, amplifier only,
40 lbs., Exp./Frt. **179.95**

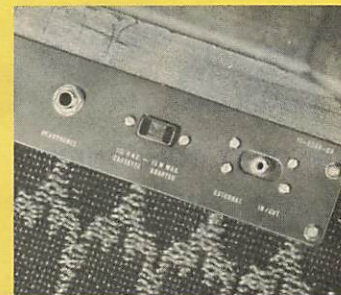
Kit TA-17-1, one speaker system,
112 lbs., Exp./Frt. **129.95**



Heathkit/Thomas Spinet for family fun at kit-form savings



Color-Glo keyboards make playing as simple as ABC.



Convenient accessory panel lets you plug-in cassette equipment or earphones.



549⁹⁵
NO MONEY DOWN

SPECIAL ORGAN WARRANTY

The tone generators of the Heathkit/Thomas Spinet, and the Heathkit/Thomas Legato on the facing page, are warranted for a period of five (5) years from the date of purchase.

Two 44-Note Keyboards — with exclusive Color-Glo Keys

Space provided for Rhythm System — to be made available for the TO-1160 soon

Thomas has refined the solid-state spinet home organ to a point of perfection. And we've put this magnificent musical instrument into a remarkable kit package that saves you hundreds of dollars over the retail assembled price — and gives you one of the most satisfying projects you and the whole family can experience.

This great sounding, great looking organ has two 44-note keyboards with tilted and overhanging non-yellowing keys for easier playing. The exclusive Thomas Color-Glo system lights up the lettered keys, and color codes chords so you can start playing the first time you sit down. A "Quick-Play" organ course with a wide variety of sheet music is included with your kit. The 13-note radial arc pedal keyboard is constructed to correspond to the natural swing of your foot as it moves from one pedal to another. And the 25-watt RMS amplifier drives a wide range 12-in. speaker capable of producing the total audible range of an entire orchestra.

Controls include an Expression Pedal, Variable Pedal Volume, Variable Manual Balance; switch tabs for Vibrato, and a new Light Vi-

brato that gives true orchestral effects. Plus there's a new accessory front panel on the keyboard with earphone and cassette recorder jacks and an AC power receptacle. Plug in the earphones and the main speaker shuts off so you can practice anytime without disturbing the rest of the family. The In-Out tape jack lets you take advantage of the many available organ lesson programs pre-recorded on cassettes. All you need is a conventional cassette deck and you can playback the lessons through the organ, and record your own organ selections on blank cassettes. The handy external power socket, controlled by the organ Power switch, can be used for your cassette recorder, music rack lamp or any other accessory equipment.

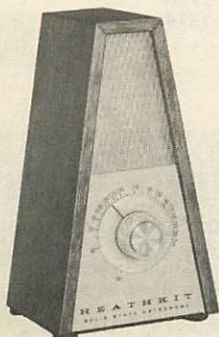
The authentic instrumental voices give you literally hundreds of orchestral combinations. On the upper keyboard are Flute 16', 8' and 4'; Trumpet 8'; Oboe 8', and Violin 8'. While on the lower keyboard you have Horn 8'; Diapason 8'; Melodia 8', and Cello 8'. The pedal keyboard provides a Flute 16'-8' combination.

Finally, the Heathkit/Thomas Spinet is beautiful furniture — created by a foremost designer to attractively complement your home. The cabinet and bench are hand-crafted from selected walnut veneers in a Scandia finish, with solid hardwoods used at all points that require strength and rigidity. And, unlike other electronic organ kits, the cabinet is shipped to you fully finished and assembled. You install the electronics. Overall dimensions are: 44" H x 43½" W x 25" D.

Kit TO-1160, 233 lbs., Express/Frt. **549.95**

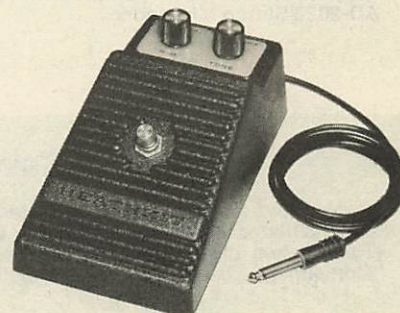
Heathkit Electronic Metronome

An indispensable tool in any musician's kit. Inexpensive enough for any student's use — yet accurate enough for the professional musician. Adjustable tempos from 40 to 210 beats per minute. Adjustable volume control. Chart relates tempos in various time signatures to beats per minute. Easy one evening assembly. Requires two 9V batteries (not supplied).
Kit TD-17, 2 lbs., mailable **9.95**



Heathkit Distortion Booster

Add that unique effect to your sound. Just plug in between your guitar and amplifier. Housed in a convenient foot-switch—push the switch to add the distortion — push again to play it straight. Tone and distortion degree ctrldls. Runs on penlite cell (not supplied).
Kit TA-28, 4 lbs., mailable **17.95**



charg-a-kit — No money down on any kit — up to 2 years to pay — see page 42 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-16, AS-18, AS-37A, 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-1215,
or ADP-150 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-1229, ADP-810, ADP-250
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 pres-
ent stereo amplifier (AA-1214,
AA-14, AA-29, AA-15) . . .

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

**SEE SPECIAL
TURNTABLE OFFER,
PG. 62**

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-19 "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 headphone control, antenna) will also qualify for the 5% discount.

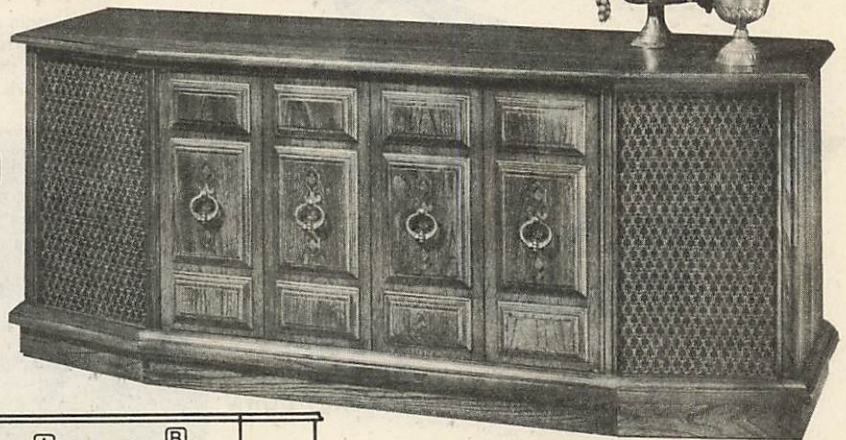
Assembled & Finished Furniture for your Heathkit Audio System



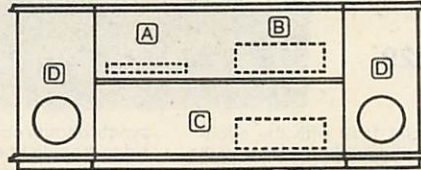
One-piece Mediterranean credenza

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.

195⁰⁰
NO MONEY DOWN



- 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**



CABINET OVERALL: 267/8" H x 66" W x 19 1/4" D. **SHELF COMPARTMENT:** (A & B) overall, 357/8" W x 17 1/2" D (shelf 15" D); adjustable shelf height: 5 1/2", 6 1/2", 7 1/2", 8 1/2". **LOWER COMPARTMENT:** (C): 35 7/8" W x 17 1/2" D x 12 1/4" H min. (with shelf at 8 1/2"). **SPEAKER CABINET VOLUME:** (D): 2.3 cu. ft. (12" cut out). **CHANGER BASE:** 5 1/2" H x 18 1/2" W x 14" D. **TAPE PLAYER BASE:** 14" W x 12 1/2" D.

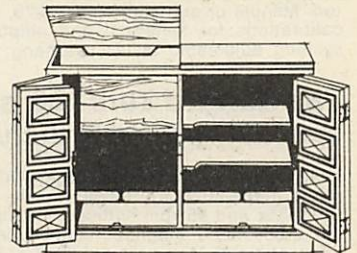


3-piece Mediterranean group

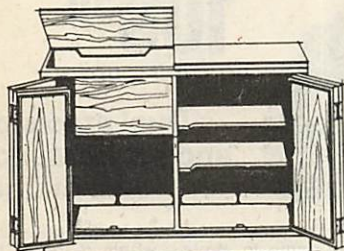
Selected solids and veneers with a dramatic pecan finish. Bi-fold doors. Statuary bronze handles. Top raises to reveal changer compartment, doors open to components. Adjustable shelves. Matching ducted-port speaker cabinets accept 8-in. or 12-in. speakers (installation instructions included), measures 28 3/4" H x 17 3/8" W x 18 3/8" 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**

365⁰⁰
NO MONEY DOWN



CABINET OVERALL: 28 3/4" H x 40" W x 19 3/8" 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:** 23 3/4" H x 19" W x 16" D, with two adjustable shelves.



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 28 3/8" 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: 23 3/8" H x 40" W x 19" D. **CHANGER COMPARTMENT:** 19" W x 16 1/2" D, mounting board is uncut and can be adjusted in height. **RECORD-TAPE RECORDER COMPARTMENT:** 15 3/4" H x 19" W x 16 1/2" D. **SHELF COMPARTMENT:** 24 3/8" H x 19" W x 16 1/2" D, with two adjustable shelves.

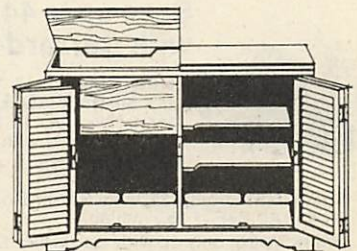


298⁰⁰
NO MONEY DOWN

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 28 3/8" 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: 28 3/8" 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:** 15 3/4" H x 19" W x 16" D. **SHELF COMPARTMENT:** 24 3/8" H x 19" W x 16" D, with two adjustable shelves.



325⁰⁰
NO MONEY DOWN

Special Dual & Garrard



Select your Heathkit stereo system using the guide on page 60, and include any of the Dual or Garrard turntables shown on this page. Then deduct 10% from the regular price of the system rather than our standard 5% system discount.

Offer expires May 31, 1973 and is limited to systems including Dual & Garrard Turntables only.

199⁵⁰
NO MONEY DOWN



From United Audio, the Dual 1229 with illuminated strobe

United Audio replaces the immensely popular Dual 1219 with the exciting new Dual 1229. New features are a built-in illuminated strobe with adjustable viewing window so turntable speed can be checked from the most convenient angle. Tracking pressure dial calibrated from 0.1 gram through 1.5 grams. And you get all the other top-of-the-line Dual features too. Manual or automatic play of 78, 45 and 33 1/3 rpm discs; anti-skating calibrations for spherical and elliptical stylus; silicone-damped cueing system; adjustable stylus overhang; full 12-inch diameter 7-lb. platter;

synchronous/continuous pole motor; 6% pitch adjustment. Select cartridge from list below. 8" H x 18 1/2" W x 16" D.

- Assembled ADP-1229, turntable only, 23 lbs., mailable 199.50
- ADA-49-1, walnut base (Dual WB-19) 5 lbs., mailable 14.95
- ADA-49-4, dust cover (Dual DC-9) 3 lbs., mailable 12.95
- ADA-39-2, 45 rpm spindle (Dual AS-12) 1 lb., mailable 5.95

The Garrard Zero 100 is now specially priced to include base

The popular Garrard features a pivoting cartridge head that keeps the stylus perpendicularly tangent to the record groove. Also has pitch control, 33 1/3 and 45 rpm settings, sliding stylus weight, 15% vertical tracking adjustment, magnetic anti-skating control. Choose cartridge from table at right. Measures 15 3/4" W x 14 1/8" D x 2 3/4" above motor board, 2 3/4" below. Price includes Garrard WB-2 solid walnut base shown.

- Assembled ADP-250, 24 lbs., mailable 209.90
- ADA-100-2, 45 rpm spindle (Garrard CRS-100), 2 lbs., mailable 3.80
- ADA-47-4, dust cover. (Garrard D2) 4 lbs., mailable 6.50



209⁹⁰
NO MONEY DOWN



119⁴⁵
NO MONEY DOWN

The specially priced Garrard SL72B now includes base, too

Like all the great Garrards, has Synchro-Lab motor for precise turntable speed, three-speed automatic or manual play, stylus pressure gauge, anti-skate control, viscous cueing. Cartridge options shown below. Measures 15 3/4" H x 14 3/8" W x 4 3/8" above board, 3" below.

Special price includes Garrard WB-2 walnut base shown.

- Assembled ADP-150, 19 lbs., mailable 119.45
- ADA-57-2, 45 rpm spindle (Garrard LRS25), 1 lb., mailable 3.80
- ADA-47-4, dust cover, (Garrard D2), 4 lbs., mailable 6.50



109⁵⁰
NO MONEY DOWN

Dual precision and performance on a budget

With the 1215, United Audio puts the prestigious Dual trademark — and all the quality that the name has come to imply — within reach of the audiophile who wants superior sound at a reasonable cost. The Dual 1215 gives you 3-speed manual or automatic operation; separate anti-skating calibrations for spherical and elliptical stylus; variable pitch control; damped cue control; constant-speed hi-torque motor; 3 3/4-lb. laminated platter. The low-mass tubular tonearm tracks as low as 1 gram. Choose your cartridge from the table below.

- Assembled ADP-1215, turntable only, 14 lbs., mailable 109.50
- ADA-39-1, walnut base (Dual WB-12) 5 lbs., mailable 10.95
- ADA-1218-1, dust cover (Dual DC-4) 3 lbs., mailable 12.95
- ADA-39-2, 45 rpm spindle (Dual AS-12) 1 lb., mailable 5.95

Save up to 44.95 on cartridges ordered with Garrard and Dual turntables



NEW Shure V-15 Type II (Improved). Perfect cartridge for the best turntables. Has new improved VN15E stylus for better trackability in bass & mid-range registers. Pay just \$30 when ordered with Garrard Zero 100 or Dual 1229 only.

Model AD-1502, 1 lb., mailable 67.50

- Shure M91E, only \$5 with Garrard or Dual turntable order.
- Model AD-68F, 1 lb., mailable 49.95
- Shure M93E, only 1¢ with Garrard or Dual turntable order.
- Model AD-58R, 1 lb., mailable 39.95
- Empire 999SE/X, only \$5 with Garrard or Dual turntable order.
- Model AD-121, 1 lb., mailable 49.95
- Empire 999E/X, only 1¢ with Garrard or Dual turntable order.
- Model AD-126, 1 lb., mailable 39.95

MODEL	FREQUENCY RESPONSE	OUTPUT	SEPARATION	ELLIPTICAL STYLUS	TRACKING
Shure V-15 Type II	20-25,000 Hz	3.4 mV	25 dB	0.2 x 0.7	3/4 to 1 1/2 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.

Turntable Stereo System Offer

What's "optional" with the others is "standard" in the one-price BSR McDonald 810X Package

A complete package — with cartridge, base and dust cover — featuring the new BSR McDonald 810 Transcription Series Automatic Turntable — engineered to complement the most sophisticated home audio installation. This premier performer sets a new standard for smoothness, quietness and featherlight operation. This is achieved with a pre-programmed sequential cam system that reduces the multiplicity of noise-producing parts common to other turntables. A transcription tone-arm system virtually eliminates tracking error and offers precise zero balance adjustment over the full range of cartridge and stylus masses. Other engineering features include a newly designed ultra-quiet synchronous induction power unit; concentric gimbal arm mount; viscous-damped cueing and arm descent; full 12" die-cast platter; dual-range anti-skate control; variable pitch control; platter-mounted strobe disc; stylus set-down adjustment, and featherweight pushbuttons that select manual, semi-automatic or automatic play for 7", 10" or 12" records, 45 or 33 1/3 rpm. And the 810X package includes BSR-810 automatic turntable, Shure M-91ED elliptical cartridge; BSR WB-8 walnut wood base, BSR DC-8 dust cover. It's a total retail value of \$239.45 — at this great package price. Total Turntable dimensions (with base and dust cover): 9 1/4" H x 17 1/8" W x 15" D.



All Heath/BSR McDonald automatic turntables come with a plastic see-through cover that protects records and mechanism from dust.

189⁹⁵
NO MONEY DOWN

Assembled ADP-810, 33 lbs., mailable 189.95

New Heath/BSR McDonald AD-1145 Professional Series Turntable

The new AD-1145 heads up three great new turntables carrying the Heathkit/BSR hallmark — the standard for top quality changers that includes base, dust cover and cartridge in one moderate price. 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.

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



84⁹⁵
NO MONEY DOWN

New Heath/BSR McDonald AD-1135 Professional Series Turntable

A high-performance turntable at a modest price, the AD-1135 offers many of the same features found in the AD-1145. It has manual or semi-automatic or automatic capability; high torque synchronous motor; viscous cueing/pause control; aluminum low-mass tone arm; dual range anti-skate control; micrometer stylus adjustment; slide-in cartridge holder; automatic locking tone arm. 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.

Assembled AD-1135, 14 lbs., mailable 69.95
AD-1037, optional 45 rpm spindle, 1 lb., mailable 1.95



69⁹⁵
NO MONEY DOWN

New Heath/BSR McDonald AD-1125 Complete Turntable Package

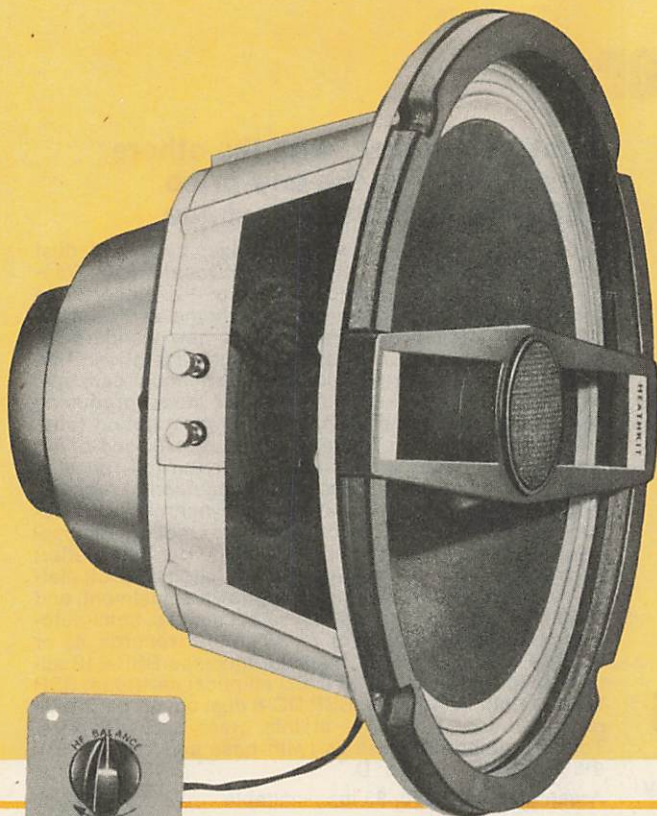
An excellent choice for rounding out any budget-minded component system. The AD-1125 features manual, semi-automatic or automatic modes; four-pole induction motor; aluminum counterweighted tone arm; slide-in cartridge holder; cue/pause control; stylus force control and indicator. Includes base, dust 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.

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



54⁹⁵
NO MONEY DOWN

Heathkit Separate Speakers for your custom-sound system



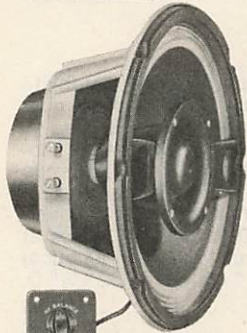
Three-Way High Compliance Speaker . . . Our finest separate speaker system, designed to bring out the best in top-quality stereo-hi-fi systems. Features 12" unitary speaker with woofer, compression mid-range and a horn-loaded compression super tweeter; 80-watts peak power capability; heavy die-cast frame; 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

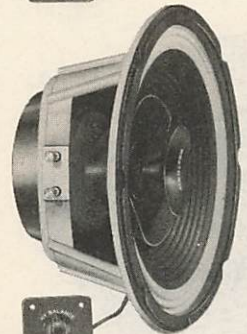
NO MONEY DOWN



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

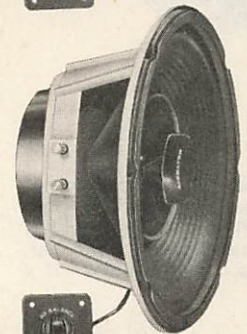
AS-183 SPECIFICATIONS — Impedance: 8 ohms. Power rating: 30 watts. Frequency response: 20-15,000 Hz. Cone resonance: 25 Hz. Magnet weights: 1¾ lbs., 4.65 oz. Voice coil sizes: 1½" and 1".



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

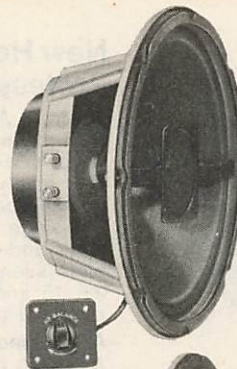
AS-173 SPECIFICATIONS — Impedance: 8 ohms. Power rating: 25 watts. Frequency response: 35-15,000 Hz. Cone resonance: 40 Hz. Voice coil sizes: 1½" and 1".



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

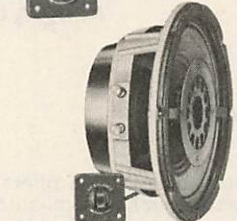
AS-163 SPECIFICATIONS — Impedance: 8 ohms. Frequency response: 40-15,000 Hz. Cone resonance: 60 Hz. Magnet weights: 13 oz., 1 oz. Voice coil sizes: 1½" and 1".



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

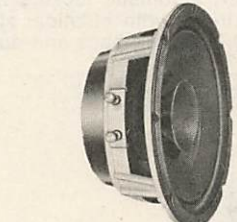
AS-153 SPECIFICATIONS — Impedance: 8 ohms. Frequency response: 50-15,000 Hz. Cone resonance: 60 Hz. Magnet weights: 10 oz., 1.47 oz. Voice coil sizes: 1" and ¾".



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".



Headphone control unit

Takes two sets of headphones. Dual concentric level control. 20' cable.
Kit AC-17, 3 lbs., mailable 8.50

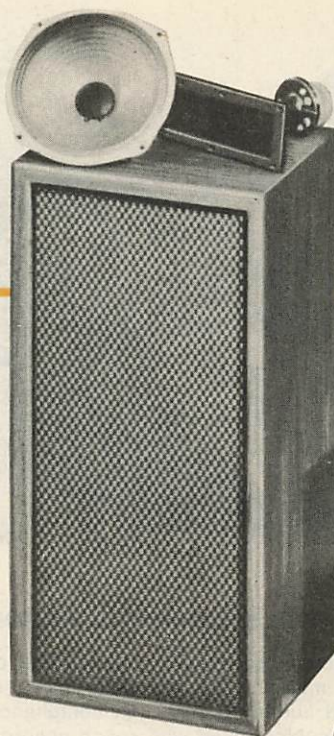
Heathkit shelf-speaker systems with preassembled, finished cabinets

Heathkit high-efficiency two-way speaker system

This highly efficient speaker system, designed to be driven by amplifiers from 5 to 25 watts, delivers clean audio reproduction with a smooth response over its entire frequency range. Two specially designed speakers — an 8-in. woofer with 10-oz ceramic magnet and compression type exponential horn tweeter — are housed in an attractive ducted-port, bass-reflex cabinet. The system is rated 8 ohms impedance, 25 watts, 70 to 12 kHz response. Preassembled cabinet measuring 11½" H x 23" W x 11½" D is covered in rich looking satin walnut-grain polyester that's stain and fade resistant. Buy two for stereo, build both in one evening.

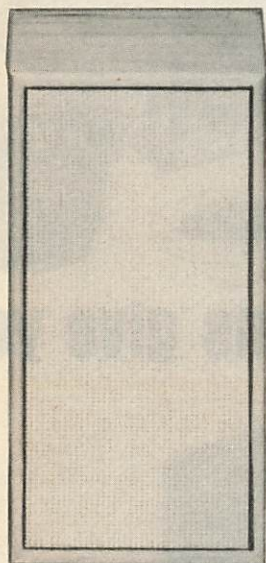
Kit AS-37A, 41 lbs., mailable 44.95

AS-37A SPECIFICATIONS — Minimum amplifier power (RMS): 5 watts. Maximum Music Power: 25 watts. Nominal impedance: 8 ohms. Cabinet: type-ducted-port bass-reflex. Dimensions — 11½" H x 23" W x 11½" D. Finish — vinyl-covered plastic. Speakers: One 8" speaker, 10 oz. ceramic magnet. One horn tweeter, 4.65 oz. alnico magnet. Frequency response: 70 — 12,000 Hz. Crossover frequency: 1600 Hz. Control: HF balance.



44⁹⁵

NO MONEY DOWN

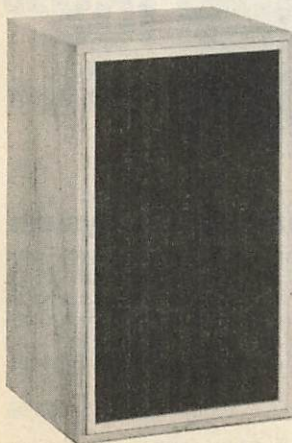
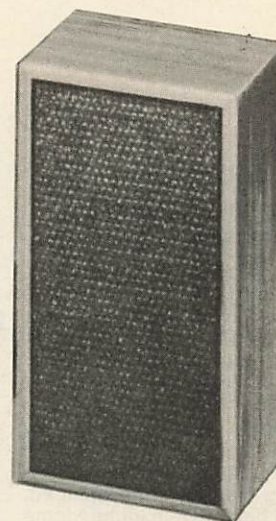


Heathkit AS-16 — a medium-priced compact with acoustic suspension design . . . only 56.95

Mini-size with maxi-performance. The 8" acoustic suspension woofer with a 6.5 oz. magnet literally rides on air to give you rich, low-distortion bass to 60 Hz. The 3½" tweeter with 4.8 oz. magnet reproduces crystal-clear highs to 18 kHz and has a level control for balance. You'll hear everything with an authenticity you never dreamed possible in a system of this size. Handles 25 watts of program material. Compact size makes the system ideally suited to bookcase installation . . . measures just 10" H x 19" W x 8¼" D. And the whole system goes together in just a couple of hours. Both speakers already are cabinet mounted. You merely wire the 1500 Hz crossover network. You'll like the rich looks of the handsome walnut cabinet . . . and it's protected against scratches and spills by a clear vinyl covering. Order a pair for stereo.

Kit AS-16, 22 lbs., mailable 56.95

AS-16 SPECIFICATIONS — Frequency response: 60 to 18,000 Hz. Crossover frequency: 1500 Hz. Power rating: Program material — 25 watts. Peak capacity — 50 watts. Nominal impedance: 8 ohms. Speakers: Low frequency — 8" 6.8 oz. magnet. High frequency — 3½" 4.8 oz. magnet. Adjustable high frequency level control. Dimensions: 10" H x 19" W x 8¼" D.



Heathkit AS-106 Bookshelf Speaker...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 fiberglass 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.

Heathkit two-way acoustic suspension mini system . . . 36.95

The 6-in. woofer delivers clean, crisp bass down to 55 Hz, while the 2½-in. tweeter produces sparkling highs to 18 kHz. High frequency balance control lets you adjust the highs to suit your taste. Handles 25 watts program material, 50 watts peak. Has 8 ohm impedance, crossover frequency 3000 Hz. Walnut cabinet protected by clear vinyl covering. 8¼" H x 15¼" W x 6½" D. Buy two, and build them in an evening.

Kit AS-18, 14 lbs., mailable 36.95

AS-18 SPECIFICATIONS — Frequency Response: 60-20,000 Hz. Crossover Frequency: 3000 Hz. Power Rating: Program material — 25 watts. Peak capacity — 50 watts. Nominal Impedance: 8 ohms. Speakers: Low frequency — 6" 8.4 oz. magnet. High frequency — 2½" 2.15 oz. magnet. Control: HF balance. Dimensions: 8¼" H x 15¼" W x 6½" D. Cabinet: Walnut veneer, vinyl covered.



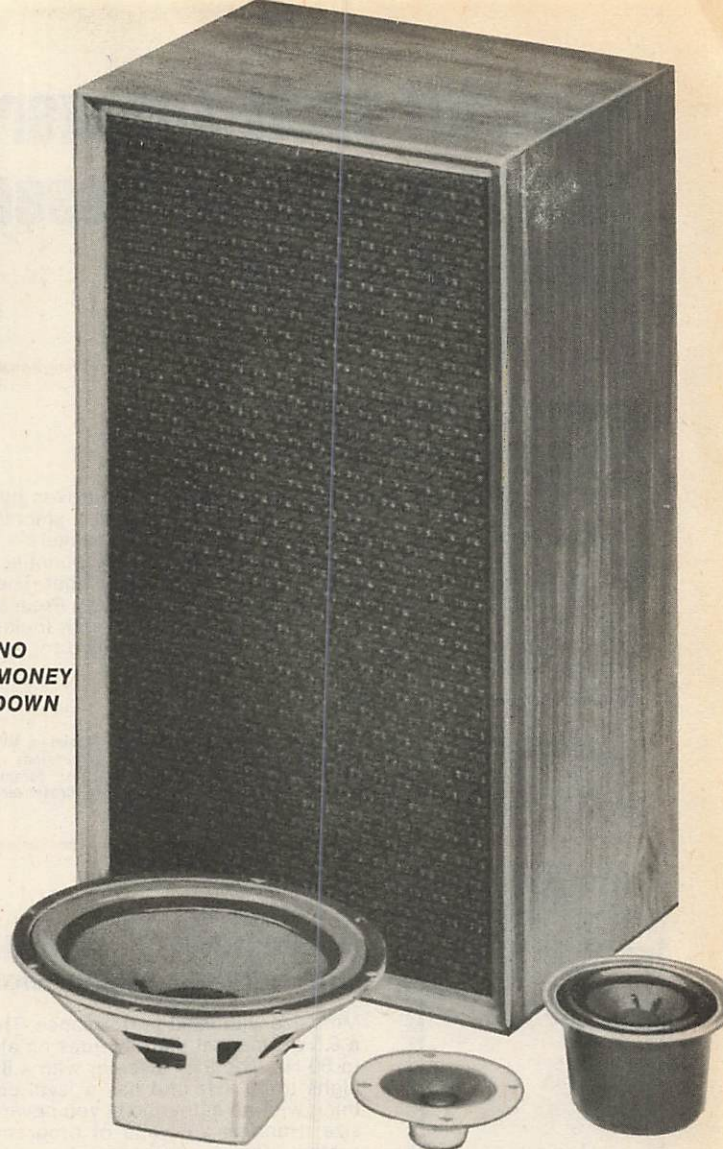
New 3-Way acoustic suspension system

89⁹⁵ NO MONEY DOWN

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.



Heathkit speaker systems give you

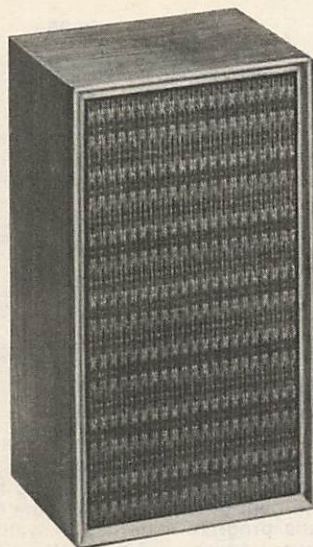
Low cost 2-way acoustic suspension system

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.

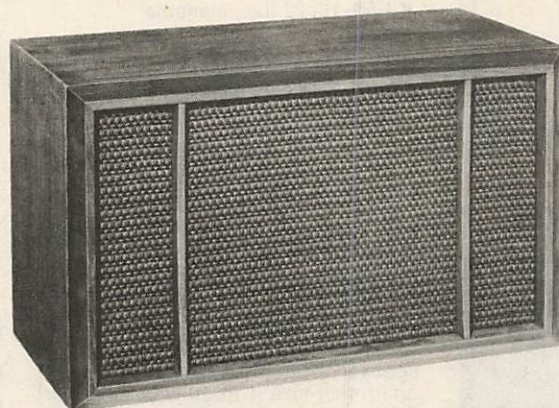
Has high compliance, low resonance woofer in sealed cabinet filled with sound absorbing material; ring damped, closed back 3½-in. cone/dome tweeter; high frequency level control; factory assembled one-piece cabinet with removable grille. Buy two . . . and enjoy stereo the same night.

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. Dimensions: 24" H x 13½" W x 11½" D.



64⁹⁵ NO MONEY DOWN



159⁹⁵
 NO MONEY DOWN

Heathkit/JBL System

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., mailable **159.95**

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.

**Heathkit cost-cutting efficiencies join
Altec-Lansing speaker engineering
to create this outstanding
floor model system**

*A beautiful piece of furniture — designed to
complement any decor*

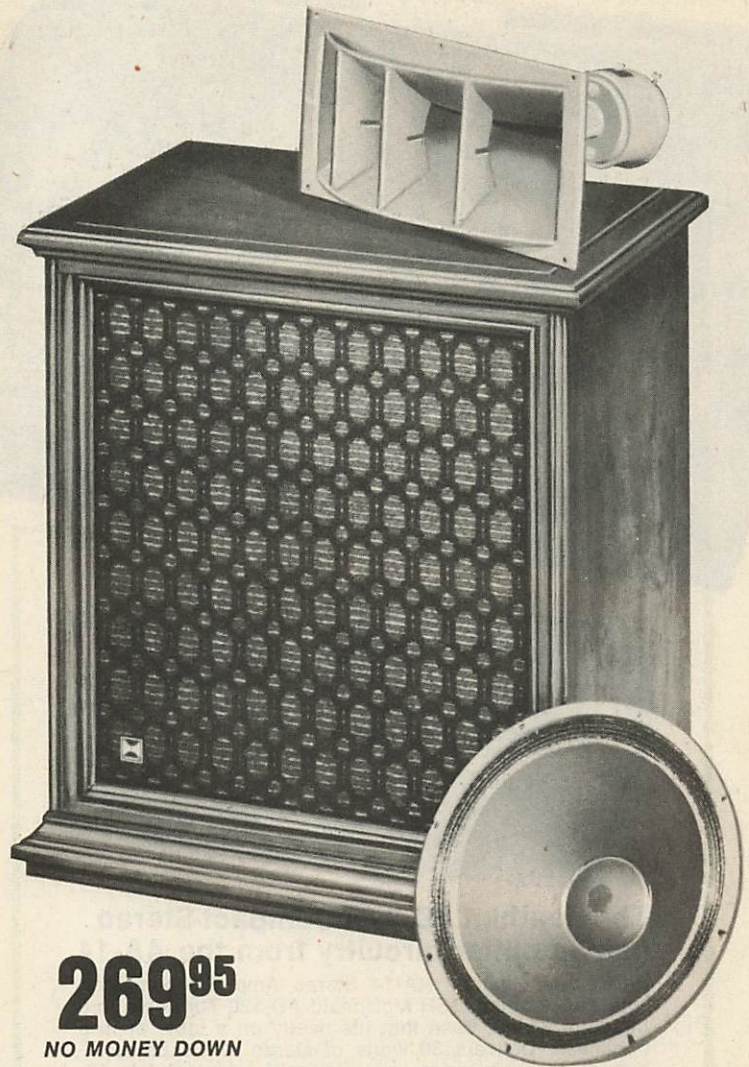
The AS-101 is a skillful blend of Altec-Lansing speaker experience and Heathkit engineering — a medium priced, high performance 8 ohm system designed to meet the demands of quality components such as the AR-1500, AA-15, AR-29 & AR-1302.

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, 1¼-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 19⅞" D.

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



269⁹⁵
NO MONEY DOWN

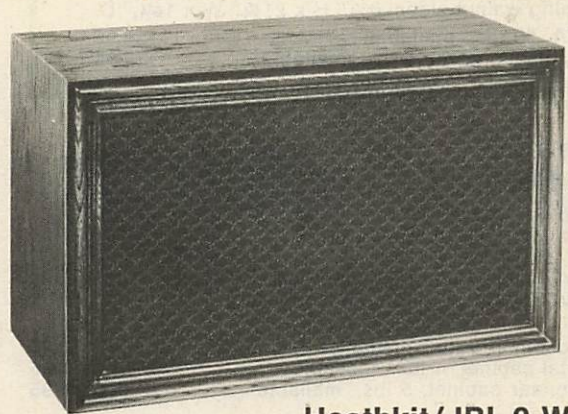
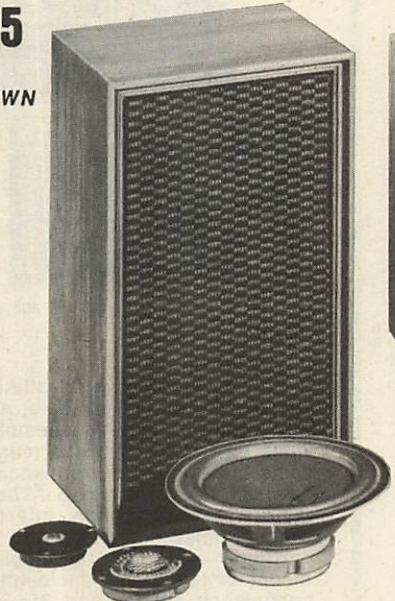
more performance for your money

**Heathkit/
AR 3-Way
System** **189⁹⁵**
NO MONEY DOWN

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 at traditional Heathkit savings. 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 controls at rear of oiled walnut cabinet let you "custom tailor" the sound to your environment.

Kit AS-103A, 69 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 midfrequency 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.



189⁹⁵
NO MONEY DOWN

Heathkit/JBL 2-Way System

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., mailable 189.95

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.

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



Heath-quality stereo in a compact

Here's the highly praised Heathkit AR-14 Solid-State Stereo Receiver, combined with the top performing Heathkit/BSR McDonald AD-130 Automatic Turntable. 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.

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



The Heathkit AD-17A Compact Stereo has amplifier circuitry from the AA-14

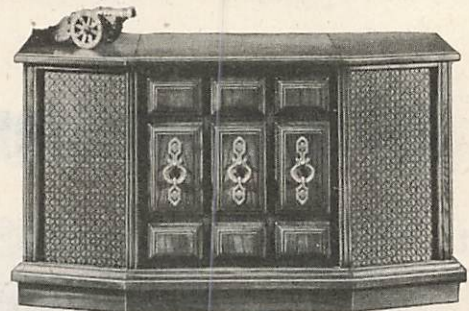
Here's the Heathkit AA-14 Stereo Amplifier combined with the Heathkit/BSR McDonald AD-120 Turntable in a beautiful walnut base that fits neatly on a table or in a bookcase. Delivers 30 watts of stereo music power — enough to easily drive any reasonably efficient 4 to 16-ohm speakers. Has accessory inputs for tuner and tape recorder. Fully automatic turntable has cue/pause control, adjustable stylus pressure, anti-skate control, Shure diamond stylus magnetic cartridge. AA-14 circuitry assembles quickly and easily with circuit-board wiring harness construction. Optional smoked plastic dust cover has matching walnut sides. 8 1/4" H x 21 3/4" W x 14 1/8" D. Kit AD-17A, 39 lbs., mailable 129.95 ADA-17-1, plastic cover, 5 lbs., mailable 15.95

SAVE UP TO 10.99!

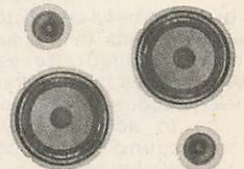
Order your stereo compacts with a pair of speakers and deduct 5% from the total price. For example, a system composed of AD-27A & a pair of AS-106 speakers (p. 65) costs only 208.86 — a saving of 10.99.



Heathkit Stereo Credenza — beautiful to see and hear



Top lifts to expose turntable and all controls.



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

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 10 3/8" 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: 2 5/8" H x 7 1/4" W x 5 3/4" D. *Rated IHF (Institute of High Fidelity) Standards.

Combines 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 next page. 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 3 1/2-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 49 1/2" W x 20 1/2" D. **Not Eligible for 5% System Discount.**

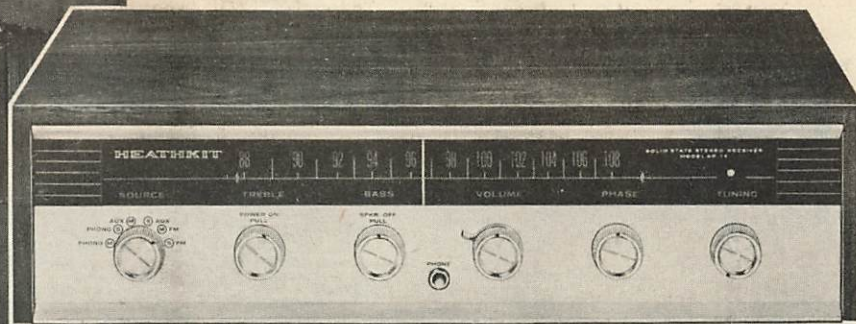
Kit AD-19A, 158 lbs., Express/Frt. 299.95



AR-14 30-Watt FM Stereo Receiver

A value second to none, with performance that will surpass many receivers that cost considerably more. 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.

The AR-14 has two preamplifiers and two power amps delivering 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



Heath "14"-Series Stereo gives you a low-cost receiver or lower cost separates **99⁹⁵** less cabinet **NO MONEY DOWN**

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 $\frac{1}{2}$ " x 3 $\frac{1}{2}$ "; Depth required from front of mounting surface 11 $\frac{1}{2}$ ".



49⁹⁵ less cabinet
NO MONEY DOWN

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)



59⁹⁵ less cabinet
NO MONEY DOWN

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)

Stereo Tuners and Amplifiers from



199⁹⁵
less cabinet
NO MONEY DOWN

Heathkit AJ-15 FM Stereo Tuner

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

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

This is the tuner section of the renowned AR-15 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 μ V* 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 μ V*. 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 $\frac{3}{4}$ " H x 16 $\frac{7}{8}$ " W x 12 $\frac{1}{2}$ " D.
*Rated IHF (Institute of High Fidelity Standards).



189⁹⁵
less cabinet
NO MONEY DOWN

Heathkit AA-15 150-watt Stereo 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% harmonic and IM distortion at 50-watts continuous output; re-

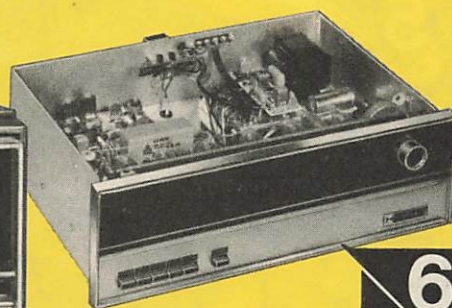
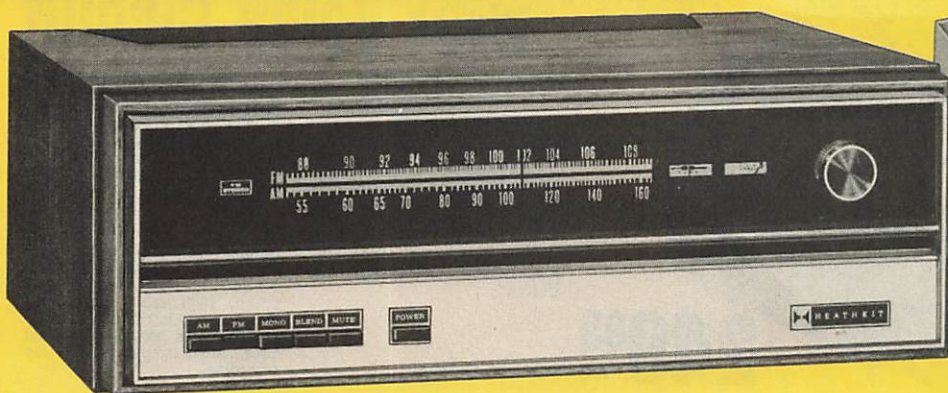
cessed input and output jacks; both main and remote stereo speaker switches and connections; two stereo headphone jacks; tone-flat switch; positive circuit protection; loudness switch; tape monitor switch; simplified circuit board construction; versatile three-way installation . . . in the wall, your 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 $\frac{3}{4}$ " H x 16 $\frac{7}{8}$ " W x 12 $\frac{1}{2}$ " D.

famous Heathkit receivers



179⁹⁵
less cabinet
NO MONEY DOWN



Heathkit AJ-29 AM/FM Stereo Tuner

AM and FM entertainment at its best —
*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 whopping station-pulling power, using FET design for superior overload charac-

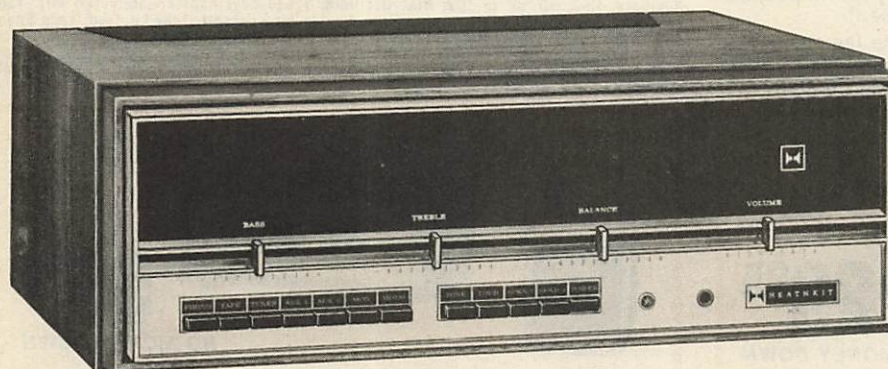
teristics. A tiny integrated circuit performs four different functions in the multiplex section to assure outstanding stereo performance. Three ICs in the IF section provide superior AM rejection capability, hard limiting, temperature stability and greater reliability.

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



Heathkit AA-29, 100-watt Stereo Amplifier

100 watts of pure power —
for the finest home music systems

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

sunked output transistors and among the best IM and harmonic distortion specifications 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).

NEW Cassette kit with Dolby Circuit



Full-size dust cover option protects transport mechanism and controls.



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.

249⁹⁵
NO MONEY DOWN

Now you can enjoy the life-like fidelity of low noise cassette recording at its finest — including the new chromium dioxide tapes — with the new Heathkit AD-1530 Deluxe Cassette Tape Deck. Heath engineers have combined a preassembled top-quality domestic-make tape transport, the famous Dolby Noise Reduction System, and careful manual preparation to produce a superb cassette tape deck in easy-to-assemble, modestly-priced 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. Lever controls offer FAST-FORWARD, REWIND and EJECT functions. Lever switches are also provided for STEREO or MONO input; DOLBY ON/OFF; tape-type REGULAR (iron oxide) or CrO₂ (chromium dioxide). In the CrO₂ position, both the bias and audio levels of the deck are increased to make full use of the greater fidelity and dynamic range of chromium dioxide tape. Other control 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 ¼" phone jack can be used).

The electronics package of the AD-1530 features the famous B-type noise reduction circuitry developed by Dolby Laboratories. This system greatly reduces noise without reducing the overall frequency re-

sponse of the tape. A professional version of the system has long been employed by major recording companies. The B-type system is a simplified version, now available for use in consumer high-fidelity products. The Dolby system, coupled with the wide-response play and record circuitry, including a top-quality record/play head from a leading U.S. manufacturer, combine in the AD-1530 to give you sound fidelity virtually undistinguishable from reel-to-reel decks.

Modular plug-in circuit board design is employed in the amplifier and Dolby circuits of the AD-1530, simplifying kit construction and any servicing. Add to this, the completely preassembled tape transport mechanism, and assembling your AD-1530 becomes an easy, enjoyable five-evening project. The attractive walnut-veneer cabinet with contrasting black top trimmed in brushed aluminum makes a handsome addition to any listening room or living room decor. 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 with adjustable bias

Full-function record & 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". An IC voltage regulator power supply and push-pull oscillator for erase and record bias contribute to the unit's low hum and noise factor. 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 3/8" L x 11" D. Power: 120/240 VAC, 50-60 Hz, 7 watts.



Heathkit 8-Track Stereo Cartridge Player

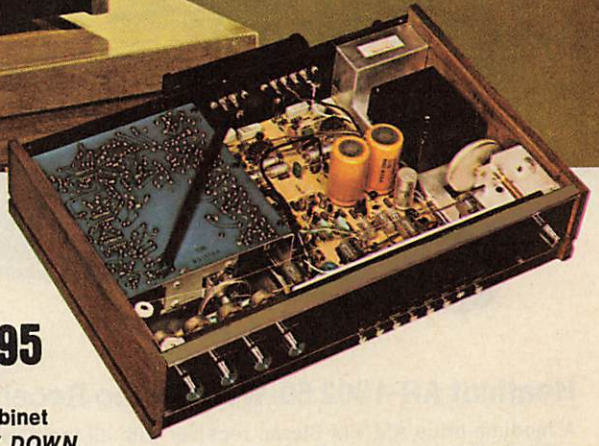
Plays back pre-recorded 8-track stereo tape cartridges through your present music system. Just plug it into the "Tape", "Tuner" or "Auxiliary" inputs of your amplifier . . . insert the cartridge of your choice and listen. A metal tape splice switches the playhead from one track to the next automatically. 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 all solid-state 6-transistor, 2-diode pre-amplifier circuit goes together quickly on one small circuit board, and the tape player mechanism by Motorola® is preassembled and adjusted to make your kit building an easy two evening project. 16-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.

4
EVENING
KIT

Heath's New Best Values in stereo - the "1214" series



The exciting AR-1214 50-Watt AM/FM Stereo Receiver

The distinctive compact styling makes the AR-1214 AM/FM Stereo Receiver an excellent choice where space is at a premium. 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 preassembled 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. Four evenings will have it all together. And the cabinet with black vinyl-clad metal top and walnut finished wood end panels is included in the low price.

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.

Kit AR-1214, 18 lbs., mailable **169.95**

AR-1214 SPECIFICATIONS — FM SECTION (Monophonic) — Tuning range: 88 to 108 MHz. Intermediate frequency: 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: 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.

169⁹⁵

includes cabinet
NO MONEY DOWN

with 100% modulation, 19 kHz and 38 kHz suppression: 55 dB or greater. SCA suppression: 55 dB typical. **AM SECTION** — Tuning range: 535-1620 kHz. Intermediate frequency: 455 kHz. Sensitivity: Less than 100 μ V per meter.* Selectivity: Greater than 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 (music power rating): 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, using 60 and 6000 Hz mixed 4:1. 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 (10 mV reference) — 65 dB. Channel separation: 55 dB Phono & Tape. Output impedance: 4, 8 or 16 ohms. Tape output impedance: Approx. 50 ohms. Input impedance: Phono: 49 k ohm (RIAA** equalized). Tape: 100 k ohm. Tape monitor: 100 k ohm. Tape output: 0.4 V with 0.2 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.

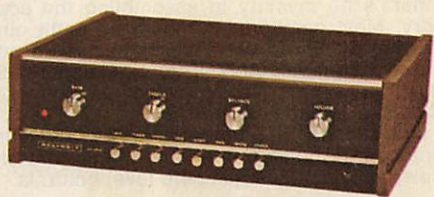
*Rated IHF (Institute of High Fidelity) Standards

**Record Industry of America

3
EVENING
KIT

89⁹⁵

includes cabinet
NO MONEY DOWN



Heathkit AA-1214 50-Watt Stereo Amplifier

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.

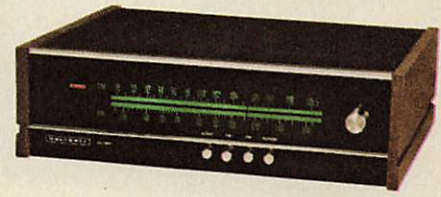
Kit AA-1214, 13 lbs., mailable **89.95**

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. See other specifications same as Amplifier Section of AR-1214.

3
EVENING
KIT

89⁹⁵

includes cabinet
NO MONEY DOWN



Heathkit AJ-1214 AM/FM Stereo Tuner

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.

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 42 for details.

Top values in Heathkit medium power Receivers



239⁹⁵ less cabinet
NO MONEY DOWN

Heathkit AR-1302 60-Watt Stereo Receiver

A medium-price AM/FM Stereo receiver with all the power & station-pulling characteristics of components costing far more. And 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.

A newly designed FM IF section uses two ICs and two ceramic filters to achieve truly outstanding sound reproduction. Sensitivity is 1.9 μ V, 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 phono, tape, AM, FM mono or stereo sources. 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. Indi-

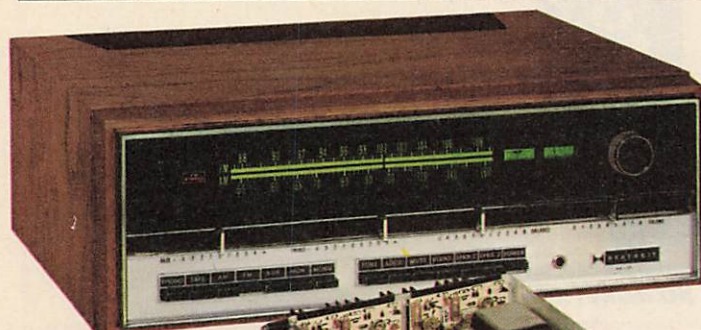
vidually adjustable controls for each input including tape monitor. Two tuning meters, center and signal level. Other features: direct coupled outputs; dissipation limiting circuitry; massive power supply; assembled and aligned FM tuner; built-in test circuitry (no other instruments needed); "black magic" panel lighting.

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

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

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 mixed, 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 μ V*. Selectivity: 60 dB*. Capture ratio: 1.8 dB*. AM Suppression: 45 dB*. Spurious Rejection: -90 dB*. **FM SECTION (Stereo) — 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 μ V/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 $\frac{1}{8}$ " H x 16 $\frac{3}{4}$ " W x 14 $\frac{1}{2}$ " D.

*Rated IHF (Institute of High Fidelity) Standards



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

299⁹⁵ less cabinet
NO MONEY DOWN

One of the few truly superior stereo receivers on the market, 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.

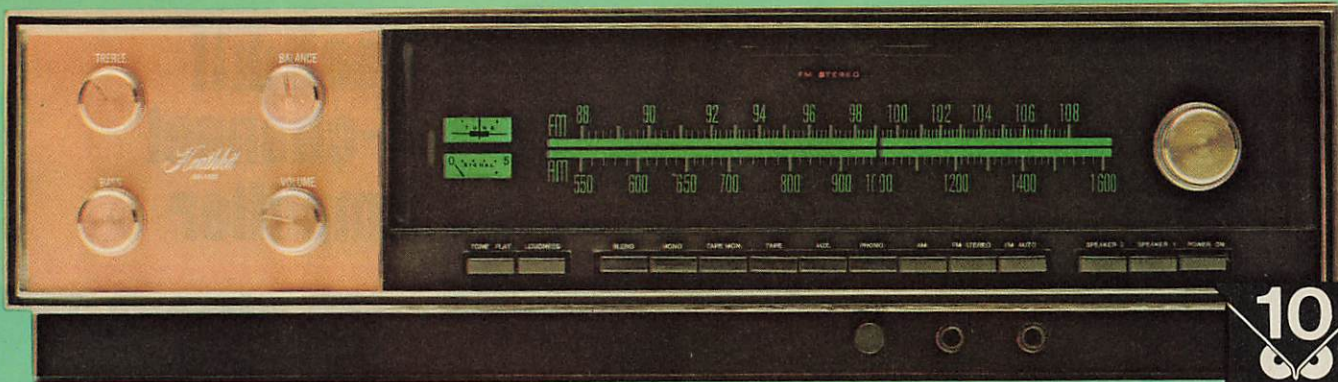
And there's no mystery in assembling the sophisticated solid-state circuitry. Most components mount on eight circuit boards, seven of which plug in. Three cable assemblies with color-coded wires connect to six-pin connectors. The remaining chassis wiring and soldering are as simple as following the check-by-step 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**

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): -1dB, 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 (10mV 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 Response: ± 1 dB 20 to 15,000 Hz. Sensitivity: 1.8 μ V*. 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 — (Stereo) — 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 μ V at 1000 kHz for 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 $\frac{1}{8}$ " H x 16 $\frac{3}{4}$ " W x 14 $\frac{1}{2}$ " D.

*Rated IHF (Institute of High Fidelity) Standards



10
EVENING
KIT

379⁹⁵ less cabinet
NO MONEY DOWN

Heathkit AR-1500—kit or wired, still number one

180-Watt AM/FM Stereo Receiver

STEREO REVIEW'S Julian Hirsch said the Heathkit AR-1500 180-watt receiver was "the most powerful and sensitive receiver we have ever measured..." **AUDIO MAGAZINE** called it "a stereo receiver easily worth twice the cost (or perhaps even more)..." In the past we've sometimes referred to sophisticated kits like this as being "for experts only". But this proud descendant of the legendary Heathkit AR-15 can be built by anyone capable of building the most simple electronics kit. Mr. Hirsch 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..."

According to **AUDIO MAGAZINE**, "As always, construction instructions are lucid enough for the inexperienced kit-builder and there is enough technical and theoretical information to satisfy even the most knowledgeable audio/RF engineer."

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, biamplification, 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.

- 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**

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

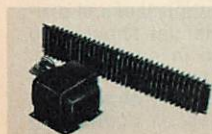
We believe you will find your ARW-1500 to be superior to any stereo component you've ever owned... and distinctively personal. Each receiver is meticulously hand made right down to the last solder connection, painstakingly aligned, and thoroughly tested. Actual performance curves of your receiver are 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... your personal ARW-1500.

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

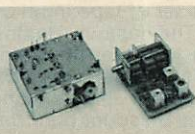
AR-1500 SPECIFICATIONS — TUNER — FM SECTION (Monophonic): Tuning Range: 88 to 108 MHz. Intermediate Frequency (IF): 10.7 MHz. Frequency Response: ±1 dB, 20 to 15,000 Hz. Antenna: Balanced input for external 300 ohm antenna. 75 ohm antenna input may be used between either FM antenna terminal and ground. 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 (Stereo):** Channel Separation: 40 dB or greater at midfrequencies; 35 dB at 50 Hz; 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 — 18½" W x 5½" H x 13¾" D.

*Rated IHF (Institute of High Fidelity) Standards.

**Rated RIAA (Record Industry Association of America).



Massive power transformer, and output transistor with full-width heat sink.



AM tuner with 2 dual-gate MOSFETS & JFET mixer plus preassembled FM tuner.



Hinged circuit boards for FM IF, AM IF, Multiplex & Phono Preamp sections.

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



Heathkit 4-channel Amplifier

359⁹⁵ less cabinet
NO MONEY DOWN



A new, improved Heathkit 4-channel amplifier designed to bring you the best of all audio worlds. 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.

4-channel powerhouse — At the heart of the AA-2010's sterling performance are four consecutively 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.

Performance to match your most exotic system — 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. Order your AA-2010 now . . . and get in on the 4-channel fun.

Kit AA-2010, 37 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 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.



Convert to 4-channel with the Heathkit "Universal" Decoder

39⁹⁵ NO MONEY DOWN

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.

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-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.

The AD-2022 can be connected between your separate stereo preamp and amplifier, or it can be used with integrated stereo amplifiers or receivers by using their tape monitor jacks (no internal wiring needed). An extra set of tape input and output jacks is provided on the decoder. The famous Heathkit manual shows you how to get your system into the 4th dimension in one evening. Order your AD-2022 today. Better yet, order it along with an additional stereo amp and pair of speakers and save 5% on the total cost with Heath's System Discount plan. Includes six connecting cables.

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

The Heathkit "Computer" Tuner



539⁹⁵

NO MONEY DOWN



Heathkit AJ-1510 FM Stereo Tuner

Pure digital design philosophy — technology so advanced it's never before been used in consumer electronics

Digital frequency display for easier reading

Keyboard ... "computer" card ... or automatic-scanning, for the most convenient FM tuning ever

Unsurpassed performance specs — better than 0.005% tuning accuracy; 0.1% distortion; 1.8 uV sensitivity; 95 dB selectivity; 40 dB separation

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 uV) 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 favorite stations, can be inserted in the Tuner behind the hinged lower front panel. Selector buttons marked A, B, C give you instant access



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.

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.

The best there is . . . built by you. 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, ± 0.5 dB. Audio: 20-15,000 Hz, ± 1 dB. Sensitivity: Less than 1.8 uV. 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%. **STEREOPHONIC** — 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: (± 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 16 1/2" W x 14 3/4" D. Weight 23 lbs. (less cabinet)
* IHF

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

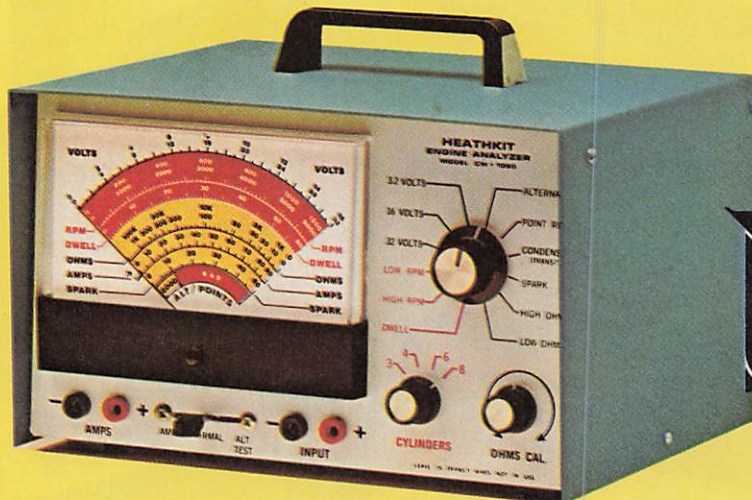
Tune-up and save with Heathkit Automotive



The handy storage compartment in the rear of the CM-1050 easily holds all leads and accessories supplied with the kit.

64⁹⁵

NO MONEY DOWN



A professional quality Portable Engine Analyzer at kit form savings

The Heathkit CM-1050 Engine Analyzer is the most versatile automotive testing and troubleshooting instrument we've ever offered. And at this low kit price, it's an unbeatable value. 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 on any measurement range. The function switch selects three voltmeter ranges, two rpm ranges, dwell, two ohmmeter ranges, alternator test, point resistance test, condenser substitution, and a spark output test. A separate cylinder-selection switch makes rpm and dwell measurement even easier, and a lever switch allows simultaneous connection for reading amps while in any function. Unlike most other analyzers, recalibration between has been eliminated, with the exception of an easy ohmmeter adjust. You calibrate the meter when you build the CM-1050, and it stays calibrated. Accuracy is $\pm 3\%$ on all measurement ranges with metal-film resistors used at every critical location to insure stability over a wide temperature range.

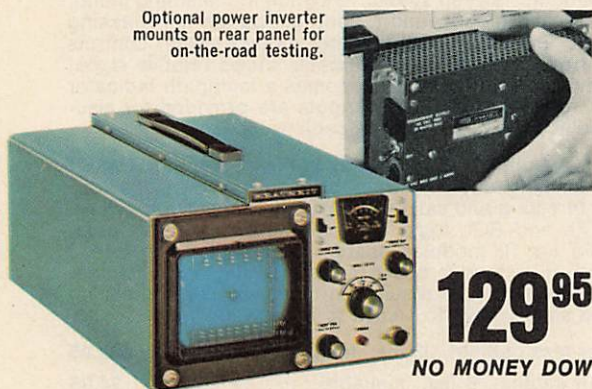
One circuit board and a wiring harness make the CM-1050 a simple

two evening kit. When you're done, you have a completely portable, self-powered instrument. Three C cells (not included) are installed through a handy thumb-twist opening on the rear panel. The wide variety of test leads and accessories included with the kit all fit in the generous storage area in the rear of the all-metal cabinet. Whether you are a professional mechanic or the Saturday "do-it-yourselfer", The Heathkit Engine Analyzer is the tool for you.

Kit CM-1050, 8 lbs., mailable **64.95**

CM-1050 SPECIFICATIONS — Voltmeter ranges: 0-3.2 V DC, 0-16 V DC, 0-32 V DC, $\pm 3\%$ of full scale. Ohmmeter: Two ranges: R x 1 (100 Ω center scale), R x 100 (10 k Ω center scale), $\pm 3\%$ arc. Tachometer: Two ranges: 0-1200 rpm, 0-6000 rpm, $\pm 3\%$ of full scale. Dwell meter: Two ranges: 0-45° (on 0-60° scale), 0-60°, $\pm 3\%$ of full scale. Amperes: -5 to +90 amperes DC, $\pm 3\%$ of full scale. Spark output: 0-50. Point resistance: Good/Bad. Alternator: Good/Bad. Condenser: 0.22 μ F, 10%. Accuracy: $\pm 3\%$ of full scale. Temperature coefficient Tref=77°F: Change less than $\pm 5\%$ 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 μ A, 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. Batteries Required: For use to 32°F. Three 1.5-V, C-cell, zinc-carbon batteries (NEDA #14). For use to 0°F: Three 1.5-V, C-cell, alkaline batteries (NEDA #14A). Dimensions: 7½" H x 10½" W x 8¾" D.

Optional power inverter mounts on rear panel for on-the-road testing.



129⁹⁵

NO MONEY DOWN

The Heathkit Ignition Analyzer with tach and 5-in. scope

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 on the front panel with 0 to 1000 rpm and 0 to 5000 rpm ranges, constant pattern width circuitry. Convenient front-panel controls give you selection of four different patterns — primary or secondary, in either parade or superimposed displays. The optional Heathkit inverter (COA-1015-1) has cigar lighter adapter.

Kit CO-1015, 22 lbs., mailable **129.95**

Kit COA-1015-1, 12V Inverter, 4 lbs., mailable **24.95**

CO-1015 SPECIFICATIONS — Power Requirements: 120/240 VAC, 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) $\pm 5\%$ over entire RPM range. Presets: Focus, Astigmatism, Trigger Adjust, Tac Cal. Connection Cables: 12' pick-up clamp; ground and secondary clip leads extend 2' beyond pick-up clamp. Tachometer: 0-1000 RPM, 0-5000 RPM $\pm 5\%$ of full scale. Dimensions: 7" H x 10½" W x 17½" D.

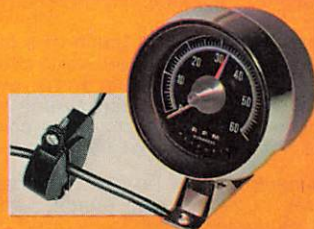
Heathkit Solid-State Tachometer ... 29.95

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**

MI-18 SPECIFICATIONS — Trigger Sensitivity (Minimum Requirements): Pickup Coil, 25 mA peak, 2 μ S rise time. Tach Connection: 30 V negative pulse, 20 μ S 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: $\pm 3\%$ at calibrating temperature (when calibrated at full scale), $\pm 5\%$ 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: 3¾" hole, 2¼" over-all case depth. Model MI-18-2: 3¾" overall face diameter, 4¼" high, 3" overall case depth.



Test Gear



The Heathkit CD Ignition System can put 50,000 miles between tune-ups

Better gas mileage, up to 50,000 miles between tune-ups. That's what the Heathkit Capacitive Discharge Ignition System can do for any car or truck with a conventional (battery, generator/alternator) negative ground system. The CP-1060 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. Finally, it puts very little current through the points, reducing heat that causes pitting and burning. An external override button permits switching to conventional system. Also works with Inboard, I/O and outboard marine engines having a standard, automotive type battery-distributor-coil system. Build it in a couple of hours, install it in less than that. The two connectors supplied screw on the coil terminal posts. Unit mounts to wheel well or other convenient location.

Kit CP-1060, 4 lbs., mailable 39.95

CP-1060 SPECIFICATIONS — Nominal input: 12-14V 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. Output pulse duration: 0.6 msec at low battery voltage & low rpm (typical, 8.5V @ 500 rpm). 0.4 msec. at normal battery voltage & normal rpm (typical, 12-14V @ 500-4000 rpm). 0.2 msec. at high battery voltage and high rpm (typical, 14.5V @ 6000 rpm). Maximum ignition point contact resistance: 7 ohms. Minimum ignition point shunting resistance: 100 ohms. 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.

39⁹⁵

NO MONEY DOWN

1
EVENING
KIT



Our most popular tune-up meter . . . 29.95

Measures dwell on all 4-cycle 3, 4, 6 or 8 cylinder engines with conventional (not solid-state) ignitions (45-120 degrees full scale, depending on number of cylinders). Has two rpm scales — 0-1500 and 0-4500. Analyzes DC voltage from 0 to 15 volts. There's no need to reconnect probes to change from dwell to rpm measurement.

Kit ID-29, 5 lbs., mailable 29.95

ID-29 SPECIFICATIONS — Dwell-meter: 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: $\pm 3\%$ of full scale. Dimensions: 4 1/4" H x 8 1/2" W x 7 1/4" D (including handle).

New Heathkit Timing Light with inductive pickup . . . 29.95

Simply hook-up to the battery terminals, snap the inductive pickup around the wire to the #1 spark plug, and you're ready to go. You can even connect-up while the engine is running. It can't interfere with the operation of other tune-up instruments either. Rugged blue plastic housing insulates you against electrical shock. Circuit protection against reversed polarity.

Kit CI-1040, 4 lbs., mailable 29.95

CI-1040 SPECIFICATIONS — Useful light range: Up to 2 ft. in daylight. Engine speed range: Full flash brightness up to 2000 rpm. Operation above 2000 rpm should be intermittent only. 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: 6 1/2" H x 2" W x 10" D.

Heathkit Solid-State Timing Light . . . 19.95

Provides a flash that won't wash out even in direct sunlight. High-impact focusing lens concentrates the beam. Connect one cable to the car's battery, the other cable 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. Operation above 2000 rpm should be intermittent only. 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: 6 1/2" H x 10" L x 2" W.

Heathkit Automatic Battery Charger . . . 29.95

A lifesaver for 12 VDC lead-acid batteries. Will not start unless it's correctly connected, ending hot sparking cables and ruined batteries. Simply won't overcharge no matter how long it's hooked up. Just plug it into a convenient 120 VAC outlet and hook up the terminal cables. When battery voltage reaches 13.4 volts (full charge), the GP-21 shuts itself down, maintaining just enough current through the battery to compensate for internal leakage. And you can leave the cables connected indefinitely — for weeks or months. There's no charge-rate selector, so amperage can't be set too high or too low.

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: 5 1/2" H x 9" W x 6 3/4" D.



3-in-1 Hanson Basic Tester Set . . . 10.95

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, $\pm 2\%$ 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. Send for this handy set, today.

CGP-1036, 3 lbs., mailable 10.95





Enjoy now **charg-a-kit** ... pay later



Nothing beats the downright convenience of doing your Heathkit shopping with a Heath **Charg-a-Kit Revolving Charge Account**. Once your account is opened, a phone call or letter will send your order on its way. No cash required, and we figure shipping charges for you and add them to your account automatically. You receive a complete summary of your account each month. Add-on purchases can be made at any time. No finance charges, either, if your account is paid in 30 days. Extended terms available, too, for larger orders.

Enjoy your favorite Heathkit product **NOW** — the easy way — by filling out and mailing the **Heath Revolving Charge Account application** on page 43.

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