

HEATHKIT[®]

Over 350 kitbuilding ideas for the new year



Read what the experts say about the new Heathkit AR-1500 stereo receiver

"The AR-1500 is the most powerful and sensitive receiver we have ever measured..." —*Julian Hirsch, Stereo Review*

"...a stereo receiver easily worth twice the cost (or perhaps even more)..." —*Audio Magazine*

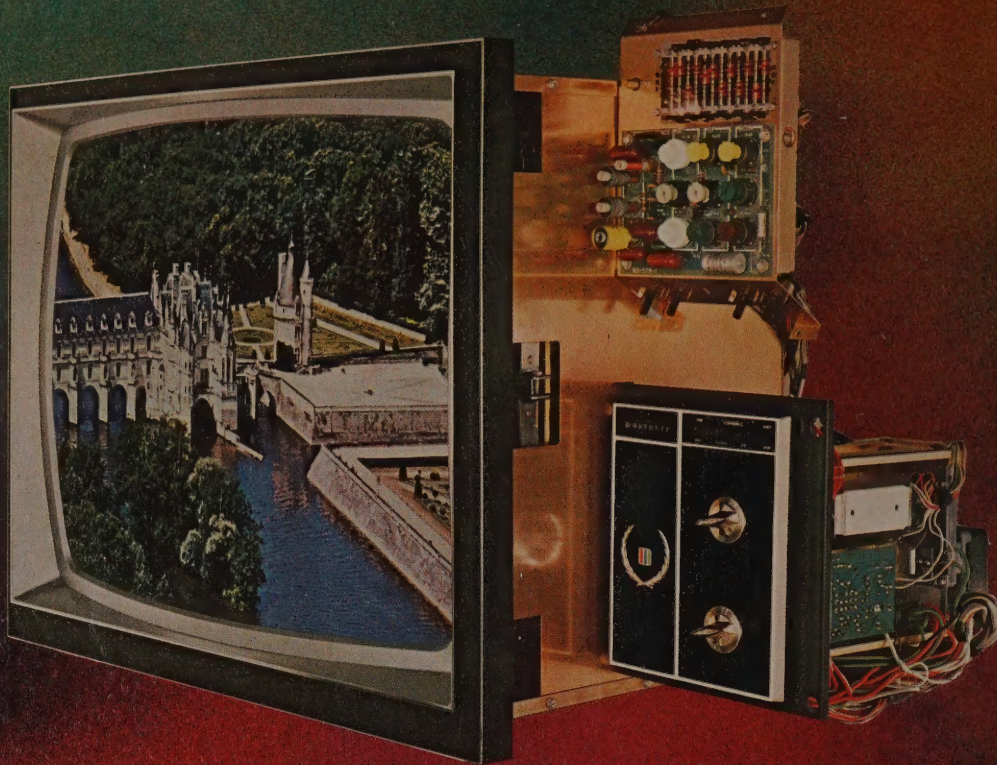
"Great new solid-state stereo receiver kit matches the demands of the most golden of golden ears." —*Radio Electronics*

Read more of the experts' reviews on the new Heathkit AR-1500 on page 12

Other new kits in this issue :

- New 25" solid-state color TV with 24-channel VHF/UHF detent power tuning, p. 2
- New low-cost solid-state 5" 10 MHz scope, p. 47
- New "compact" AS-106 acoustic suspension speaker, p. 30
- New 100 MHz 5-digit frequency counter, p. 46

New 25V solid-state color TV with



Another Heathkit "first" — the new GR-900 with more tuning convenience than any other set we make... 599.95 (less cabinet)

- Power tunes 12 preset UHF & 12 VHF channels ...in either direction
- New voltage-controlled varactor UHF tuner
- Full remote control capability on both UHF & VHF
- Exclusive Heath MTX-5 ultra-rectangular tube
- New built-in angular tint control switch

With the new Heathkit GR-900, color TV takes on a new dimension of convenience for '72. No more fumbling through the elusive UHF band—the GR-900 lets you preselect any 12 of your favorite UHF channels 14 through 83. Then you scan in both directions either with push-button power tuning or remote control, while the exclusive Heath detent tuning feature zeroes 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. A simple push button selects either UHF or VHF channels, while a lighted dial indicates the UHF or VHF channel number you're tuned to. In remote control operation, an electronic latching circuit replaces the UHF/VHF switch to provide you with full remote selection of all 12 VHF and 12 preset UHF channels. Also featured is a new angular tint control switch giving you selection of "normal" or "wide angle" color demodulation to reduce tint and flesh tone change when switching channels or when stations change from one program source to another.

The new 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.

Color Picture Tubes Warranted For 2 Full Years.

An "Instant-On" feature brings you picture and sound in seconds—can be overridden for normal "on/off" operation. Other features include VHF and UHF power tuning at the touch of a button or remote control; Automatic Fine Tuning for perfect picture and sound at a touch; adjustable tone control; an output for playing the TV audio through your stereo/hi-fi system for the ultimate in sound reproduction.

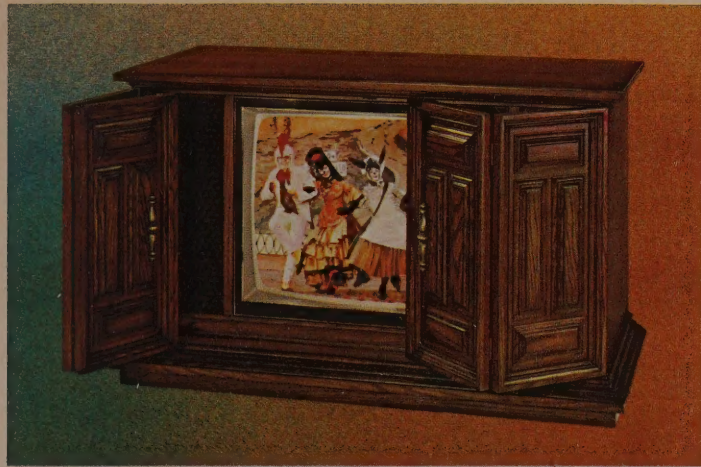
At the heart of the GR-900's outstanding performance, long-life and reliability is the solid-state modular circuitry including 46 transistors, 57 diodes and four ICs containing another 54 transistors and 15 diodes. Picture tube and high voltage rectifier are the only tubes used. Assembly, service, and adjustments are simplified through the use of individual plug-in glass epoxy circuit boards containing major circuit functions. Better fringe-area reception, increased sensitivity, lower noise and cross-modulation are the result of a specially designed solid-state VHF tuner with MOS Field Effect Transistor. Sensitivity is further enhanced by the RF amplifier and hot-carrier diode design of the varactor tuner. Other features are a three-stage solid-state high-gain IF for improved picture quality; Automatic Chroma Control for consistent color saturation under varying signal conditions; adjustable video peaking for precise sharpness control of picture; adjustable noise limiting and gated AGC for minimizing pulse-type interference. And, as with all Heathkit color TV models, the GR-900 is designed for home servicing to add to your savings. The built-in dot generator and tilt-out convergence panel let you perform the periodic 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. Versatile installation flexibility is yours in the GR-900, too. Install it in the new Heathkit electronic hide-away TV wall mount (next page); your choice of luxurious preassembled cabinets on page 4; or in your own custom mount.

For the ultimate in color TV entertainment and convenience—25 in. diagonal ultra-rectangular viewing, with advanced UHF detent tuning—order your all new Heathkit GR-900 today. And have a happy new year.

Kit GR-900, TV less cabinet, 125 lbs., Express/Frt. 599.95
See next page and page 4 for GR-900 cabinet options

GR-900 SPECIFICATIONS — Tuning range: VHF TV channels 2-13; UHF TV channels 14-83 presettable in each of 12 detent positions. **Hi-Fi output:** Impedance, 2.2 K ohms. **Output voltage:** 1V rms nominal. All other specifications same as GR-371 MX.

24-channel detent UHF/VHF power tuning



Luxurious new Mediterranean console for Heathkit GR-900 and GR-371MX Color TVs...179.95

The finest cabinet in the Heathkit line has rich-grained pecan veneers on hand rubbed furniture grade hardwood solids. Two beautifully scalloped double-hinged doors hide the TV screen when it's not in use, fold neatly to the cabinet sides when opened. Ornate brass "Canterbury Antique" handles add the perfect finishing touch. Measures 29 3/4" H x 46 1/4" W x 22 5/8" D (25 1/2" D incl. cup).

Assembled GRA-405-25, 100 lbs., Express/Frt. **179.95**

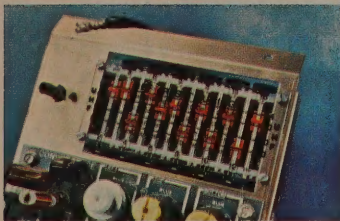
Other cabinet options for GR-900 and GR-371MX color TVs on pg. 4

GRA-404-25 (Mediterranean), 87 lbs., Express/Frt. **139.95**

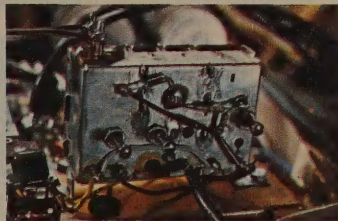
GRA-403-25 (Early American), 75 lbs., Express/Frt. **122.95**

GRA-401-25 (Contemporary), 62 lbs., Express/Frt. **81.95**

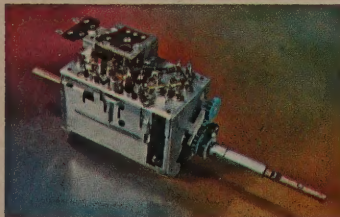
Only the Heathkit GR-900 offers you these advanced color TV features:



Convenient UHF preselection controls



Exclusive Heathkit varactor UHF tuner



Exclusive MOSFET solid-state VHF tuner



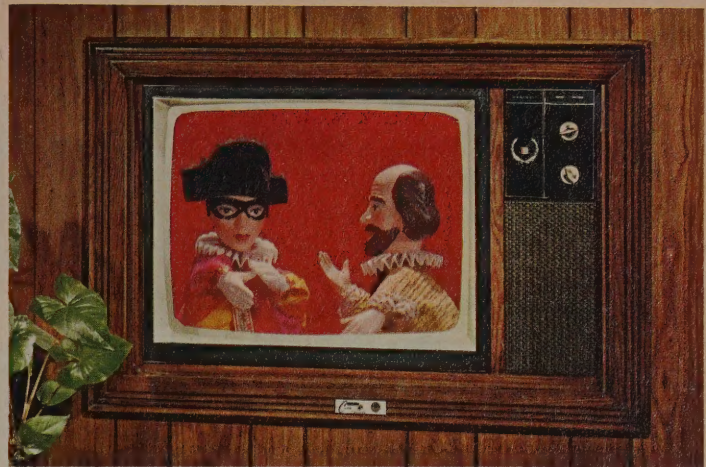
Front panel pushbuttons for fingertip control



New angular Tint Control switch

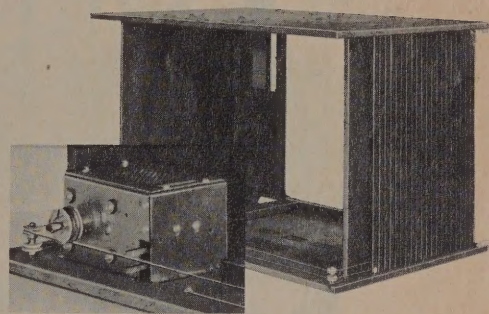


New programmed Trouble-shooting Procedure manual



Heathkit hide-away TV wall mount with "electronic doors" for GR-900 & 371MX

Everything you need for easy custom installation including preassembled trim frame, sliding tambour doors, electric motor assembly, and enclosure complete with tilt-out speaker baffle & convergence panel. Assembly easily slides out for TV maintenance.



Now you see it, now you don't. That's the hidden beauty behind the Heathkit electronic TV Wall Mount designed to house your Heathkit GR-900 and GR-371MX color TV. Push the frame-mounted button—or touch the optional GRA-900-6 Wireless Remote Control—and the carefully crafted tambour doors silently glide open to reveal your color TV picture. Picture and sound come on automatically when doors are opened. Another touch of the button (or Wireless Remote) and the doors slide quietly closed. An easy-slip clutch transmits power from the electric motor to doors. Doors also may be operated manually. The new "electronic" wall mount is ideal for bedroom, office, den... wherever you want to hide your TV. Or use it as the perfect hide-away for hi-fi components, wall safe, bar, etc.

The Heathkit TV Wall Mount can be as unobtrusive as conventional wall molding or as wild as a piece of modern art. It's available pre-finished in rich walnut or unfinished for antiquing or painting by you. You can even give the sliding doors a one-of-a-kind personal touch. Cover them with a favorite print or poster, slitting the illustration at the center point and at the tambour folds. Kit includes everything you need to build the completely self-contained enclosure that easily slides into hole prepared in wall or door.

Kit GRA-402-25, walnut finish, 50 lbs., Express/Frt. **114.95**

Kit GRA-407-25, unfinished, 50 lbs., Express/Frt. **109.95**

GRA-402-25, 407-25 SPECIFICATIONS — Power requirements: 120-130 VAC, 60 Hz, 75 watts. Time delay: (after switch is actuated and doors begin to close) approximately 5 seconds. Door closing time. Approx. 10 seconds. Dimensions: Cabinet: 23 3/8" H x 38 1/8" W x 22 3/8" D. Frame: 26 3/8" H x 39 3/8" W x 1 3/8" D.

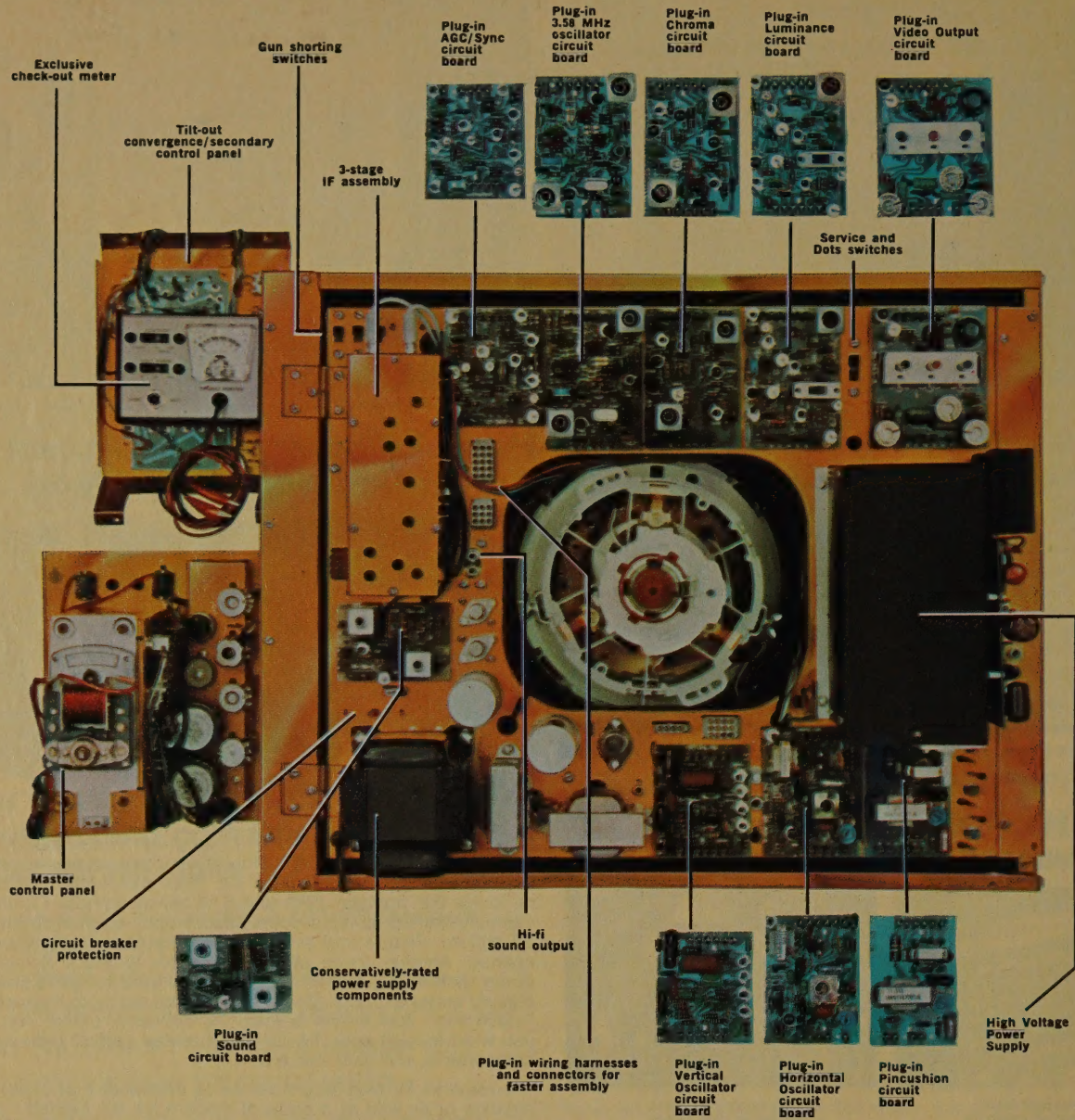
New Wireless Remote Control for GR-900...

gives you 8-function across the room control of on/off; 3 preset volume levels; power tuning (up and down); color; tint; and UHF/VHF channel selection.

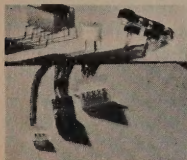
Kit GRA-900-6, 8 lbs., mailable **79.95**

Inside Heathkit Color TV

Only exclusive Heath design gives you all these features...



why Heathkit solid-state color TV is your best TV value today:



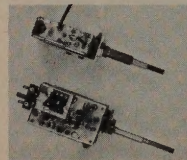
transistor & IC sockets; plug-in wiring harnesses



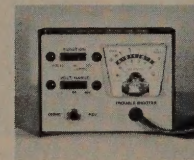
famous Heathkit manuals



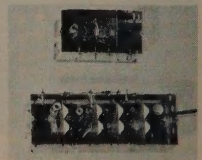
7 separate power supplies



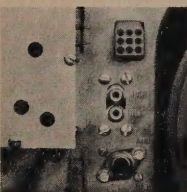
solid-state tuners



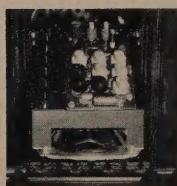
exclusive check-out meter



3-stage IF & built-in AFT



Hi-fi sound output



Convergence / secondary control panel tilts out from cabinet to provide instant access to controls for minor touch-up adjustments or periodic convergence. A Heath exclusive.

Add this easy-to-build wireless remote control to Heathkit solid-state color TV...GR-270, GR-370 & GR-371MX models. Gives across-the-room control of on/off, volume, channel selection, color and tint without moving from the comfort of your chair. Fast, easy assembly & installation.

Kit GRA-70-6, 6 lbs., mailable 64.95



25V and 23V solid-state color TV

GR-371MX...579.95 (less cabinet)

GR-370...539.95 (less cabinet)



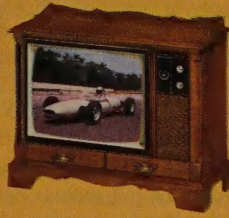
GRA-404-25



GRA-303-23



GRA-401-25



GRA-403-25



GRA-301-23



GRA-304-23

Last call on GR-370

Big-screen viewing...with deluxe features

- Plug-in circuit boards for fast, easy assembly
- Factory-assembled & aligned tuners, IF, AFT & high voltage section
- Pushbutton VHF power tuning
- Exclusive Heathkit owner-service capability

The Heathkit 25V GR-371MX and 23V GR-370 bring you the big picture, along with the advanced features you want most in color TV. The GR-371MX boasts the exclusive Heath MTX-5 25-inch diagonal ultra rectangular picture tube — the largest color TV tube available to the industry — with a full 315 sq. in. of viewing area reproducing the complete transmitted image with no wrap-around at the sides. A specially etched face plate cuts glare, increases contrast without sacrificing brightness, and a matrix screen around the phosphor dots reduces reflected light. The "370" features one of the industry's finest 23 inch diagonal premium quality bonded face etched glass picture tubes for crisp, bright, natural color. A Matrix tube is available at slightly extra cost. Both sets feature famous Heathkit modular plug-in circuit board design with transistor sockets; factory-assembled & aligned tuners, IF, AFT & high voltage section for easier assembly; solid-state circuitry with 45 transistors, 55 diodes, 2 silicon-controlled rectifiers, 4 ICs containing another 46 transistors, 21 diodes, and just 2 tubes (picture & high voltage rectifier) for long life & reliability; exclusive MOSFET design solid-state tuner for good sensitivity, low noise, best reception; completely shielded 3-stage IF for high gain, good picture quality; push-button Automatic Fine Tuning for "locked-on" sound & picture; pushbutton VHF power tuning scans all VHF and one UHF channel at a touch; Automatic Chroma Control for constant color under varying signal conditions; adjustable noise limiting and gated AGC to minimize pulse interference and maintain constant signal strength; adjustable video peaking for selecting degree of picture sharpness you want; adjustable tone control; defeatable "instant-on"; automatic degaussing; 75 & 300 ohm antenna inputs; and hi-fi output for playing TV audio through your own hi-fi system. As with all Heathkit color TVs, the GR-371MX and GR-370 come with built-in dot generator & tilt out convergence panel to let you perform periodic adjustments required of all color receivers. A volt-ohm meter and complete trouble-shooting instructions are included, too. For top-of-the-line performance at traditional Heathkit savings, order your GR-371 or GR-370 today.

Kit GR-371MX, all parts including chassis, 315 sq. in. picture tube, mask, UHF & VHF tuners, AFT & speaker, 125 lbs., Exp./Frt. **579.95**

Kit GR-370, all parts, incl. chassis, picture tube, mask, VHF & UHF tuners, AFT & speaker, 124 lbs., Exp./Frt. **539.95**

Kit GR-370MX, GR-370 as above with Matrix picture tube, 124 lbs., Exp./Frt. **549.95**

Cabinets for GR-371MX

Assembled GRA-404-25, Mediterranean cabinet of furniture grade hardwoods & veneers beautifully finished in pecan. 30 $\frac{3}{8}$ " 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 $\frac{3}{8}$ " H x 37 $\frac{1}{4}$ " W x 19 $\frac{7}{8}$ " D (22 $\frac{3}{4}$ " D incl. cup), 62 lbs., Exp./Frt. **81.95**

Assembled GRA-403-25, Early American cabinet in classic Salem Maple, constructed of fine hardwoods & veneers. 32 $\frac{1}{2}$ " H x 38 $\frac{1}{2}$ " W x 19 $\frac{3}{4}$ " D (22 $\frac{3}{8}$ " D incl. cup), 75 lbs., Exp./Frt. **122.95**

(See page 3 for other cabinet options)

Cabinets for GR-370

Assembled GRA-303-23, Early American cabinet 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., Exp./Frt. **119.95**

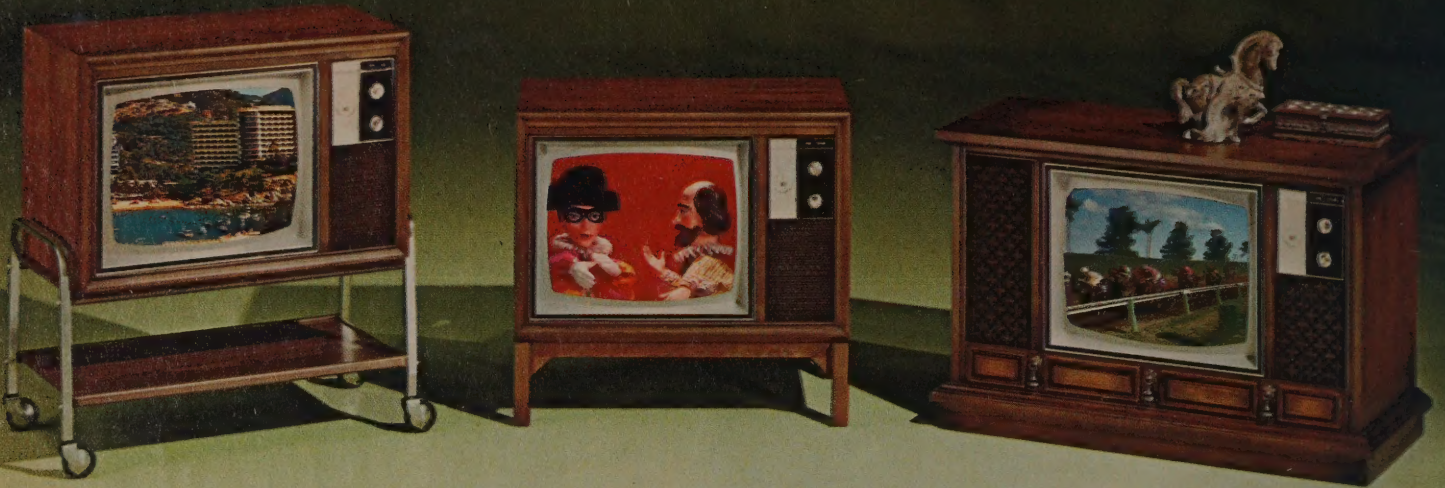
Assembled GRA-301-23, contemporary walnut cabinet of fine veneers & solids with oil-rubbed walnut finish. 29 $\frac{3}{8}$ " H x 35 $\frac{7}{8}$ " W x 19 $\frac{7}{8}$ " D (22 $\frac{3}{4}$ " D incl. cup), 60 lbs., Exp./Frt. **81.95**

Assembled GRA-304-23, Mediterranean cabinet of furniture grade hardwoods finished in flawless pecan. 30 $\frac{3}{8}$ " H x 47 $\frac{1}{2}$ " W x 20 $\frac{5}{8}$ " D (23 $\frac{1}{2}$ " D incl. cup), 78 lbs., Exp./Frt. **139.95**

GR-371MX & GR-370 SPECIFICATIONS: Viewing Area: (GR-371MX) — 315 sq. in.; (GR-370) — 295 sq. in. **Picture Tube High Voltage:** 25,000 V. **Deflection:** Magnetic, 90 degrees. **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. **Picture IF Carrier:** 45.75 MHz. **Sound IF Carrier:** 41.25 MHz. **Color IF Subcarrier:** 42.17 MHz. **Sound IF Frequency:** 4.5 MHz. **Video IF Bandwidth:** 3.58 MHz. **Hi-Fi Output:** Output impedance, 1 k ohm. Frequency response ± 1 dB 50 Hz to 15 kHz. Harmonic distortion, less than 1% at 1 kHz. Output voltage, 0.3 V rms nominal. **Audio Output:** Output impedance, 4 ohm or 8 ohm. Output power, 2 watts. **Power Requirements:** 110 to 130 volts AC, 60 Hz, 240 watts.

Color Picture Tubes Warranted For 2 Full Years.

20V solid-state color TV



Simulated Color TV Pictures

Heathkit GR-270—an excellent choice for smaller rooms...489.95 (less cabinet)

- Automatic Fine Tuning
- Pushbutton VHF power tuning
- Factory-assembled and aligned 3-stage IF

Where space is at a premium, the GR-270 fills the bill—with big-set features and performance. Modular design makes building a snap. Ten glass epoxy circuit boards snap in or out in seconds simplifying assembly and service. The solid-state design uses over 100 devices and only two tubes (picture and high voltage rectifier) to deliver visibly superior performance. The premium quality 20" diagonal picture tube, one of industry's best 227 sq. in. bonded face, etched glass tubes, delivers crisp, true color pictures. Automatic fine tuning is standard, as is power tuning of all VHF channels and one preselected UHF channel. Factory assembled and aligned 3-stage IF is completely shielded to eliminate external interference. Solid-state VHF tuner with MOSFET delivers improved sensitivity, lower noise and less cross-modulation for better reception under marginal conditions.

Other features include built-in automatic degaussing; automatic chroma control; adjustable noise limiting and gated AGC; high resolution circuitry; adjustable video peaking; "instant on"; adjustable tone control; hi-fi-output; 75 and 300 ohm VHF antenna inputs. For further self-

service savings, a built-in dot generator, tilt-out convergence/secondary control panel and comprehensive Heath manual team up to offer simple step-by-step home service. And the Volt-ohm meter supplied lets you troubleshoot and adjust entire set.

Kit GR-270, all parts incl. chassis, picture tube, mask, VHF and UHF tuners, AFT and spkr., 116 lbs., Express/Frt. **489.95**

Cart and cabinet combo,

Assembled GRA-203-20 cabinet, 46 lbs., Express/Frt. **51.95**

GRA-204-20 roll-around cart, 19 lbs., Express/Frt. **19.95**

GRS-203-5 cart & cabinet combo, 65 lbs., Express/Frt. **61.95**

Assembled GRS-203-6, walnut finished, contemporary cabinet and base combo above center. Cabinet 21 $\frac{1}{8}$ " H x 31 $\frac{1}{2}$ " W x 18 $\frac{3}{8}$ " D (21 $\frac{1}{2}$ " D incl. cup), 59 lbs., Express/Frt. **63.95**

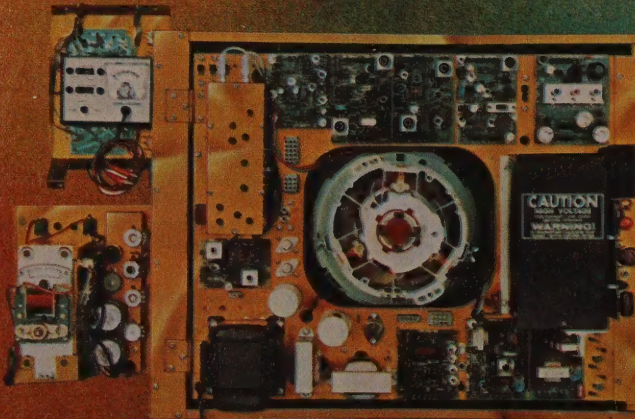
Assembled GRA-202-20 Mediterranean cabinet, finished in luxurious pecan, above. 28 $\frac{1}{8}$ " H x 42 $\frac{3}{8}$ " W x 19 $\frac{7}{8}$ " D (22 $\frac{3}{4}$ " D incl. cup), 85 lbs., Express/Frt. **84.95**

GR-270 SPECIFICATIONS: Viewing Area: Approx. 227 sq. in. Picture Tube High Voltage: 25,000 V. Deflection: Magnetic, 90 degrees. 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. Picture IF Carrier: 45.75 MHz. Sound IF Carrier: 41.25 MHz. Color IF Sub-carrier: 42.17 MHz. Sound IF Frequency: 4.5 MHz. Video IF Bandwidth: 3.58 MHz. Hi-Fi Output: Output impedance, 1 k ohm. Frequency response, ± 1 dB 50 Hz to 15 kHz. Harmonic distortion, less than 1% at 1 kHz. Output voltage, 0.3 V rms nominal. Audio Output: Output impedance, 4 ohm or 8 ohm. Output power, 2 watts. Power Requirements: 120 VAC, 60 Hz, 240 W. Required installation clearances are given in spec sheet and manual.



HEATHKIT TV CAN BE BUILT BY BEGINNERS

If you can follow simple directions, we believe you can assemble any Heathkit TV set... with no prior experience, special tools or skills. The construction manual shows you how. Even shows you how to perform many normal service and adjustment procedures with no outside help. Remember, when you buy Heathkit TV, we won't let you fail, for our entire staff of TV experts stands ready to help you.

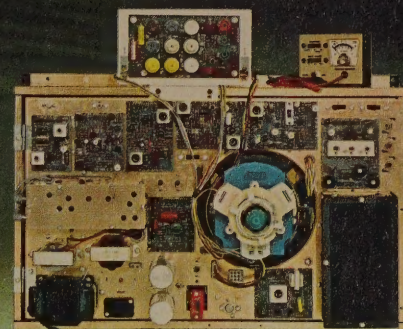
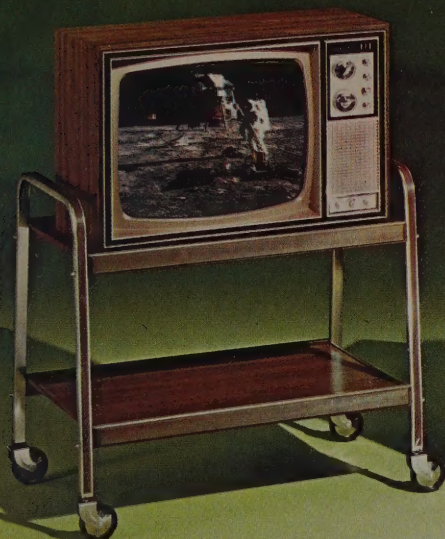


Color pictures tubes warranted for 2 full years

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. 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 a period of two years from date of original purchase. All picture tubes warranted for two full years.

18V compact solid-state color TV



Simulated Color TV Pictures

Heathkit GR-269 – the “fit anywhere” color TV, ... only 399.95 (less cabinet)

- All solid-state modular design
- Automatic fine tuning — standard
- Assembled and aligned solid-state 3-stage IF

The GR-269 is small enough to fit practically any room size or decor, yet large enough to deliver an excellent, fully viewable picture in any living room or rec room. Four state-of-the-art Integrated Circuits, 48 transistors, 47 diodes and just two tubes (picture and high voltage rectifier) combine to deliver superb performance.

Most of the circuitry mounts on 9 plug-in circuit boards on the rear of the swingout chassis. You get faster, easier assembly with less chance for error...higher reliability...and much easier service and adjustment. The factory assembled & aligned AFT module gives you perfect picture and sound automatically, instantly...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 for easier assembly and peak performance. Solid-state 3-stage IF is assembled & aligned. Delivers higher gain for better performance. Completely shielded. “Instant-On” is standard. Just a

pull of the power switch gives instant sound, pictures in seconds. Switch-controlled degaussing permits degaussing the set anytime to give you pure, clean color pictures at a touch. Other features include hi-fi sound output; 75 & 300 ohm antenna inputs; exclusive Heath Magna-Shield that screens out magnetic fields; plus the famous Heath built-in self-service aids that allow you to completely maintain and service your set, right down to the smallest part.

Kit GR-269, all parts including chassis, 180 sq. in. picture tube, mask, VHF & UHF tuners, AFT, speaker, 100 lbs., Express/Frt. **399.95**

Assembled GRA-402-18 walnut-grained vinyl clad wood cabinet illustrated above left. 16½” H x 25” W x 11” D (15⅝” D incl. cup), 33 lbs., Express/Frt. **29.95**

Assembled GRA-401-18 Striking contemporary cabinet finished in hand-rubbed oiled walnut illustrated above center. 29” H x 28¼” W x 18¼” D. 41 lbs., Express/Frt. **59.95**

GRA-403-18 Roll-Around Cart above with walnut finished wood and pale brass accents. 27” W x 15⅝” D x 22” H. 23 lbs., Express/Frt. **19.95**

GR-269 SPECIFICATIONS: Picture Size: 180 sq. in. viewing area. Tube-type: Non-etched. Deflection: Magnetic, 90°. Focus: Electrostatic. Convergence: Magnetic. Antenna Input Impedance: VHF — 300 ohm balanced or 75 ohm unbalanced; UHF — 300 ohm balanced. Tuning Range: VHF — Channels 2-13; UHF — Channels 14-83. Picture IF Carrier: 45.75 MHz. Sound IF Carrier: 41.25 MHz. Color IF Subcarrier: 42.17 MHz. Sound 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: 15¾” H x 24½” W x 18” D. Required installation clearances are given in spec sheet and manual.

HEATHKIT COLOR TV COMPARISON CHART

Model	Tube Size & Type	Viewing Area	Tube Face	Circuit Type	Modular Design	AFT	Adj. Video Peaking	Remote Available	Degaussing Type	Automatic Linearity	Picture Straightening	Separate Control Panel	Cabinet Optional	Hi-Fi Output	Self-Service	Price
GR-900	25v Matrix MTX-5	315 sq. in.	Etched Non-glare	Solid State	Yes	Yes	Yes	Yes	Auto	Yes	Top, Bottom, & Sides	Yes	Yes	Yes	Yes + Meter	\$599.95
GR-371MX	25v Matrix MTX-5	315 sq. in.	"	Solid State	Yes	Yes	Yes	"	"	Yes	"	"	"	"	Yes + Meter	\$579.95
GR-370MX	23v Matrix	295 sq. in.	"	Solid State	Yes	Yes	Yes	"	"	Yes	"	"	"	"	Yes + Meter	\$549.95
GR-370	23v Bright	295 sq. in.	"	Solid State	Yes	Yes	Yes	"	"	Yes	"	"	"	"	Yes + Meter	\$539.95
GR-681MX	23v Matrix	295 sq. in.	"	Tube	No	Yes	No	No	"	No	"	"	"	"	Yes	\$439.95
GR-681	23v Bright	295 sq. in.	"	Tube	No	Yes	No	No	"	No	"	"	"	"	Yes	\$429.95
GR-270	20v Bright	227 sq. in.	"	Solid State	Yes	Yes	Yes	Yes	"	Yes	"	"	"	"	Yes + Meter	\$489.95
GR-269	18v Bright	180 sq. in.	Non-Etched	Solid State	Yes	Yes	No	No	Manual	Yes	T & B	No	"	"	Yes + Meter	\$399.95
GR-169	14v Bright	102 sq. in.	Non-Etched	Solid State	Yes	No	No	No	Manual	Yes	None	No	Incl.	No	Yes + Meter	\$349.95

Heathkit solid-state portable TVs



Heathkit 14" solid-state portable color TV... 349.95

- Mini-version of big set circuitry
- Complete secondary controls
- Simplified modular circuit board assembly

No "bargain-basement special," the Heathkit GR-169 color receiver is designed around the same advanced solid-state circuitry and quality components that account for the superior picture and sound in Heathkit consoles. The GR-169 is a miniature version of the renowned Heathkit GR-370, modified just slightly to accommodate the 14" (diagonal) screen. The GR-169 incorporates all the secondary controls found in the big Heathkit sets: Color, Tint, Contrast, Horizontal & Vertical Hold, Height, AGC, Color Killer, Dots and Screen adjustments. And they're all up front for fast, precise tuning. Plus, there's front-panel switch-controlled degaussing so you can quickly demagnetize your GR-169 after moving it from one location to another. Plug-in circuit boards, transistors and ICs permit fast, trouble-free assembly. Kit includes a handy volt-ohm meter, built-in dot generator and the comprehensive manual with supplementary troubleshooting procedures so you can perform normal periodic adjustment and servicing. And the handsome cabinet is included.

Kit GR-169, 69 lbs., Express/Frt. 349.95

GR-169 SPECIFICATIONS — Picture Size: 102 sq. in. viewing area. Deflection: Magnetic, 90°. Focus: Electrostatic. Convergence: Magnetic. Antenna Input Impedance: VHF — 300 ohm balanced or 75 ohm unbalanced; UHF — 300 ohm balanced. Tuning Range: VHF — Channels 2-13; UHF — Channels 14-83. Picture IF Carrier: 45.75 MHz. Sound IF Carrier: 41.25 MHz. Color IF Subcarrier: 42.17 MHz. Sound IF Frequency: 4.5 MHz. Video IF Bandwidth: 3.58 MHz. Audio Output: Power — 1 watt. Impedance — 8 ohms. Power Requirements: 120 VAC, 130 W. Dimensions: 16" H x 20½" W x 16" D.

Swivel Wall Shelf for GR-169... mounts on any wall, saves floor space. Shelf swivels for most convenient viewing angle. Platform finished in walnut; pale brass plated tubing. Platform 24" W x 15¾" D.

GRA-169-1, 15 lbs., Express/Frt. 18.95

Simulated Color TV Pictures



Heathkit 12" solid-state portable B&W TV... 129.95

- Plug-in or battery operation
- New, improved solid-state circuitry
- Easy 12-hour assembly

At home the GR-104B plugs into any standard 120 VAC outlet. In the car, boat or camper it performs just as flawlessly with your 12 volt system. In the great outdoors the GR-104B becomes completely self-contained with the optional rechargeable battery-pack base and snap-on sun shield.

Features include a 110° shell bond picture tube with 20mm neck that requires less deflection power; automatic gain control for rock-steady pictures; front-panel speaker puts the sound where you are. And there are 3 video IF amplifiers with superior gain and controlled bandwidth; deluxe 4 circuit VHF "memory" tuner; 2-speed UHF tuner; transformer operated and regulated power supply for drift-free operation regardless of source; lighted channel indicators; double circuit breaker protection, and hinged two-piece chassis for easy servicing. Assembles in approximately 12 hours.

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

Kit GRA-104-3, battery pack & sun shield, 9 lbs., mailable 42.95

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

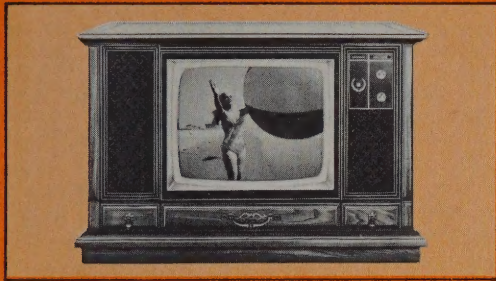
GR-104B SPECIFICATIONS: Picture Size: 74 sq. in. viewing area, picture diagonal 12". Deflection: Magnetic, 110 degrees, 20 mm neck. Focus: Electrostatic. Antenna Input Impedance: 300 ohm balanced. Tuning Range: VHF TV Channels 2 thru 13, UHF TV Channels 14 thru 83. Picture IF Carrier: 45.75 MHz. Sound 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 & Semiconductor 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: 11½" H x 15¾" W x 9¾" D.

Rechargeable Battery Pack Base Mount Plus Sun Shield. Combination rechargeable batteries and charging circuit for play-anywhere operation. Batteries automatically recharge when plugged into any 120 V AC outlet, and GR-104B turned off. Sun shield hood fits over screen mask for best outdoor viewing.



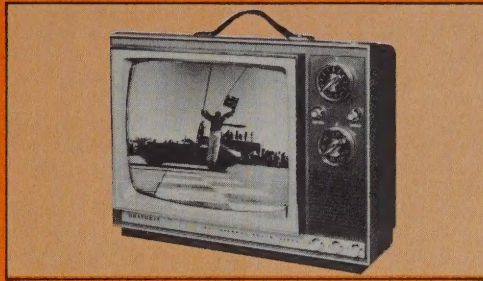
Learn for the fun of it.

Enjoy building a solid-state Heathkit Color or Black & White TV — learn Servicing at the same time!



Included in your Master Course in Color TV Servicing:

Heathkit GR-371MX Color Receiver
For details on this receiver, please refer to page where this unit is pictured and described. Furniture cabinet not included. (Simulated TV reception)



Included in your Master Course in B & W TV and Radio Servicing:

Heathkit GR-104 Black & White Receiver
For details on this receiver, please refer to page where this unit is pictured and described. (Simulated TV reception)



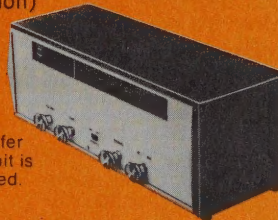
Up to 32 training kits

With both of these NTS programs, in addition to the TV receiver, you will also build an AM-SW radio, a Solid-State radio, and test instruments you'll enjoy for a lifetime — the Heath VOM IM-17 and the NTS Electronic Tube Tester.

Approved for veterans

If you have been in service since 1955, or are still in service, check special box in the enrollment coupon.

Heathkit VOM IM-17.
For details, please refer to page where this unit is pictured and described.



In the Master Course in B & W TV and Radio Servicing, you will also build the NTS Signal Generator. These kits are developed by NTS especially for training purposes. They make learning TV-Radio a snap. And, they come to you without extra costs — you pay shipping charges only on the color picture tube.

National Technical Schools is an accredited member of:
National Association of Trade & Technical Schools,
National Home Study Council.

NATIONAL TECHNICAL SCHOOLS

WORLD-WIDE TRAINING SINCE 1905

Dept. HKK, 4000 South Figueroa Street, Los Angeles, California 90037

SEE OTHER SIDE FOR MORE COURSE INFORMATION

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 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 within the limit of my payment plan. 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. HKK, 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-371MX 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-104 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)
- COLOR TELEVISION SERVICING FOR ADVANCED TECHNICIANS.
COMPLETE HEATHKIT GR-371MX 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 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.

BOTH NTS MASTER COURSES are designed to give you all the background you'll ever need to install and maintain home entertainment equipment. You'll learn to service your own set. Save money on costly service calls, too. You get all this, plus training in stereo and stereo multiplex sound systems.

You need no electronics experience at all. Lessons are easy to understand and fully illustrated. First you'll be introduced to basic electronic principles — the fundamental scientific laws that apply to television, radio and electronics. Then, at your own pace, you'll learn not only the "how" of assembling your kits, but also the "why" — what makes them work. You'll develop a thorough understanding of home entertainment electronics.

All kits are carefully integrated with lesson materials 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 added assistance, if you need it.

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 television receivers.

Hi-fi, stereo, recorders, microphones, speakers and speaker enclosures are also covered in both courses — at no additional cost.

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.

Our **COLOR TV SERVICING FOR ADVANCED TECHNICIANS COURSE** is an advanced course for technicians who have had prior radio training and experience. Covers B&W and Color TV Servicing.

- **18 TRAINING KITS**

Build and keep the Heath GR-371MX & Heath VOM IM-17.

- **79 LESSONS AND KIT MANUALS**

CONSUMER CREDIT INFORMATION

To assist you in understanding the difference between the paid-in-full upon enrollment tuition fee and the time-payment tuition price, National Technical Schools has prepared this chart. This information is presented in accordance with guidelines established under federal law.

HOW TO USE THE CHART: After you have selected the course in which you wish to enroll, and have decided upon the payment plan you will follow, find your tuition cost under Column A. This is the total amount you will pay for the course you have chosen. The cash price, listed in Column B, is the total cost if you prefer to pay in full for the course at the time of your enrollment. By subtracting the down payment (Column C), for your selected course and

plan, from the cash price, the difference is the amount financed which is shown in Column D. The amount of the financing charge is listed in Column E. This finance charge, expressed as an annual percentage rate based upon the amount being financed, is shown in Column F. The total number of monthly payments to be made is listed in Columns G and H. All students have the right to pay in advance the unpaid balance of their tuition and obtain a partial refund of the time-payment charge, based on the actuarial method.

Upon receipt of your enrollment form and payment, we will send you a student I.D. card, and other important information which will assist you in your studies. You will also receive a copy of your enrollment form for your records.

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.	\$—
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 VETERAN FORMS

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

Last call on Heathkit 23V tube-type color TV

PRICES SLASHED ON HEATHKIT GR-681

was 449.95
NOW ONLY **429⁹⁵**

GR-681MX with Matrix tube
was 459.95 NOW ONLY **439.95**

Simulated Color TV Pictures



GRA-301-23

Last call
on cabinets
for GR-681



GRA-303-23

Heathkit GR-681 23 inch meas. diag. tube-type color TV...429.95 (less cabinet)

- Automatic Fine Tuning
- VHF power tuning
- Cable remote control

Features include AFT for perfectly-tuned pictures and sound at the touch of a button; VHF Power Tuning; cable-type remote control; bonded face, etched glass picture tube; automatic degaussing; 3-stage video IF strip; dynamic pincushion correction circuit; 75 and 300 ohm antenna inputs; hi-fi sound output; exclusive Heath self-service aids.

Kit GR-681, AFT model, chassis, tubes, mask, tuners & speaker, 133 lbs., Express/Frt. **429.95**

Kit GR-681MX, as above with Matrix tube, 133 lbs., Express/Frt. **439.95**

Assembled GRA-303-23, Early American cabinet, factory assembled of hardwoods & veneers, finished in Salem Maple; 29³/₄" H x 37¹/₄" W x 19¹/₄" D (22⁵/₈" D incl. cup), 73 lbs., Express/Frt. **119.95**

Assembled GRA-301-23, contemporary walnut cabinet. Constructed of fine veneers & solids with an oil-rubbed walnut finish; 29³/₈" H x 35⁷/₈" W x 19⁷/₈" D (22³/₄" D incl. cup), 60 lbs., Express/Frt. **81.95**

Assembled GRA-304-23, Mediterranean cabinet. Made from furniture grade hardwoods & luxurious veneers; 30¹/₈" H x 47¹/₂" W x 20⁵/₈" D (23¹/₂" D incl. cup), 78 lbs., Express/Frt. **139.95**

GR-681 SPECIFICATIONS — Picture Size: Rectangular viewing area approx. 295 sq. in. Deflection: Magnetic 90°. Focus: Electrostatic. Convergence: Magnetic & dynamic. Antenna Input Impedance: 300 ohm balanced, or 75 ohm unbalanced (VHF). Picture IF 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. Chassis & Tube Dimensions Only: 20¹/₂" H x 25¹/₈" W x 19⁵/₈" D. Control panel assembly, 6¹/₂" W x 7⁵/₈" H x 7" D. Required installation clearances are given in spec. sheet and manual.

Why millions of people buy and build Heathkit products:

• Creative fun and personal satisfaction

Heathkit hobbying offers you a unique creative outlet...an opportunity to create something wholly different from the usual hobby fare...and the heady sense of pride and accomplishment that comes from having created something of value with your own hands.

• Superior performance and value

Heath's insistence on the use of high quality parts and components in kit design results in products whose quality and performance equals and often surpasses that of ready-built equipment costing far more. This superiority is recognized by owners, electronic experts, and leading testing organizations.

• Substantial savings

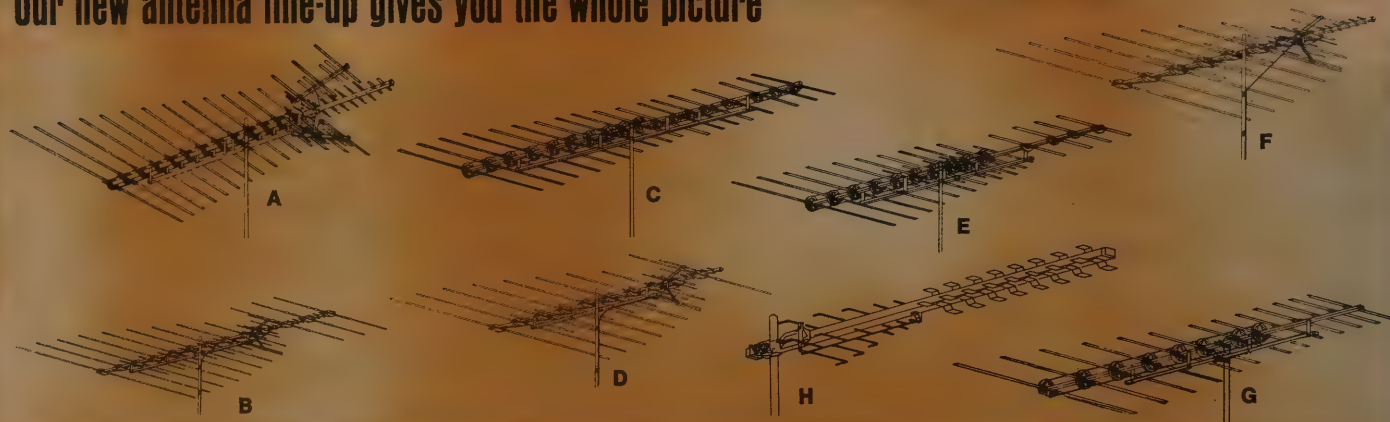
Heathkit products save your money two ways. First, cost-of-labor-saving kit design results in cost savings in some cases of 30% to 50% over comparable pre-built units. Second, Heathkit assembly manuals include self-service instructions, often saving you the expense of service calls later on. It all adds up to greater savings, more value for every Heathkit dollar you spend.

• Fully-backed warranty

After you buy a Heathkit product...we won't let you fail! Every product is backed by our "plain language" warranty covering all parts and components. A staff of factory-trained experts stands ready, both at the factory and at all nationwide Heathkit Electronic Centers, to help you with any questions or difficulties you may have in assembling your kit. And, should the need arise, complete service facilities are also available to you both at the factory and at the stores.



Our new antenna line-up gives you the whole picture



A) The new "Super Antenna" for optimum reception no matter where you live

The ultimate antenna for the Heathkit GR-900 maximum-performance color receiver.

GD-750, 20 lbs. (less mast & coaxial cable), Express/Frt. **79.95**

GD-750 SPECIFICATIONS — Reception Area: Deepest fringe. Impedance: 300 ohms. Front-to-back ratio: VHF low 23 dB, high 23 dB, UHF 24 dB. Beamwidth: VHF low 68°, high 33°; UHF 30°. Elements: VHF 13 driven, 13 parasitics; UHF 1 driven, 44 passive. Length: 196". Turning radius: 116".

B) New Deep Fringe VHF-UHF-FM Coaxial

GD-650, 20 lbs. (less mast & coaxial cable), Express/Frt. **49.95**

GD-650 SPECIFICATIONS — Gain: Low 6½ dB, high 12 dB, UHF 11 dB. Front-to-back ratio: 20 dB. Elements: VHF 9 active, 14 passive; UHF 1 active, 27 passive. Length: 112¾". Width: 106". Turning ratio: 87½".

C) Deep Fringe VHF-FM Coaxial

GD-229, 20 lbs. (less mast & coaxial cable), Express/Frt. **39.95**

GD-229 SPECIFICATIONS — Elements: Active-10; Passive-21. Front-to-Back Ratio: 20. Usable Distance: (over flat terrain with best reception conditions) 200 mi.; FM — 90 mi. Includes 300 to 75 ohm antenna mounted matching balun. Length: 183". Width: 102". Turning Radius: 107".

D) New Fringe/Near-Fringe VHF-UHF-FM Coaxial

GD-450, 15 lbs. (less mast & coaxial cable), Express/Frt. **39.95**

GD-450 SPECIFICATIONS — Gain: Low 5½ dB, High 10 dB, UHF 9 dB. Front-to-back ratio:

Low 18 dB, High 17 dB, UHF 20 dB. Elements: VHF 8 active, 9 passive; UHF 1 active, 15 passive. Length: 118¾". Width: 106". Turning ratio: 77½".

E) Fringe Area VHF-FM Coaxial

GD-219, 19 lbs. (less mast & coaxial cable), Express/Frt. **29.95**

GD-219 SPECIFICATIONS — Elements: Active-10; Passive-13. Front-to-back ratio: 20. Usable distance: 180 mi. (over flat terrain with best reception conditions) FM — 90 mi. Includes 300 to 75 ohm antenna mounted matching balun. Length: 142". Width: 102". Turning radius: 88".

F) New City-Suburban VHF-UHF-FM Coaxial

GD-550, 10 lbs. (less mast & coaxial cable), Express/Frt. **29.95**

GD-550 SPECIFICATIONS — Gain: Low 5 dB, High 8½ dB, UHF 8 dB. Front-to-back ratio: Low 14 dB, High 15 dB, UHF 20 dB. Elements: VHF 7 active, 7 passive; UHF 1 active, 13 passive. Length: 106¾". Width: 102". Turning ratio: 76".

G) City-Suburban VHF-FM Coaxial

GD-158, 14 lbs. (less mast & coaxial cable), Express/Frt. **27.95**

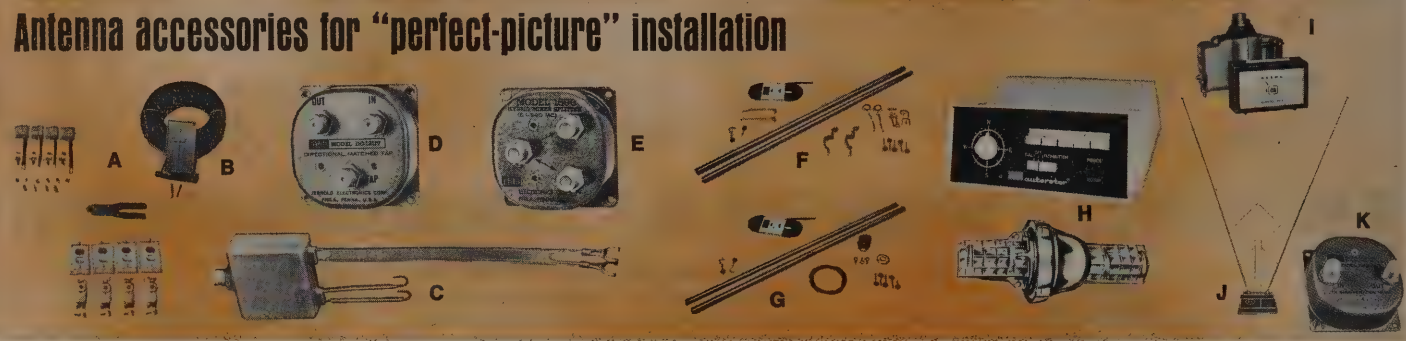
GD-158 SPECIFICATIONS — Elements: Active-8; Passive-9. Front-to-back ratio: 19. Usable distance: (over flat terrain with best reception conditions) 150 mi.; FM — 70 mi. Includes 300 to 75 ohm antenna-mounted matching balun. Length: 120". Width: 102". Turning radius: 79".

H) City-Suburban UHF Coaxial

GD-188, 4 lbs. (less mast & coaxial), mailable **9.95**

GD-188 SPECIFICATIONS — Elements: Active-11; Passive-8. Front-to-back ratio: 19. Usable distance: 60 mi. (over flat terrain with best reception conditions). Includes 300 to 75 ohm antenna-mounted matching balun. Length: 46". Width: 8". Turning radius: 44".

Antenna accessories for "perfect-picture" installation



A) Coaxial Distributor for 4-room TV/FM network—Solid-state Jerrold design distribution amp takes single coax input from any all-channel antenna, amplifies all signals & feeds 4 outlets. Each terminates at surface mounted box or mount flush in electrical boxes. Everything supplied...200' coax cable, connectors, crimping tool, 4 matching transformers/frequency splitters.
GD-248, 14 lbs., mailable **89.95**

B) Reception Proven Coax Cable 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**

C) 75-300 Ohm Matching Transformer/Splitter — Matches one all-channel 75-ohm downlead to separate 300 ohm VHF and UHF TV inputs. With hardware, instructions.
GD-298, 1 lb., mailable **4.95**

D) 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**

E) 75 Ohm Mixer-Splitter To Operate Two Sets—Operates two sets from one coax downlead, or combines two 75 ohm antennas into one lead. 12 dB isolation, instructions, hardware included.
GD-318, 1 lb., mailable **7.95**

F) Antenna Chimney Mount—Two 5' masts, chimney mount, 50 foot 300 ohm trans-

mission line, standoffs, two 10 foot steel traps, complete instructions.
GD-208, 10 lbs., Express/Frt. **7.95**

G) Antenna Roof Mount Kit—Two 5' masts, mast base, 50 foot 300 ohm transmission line, 50 foot guy wire, all standoffs, screw eyes, wire clamps.
GD-218, 9 lbs., Express/Frt. **6.95**

H) 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 power cable not supplied).
GDP-258, 16 lbs., mailable **49.95**

I) High Quality Alliance Tenna-Rotor—Rotates 360° in either direction, instantly reversible, magnetic braking. Sealed against moisture, lubricated for life. (5-wire power cable not supplied.)
GDP-214, 11 lbs., mailable **29.95**

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**

K) FM Band Rejection Filter—Reduces FM input signal strength by a minimum of 18 dB. Recommended where local FM stations cause broadband amplifiers of a system to overload. Reduces FM signal strength by minimum of 18 dB. Insertion loss to VHF/UHF TV channels is 1 dB. 75 ohm impedance.
GD-250, 1 lb., mailable **9.95**



Dear Friends:

Most of you are aware that we had scheduled some price increases back last August. In fact, we had printed the annual catalog prior to President Nixon's voluntary "freeze", so overprinted a special notice on the cover stating that price increases shown were being postponed. Those increases reflected our rising wage and material costs.

Under Phase II of the President's program, we have submitted the required information to the Federal Price Commission and received formal approval to increase prices on certain specified products. While these increases vary somewhat to those in the annual catalog, they still do not reflect our entire increased cost. In total, the increases amount to 1.5% over the entire line as calculated by the Commission rules. Most prices did not change; however, some exceed the 1.5% average — such as with the AR-1500 which has more costly components due to circuit improvements over the AR-15. So that you may identify the amount of any price increase, we are showing below the "base price" for each product, which is the price in effect prior to the August 14th wage/price freeze.

We support the President's plan to control inflation. Our increases are well below the guidelines established by him and only reflect what is necessary to maintain our high standards for quality and performance.

Sincerely,

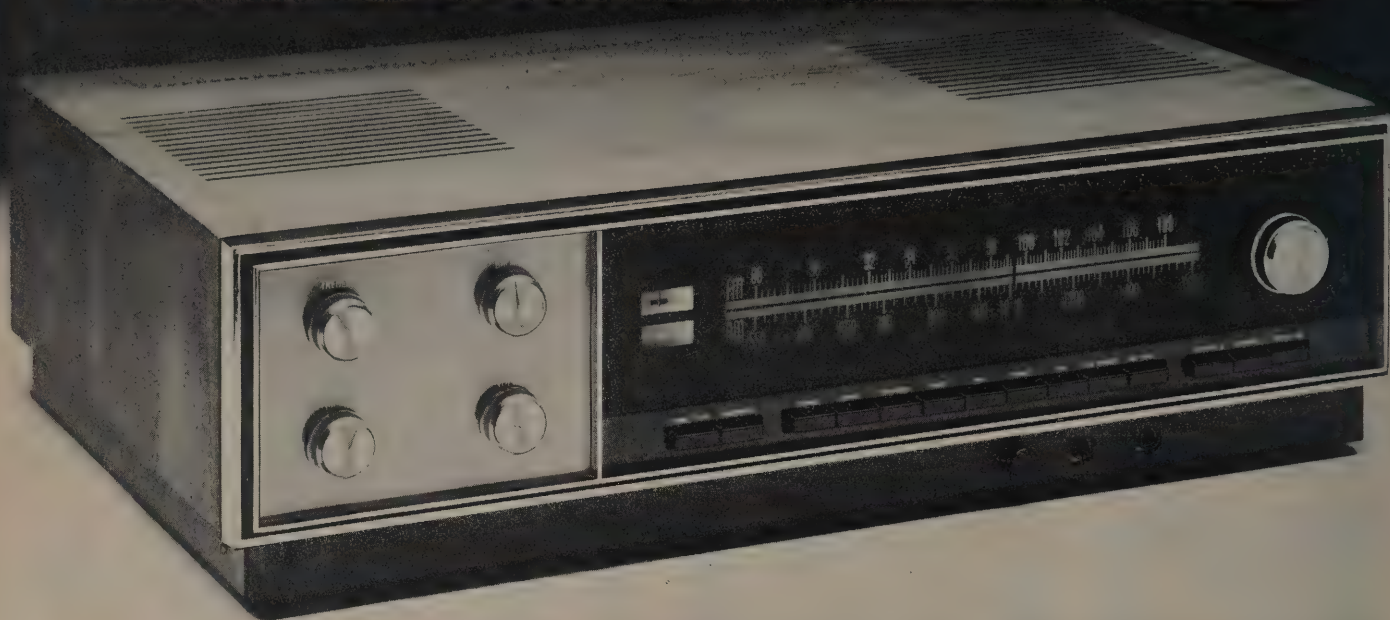
D. W. Nurse

D. W. NURSE
President

Base price information

MODEL	BASE PRICE	MODEL	BASE PRICE	MODEL	BASE PRICE	MODEL	BASE PRICE	MODEL	BASE PRICE	MODEL	BASE PRICE		
AA-14	67.95	AS-163	34.95	EU-701-B	2,720.00	EUW-20	3.50	MODEL	BASE PRICE	MODEL	BASE PRICE		
AA-15	179.95	AS-163-2	66.00	EU-701-BL	2,765.00	EUW-23-E	39.95	GDA-325-1	.50	GTA-18-2	29.95	MODEL	BASE PRICE
AA-18	19.95	AS-173	44.95	EU-701-C	2,920.00	EUW-37	65.00	GDP-99	17.95	GTA-18-3	6.95	IPW-17	110.00
AA-29	149.95	AS-173-2	85.00	EU-701-CL	2,965.00	EUW-15	100.00	GDP-108	9.95	GTA-18-4	9.95	IPW-27	125.00
AA-32	49.95	AS-183	54.95	EU-701-D	3,020.00	EUW-17	32.00	GDP-119	39.95	GTA-101-1	19.95	IR-18-M	149.95
AC-17	7.95	AS-183-2	105.00	EU-701-DL	3,065.00	EUW-18	30.00	GDP-129	54.95	GTA-101-2	19.95	IRA-18-1	9.95
AD-17	119.95	ASA-102-1	149.95	EU-701-E	145.00	EUW-19-B	180.00	GDP-149	49.95	GTA-101-3	22.95	IT-12	24.50
AD-19	289.95	CI-1020	19.95	EU-701-11	210.00	EUW-24	88.00	GDP-159	59.95	GUA-1800-1	4.99	IT-17	69.95
AD-27	169.95	DX-60-B	79.95	EU-701-30	395.00	EUW-25	225.00	GDP-202	11.95	GW-14-A	89.95	IT-28	24.95
AD-58-R	39.95	EC-1	225.00	EU-701-50	475.00	EUW-27	125.00	GDP-204	6.95	GWA-14-1	14.95	IT-27	6.95
AD-68-F	49.95	EF-1-E	11.95	EU-701-90	70.00	EUW-28	25.00	GDP-207	4.95	GWA-14-2	79.95	JK-17	21.95
AD-110	119.95	EF-1	10.95	EU-701-91	195.00	EUW-18-A	99.95	GDP-214	29.95	GWS-14-A	159.95	JK-18	24.95
AD-120	44.95	EF-1-5	39.95	EU-701-92	75.00	GD-18-B	99.95	GDP-258	49.95	HD-10	39.95	JK-27	14.95
AD-121	49.95	EF-1-6	49.95	EU-701-93	100.00	GD-18	54.95	GDP-315	6.95	HD-15	24.95	JK-37	29.95
AD-126	39.95	EF-3	14.95	EU-702-70	835.00	GD-19-M	224.95	GDP-317	5.45	HD-16	9.95	JK-1011	19.95
AD-130	64.95	EF-3-2	44.95	EU-703-B	3,145.00	GD-19-S	224.95	GDP-327	5.45	HD-20	14.95	JK-1022	24.95
AD-140	89.95	EK-1	24.95	EU-703-D	3,445.00	GD-19	199.95	GDP-337	5.45	HDP-21-A	29.95	JK-1033	29.95
AD-2002	29.95	EK-2-A	21.50	EU-703-2	190.00	GD-28	59.95	GFP-83	12.95	HDP-22	18.95	MDA-19-A	89.95
ADA-17-1	14.95	EK-2-B	21.50	EU-703-31	315.00	GD-29	379.95	GH-12-A	8.95	HDP-32	9.50	MDA-19-1	9.50
ADA-39-1	10.95	EK-3	19.95	EU-703-60	130.00	GD-48	69.95	GH-17-A	14.95	HDP-42	2.50	MDP-103	9.95
ADA-39-2	5.95	EPA-10-1	6.50	EU-703-61	70.00	GD-57	129.95	GH-25	19.95	HDP-293	4.50	MDP-105	24.95
ADA-39-4	10.95	EPA-10-2	5.00	EU-703-62	140.00	GD-69	19.95	GP-21	29.95	HG-10-B	44.95	MDP-106	29.95
ADA-47-1	6.50	EU-13-A	185.00	EU-703-70	1,145.00	GD-77	49.95	GR-17	49.95	HM-15	14.95	MDP-107	59.95
ADA-47-3	15.95	EU-14-A	68.00	EU-707-31	975.00	GD-79	49.95	GR-24	28.95	HM-102	29.95	MDP-108	49.95
ADA-47-4	6.50	EU-20-B	225.00	EU-800-CA	105.00	GD-87	49.95	GR-28	24.95	HN-31	10.95	MI-18-1	29.95
ADA-49-1	14.95	EU-20-BE	225.00	EU-800-CB	18.00	GD-97	34.95	GR-36	69.95	HP-13-A	69.95	MI-18-2	32.95
ADA-49-4	12.95	EU-20-V	320.00	EU-800-CC	24.00	GD-101	39.95	GR-38	32.95	HP-23-A	51.95	MI-19-1	79.95
ADA-57-2	3.80	EU-20-VE	320.00	EU-800-DB	19.00	GD-107	54.95	GR-43-A	159.95	HR-10-B	79.95	MI-19-2	79.95
ADA-100-1	19.95	EU-20-W	315.00	EU-800-DC	14.00	GD-109	79.95	GR-48	39.95	HRA-10-1	9.95	MI-25	44.95
ADA-100-2	3.80	EU-20-2	17.00	EU-800-DD	90.00	GD-110	39.95	GR-58	49.95	HS-24	8.95	MI-29	89.95
ADA-110-1	19.95	EU-20-3	17.00	EU-800-DE	40.00	GD-111	109.95	GR-78	129.95	HM-12-A	109.95	MI-101-1	139.95
ADP-49	175.00	EU-20-4	17.00	EU-800-DF	32.00	GD-113	29.95	GR-81	29.95	HW-16	99.95	MI-102	24.95
ADP-79	99.50	EU-20-5	17.00	EU-800-HB	35.00	GD-120	12.95	GR-88	49.95	HW-18-1	119.95	MP-10	32.50
ADP-89	139.50	EU-20-9	17.00	EU-800-JA	48.00	GD-121	22.95	GR-98	49.95	HW-22-A	109.95	MP-14	119.95
ADP-92	23.92	EU-20-10	17.00	EU-800-JB	20.00	GD-125	35.95	GR-100	259.95	HW-32-A	109.95	MWA-15-1	99.00
ADP-100	189.50	EU-20-23	34.00	EU-800-JC	15.00	GD-130	9.95	GR-104-A	124.95	HW-101	249.95	MWA-18-1	19.95
ADP-135	15.95	EU-20-28	220.00	EU-800-JD	29.00	GD-138	25.95	GR-104-B	124.95	HW-18-1	179.95	MWA-18-2	49.95
ADP-1002	59.00	EU-20-29	110.00	EU-800-JE	18.00	GD-158	27.95	GR-151-B	19.95	IB-28	89.00	MWA-18-2	499.95
ADP-1218	139.50	EU-20-31	160.00	EU-800-JF	18.00	GD-160	25.95	GR-169	349.95	IB-101	199.95	PD-48	4.95
AE-16	24.95	EU-28-A	25.00	EU-800-JG	21.00	GD-179-A	99.95	GR-227	299.95	IB-102	99.95	PK-1	4.95
AE-18	19.95	EU-29-A	26.00	EU-800-JI	37.00	GD-179-B	109.95	GR-269	399.95	ID-11	21.95	PK-3	5.00
AE-19	19.95	EU-30-A	55.00	EU-800-JJ	26.00	GD-187	29.95	GR-270	489.95	ID-29	29.95	PKW-2	12.00
AE-25	9.95	EU-40-A	100.00	EU-800-K	26.00	GD-188	9.95	GR-295-MX	429.95	ID-101	39.95	PKW-3	7.00
AE-35	8.50	EU-41-A	65.00	EU-800-JM	15.00	GD-189	10.95	GR-296	419.95	ID-1041	6.95	PKW-4	4.95
AE-37	145.00	EU-42-A	130.00	EU-800-KA	85.00	GD-206	19.95	GR-297	549.95	IDS-100	395.00	PKW-4	4.95
AE-47	155.00	EU-44-A	70.00	EU-800-KC	65.00	GD-208	7.95	GR-370	539.95	IG-18	67.50	PKW-101	19.95
AE-55	12.95	EU-45-A	100.00	EU-800-LA	28.00	GD-209-A	139.95	GR-371	579.95	IG-28	79.95	PKW-102	11.00
AE-57	170.00	EU-50-CA	19.50	EU-800-RA	39.00	GD-209-B	149.95	GR-581	339.95	IG-37	79.95	PM-17-A	89.95
AE-65	3.95	EU-50-CC	5.00	EU-800-RB	17.00	GD-218	6.95	GR-681-MX	459.95	IG-42	64.95	PM-18	69.95
AE-101	189.95	EU-50-GA	11.00	EU-800-RC	20.00	GD-219	29.95	GR-681	449.95	IG-52-E	70.95	PM-17-A	89.95
AEA-37-1	70.00	EU-50-HA	5.00	EU-800-RD	8.00	GD-228	7.95	GR-681	449.95	IG-52	69.95	PM-18	69.95
AEA-47-2	80.00	EU-50-HM	14.00	EU-801-A	490.00	GD-228	39.95	GRA-43-1	6.95	IG-57-A	135.00	PM-17-A	89.95
AEA-57-1	90.00	EU-50-JA	39.50	EU-801-B	388.00	GD-238	9.95	GRA-72	2.95	IG-72	49.95	PM-17-A	89.95
AEA-101-1	29.95	EU-50-MA	22.50	EU-801-D	734.00	GD-239	49.95	GRA-88-1	7.95	IG-102	31.95	PM-17-A	89.95
AEA-101-2	19.95	EU-50-MB	13.00	EU-801-11	82.00	GD-248	89.95	GRA-100-3	24.95	IGW-18	99.50	PM-17-A	89.95
AJ-14	57.95	EU-50-MC	12.00	EU-801-12	55.00	GD-298	4.95	GRA-100-4	19.95	IGW-28	114.95	SB-100	220.00
AJ-15	189.95	EU-50-MD	10.00	EU-801-13	65.00	GD-301	10.95	GRA-104-1	42.95	IGW-57-A	199.00	SB-102	349.95
AJ-29	169.95	EU-50-ME	16.00	EU-801-14	37.00	GD-308	10.95	GRA-104-2	1.95	IGW-72	74.95	SB-220	319.95
AK-8	3.95	EU-50-PA	98.50	EU-801-15	195.00	GD-309-A	99.95	GRA-104-3	42.95	IM-16	49.95	SB-303	259.00
AR-14	119.95	EU-51-A	145.00	EU-801-16	175.00	GD-309-B	114.95	GRA-159-1	18.95	IM-17	21.95	SB-310	299.95
AR-15	349.95	EU-53-A	46.00	EU-802-D	795.00	GD-318	7.95	GRA-160-2	64.95	IM-18	29.95	SB-310	299.95
AR-17	79.95	EU-70-A	595.00	EU-805-AA	1,250.00	GD-320	489.95	GRA-180-3	24.95	IM-25	85.00	SB-310	299.95
AR-19	239.95	EU-80-A	120.00	EU-805-D	940.00	GD-325-DE	495.95	GRA-180-4	19.95	IM-28	39.95	SB-310	299.95
AR-27	44.95	EU-81-A	245.00	EU-805-12	340.00	GD-328	11.95	GRA-201-20	19.95	IM-36	64.95	SB-310	299.95
AR-29	299.95	EU-100-W	1,595.00	EU-900-CA	40.00	GD-396	4.50	GRA-202-20	119.95	IM-38	41.95	SB-310	299.95
AR-1500	349.95	EU-100-WE	1,635.00	EU-900-EA	105.00	GD-973-A	17.50	GRA-203-20	49.95	IM-48	69.00	SB-310-1	21.95
ARA-1500-1	24.95	EU-100-X	1,900.00	EU-900-GA	145.00	GDA-18-1	49.95	GRA-203-20	49.95	IM-58	65.00	SB-310-2	39.95
ARW-15	540.00	EU-100-Z	2,845.00	EU-900-JA	40.00	GDA-18-2	49.95	GRA-204-20	19.95	IM-102	229.95	SB-310-3	9.95
AS-16	54.95	EU-200-1	25.00	EU-900-NA	40.00	GDA-19-1	86.50	GRA-227-1	79.95	IM-103	15.95	SB-310-4	29.95
AS-18	34.95	EU-200-2	175.00	EU-900-NC	65.00	GDA-19-2	49.95	GRA-227-2	79.95	IM-105	47.95	SB-310-5	65.00
AS-27	80.00	EU-200-3	100.00	EU-900-QA	150.00	GDA-19-3	34.95	GRA-227-3	24.95	IM-108	54.95	SG-B-E	20.50
AS-27-2	152.00	EU-200-3	25.00	EUA-14-1	9.00	GDA-19-4	19.95	GRA-227-4	19.95	IM-125	120.00	SM-101-A	79.00
AS-37-A	41.95	EU-200-81	425.00	EUA-14-2	9.00	GDA-19-41	24.95	GRA-228	59.95	IM-28	59.95	SM-101-B	500.00
AS-38	154.95	EU-201-B	395.00	EUA-19-1	230.00	GDA-19-42	24.95	GRA-256-6	49.95	IMW-38	57.95	SM-105-A	370.00
AS-41-U	15.95	EU-201-V	525.00	EUA-19-2	15.00	GDA-20-3	54.95	GRA-301-23	79.95	IN-17	29.95	SM-666	132.50
AS-41-W	16.95	EU-201-W	515.00	EUA-19-3	15.00	GDA-20-3	54.95	GRA-303-23	114.95	IN-27	19.95	SM-777	59.95
AS-48	184.95	EU-205-B	675.00	EUA-19-4	190.00	GDA-29-1	24.95	GRA-304-23	129.95	IN-37	7.95	TA-16	119.95
AS-81-U	19.95	EU-205-1	45.00	EUA-19-6	210.00	GDA-47-1	86.50	GRA-401-18	59.95				

We believe this to be the world's finest stereo receiver



Now read what the experts say about the new

"The AR-1500 is the most powerful and sensitive receiver we have ever measured..."

— JULIAN HIRSCH, *Stereo Review*

"...a stereo receiver easily worth twice the cost (or perhaps even more)..."

— *Audio Magazine*

"Great new solid-state stereo receiver kit matches the demands of the most golden of golden ears."

— *Radio Electronics*

Mr. Hirsch goes on to say:

"The FM tuner section of the AR-1500 was outstandingly sensitive. We measured the IHF sensitivity at 1.4 microvolts, and the limiting curve was the steepest we have ever measured... The FM frequency response was literally perfectly flat from 30 to 15,000 Hz... Image rejection was over 100 dB (our measurement limit)..."

"The AM tuner was a pleasant surprise... It sounded very much like the FM tuner, with distinct sibilants and a quiet background, and was easily the best-sounding AM tuner we have had the pleasure of using..."

"...all input levels can be matched and set for the most effective use of the loudness compensation. This valuable feature is rarely found on high-fidelity receivers and amplifiers..."

"The phono equalization was perfectly accurate (within our measuring tolerances)... The magnetic phono-input sensitivity was adjustable from 0.62 millivolt to about 4.5 millivolts, with a noise level of -66 dB, which is very low... When properly set up, it would be impossible to overload the phono inputs of the AR-1500 with any magnetic cartridge..."

"...it significantly bettered Heath's conservative specifications. Into 8-ohm loads, with both channels driven, the continuous power at clipping level was 81.5 watts per channel. Into 4 ohms it was 133 watts per channel, and even with 16-ohm loads the receiver delivered 46.5 watts per channel. Needless to say, the AR-1500 can drive any speaker we know of, and with power to spare..."

"At 1,000 Hz, harmonic distortion was well under 0.05 per cent from 1 to 75 watts per channel... The IM distortion was under 0.05 per cent at level of a couple of watts or less, and gradually increased from 0.09 per cent at 10 watts to 0.16 per cent at 75 watts... The heavy power transformer is evidence that there was no skimping in the power supply of the AR-1500, and its performance at the low-frequency extremes clearly sets it apart from most receivers..."

"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 tests charts that show all voltage and resistance measurements in key circuits as they should appear on the receivers built-in test meter..."

"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..."

"In sound quality and ease of operation, and in overall suitability for its intended use, one could not expect more from any high-fidelity component..."

From the pages of *Audio Magazine*:

"...the AR-1500 outperforms the near-perfect AR-15 in almost every important specification..."

"The FM front end features six tuned circuits and utilizes three FET's, while the AM RF section has two dual-gate MOSFET's (for RF and mixer stages) and an FET oscillator stage. The AM IF section features a 12-pole LC filter and a broad band detector. The FM IF section is worthy of special comment. Three IC stages are used and there are two 5-pole LC filters..."

"...IHF FM sensitivity... turned out to be 1.5 uV as opposed to the 1.8 uV claimed. Furthermore, it was *identical* at 90 MHz and 106 MHz (the IHF spec requires a statement only for IHF sensitivity at 98 MHz but we always measure this important spec at three points on the dial). Notice that at just over 2 microvolts of input signal S/N has already reached 50 dB. Ultimate S/N measured was 66 dB and consisted of small hum components rather than any residual noise. THD in Mono measured 0.25%, exactly twice as good as claimed! Stereo THD was identical, at 0.25%, which is quite a feat..."



**HEATHKIT STEREO...
VALUE LEADER
OF THE AUDIO WORLD**

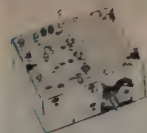
From the Heathkit Williamson-type amplifiers of the early 50's to the sophisticated solid-state devices on these pages, Heathkit hi fi and stereo components have

earned a reputation for uncompromising performance at a price you can afford to pay. Add to this the sheer fun and satisfaction of assembling your own components from manuals famous for completeness and simplicity, and you see why Heathkit stereo rates number one in value today.

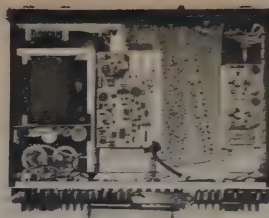


"Black Magic" panel lighting.

Befitting its sophistication, the AR-1500 retains its dignity even when not in use, the majestic midnight face unmarred by dial or scale markings. A touch of the power switch and the "Black Magic" panel lights up to reveal the extended slide rule dial.



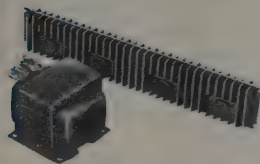
Completely new AM tuner circuitry mounts easily on printed circuit board — includes two dual-gate MOSFETS and J-FET mixer. FM tuner is preassembled ready to install.



Clean, open chassis layout is evident in this bottom view of the AR-1500...a result of the modular plug-in circuit board design.



Operational versatility is enhanced by outputs for two separate speaker systems...and inputs for a multitude of sources, all with individual level controls.



Massive transformer, and output transistors with heat sink across the full length of the back panel, are mute testimony to the power at your command.



Hinged circuit boards for FM IF, AM IF, Multiplex and Phono Pre-amp sections — six plug-in boards for all other major circuitry.



FM circuitry has two LC Filters, three ICs. Even the AM has an LC Filter for superior reception. Plug-in boards for AM and FM. IF sections contribute to error-free assembly.

Heathkit AR-1500

...the separation of the multiplex section of the AR-1500 reaches about 45 dB at mid-band and is still 32 dB at 50 Hz and 25 dB at 10 kHz (Can your phono cartridge do as well?)...

"The real surprise came when we spent some time listening to AM... This new AM design is superb. We still have one classical music station that has some simultaneous broadcasting on its AM and FM outlets and that gave us a good opportunity to A-B between the AM and FM performance of the AR-1500. There was some high-frequency roll-off to be sure, but BOTH signals were virtually noise-free and we were hard pressed to detect more THD from the AM than from the FM equivalent. Given AM circuits like this (and a bit of care on the part of broadcasters), AM may not be as dead as FM advocates would have us believe!...

"As for the amplifiers and preamplifier sections, we just couldn't hear them—and that's a commendation. All we heard was program material (plus some speaker coloration, regrettably) unencumbered by audible distortion, noise, hum or any other of the multitude of afflictions which beset some high fidelity stereo installations. The controls are easy to use and quickly become familiar...

"Rated distortion [0.25%] is reached at a [continuous] power output of 77.5 watts per channel with 8 ohm loads (both channels driven). At rated output (60 watts per channel) THD was a mere 0.1% and at lower power levels there was never a tendency for the THD to 'creep up' again, which indicates the virtually complete absence of any 'cross-over distortion' components. No so-called 'transistor sound' from this receiver, you can be sure. We tried to measure IM distortion but kept getting readings of 0.05% no matter what we did. Since that happens to be the 'limit' of our test equipment and since the rated IM stated by Heath is less than 0.1% at all power levels up to rated power output there isn't much more we can say except that, again, the unit is better than the specification—we just don't know how much better...

"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."

And Radio Electronics had this to say:

"As you know, the original, the AR-15, has been widely acclaimed as one of the very best stereo receivers that has ever been made. Therefore, it's hard to imagine that anyone has gone ahead and built a better one. But spec for spec, the AR-1500 is ahead of the AR-15..."

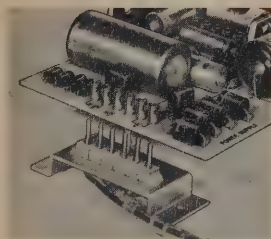
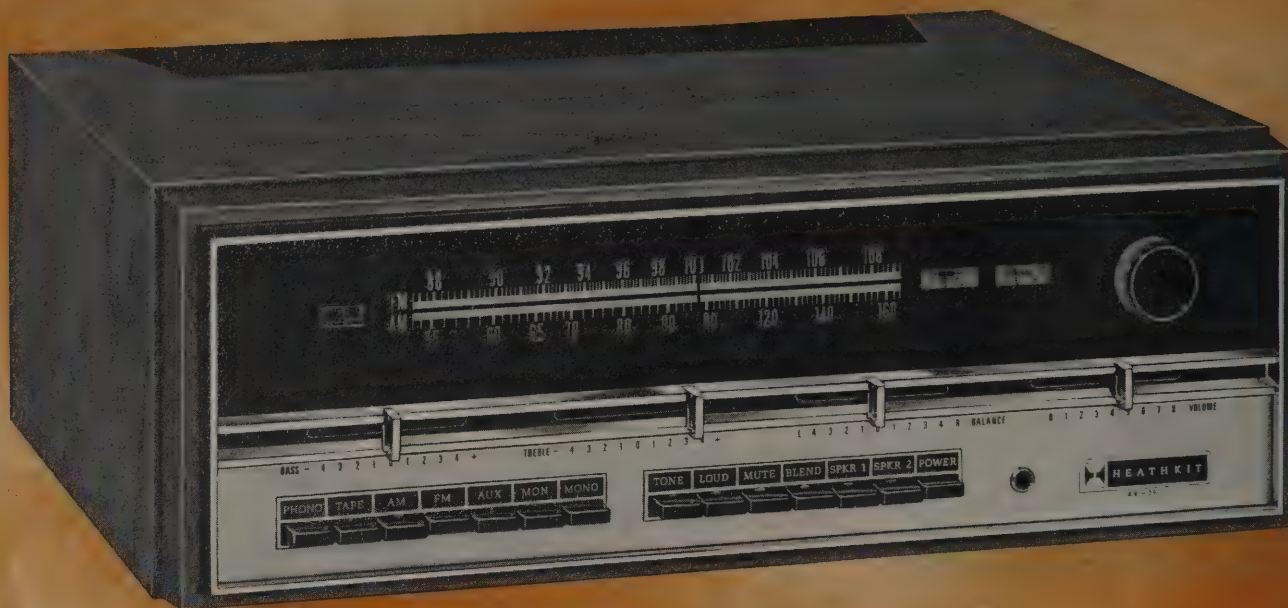
The new Heathkit AR-1500 180-Watt Stereo Receiver...its performance speaks louder than words. Order yours today.

Kit AR-1500, less cabinet, 53 lbs., mailable **379.95**
ARA-1500-1, walnut cabinet, 6 lbs., mailable **24.95**

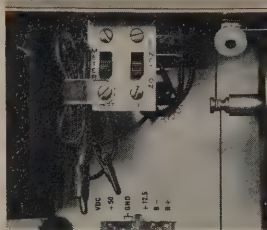
AR-1500 SPECIFICATIONS — TUNER — FM SECTION (Monophonic): Tuning Range: 88 to 108 MHz. Intermediate Frequency (IF): 10.7 MHz. Frequency Response: ±1 dB, 20 to 15,000 Hz. Antenna: Balanced input for external 300 ohm antenna, 75 ohm antenna input may be used between either FM antenna terminal and ground. Sensitivity: 1.8 uV.* Volume Sensitivity: Below measurable level. Selectivity: 90 dB.* Image Rejection: 100 dB.* IF Rejection: 100 dB.* Capture Ratio: 1.5 dB.* AM Suppression: 50 dB.* Harmonic Distortion: 0.5% or less.* Intermodulation Distortion: 0.1% or less.* Hum and Noise: 60 dB.* Spurious Rejection: 100 dB.* **FM SECTION (Stereophonic):** Channel Separation: 40 dB or greater at midfrequencies; 35 dB at 50 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 10 kHz 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. **OPERATIONAL CONTROLS AND SWITCHES — AM FM Tuning:** 535 to 1620 kHz for AM and 88 to 108 MHz for FM. Power Switch: Applies or removes all power to internal circuitry. Speaker Switches: Select either or both speaker systems, or disconnect both systems for private headphone listening. Source Switches: Tape, Aux, Phono, AM, FM Stereo, and FM Auto. Tape Mon Switch: Monitors source signal or recorded signal while recording on tape. Mono Switch: Selects mode of operation; monophonic or stereo. Blend Switch: Reduces high frequency noise without reducing frequency response (high frequency stereo separation may be reduced). Loudness Switch: Compensates for nonlinear frequency-versus-volume characteristics of the human ear at low listening levels. Tone Flat Switch: By-passes tone controls and provides flat amplifier response. Volume Control: Dual tandem control provides simultaneous adjustment of both channels. Bass Control: Dual tandem control. Full clockwise provides 15 dB boost at 20 Hz. Full counterclockwise provides 18 dB cut at 20 Hz. Treble Control: Dual tandem control. Full clockwise provides 14 dB boost at 20 kHz. Fully counterclockwise provides 15 dB cut at 20 kHz. Balance Control: Dual tandem control balances right and left channels for equal sound output. 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 355 watts at full output with no load on accessory outlets. Dimensions: Overall — 18½" W x 5½" H x 13" D.

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

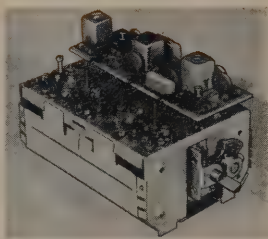
AR-29 100-Watt Stereo Receiver...299⁹⁵



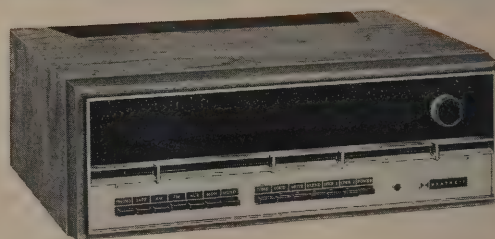
Plug-in fiberglass circuit boards aid assembly, make servicing a snap!



Built-in test circuitry permits fast precise initial setup and servicing without external test equipment.



Pre-assembled and aligned Field Effect FM tuner delivers high sensitivity, low cross modulation, no overloading.



Unique "Black Magic" dual tinted acrylic panel design hides dial, scale and meter markings when the AR-29 is not in use.

Slide-control/pushbutton design with every function you'll ever need

- 100 watts IHF music power, 70 watts continuous
- Assembled & aligned FET tuner
- Computer designed L-C filter
- Solid-state circuitry includes four IC's
- Plug-in circuit boards

Designed with the same exacting attention given the AR-15, the Heathkit AR-29 is unquestionably the best value on the market in a medium-power stereo receiver. Delivers a full 100 watts of IHF music power, 70 watts continuous—enough to drive the most inefficient speakers, producing an incredibly clean, lifelike sound. The all solid-state design utilizes 65 silicon transistors, 42 diodes and four IC's containing another 124 transistors and 40 diodes; an assembled, aligned FET tuning unit that's hypersensitive and free from overload; computer designed L-C filter that never needs alignment. And all major circuitry mounts on plug-in boards for fast, easy assembly.

It's packed with high-performance features including transformerless, direct coupled outputs with dissipation limiting circuitry for output protection; ball-bearing inertia flywheel tuning; mute control and blend control on FM; SCA filter; linear motion controls for volume, balance,

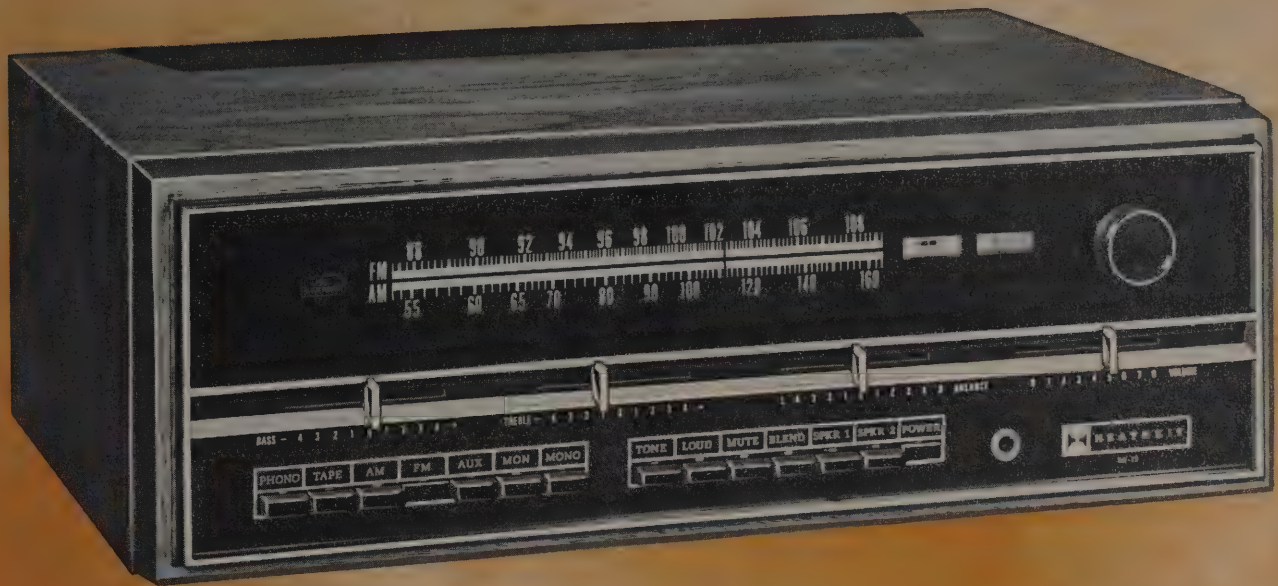
bass and treble; individually adjustable level controls for each channel of each input including tape monitor.

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

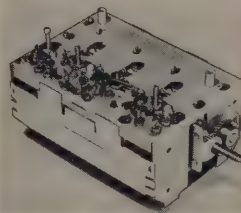
AE-19 oiled pecan cabinet, 9 lbs., mailable **19.95**

AR-29 SPECIFICATIONS — AMPLIFIER — Music power (Each Channel): 8 ohms, 50 W*; 4 ohms, 65 W; 16 ohms, 30 W. **Continuous Power:** 8 ohms, 35 W*; 4 ohms, 35 W; 16 ohms, 25 W. **Power Bandwidth For 0.25% T.H.D.:** 5 Hz to 30 kHz*. **Frequency Response (1 W):** -1 dB, 7 Hz to 60 kHz. **Harmonic Distortion:** 0.25% from 20 Hz to 20 kHz at 35 W rms. 0.1% at 1000 Hz at 1 W. **Intermodulation Distortion:** 0.2% at 35 W, 60 and 6,000 Hz mixed 4:1. 0.1% at 1 W. **Damping Factor:** 50. **Input Sensitivity:** Phono: 2.2 mV (Overload 155 mV). Tape, Aux. & Tape Mon, 180 mV (Overload 10 V). **Hum & 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 µV*. **Selectivity:** 70 dB*. **Image Rejection:** 90 dB*. **Capture Ratio:** 1.5 dB*. **AM Suppression:** 50 dB*. **Harmonic Distortion:** 0.5%*. **Intermodulation Distortion:** 0.4%*. **Hum & Noise:** -60 dB*. **Spurious Rejection:** -90 dB. **FM SECTION — (Stereo-phonics) —** **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. gr. **Sensitivity:** External antenna, 20 µV 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—5½" H x 16¾" W x 14½" D. *Rated IHF (Institute Of High Fidelity) Standards

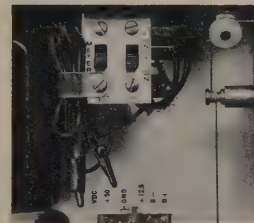
AR-19 60-Watt Stereo Receiver...239⁹⁵



Black Magic Panel Lighting. The distinctive black & chrome face reveals no dial or scale markings when the AR-19 is not in use. Push the power switch and the dial scale markings appear. The unique dual tinted acrylic panel design does it.



Field Effect Solid-State FM Tuner — factory assembled and aligned, gives high sensitivity, low distortion, low cross modulation and freedom from overloading.



Built-In Test Circuitry for fast, exact initial set-up and complete servicing without external test equipment.



Factory Assembled, Aligned FM IF Circuit Board for faster assembly, optimum performance and elimination of IF alignment.

Plenty of power for the average size home at a surprisingly low price

- AM/FM/FM-Stereo
- All solid-state circuitry
- 60 watts IHF music power, 40 watts continuous
- Modular plug-in circuit boards
- IC multiplex section

The Heathkit AR-19 is modestly priced, but in the top class for performance. Most of the solid-state devices (57 transistors, 35 diodes, five integrated circuits) are modularized into plug-in circuit boards. They produce the power and fidelity you need for quality stereo performance—60 watts of stereo music power, response of 6 to 35,000 Hz—distortion less than 0.25%. FM Tuner Sensitivity is 2 uV. That's high performance at low cost.

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. Individually adjustable controls for each input including tape monitor. Two tuning meters, center and signal level.

Other features: direct coupled outputs; dissipation limiting circuitry; massive power supply; assembled and aligned FM tuner; assembled IF section; built-in test circuitry (no other instruments needed); "black magic" panel lighting.

For ample power and the AM-FM-FM Stereo sounds you like to hear—at a price you can afford to pay—order your Heathkit AR-19 now.

Kit AR-19, less cabinet, 30 lbs., mailable **239.95**

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

AR-19 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.:** 5Hz to 30 kHz*. **Harmonic distortion:** 0.25% from 5 Hz to 20 kHz at 20 W 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:** 2.0 uV*. **Capture ratio:** 2.5 dB*. **AM Suppression:** 50 dB*. **Spurious Rejection:** -90 dB*. **FM SECTION (Stereo) — Channel Separation:** 35 dB at mid-frequencies. **Frequency Response:** ±1 dB from 20 to 15,000 Hz. **Harmonic distortion:** 1.5% 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, 130 uV/M at 1000 kHz for 10 dB S+N/N. **Selectivity:** 25 dB at 10 kHz. **Image rejection:** 60 dB at 600 kHz*, 60 dB at 1400 kHz*. **GENERAL — AC Outlet Sockets:** One switched, one unswitched (350 W max. each). **Power requirements:** 120/240 VAC 50/60 Hz. **Dimensions:** Overall — 5 1/8" H x 16 3/4" W x 14 1/2" D.

*Rated IHF (Institute of High Fidelity) Standards

Low cost/high performance receivers



**AR-14 30-watt
FM/FM-Stereo
Receiver
119.95**

A practical, "no-nonsense" amplifier teamed with a highly efficient FM tuner

- 30 clean watts of music power
- FM-Stereo indicator light
- Choice of walnut veneer or metal cabinet

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 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 stereo 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 **119.95**
AE-55, walnut veneer cab., 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" x $3\frac{1}{2}$ "; Depth required from front of mounting surface 11 $\frac{1}{2}$ ".



Heathkit AR-17 14-watt FM/FM-Stereo Receiver...72.95

- All solid-state design with 38 transistors
- Complete source inputs

Shop and compare—you'll find the Heathkit AR-17 an unbeatable value. It offers a 28 transistor, seven-diode circuit that delivers 14 watts of music power with a response of 25 to 35,000 Hz ± 1 dB at full power with less than 1% distortion. Tuner sensitivity 5 μ V. That's performance that's hard to beat at any price.

Mini-size, maxi-versatile. Only 12-in. wide and 3-in. high so it fits on a bookshelf, yet it has a full complement of controls. Six position selector for magnetic phono, tuner, auxiliary, stereo or mono. Has tandem tone controls, clutched volume control, stereo phase adjust for best separation, stereo indicator. Front panel headphone jack. Assembled FM front end, easy circuit board completion. Drives 4-16 ohm speakers. For 120/240 VAC.

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**



Heathkit AR-27 7-watt Mono FM Receiver...44.95

- Factory assembled & aligned tuner
- 13-transistor, six-diode circuitry

Here's high fidelity FM for no more than the cost of an ordinary table radio. The Heathkit AR-27 has a 13 transistor, six diode circuit that offers 7 watts of music power, 5 watts continuous power with a response of 25-60,000 Hz ± 1 dB with less than 1% harmonic distortion in the audible range. Drives efficient speakers of 4 to 16 ohms. Assembled FM front end has 5 μ V sensitivity. Easy to use, has source selector of magnetic phono, tuner, or auxiliary; tone and volume controls; fly-wheel tuning; push-pull on-off switch. Easy circuit board construction completes in two evenings. Fit anywhere size (3" H x 12" W x 10 $\frac{3}{8}$ " D) —go anywhere power requirements, 120/240 VAC, 50-60 Hz. Just add speaker and enjoy.

Kit AR-27, less cabinet, 8 lbs., mailable **44.95**
AE-35 beige metal cabinet, 4 lbs., mailable **3.95**
AE-25 walnut veneer cabinet, 5 lbs., mailable **9.95**

Famous "15" separates for the purist



Unique "Black Magic" dual tinted acrylic panel design hides dial, scale and meter markings when the AJ-15 is not in use.

AJ-15 FM/FM-Stereo Tuner—a true state-of-the-art component...199.95

- 1.8 μ V sensitivity
- 70 dB selectivity

This is the ultimate tuner for those who can afford the best, but still recognize the "cost-of-labor-saving" advantages of a kit. The Heathkit AJ-15 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. Phone & 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).



There's "Black Magic" in the AA-15 front panel. When the unit is turned off, markings disappear into the rich midnight black face plate.

AA-15 150-watt Stereo Amplifier—pure power for the most sophisticated systems...189.95

- Individual input level controls
- Less than 0.5% distortion

The Heathkit AA-15 gives the discriminating audiophile 150-watts of dynamic music power; 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; recessed input and output jacks; both main and remote stereo speaker switches and connections; two stereo headphone jacks; tone-flat switch; positive

circuit protection; loudness switch; tape monitor switch; simplified circuit board construction; versatile three-way installation...in the wall, your own custom cabinet, or optional Heath walnut cabinet.

Kit AA-15 (less cabinet) 37 lbs., mailable **189.95**

AE-18 walnut cabinet, 8 lbs., mailable **19.95**

AA-15 SPECIFICATIONS — Music power (each channel): 8 ohms, 75 W*; 4 ohms, 50 W; 16 ohms, 45 W. Continuous power: 8 ohms, 50 W*; 4 ohms, 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: 4 $\frac{3}{4}$ " H x 16 $\frac{7}{8}$ " W x 12 $\frac{1}{2}$ " D.

*Rated IHF (Institute of High Fidelity Standards).

Heathkit "29" and "14" separates



"Black Magic" panel lighting

The AJ-29 AM/FM/FM-Stereo Tuner—taken from the magnificent AR-29 Receiver... 179.95

- 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/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/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 characteristics. 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)

The AA-29 100-watt Stereo Amplifier—drives two speaker systems with power to spare... 159.95

- 35 watts rms per channel
- Massive regulated & filtered power supply
- Popular "29" slide controls

If you're looking for increased output for your present stereo component system, or a stout heart for a brand new installation, 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.

But the AA-29 is no uncontrollable brute. The sophisticated solid-state circuitry is designed to use the watts where they'll do the most good—producing crystal clear highs, strong vibrant basses at low-to-medium volume levels.

A massive, fully-regulated and filtered power supply, four conservatively heat sunk output transistors and among the best 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)

for flexible true-component installations



The AJ-14 FM/FM-Stereo Tuner—uncommon performance at a practical price...57.95

- Same great FM specs as the AR-14 Receiver
- Solid-state circuitry

A great buy for a low-to-moderate-price system. The Heathkit AJ-14 lets you add exciting FM/FM-stereo to an existing stereo amplifier and speaker installation, or, when used with the AA-14 Stereo Amplifier, gives you a matched component system.

Modern, solid-state circuitry encompasses 14 transistors, five diodes. Three transistors in the tuning section, four in the four-stage IF section provide a 5uV sensitivity, less than 1% distortion—comparable to far more expensive tuners. Filtered outputs allow beat-free stereo recording. There are only four controls for simple operation. 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**57.95**

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, p. 16. (3" H x 12" W x 9 3/4" D)

The AA-14 30-watt Stereo Amplifier—a great low cost amplifier...67.95

- Same amplifier performance as the AR-14 Receiver
- Solid-state circuitry
- Choice of walnut veneer or metal cabinet

There's no better starting point for that economical stereo system. The Heathkit AA-14 is an easy-to-build high performance solid-state component with enough power to drive any efficient 4-16 ohm speaker system. The advanced circuitry 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.

Features complete control complement. Six-position source control handles turntable, tuner or tape-deck—stereo or mono. Clutched volume control gives independent adjustment of each channel. Full-range tandem controls allow bass and treble boost and cut. Also has edge-lighted dial, front-panel headphone jack, speaker-off switch.

Kit AA-14, less cabinet, 11 lbs., mailable**67.95**

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 1/4" D)



Heathkit 20-watt Stereo Amplifier...49.95

Delivers a full 10 watts IHF music power per channel, drives any high efficiency 4-16 ohm speakers with ease. Low distortion and wide 30-30,000 Hz ± 1 dB response. Four stereo inputs: magnetic & ceramic cartridges, tuner and auxiliary. Dual tandem bass & treble controls; separate right & left channel volume controls. Metal cabinet in black, brown & beige included. 120/240 VAC wiring options.

Kit AA-32, 16 lbs., mailable**49.95**

AA-32 SPECIFICATIONS — Output per channel: 8 watts (16 watts total) IHF Music Power Output. Frequency response: ± 1 dB from 30 Hz to 30,000 Hz at rated output. Harmonic distortion: (at rated output) 2% @ 30 Hz; 0.7% @ 1000 Hz, 2% @ 15,000 Hz. Intermodulation distortion: (at rated output) Less than 3% using 60 and 6000 Hz mixed 4:1. Power requirements: 120/240 VAC, 50-60 Hz. Dimensions: 4 3/4" H x 13 1/2" W x 9 1/4" D.



Heathkit 4-watt Mono Amplifier...19.95

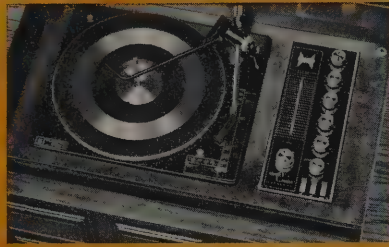
A remarkable value and ideal choice for adding background music to office, den or playroom. Drives any 4-16 ohm high efficiency speaker with power to spare. Excellent frequency response and low distortion. Inputs for ceramic phono cartridges, mono AM or FM tuners or tape recorders. Front panel headphone jack. Brown & beige metal cabinet included. 120/240 VAC.

Kit AA-18, 4 lbs., mailable**19.95**

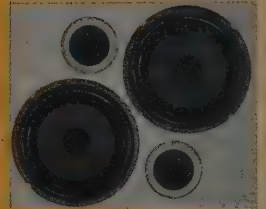
AA-18 SPECIFICATIONS — Dynamic power output: 4 watts.* Continuous power output: 3.25 watts.* Harmonic distortion: Less than 1.5% from 40 Hz to 60 kHz at 4 watts output. Less than 0.7% from 20 Hz to 60 kHz at 1 watt output. Intermodulation distortion: Less than 4% with 4 watts output using 60 Hz and 6 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.

Heathkit Stereo Credenza - 289⁹⁵



Lift the top, reach controls and turntable from standing position; handy compartment holds all your records for the evening.



Two separate speaker systems, four speakers. Quality units for sound comparable to that of individual components.

An uncommon buy in beautiful music

- Famous 30-watt AR-14 Stereo Receiver circuitry
- Assembled & finished Mediterranean oak cabinet

The Heathkit AD-19 component quality performance in a console—and superb value. You get the circuitry of the famous Heathkit AR-14 FM/FM-Stereo Receiver, rated by experts as a “best buy”—the precision-built BSR McDonald 500A Turntable—two matched speaker systems. And they all go together in an incredibly beautiful cabinet that costs you little more than the price of the components alone.

The AR-14 circuitry provides an honest 15 watts music power per channel—enough to fill your home with clean, undistorted sound. Its factory-built FM stereo tuner pulls in stations you didn't know were there—includes adjustable phase control, AFC to end drift, flywheel tuning. The full-featured Heath/BSR McDonald 500A Turntable has four

speeds, cue/pause control, adjustable anti-skate. Comes complete with Shure diamond stylus magnetic cartridge—all fully assembled!

Matched speaker systems mount in tuned-port enclosures. Each contains a 10-in. high compliance woofer and 3½-in. ring-damped tweeter for response from 60 to 16 kHz. The cabinet itself is finished in rich, dark oak veneer with solid oak trim, accented by antiqued brass hardware. Make a New Year's resolution to make a sound stereo investment in the Heathkit AD-19

Kit AD-19 . 158 lbs., Express/Frt. **289.95**

AD-19 PARTIAL SPECIFICATIONS — FM — Sensitivity: 5 μ V. Capture Ratio: 4 dB. **AMPLIFIER** — IHF Music Power Output: 15 W/channel. Continuous Power Output: 10 W/channel. Frequency Response: (1 W) 50-60,000 Hz. Power Bandwidth: 12-90,000 Hz. Channel Separation: 45 dB or better at 1 kHz. Harmonic Distortion: (at full output) less than 1% from 12-60,000 Hz. Intermod. Distortion: Less than 1% at full output. **SPEAKERS** — Crossover Frequency: 2 kHz. **TURNTABLE** — Speeds: 4. Size: 7", 10" or 12". Cartridge: Shure M71, 6 mil spherical diamond; 1½-3 grams. Power: 120 VAC, 50-60 Hz. Size: 27" H x 49½" W x 20½" D.

NOT ELIGIBLE FOR 5% SYSTEM DISCOUNT.



The Heathkit "17" Compact Stereo...129.95

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 handles 7, 10, and 12-in. records, has cue/pause control, adjustable stylus pressure, anti-skate control, Shure diamond stylus magnetic cartridge—comes fully assembled.

AA-14 circuitry assembles quickly and easily with circuit-board wiring harness construction. Cabinet is shipped assembled and finished. Optional smoked plastic dust cover has matching walnut sides. Order with speakers and you receive 5% system discount.

Kit AD-17A, 39 lbs., mailable **129.95**

ADA-17-1, plastic cover, 5 lbs., mailable **15.95**

AD-17A SPECIFICATIONS: Same as AD-27A opposite, except without FM tuner. Size: 8¼" H x 21¾" W x 14¼" D.



The Heathkit "27" Compact Stereo...179.95

The AR-14 FM/FM-Stereo Receiver, the Heathkit/BSR McDonald AD-130 Automatic Turntable wrapped in a handsome highly practical walnut base with integral sliding tambour dust cover. Just add a pair of 4 to 16-ohm speakers and you have one of the best-looking, best-sounding compacts on the market. Order with speakers and apply 5% system discount.

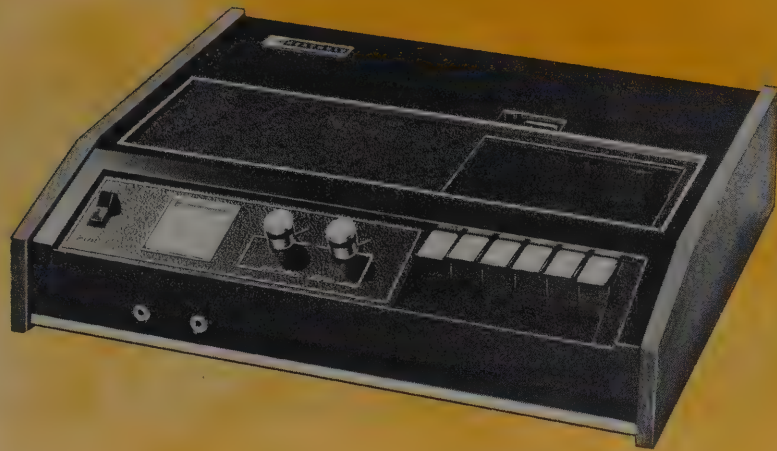
Kit AD-27A, 50 lbs., Express/Frt. **179.95**

AD-27A SPECIFICATIONS — FM SECTION — Tuning Range: 88-108 MHz. Antenna Input Impedance: 300 ohms, balanced input. Sensitivity: 5 μ V.* **AMPLIFIER SECTION** — Continuous Power Output: 10 W/channel. Music Power Output: 15 W/channel.* Tape Output: 0.5 V, with a 0.3 V signal at the AUX input. Tape Output Impedance: 3500 ohms. Frequency Response: (1 W): 12 Hz to 60 kHz \pm 1 dB, 6 Hz to 100 kHz \pm 3 dB. Power Bandwidth: 5 Hz to 90 kHz. Input Sensitivity: Aux. 300 mV. Channel Separation: 45 dB or better at 1000 Hz. **GENERAL** — Power Requirements: 120 VAC, 50-60 Hz. Dimensions: 7¾" H x 21¾" W x 14¼" D.

*Rated IHF (Institute of High Fidelity) Standards.

Heathkit AD-110 Cassette Recorder

129⁹⁵



ADA-110-1; matched omni-directional dynamic microphones provide 60-12,000 Hz response, -77 dB output level, 500 ohm impedance. Attractive polypropylene storage case included.

Performance to match your best components

- Full stereo record & playback functions
- Adjustable bias for chromium-dioxide cassettes
- Level controls and meters for both channels
- Accepts all conventional 1 $\frac{7}{8}$ -ips cassettes

With the AD-110 you can record and play back all mono and stereo cassettes through any mono or stereo system.

Wide response and low noise level matches or surpasses reel machines operating at 3 $\frac{3}{4}$ ips—reproduces all the fidelity the best cassettes offer. Accommodates the new chromium dioxide tapes, too.

Features advanced solid-state circuit with adjustable bias. DC motor with two-transistor regulator offers stable tape speed, minimum "wow" and "flutter."

IC voltage regulator power supply and push-pull oscillator for erase and record bias contribute to its low hum and noise factor. No external

equipment needed to adjust record bias for chromium dioxide tapes. Built-in reference allows initial setup and subsequent adjustments using the front panel meter.

Six pushbuttons control all tape transport functions: Record, Rewind, Play, Fast Forward, Stop-Eject, and Pause. Separate level controls and meters let you tape any "high level" input from less than 100 mV to 10 V. Other features include electronic motor shut-off when tape has played through, counter, and record interlock. Transport mechanism is pre-assembled and aligned for easier assembly. Blank 60-minute cassette included with kit.

Kit AD-110, 10 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 $\frac{7}{8}$ ips. Fast forward-rewind time: Less than 120 sec. for C-60 cassette. Tape: C-30, C-60, C-90 cassettes. Controls: 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 $\frac{1}{2}$ volt from low impedance amplifier stage. Finish: Black with walnut end panels. Dimensions (overall): 3 $\frac{1}{2}$ " H x 13 $\frac{1}{2}$ " L x 11" D. Power: 120/240 VAC, 50-60 Hz, 7 watts.

The Heathkit 8-Track Cartridge Player with Motorola transport mechanism...59.95

- Solid-state circuitry
- Preassembled & adjusted mechanism
- Automatic or manual track selection

The new Heathkit GD-28 is designed to play 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 six-transistor, two-diode preamplifier 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 even easier.

40 Minute Stereo Cartridge
Included with your new GD-28. Features 16 instrumentals played by world famous Capitol Records recording artists. A \$7.95 value!



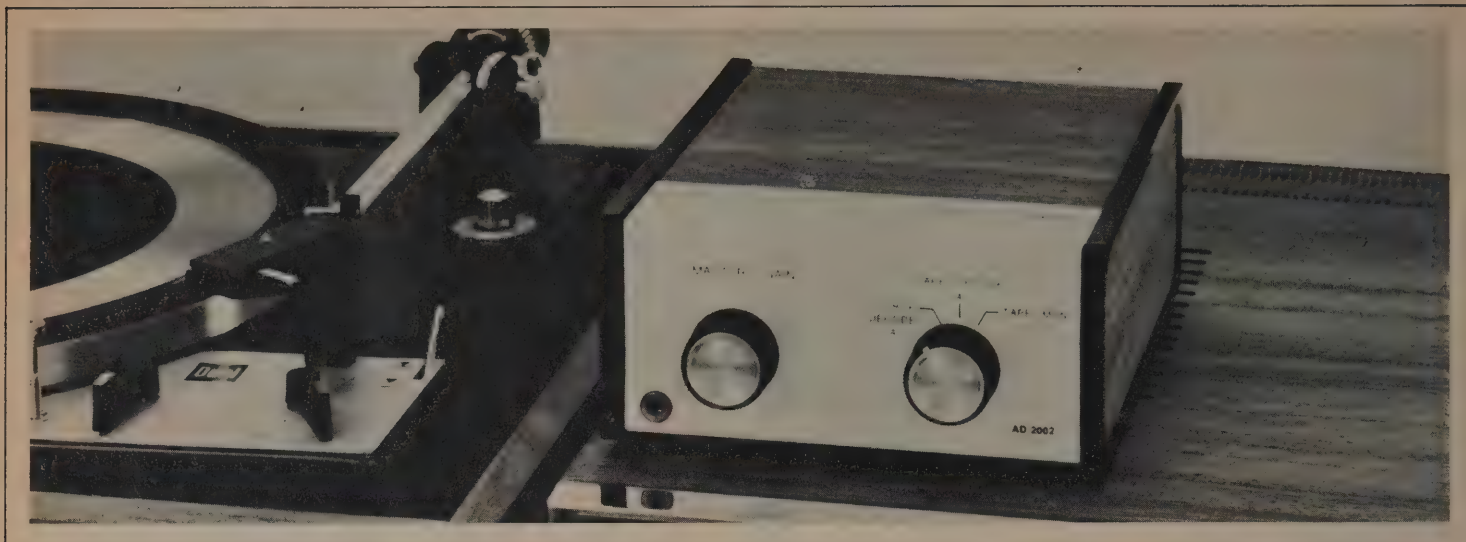
Total assembly time is about six hours. Comes complete with all necessary connecting cables, too. And the smart looking, walnut grained vinyl-clad wood cabinet and gold front panel included with the kit blends with any decor.

Add the sound of 8-track stereo tape cartridges to your home music system soon—with the new Heathkit GD-28.

Kit GD-28, 10 lbs., mailable **59.95**

GD-28 SPECIFICATIONS — Cartridge: 8-track stereo. Tape speed: 3 $\frac{3}{4}$ "/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: 120 VAC, 60 Hz, 45 W (momentary). Cabinet: Simulated walnut grained vinyl clad wood. Dimensions: 4 $\frac{1}{2}$ " H x 10 $\frac{3}{8}$ " W x 8 $\frac{1}{4}$ " D.

Heathkit Stereo-4 Decoder...29⁹⁵



Gives you matrixed 4-channel sound with conventional stereo equipment

Matrixed 4-channel reproduction is a practical approach to quadraphonic audio. It's certainly one of the most inexpensive — in terms of initial cost and because it makes use of most existing stereo gear—cartridges, turntables, amplifiers and receivers. And the Heathkit AD-2002 Stereo-4 Decoder gives you the added economy of a "cost-of-labor-saving" kit.

Compatible with most stereo components, the AD-2002 expands a system for reproduction of 4-channel matrixed signals now being encoded on 2-channel media. In addition, it enhances all of your current stereo records, tapes and FM/Stereo broadcasts with a simulated but extremely realistic 4-channel effect.

A growing number of FM stations across the country are now using Stereo-4 equipment to transmit 4 channels of information via conventional 2-channel methods. All you need to hear this dynamic presentation at home is the Heathkit Stereo-4 Decoder, an additional stereo amplifier and speaker systems for the two additional channels. Also, several record companies are producing Stereo-4 discs that can be played with existing stereo turntables and cartridges.

The Heathkit AD-2002 adds two simple controls to your present system: A master gain knob adjusts the sound level for the entire 4-speaker installation. A three-position mode switch provides "Source Decode 4"

for processing 4-channel information or giving quadraphonic effect to conventional stereo; "Tape Decode 4" for playing tape through the decoder, and "Tape Monitor 2" to cut out the decoder for normal 2-channel operation. The AD-2002 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 Heathkit Stereo-4 Decoder today. Take advantage of one of the three great systems below, (or make up your own) and save yourself 5%.

Kit AD-2002, Decoder plus six 4' audio cables and 33 $\frac{1}{3}$ RPM demonstration record, 3 lbs., mailable **29.95**

Special Stereo-4 Record Offer—The four LP-record package is the perfect introduction to matrixed 4-channel sound. Contains *Big hits of the '20s*, *Big band hits of the '30s & '40s*, *Movie Themes*, *Permissive Polyphonics*.

ADA-2002-1, 2 lbs., mailable **19.95**

AD-2002 SPECIFICATIONS: Gain (control maximum): Unity. Maximum Input Signal: 2.5 V rms. Frequency Response: 10-100,000 Hz; +0, -5 dB. Signal to Noise Ratio, (referred to .25 V input): Greater than 70 dB, wideband. Total Harmonic Distortion, (at .25 V input): Less than .15%. Intermodulation Distortion, (at .25 V input): Less than .25%. Input Impedance: 50,000 ohms minimum. Output Impedance: 3,000 ohms. Controls: Master Gain/Power On-Off, Function Switch: Dimensions: 2 $\frac{1}{2}$ " H., 5 $\frac{1}{4}$ " W., 7" D. overall. Power Requirements: 120 VAC, 50-60 Hz; 3 W.

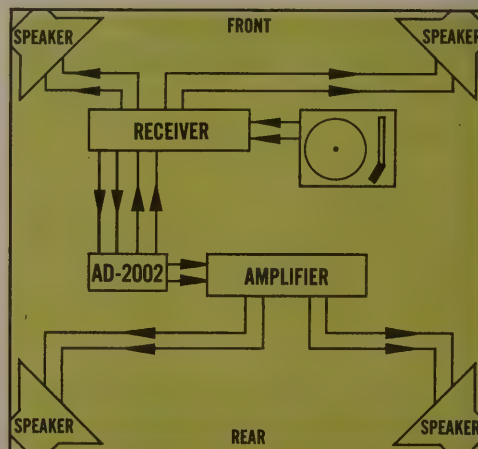
Save 5% on a Heathkit Stereo-4 Conversion System

Here's everything you need to convert your existing FM tuner, stereo amplifier (or FM/Stereo receiver) and speaker system to Stereo-4 reproduction. Choose one of the Stereo-4 systems below, or select any combination including Heathkit stereo amplifier, 2 speaker systems and Stereo-4 Decoder and deduct 5% from total price.

Kit AD-2002, Stereo-4 Decoder **29.95**
Kit AA-32, 20-watt stereo amplifier **49.95**
Kit AS-106 speaker system (pair) **39.90**
 Total if purchased separately **119.80**
 System price with 5% discount **113.81**

Kit AD-2002, Stereo-4 Decoder **29.95**
Kit AA-14, 30-watt stereo amplifier **67.95**
Kit AS-37A, speaker system (pair) **89.90**
 Total if purchased separately **187.80**
 System price with 5% discount **178.41**

Kit AD-2002, Stereo-4 Decoder **29.95**
Kit AA-29, 100-watt stereo amplifier **159.95**
Kit AS-105W, speaker system (pair) **139.90**
 Total if purchased separately **329.80**
 System price with 5% discount **313.31**



The Heathkit Stereo-4 Decoder is connected into a stereo system between the preamp and amplifier or by using the amplifier or receiver's tape monitor facilities. An extra set of tape input and output jacks is provided on the Stereo-4 Decoder.

Stereo System Planning Guide

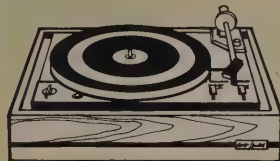
Low Cost Components

Choose a receiver, amplifier/tuner combo, or amplifier



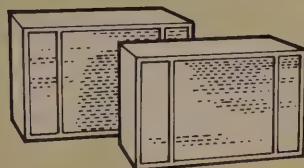
AR-14 FM/FM-Stereo Receiver, AJ-14 FM/FM-Stereo Tuner w/AA-14 Amplifier, or AR-17 FM/FM-Stereo Receiver.

Choose a program source



AD-120 or AD-130 turntable. AD-110 Cassette Recorder, or GD-28 Cartridge Player.

Choose two matched speaker systems



AS-16, AS-18, AS-37A, AS-105, or AS-106 systems. Or AS-123, AS-133, AS-153, AS-163, AS-173; separate speakers.

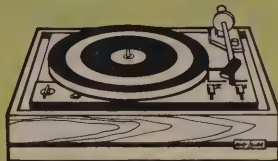
Medium-priced Components

Choose an amplifier, amplifier/tuner combo, or receiver



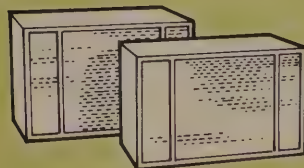
AR-19 AM/FM/FM-Stereo Receiver, AR-29 AM/FM/FM-Stereo Receiver, AJ-29 AM/FM/FM-Stereo Tuner w/AA-29 Amplifier.

Choose a program source



AD-130, AD-140, ADP-1218, ADP-79, or ADP-89 turntable. AD-110 Cassette Recorder or GD-28 Cartridge Player.

Choose two matched speaker systems



AS-105, AS-104, AS-103, AS-48, or AS-38 speaker systems. Or AS-183 separate speakers.

Top-of-the-line Components

Choose a receiver, amplifier/tuner combo, or amplifier



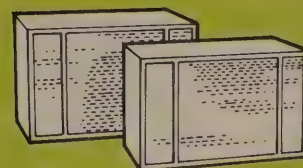
AR-1500 AM/FM/FM-Stereo Receiver, AJ-15 FM/FM-Stereo Tuner w/AA-15 Amplifier.

Choose a program source



ADP-49 or ADP-100 turntable. AD-110 Cassette Recorder.

Choose two matched speaker systems



AS-101, AS-102, AS-103, AS-48 speaker systems. Or AS-27 separate speakers.

Save An Extra 5% By Ordering A Stereo System

Here's How... (1) order a stereo amplifier and stereo program source (such as tuner, turntable, tape player) plus a pair of speaker systems; (2) a stereo receiver and a pair of speaker systems; (3) a stereo compact plus a pair of speaker systems. Order the complete system at the same time, and subtract 5% from the total price. System discount also applies to the new stereo four conversion sys-

tems on page 22. (This system discount does not apply to the Heathkit AD-19 "Component Credenza".) 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, headphones, AC-17 headphone control, antenna) will also qualify for the 5% discount.

Great stereo sound revolves around



SAVE ON
CARTRIDGES

Empire 999SE/X

New Shure V-15 Type II

Shure M91E

A) Garrard Zero 100 with dual-pivot arm

Tone arm has pivoting cartridge housing that keeps stylus perpendicular to groove throughout play for zero tracking error. Has 33 $\frac{1}{3}$ and 45 rpm settings, variable speed adjustment, illuminated stroboscope, sliding stylus weight, 15% vertical tracking adjustment, cartridge overhang adjustment, magnetic anti-skating control, interchangeable spindles for manual or automatic play, adapter available for 45 rpm discs. Cartridge options below. Measures 15 $\frac{3}{16}$ " W x 14 $\frac{1}{8}$ " D x 4 $\frac{3}{8}$ " above motor board, 2 $\frac{1}{16}$ " below. Prod. of Gr. Britain.

ADP-100, turntable only, 18 lbs., mailable 189.50
ADA-100-2, 45 rpm spindle (Garrard LRS-100), 2 lbs., mailable 3.80

B) Garrard SL95B with 12" platter

Three-speed automatic or manual play, with tracking as low as $\frac{1}{4}$ gram. Has low mass aluminum tone arm in gimballed pivots, adjustable anti-skating, two-point record handling in automatic mode, viscous cuing, slide-in cartridge clip. Choose cartridge below. Measures 15 $\frac{1}{16}$ " W x 14 $\frac{5}{8}$ " D x 4 $\frac{3}{8}$ " above motor board, 3" below. Prod. of Gr. Britain.

ADP-89, turntable only, 14 lbs., mailable 139.50
ADA-57-2, 45 rpm spindle (Garrard LRS25), 1 lb., mailable 3.80

C) The SL72B, Garrard precision for less

Like all the great Garrards, has Syncro-Lab motor for precise turntable speed, three-speed automatic or manual play, stylus pressure gauge, anti-skate control, viscous cuing. Cartridges below. Measures 15 $\frac{1}{16}$ " W x 14 $\frac{5}{8}$ " D x 4 $\frac{3}{8}$ " above motor board, 3" below. Prod. of Gr. Britain.

ADP-79, turntable only, 13 lbs., mailable 99.50
ADA-57-2, 45 rpm spindle (Garrard LRS25), 1 lb., mailable 3.80

Accessories for your Garrard turntable:

ADA-100-1, solid walnut base (Garrard WB-2), 6 lbs., mailable 19.95
ADA-47-3, Power-Matic base (Garrard B2P), 3 lbs., mailable 15.95
ADA-47-1, coordinated base, simulated leather/ebony (Garrard B2), 3 lbs., mailable 6.50
ADA-47-4, dust cover (Garrard D2), 4 lbs., mailable 6.50

D) Dual 1219 with perfect-pitch control

Manual or automatic operation for 78, 45 & 33 $\frac{1}{3}$ rpm. Has gimbal tone-arm suspension; separate anti-skating adjustment for spherical and elliptical cartridges; cue-control; damped tonearm descent; elastically

damped counterbalance; adjustable stylus overhang for minimum tracking error; full 12" diameter 7-lb. platter; synchronous/continuous pole motor for exact speed; 6% speed adjustment for precise pitch. Choose cartridge below. 18 $\frac{1}{2}$ " W x 16" D x 8" H. Prod. of W. Germany.

ADP-49, turntable only, 23 lbs., mailable 175.00
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

E) Dual 1218—new value leader

Gives three-speed manual or automatic play. Has separate anti-skating scales for conical and elliptical styli; tracking angle selector in cartridge housing, vernier counterbalance, cue control, pitch control, 4-lb. one-piece cast platter. Will track as low as 0.5 gram. Choose cartridge below. Measures 12 $\frac{9}{16}$ " W x 10 $\frac{5}{16}$ " D x 3 $\frac{1}{16}$ " above motor board, 2 $\frac{1}{16}$ " below. Prod. of W. Germany.

ADP-1218, turntable only, 18 lbs., mailable 139.50
ADA-39-1, walnut base (Dual WB-12), 5 lbs., mailable 10.95
ADA-39-4, dust cover (Dual DC-2), 3 lbs., mailable 10.95
ADA-39-2, 45 rpm spindle (Dual AS-12), 1 lb., mailable 5.95

Save up to 44.95 on cartridges ordered with turntables

New Shure V-15 Type II (Improved). Perfect cartridge for the best turntables. Has new improved VN15E stylus for better trackability in bass and mid-range registers. Order with Garrard Zero 100 or Dual 1219, pay just \$30.

Model AD-1502, 1 lb., mailable 67.50
MFG. SPECS. — Frequency response: 20-25,000 Hz. Output: 3.4 mV. Separation: 25 dB. Load impedance: 47 k ohms. Stylus: 0.2x0.7 elliptical. Tracking force: $\frac{3}{4}$ to 1 $\frac{1}{2}$ grams.

Shure M91E only \$5 when ordered with any Garrard or Dual turntable.

Model AD-68F, 1 lb., mailable 49.95
MFG. SPECS. — Frequency response: 20-20,000 Hz. Output: 5.0 mV. Separation: 25 dB. Load impedance: 47 k ohms. Stylus: 0.2x0.7 elliptical. Tracking force: $\frac{3}{4}$ to 1 $\frac{1}{2}$ grams.

Shure M93E only 1¢ when ordered with any Garrard or Dual turntable.

Model AD-58R, 1 lb., mailable 39.95
MFG. SPECS. — Frequency response: 20-20,000 Hz. Output: 6.2 mV. Separation: 25 dB. Load impedance: 47 k ohms. Stylus: 0.4x0.7 elliptical. Tracking force: $\frac{1}{2}$ to 1 $\frac{1}{2}$ grams.

Empire 999SE/X only \$5 with any Garrard or Dual turntable.

Model AD-121, 1 lb., mailable 49.95
MFG. SPECS. — Frequency response: 8-32,000 Hz. Output: 8.0 mV. Separation: 35 dB. Load impedance: 47 k ohms. Stylus: 0.2x0.7 elliptical. Tracking force: $\frac{1}{2}$ to 1 $\frac{1}{2}$ grams.

Empire 999E/X only 1¢ with any Garrard or Dual turntable.

Model AD-126, 1 lb., mailable 39.95
MFG. SPECS. — Frequency response: 10-30,000 Hz. Output: 8.0 mV. Separation: 35 dB. Load impedance: 47 k ohms. Stylus: 0.3x0.7 elliptical. Tracking force: $\frac{3}{4}$ to 2 grams.

a great turntable/cartridge combination



A



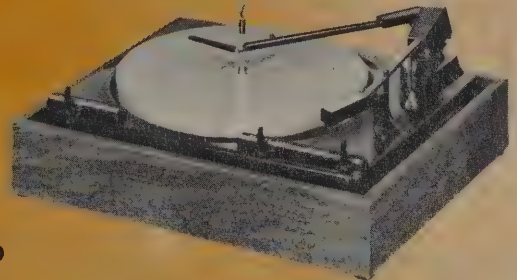
C



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



B



D

All Heath/BSR Turntables come complete with base, dust cover, 45 rpm adapter, cables, and magnetic diamond cartridge.

A) Heath/BSR McDonald AD-140... 89.95

Factory assembled & tested, has four-speed manual, semi-automatic or automatic modes; high torque synchronous motor; viscous damped cueing and pause control; low mass aluminum tone arm; dual range anti-skate control; vernier counter-balance adjustment. Automatic tone arm locks in "off" position. Stereo muting switch gives complete silence during change cycle. Complete with power base, dust cover. Shure M93E cartridge, 45 rpm adapter and all wiring. Prod. of Gr. Britain.

Assembled AD-140, 14 lbs., mailable **89.95**

AD-140 SPECIFICATIONS — Speeds: 78, 45, 33 $\frac{1}{3}$, 16 $\frac{2}{3}$ rpm. **Motor:** High torque, dynamically balanced synchronous type. **Cartridge:** Shure M93E magnetic, diamond elliptical stylus, 1 $\frac{1}{2}$ -3 grams stylus pressure. **Color:** Satin black with aluminum trim. **Cables furnished:** 6-ft. UL approved line cord; two 4-ft. twin shielded audio cables. **Power requirements:** 120 VAC, 60 Hz. **Dimensions:** (including dust cover & base) 7 $\frac{1}{4}$ " H x 15 $\frac{1}{4}$ " W x 13 $\frac{3}{4}$ " D.

B) Heath/BSR McDonald AD-130... 64.95

A high-performance turntable for a nice price, the AD-130 offers many of the same features found in the AD-140, shown above. It has four-speed manual or semi-automatic or automatic capability; high torque synchronous motor; viscous damped 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, 45 rpm adapter and cables. Prod. of Gr. Britain.

Assembled AD-130, 14 lbs., mailable **64.95**

AD-130 SPECIFICATIONS — Speeds: 78, 45, 33 $\frac{1}{3}$, 16 $\frac{2}{3}$ rpm. **Motor:** High torque, dynamically balanced synchronous type. **Cartridge:** Shure M75 magnetic, diamond spherical stylus; 3-5 grams stylus pressure. **Color:** Satin black with aluminum trim. **Cables furnished:** 6-ft. UL approved line cord; two 4-ft. twin shielded audio cables. **Power requirements:** 120 VAC, 60 Hz. **Dimensions:** (including base & dust cover) 7 $\frac{1}{4}$ " H x 15 $\frac{1}{4}$ " W x 13 $\frac{3}{4}$ " D.

C) Heath/BSR McDonald AD-120... 44.95

An excellent unit for the budget minded, the AD-120 is also the perfect automatic turntable for that low cost system. It offers four-speed play manual, semi-automatic or automatic; four-pole induction motor, aluminum counter-weighted tone arm; slide-in cartridge holder; cue/pause control; stylus force control and indicator. Includes base, dust cover, Shure M-75 magnetic diamond stylus cartridge, 45 adapter, cables. Prod. of Gr. Britain.

Assembled AD-120, 14 lbs., mailable **44.95**

AD-120 SPECIFICATIONS — Speeds: 78, 45, 33 $\frac{1}{3}$, 16 $\frac{2}{3}$ rpm. **Motor:** 4-pole dynamically balanced induction type. **Cartridge:** Shure M75 magnetic diamond spherical stylus; 3-5 grams stylus pressure. **Color:** Satin black with aluminum trim. **Cable furnished:** 6-ft. UL approved line cord; two 4-ft. twin shielded audio cables. **Power requirements:** 120 VAC, 60 Hz. **Dimensions:** (including base & dust cover) 7 $\frac{1}{4}$ " H x 15 $\frac{1}{4}$ " W x 13 $\frac{3}{4}$ " D.

D) Heath GD-187... 19.95

An ideal "starter" changer for low-cost hi-fi and stereo systems, the GD-187 comes fully assembled, ready to plug into your amp or receiver. Specifically designed for amplifiers with ceramic cartridge inputs, the GD-187 includes complete instructions for conversion to magnetic cartridge units. Gives four-speed, manual or automatic play. Ceramic cartridge has diamond stylus for LP's, sapphire for 78's. Comes wired for stereo, can be rewired for mono. Includes 45 adapter, measures 6 $\frac{1}{4}$ " H x 14 $\frac{3}{8}$ " W x 12 $\frac{1}{2}$ " D.

Assembled GD-187, 12 lbs., mailable **19.95**

GD-187 SPECIFICATIONS — **Changer:** Type, Maestro Model 52-93. **Speeds:** 16, 33 $\frac{1}{3}$, 45 and 78 rpm. **Record sizes:** 7", 10" and 12". **Cartridge:** Stereo ceramic. **Stylus:** 0.7 mil diamond for LP's, 3 mil sapphire for 78's. **Power requirements:** 120 VAC, 60 Hz, 10 W.

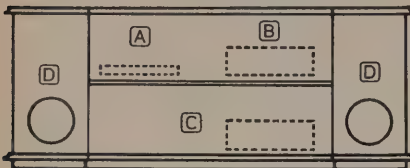
For that one-of-a-kind stereo,



One-piece Mediterranean credenza...195.00

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

- AE-101, credenza, 167 lbs., Express/Frt.195.00
- AEA-101-1, changer drawer, 16 lbs., mailable31.50
- AEA-101-2, cartridge, cassette drawer, 7 lbs., mailable19.95



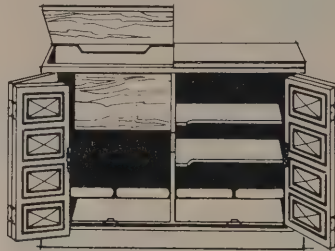
CABINET OVERALL: 267/8" H x 66" W x 19¼" D. **SHELF COMPARTMENT:** (A & B) overall, 357/8" W x 17½" D (shelf 15" D); adjustable shelf height: 5½", 6½", 7½", 8½". **LOWER COMPARTMENT:** (C): 357/8" W x 17½" D x 12¼" H min. (with shelf at 8½"). **SPEAKER CABINET VOLUME:** (D): 2.3 cu. ft. (12" cut out). **CHANGER BASE:** 5½" H x 18½" W x 14" D. **TAPE PLAYER BASE:** 14" W x 12½" D.



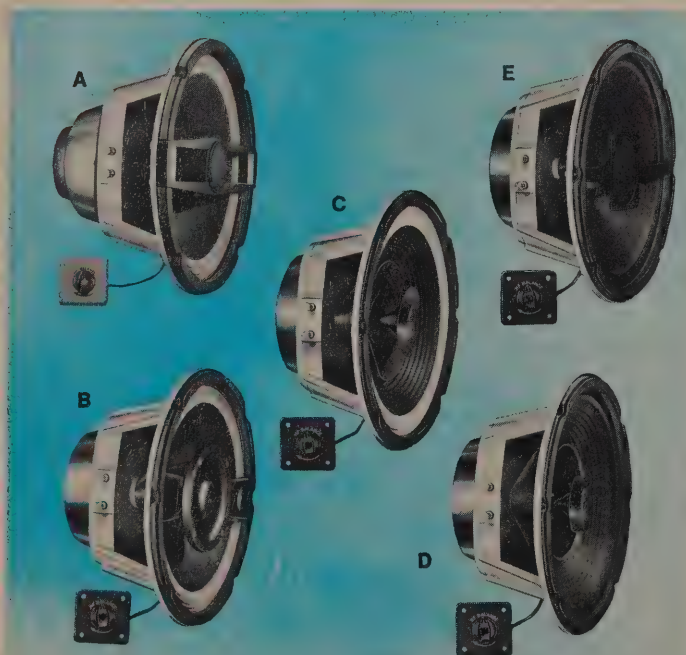
Three-piece Mediterranean group...365.00

Three-piece grouping in selected solids and veneers with a dramatic pecan finish. Bi-fold doors have sculptured resin panels that won't chip, warp or crack; stately bronze handles. Top raises to reveal changer compartment, doors open to components. Adjustable shelves. Matching ducted-port speaker cabinets accept 8-in. or 12-in. speakers (installation instructions included), measures 28¾" H x 17¾" W x 18¾" D. Order a pair for stereo.

- AE-57, equipment cabinet, 109 lbs., Express/Frt.175.00
- AEA-57-1, speaker cabinet, 68 lbs., Express/Frt.95.00



CABINET OVERALL: 28¾" H x 40" W x 19¾" D. **CHANGER COMPARTMENT:** 19" W x 16" D, mounting board is uncut and can be adjusted in height. **RECORD-TAPE RECORDER COMPARTMENT:** 15" H x 19" W x 16" D. **SHELF COMPARTMENT:** Overall interior dimensions: 23¾" H x 19" W x 16" D, with two shelves adjustable 4, 5, 6, 10, 11, 12, 16, 17 or 18" from top.



- A) 3-way high compliance.** 12" unitary speaker with woofer, compression mid-range & horn-loaded compression tweeter. 80 W peak power capability. Mid & high frequency level control. 1-yr. guarantee.
Model AS-27, 15 lbs., mailable79.50
Pair (AS-27-2), 39 lbs., mailable152.00
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".
- B) 2-way high compliance.** 12" high-compliance woofer with re-entrant horn tweeter. High frequency level control. 1-yr. guarantee.
Model AS-183, 15 lbs., mailable54.95
Pair (AS-183-2), 39 lbs., mailable105.00
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".
- C) 3-way high-compliance.** 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., mailable44.95
Pair (AS-173-2), 37 lbs., mailable85.00
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".
- D) 12" 3-way coaxial.** Handles up to 20 W. True coaxial design with woofer, midrange cone and special design horn tweeter. Electrical & mechanical crossovers. High frequency level control. 1-yr. guarantee.
Model AS-163, 12 lbs., mailable34.95
Pair (AS-163-2), 32 lbs., mailable66.00
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".
- E) 12" 2-way coaxial.** Separate woofer & tweeter with capacitive crossover for up to 15 W. High frequency level control. 1-yr. guarantee.
Model AS-153, 10 lbs., mailable24.95
Pair (AS-153-2), 28 lbs., mailable46.00
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".

use Heath custom cabinetry and speakers



Three-piece contemporary group...298.00

Smartly styled with rich walnut finish on fully crafted solids and veneers. Top lifts to expose changer compartment, bi-fold doors hide components. Decorative statuary bronze handles. Matching speaker cabinet has wood-grain molded resin louvers that can't chip, crack or warp. Ducted port reflex design accommodates 8-in. or 12-in. speakers (installation instructions included), measures 28 $\frac{3}{8}$ " 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.74.00



CABINET OVERALL: 23 $\frac{3}{8}$ " H x 40" W x 19" D. **CHANGER COMPARTMENT:** 19" W x 16 $\frac{3}{2}$ " D, mounting board is uncut and can be adjusted in height. **RECORD-TAPE RECORDER COMPARTMENTS:** 15 $\frac{3}{4}$ " H x 19" W x 16 $\frac{3}{2}$ " D. **SHELF COMPARTMENT:** Over-all interior dimensions, 24 $\frac{3}{4}$ " H x 19" W x 16 $\frac{3}{2}$ " D, with two shelves adjustable, 4, 5, 6, 10, 11, 12, 16, 17, or 18" from top.

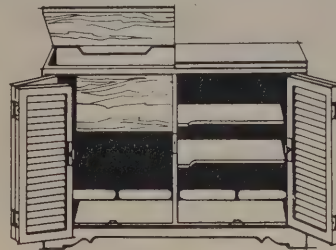


Three-piece Early American group...325.00

Traditional Salem-Maple finish on fine furniture solids and veneers, with louvered doors of molded resins. Lift-top changer compartment, bi-fold front doors swing away to reveal components. Statuary bronze handles. Speaker cabinets display quality workmanship, with handsome wood spindle grille. Ducted port reflex installation for 8-in. or 12-in. speakers. Speaker cabinet measures 28 $\frac{3}{8}$ " 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.80.00



CABINET OVERALL: 28 $\frac{3}{8}$ " H x 40" W x 19" D. **CHANGER COMPARTMENTS:** 19" W x 16" D, mounting board is uncut and can be adjusted in height. **RECORD-TAPE RECORDER COMPARTMENT:** 15 $\frac{3}{4}$ " H x 19" W x 16" D. **SHELF COMPARTMENT:** Overall interior dimensions, 24 $\frac{3}{4}$ " H x 19" W x 16" D, with two shelves adjustable 4, 5, 6, 10, 11, 12, 16, 17 or 18" from the top.

A) 8" 2-way coaxial. 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., mailable19.95

Pair (AS-133-2), 18 lbs., mailable38.00

AS-133 SPECIFICATIONS — Impedance: 8 ohms. Cone resonance: 70 Hz. Magnet weights: 10 oz., 0.68 oz. Voice coil sizes: 1" and $\frac{3}{4}$ ".

B) 8" dual cone. Only 3 $\frac{1}{2}$ " 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., mailable11.95

Pair (AS-123-2), 15 lbs., mailable22.00

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

C) Koss Pro-4AA Headset.

Model ADP-1002, 4 lbs., mailable59.00

ADP-1002 SPECIFICATIONS — Driver element: Dynamic. Frequency response: 10-20,000 Hz. Impedance: 4 to 16 ohm sources. Distortion: Negligible at normal listening levels. Cord: Coiled, 10', 4-wire, 3-circuit plug. Color: Gray-bronze cups, black cushion & band.

D) Koss KO-727B Headset.

Model ADP-1007, 2 lbs., mailable34.95

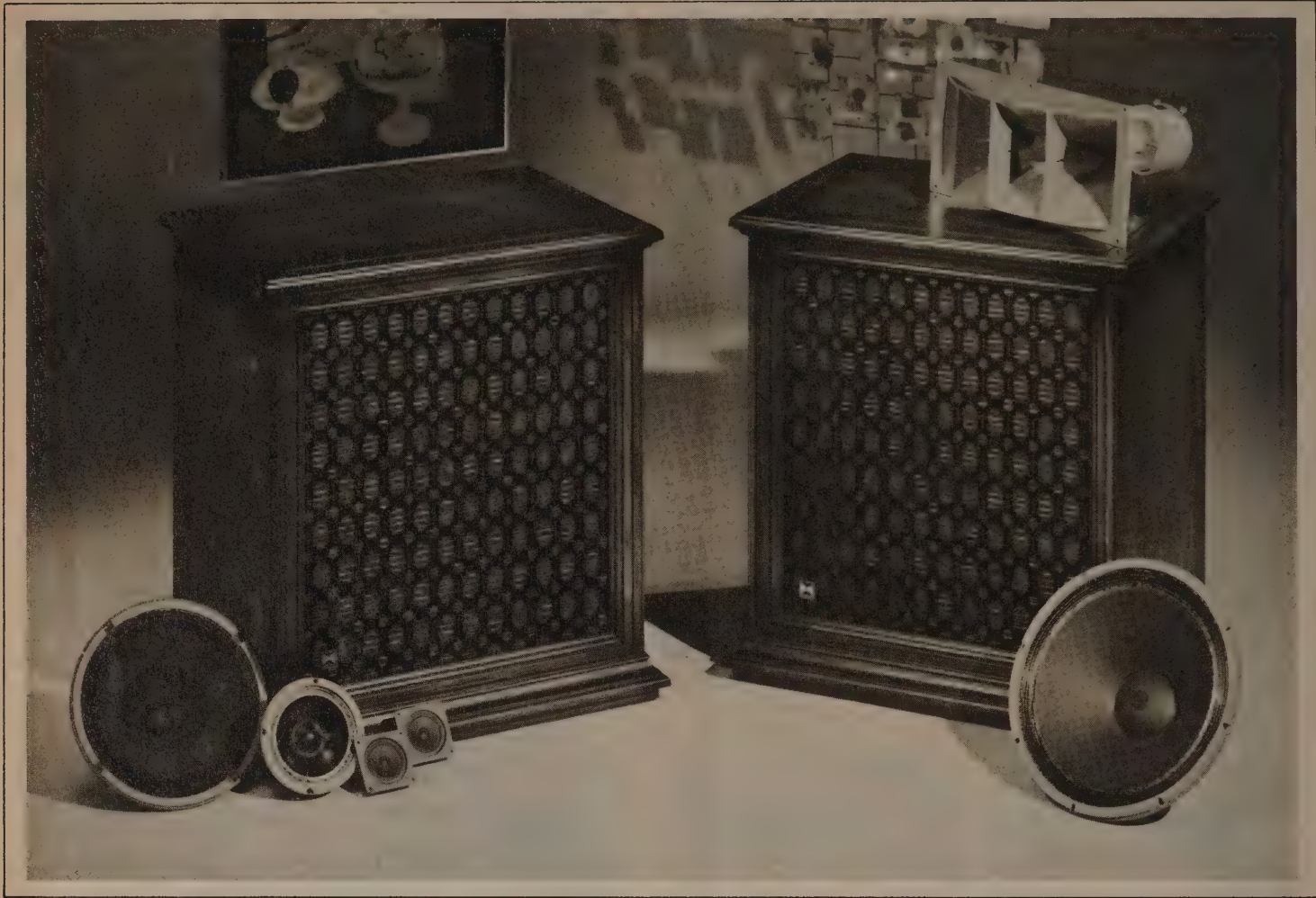
ADP-1007 SPECIFICATIONS — Driver element: Dynamic. Frequency response: 10-18,000 Hz. Impedance: 4-16 ohm sources. Distortion: Unmeasurable at 95 dB SPL. Cord: Coiled, 10', 4 conductor. Color: Charcoal with stainless steel headband.

E) Headphone control unit. Takes two sets of headphones. Dual concentric level control. 20' cable.

Kit AC-17, 3 lbs., mailable8.50



Heathkit speaker systems put the



Heathkit/Bozak 3-way System...239.95

- 22-20,000 Hz response
- Handles up to 50 watts program material

World-famous Bozak speakers in a luxurious Mediterranean floor cabinet. The AS-102 is an exceptionally great sounding 8-ohm system, suited for top-of-the-line and medium-power receivers and amplifiers. Twelve-in. woofer, 6-in. mid-range and two 2½-in. tweeters in an infinite baffle design provide clean, natural reproduction from 22 Hz to 20,000 Hz. The three-way crossover delivers frequencies below 800 Hz to the woofer, those from 800-2500 Hz to the mid-range and frequencies above 2500 Hz to the two tweeters. Both woofer & mid-range have 6½-lb. magnet assemblies and 1½-in. voice coils, and the Bozak damped, low-mass cones provide smooth response characteristics, excellent transient capability. Two 2½-in. tweeters, with 2-lb. magnet assemblies and ¾-in. voice coils, are mounted across the woofer cone, facing away from each other for better dispersion.

The AS-102 crossover is compatible with bi-amplification; manual details the simple wiring changes necessary to drive the woofer and mid-range/tweeter combination with separate amplifier if desired.

Fast, easy assembly. Just mount front panel and speakers in cabinet, wire the crossover network. It takes only 2-4 hours. The handsome factory-assembled all-wood cabinet has beautiful pecan veneers and hardwood trim with gold and black patterned grille cloth. Measures 29½" H x 27¾" W x 19⅞" D.

Kit AS-102, 112 lbs., Express/Frt.**239.95**
Kit ASA-102-1, Bozak speakers, crossover, baffle board, less cabinet. 37 lbs., mailable**149.95**

Heathkit/Altec-Lansing 2-way System...269.95

- 35-22,000 Hz response
- High efficiency speakers

The new 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-19.

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

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

Mount the front panel & speakers in the attractive cabinet, wire the crossover network and it's all together! Beautiful factory-assembled Mediterranean cabinet with pecan veneers, hardwood trim, gold and black grille cloth measures 29½" H x 27¾" W x 19⅞" D.

Kit AS-101, 131 lbs., Express/Frt.**269.95**

orchestra in your listening room



A) Heathkit Acoustic Research 3-way System...189.95

The world renowned Acoustic Research AR-3a, with three drivers in sealed acoustic suspension enclosure—now in kit form. Gives virtually flat response from 20 Hz to 20,000 Hz. Has 12-in. woofer, special hemispherical dome midrange and tweeter combined with precisely engineered crossover network. Separate output level controls at rear of oiled walnut cabinet let you “custom tailor” the sound to your environment.

Kit AS-103, 66 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.

B) Heathkit/JBL 2-way System...189.95

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

Kit AS-48, 68 lbs., mailable189.95

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

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

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

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

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

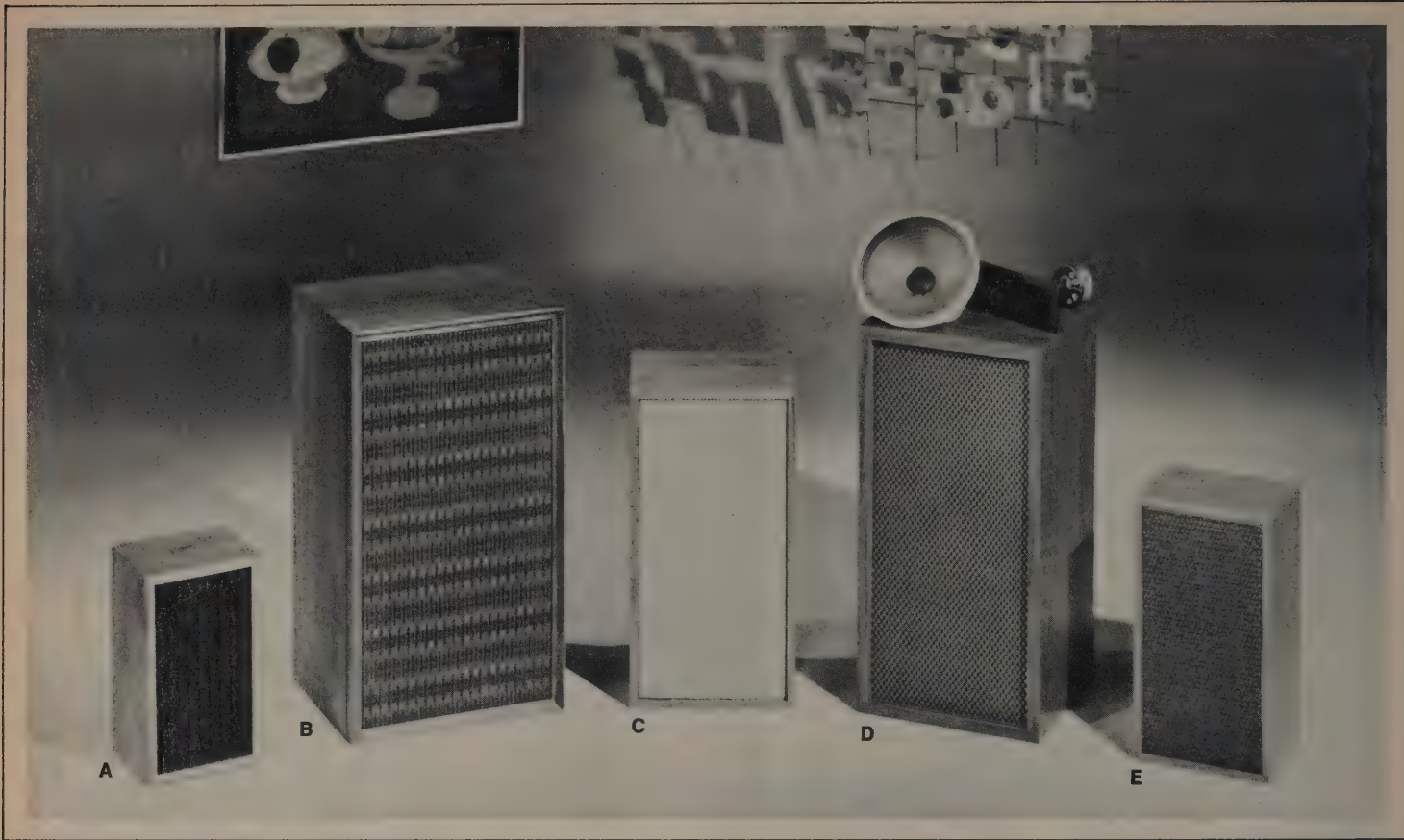
D) New Heathkit 3-way System...89.95

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

Kit AS-104, 59 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. **Recommended amplifiers:** AR-1500, AR-29, AR-19, AR-14, AA-15, AA-29, AA-14, AD-27, AD-17. **Dimensions:** 24" H x 13½" W x 11½" D.

Wide-spectrum low cost speaker systems



A) New Heathkit AS-106 Bookshelf Speaker...19.95

Excellent wide-range response—small enclosure. The new AS-106 single-speaker system is perfect for that apartment-size 4 to 20-watt amplifier.

Features a 4½-in. high-compliance cloth-suspension speaker with long throw voice coil, sealed acoustic suspension cabinet with fiber-glass sound-damping material. Useful frequency response extends from 70 Hz to 16 kHz. 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.

B) Two-way acoustic suspension system...64.95

Here's tremendous power handling capacity—up to 100 watts of music material—in a two-way system that offers excellent response from 30 Hz to beyond audibility, extremely low distortion below 50 Hz.

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

Kit AS-105U, unfinished, 55 lbs., Express/Frt. **64.95**

Kit AS-105W, walnut finish, 55 lbs., Express/Frt. **69.95**

AS-105 SPECIFICATIONS — Speakers: 10" acoustic suspension woofer, 1-lb. Alnico V magnet; 3½" cone/dome tweeter, 1.3-oz. Alnico V magnet. Frequency range: 30–18 kHz. Impedance: 8 ohms. Recommended minimum amplifier power: 10 W rms. Enclosure: Sealed infinite baffle. Crossover: Mechanical and capacitive at 1 kHz. Distortion: Less than 1% above 50 Hz, 10 W in. Recommended amplifiers: AR-1500, AR-29, AR-19, AR-14, AA-15, AA-29, AA-14, AD-27A, AD-17. Dimensions: 24" H x 13½" W x 11½" D.

C) Two-way acoustic suspension compact...56.95

Mini-size with maxi-performance. The 8-in. 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 60 kHz and has a level control for balance. Handles 25 watts of program material. And the whole system goes together in just a couple of hours. Both speakers are already cabinet mounted. You merely wire the 1500 Hz crossover network. You'll like the rich look of the handsome walnut cabinet—and it's protected against scratches and spills by a clear vinyl covering. Order a pair for stereo. 10" H x 19" W x 8¼" D.

Kit AS-16, 22 lbs., mailable **56.95**

D) Heathkit AS-37A high efficiency Two-Way System...44.95

This highly efficient speaker system has two specially designed speakers, 8-in. woofer with 10-oz. ceramic magnet and compression type exponential horn tweeter. Uses 1600 Hz crossover. Rated 8 ohms impedance, 25 watts, 70-12 kHz response. Pre-assembled cabinet (11½" H x 23" W x 11⅞" D) is covered with a rich looking satin walnut polyester that's stain and fade resistant. Buy two for stereo, build both in one night.

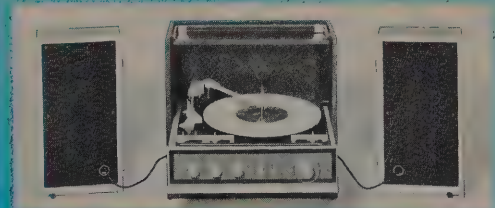
Kit AS-37A, 37 lbs., mailable **44.95**

E) Two-way acoustic suspension mini system...36.95

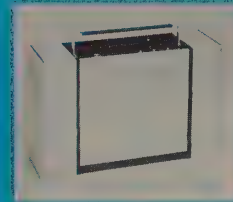
The 6-in. woofer delivers clean, crisp bass down to 55 Hz, while the 2½-in. tweeter produces sparkling highs to 18 kHz. High frequency balance control lets you adjust the highs to suit your taste. Handles 25 watts program material, 50 watts peak. Has 8 ohm impedance, crossover frequency 3000 Hz. Walnut 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**

Heathkit stereo that folds up to go



Speakers detach for maximum stereo separation.



Changer tilts up for toting.



Easy-to-build 18-watt amplifier.

Heathkit "Plum Snakey" Stereo Phono turns on to AM, too...99.95

- Wild primal purple styling
- Powerful 18-watt amplifier
- Solid-state AM tuner

The Heathkit GD-111 combines a dynamic stereo phonograph system and a powerful AM radio in a turned-on purple package that folds up to go. The record changer, 18-watt amplifier and two 4 1/2-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, 33 1/3, 45 and 78 rpm discs, includes 45 rpm spindle adapter. Features volume, tone and balance audio con-

trols. 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.

Kit GD-111, 50 lbs., mailable **99.95**

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:** 4 1/2 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:** 3 1/2 grams. **Separation:** 30 dB average. **GENERAL: Speakers:** 4 1/2" cloth suspension cone type, 8 ohms nominal impedance, 2.5 oz. Alnico 5 magnet. **Power Requirements:** 120 VAC, 60 Hz, 26 W idling, 62 W full output. **Dimensions (overall):** 14 1/2" H x 24 1/2" W x 7 1/2" D.

*Rated EIA (Electronics Industries Association) standards.

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



Heathkit GD-109—component sound you can carry...79.95

The Heathkit GD-109 portable stereo phonograph proves that a low cost portable need not compromise on audio quality. Solid-state 18-watt stereo amplifier, dependable four-speed changer, and two 4 1/2-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.

Kit GD-109, 47 lbs., mailable **79.95**

GD-109 SPECIFICATIONS — CHANGER — Speeds: 16, 33 1/3, 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, 14 1/2" H x 24 3/8" W x 7 1/2" D. **Power requirements:** 120 VAC, 60 Hz, 25 W.



Heathkit GD-107—stereo phono in a suitcase...59.95

Here's solid-state stereo in a solid one-piece case that's built for rugged dependability. Features four-speed changer for automatic or manual play, dual diamond/sapphire stylus in ceramic cartridge and 4 x 6-in. speakers in "in-depth" cabinet for superior reproduction. Includes 45 rpm adapter spindle. Assembles in just an evening.

Kit GD-107, 38 lbs., mailable **59.95**

GD-107 SPECIFICATIONS — CHANGER — Speeds: 16, 33 1/3, 45 and 78 rpm. **Record sizes:** 7", 10", and 12". **AMPLIFIER — Power output:** 3 W, 1 1/2 W per channel EIA music power. **Frequency response:** ±5 dB 100 Hz — 10 kHz. **Speakers:** Two 4x6", 25 ohm voice coils. **Dimensions:** 15" H x 25 3/4" W x 8 1/2" D. **Power requirements:** 120 VAC, 50 Hz, 15 W.

This year, make your own kind of music



The superb Heathkit/Thomas Legato—a professional 25-pedal organ for 1495.00

- Two 44-note overhanging keyboards
- Includes Color-Glo keys and organ course
- Leslie system with separate amplifier

Designed exclusively for Heath by famous Thomas Organ craftsmen, the new 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 clarinet 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 exclusive Thomas Color-Glo keys and comprehensive organ course supplied will have you playing complete, professional sounding songs in minutes.

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, plus luxurious walnut finish cabinet and bench included.

Start the new year off right with a great project for the whole family and one you'll enjoy for years to come—the Heathkit Legato. Measures 47 7/8" H x 47 7/8" W x 25" D.

- Kit TO-101**, (less Bandbox & Playmate) 282 lbs., Express/Frt. . . **1495.00**
TOA-101-3, Thomas Organ Course, 9 lbs., mailable **29.95**
TOA-101-4, 7", 33 1/3 rpm demonstration record **ppd. 50¢**

The Heathkit/Thomas Spinet offers a lifetime of enjoyment for just 499.95

- Color-Glo keys
- Ten organ voices

A modest investment in dollars and time brings the joy of making your own music into your home. And everyone in the family will be playing tunes almost immediately thanks to the Thomas Color-Glo keys and comprehensive organ course included. Provides ten organ voices.

Trombone, flute, reed, oboe and coronet on solo; saxophone, violin, horn, viola and diapason on lower manual; vibrato and repeat percussion. Has two 37-note keyboards, 13-note heel & toe pedalboard, 75-W peak power solid-state amplifier, 12-in. speaker system, oiled walnut cabinet & bench. Assembles in some 50 hours. Measures 41 1/4" H x 39 3/4" W x 21 1/2" D.

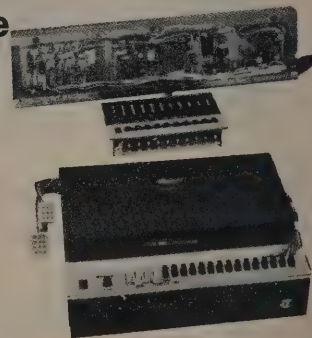
- Kit GD-325D** (less Bandbox & Playmate), 172 lbs., Express/Frt. **499.95**
GDA-325-1, 7", 33 1/3 rpm demonstration record **ppd. 50¢**

Bandbox and Playmate Organ Accessories

- 10 different drum sounds
- 15 exciting rhythms

Add the full orchestra sound of Band Box percussion to any Heathkit/Thomas organ. Gives bass drum, 2 bongos, castanets, brush and crash cymbals, blocks, claves, snare drum and drum roll effects. Playmate kit adds 15 different rhythms to organ & Bandbox—three different waltzes, fox trot 2/4, boogie 6/8, swing, bossa nova, rock, watusi, samba, beguine, cha cha, rumba, tango, bolero.

- Kit TOA-101-1**, Bandbox, 9 lbs., mailable **169.95**
 Drawer and slides required to add Bandbox to GD-232, GD-325 & GD-983 models.
Order TOA-101-5, 4 lbs., mailable **49.95**
Kit TOA-101-2, Playmate, 6 lbs., mailable **199.50**



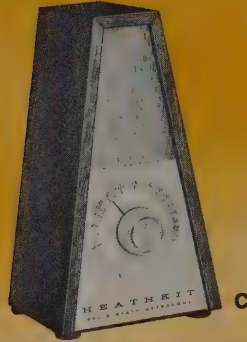
with these sound Heathkit values



A



B



C



MAKE YOUR OWN MUSIC... AND SAVE

Heathkit music makers are fun to build, fun to use, and offer substantial value over comparable ready-made instruments. No previous kit-building experience or special knowledge required. Get on the Heathkit bandwagon, now!

A) The Heathkit 120-watt amp-speaker combo gives you super-sound for only 179.95

- Built-in harmonic modifier
- Dual inputs for three separate channels
- Foot-switch control for tremolo & reverb

The Heathkit TA-17 gives you 120 watts of EIA music power, 240 watts peak power. Drives any 4 to 16 ohm speaker combination capable of withstanding its awesome power. Professional performance features include built-in switchable harmonic modifier for that "fuzzy" sound. Special brightness switch. Tremolo variable in both rate and depth. Separate bass and treble boost. Dual spring-type variable reverb built-in. Dual foot-switch for hands-free on-off control of tremolo & reverb. Three separate channels with two inputs for each — guitar, bass guitar & combo organs, microphone/phonograph.

The matching TA-17-1 speaker system features two 12-in. woofers with 27-oz. magnets and fiberglass voice coils. Special horn driver delivers extra brilliance. Measures 25 $\frac{7}{8}$ " W x 14 $\frac{1}{2}$ " D x 38" H. Includes 20-ft. cable.

Kit TA-17, amplifier only, 53 lbs., Express/Frt. 179.95

Kit TA-17-1, one speaker system, 116 lbs., Express/Frt. 129.95

Heathkit Distortion Booster...17.95



Add that unique effect to your sound. Just plug in between your guitar & amplifier. Housed in a convenient foot-switch — push the switch to add the distortion — push again to play it straight. Tone and distortion degree controls. Runs on 1.5 V AA penlite cell (not supplied).

Kit TA-28, 4 lbs., mailable 17.95

B) The Heathkit 25-watt Guitar Amp gives you portability, two channels...124.95

- One-piece amplifier-speaker cabinet
- Two 12-inch speakers
- Hands-free reverb and tremolo

One-piece construction and convenient carrying handle make the Heathkit TA-16 the logical choice for the musician on the move. All solid-state design provides high reliability, long life. Delivers a solid 25 watts EIA music power, 60 watts peak. Has two dual-input channels—one for accompaniment, microphone, etc., the second for special effects. Lead and solo guitar has double spring variable reverb and tremolo with variable rate and depth. Two foot switches in die cast housing for hands-free control of reverb and tremolo. Line reversing switch minimizes line hum. Two special heavy-duty 12-in. speakers with ceramic magnets last and last. Sturdy $\frac{3}{4}$ -in. black vinyl covered wood cabinet measures 28" W x 9" D x 19 $\frac{3}{4}$ " H.

Kit TA-16, 52 lbs., Express/Frt. 124.95

C) Heathkit Electronic Metronome...9.95

- Simple two-control operation
- Portable, battery-powered

A necessary accessory for student and teacher alike, the Heathkit Electronic Metronome combines ease of operation with rugged dependability. Has just two controls — front panel knob turns unit on and adjusts tempo from 40 to 210 beats per minute. Rear panel control adjusts volume. Chart on bottom of cherry-finished birch cabinet relates tempos in various time signatures to beats per minute. Easy one evening assembly. Requires two 9 V batteries (NEDA #1602) not supplied.

Kit TD-17, 2 lbs., mailable 9.95

Heathkit AM & FM portable entertainment



A) AM-FM solid-state portable... 44.95

- 12-transistor, 7-diode circuit
- Prealigned AM-FM front end
- 3 IF stages for 5 uV FM sensitivity

Enjoy the best of both FM and AM worlds—in a battery-powered portable that plugs in too, with the optional 117V, 60 Hz converter below. You get the instant solid-state sounds of AM or FM at the flick of a switch. And what reception! The big 1/2 in. diameter ferrite rod antenna pulls in AM stations loud and clear even over long distances. And the three tuned AM transformers and amplified AGC offer clean, stable AM listening. On the FM side, a collapsible 34 in. whip antenna, three IF stages and an amazing 5 uV sensitivity combine to give you sharp, accurate FM reception over distance impossible to achieve with many other full-size portables. And the AFC keeps your favorite FM station locked in for enjoyable, drift-free listening.

Audio output to the big 4" x 6" speaker is 350 milliwatts—enough to fill your campsite or living room with clean robust sound. Another problem common to some other portables has been eliminated, too; as your batteries go, the sound stays...the result of a Zener diode biased IF strip that keeps the gain constant down to minimum usable voltage.

The GR-17 won't eat its own weight in batteries every week either. It runs 200–300 hours on six "D" cells (not supplied), that last even longer with the optional charger/converter. The GR-17 comes in a handsome rich brown simulated leather case featuring slide rule tuning dial, tone control, built-in external earphone jack and earphone. Easy and fun to build with all solid-state circuit board design and famous Heathkit check-by-step manual. Order one now, for the greatest portable sound around.

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

GR-17 SPECIFICATIONS — AM SECTION — Tuning Range: 535 kHz-1620 kHz, IF: 455 kHz. Sensitivity: 200 uV per meter for 20 dB signal-to-noise ratio. **FM SECTION —** Tuning Range: 88-108 MHz, IF: 10.7 MHz. Sensitivity: Better than 5 uV for 30 dB quieting. Audio Output: 350 mV. Size: 6 3/4" H x 8 3/4" W x 4" D.

B) AM solid-state portable... 29.95

- 6-transistor, 2-diode circuit
- Tuned RF & IF stages
- Fast, easy circuit board assembly

Bring's you the "now" sounds of AM entertainment in a top-performing 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, inexpensive "D" cells (not included). Handsome black simulated leather case, chrome-finished frame, anodized aluminum grille.

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

GR-24 SPECIFICATIONS — Tuning Range: 535-1620 kHz, IF: 455 kHz. Sensitivity: 50 uV/m for 10 dB signal-to-noise ratio at 50 mW output. Audio Output: 250 mW. Speaker: 4" x 6" oval permanent magnet type. Size: 7" H x 8 3/4" W x 3 3/4" D.

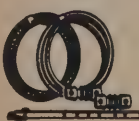
C) Economy AM solid-state portable... 19.95

- Perfect for beginning kit builders
- Teaches theory as you build
- Dependable 6-transistor, 3-diode circuit

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, prealigned coil and IF transformer, built-in antenna, tan simulated leather case.

Kit GR-151B, 4 lbs., mailable **19.95**

SWL Accessories



Long wire antenna

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

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



Superex headphones

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

GD-396, 1 lb., mailable .. **4.50**

1972 world radio-tv handbook



SWL guide

1972 edition...lists worldwide SW, FM, TV stations, call signs, frequencies & addresses.

GDP-315, 2 lbs., mailable .. **6.95**

Heathkit shortwave receivers



A



B



C

A) 4-band solid-state SWL receiver...59.95

- Continuous tuning from 550 kHz – 30 MHz in 4 bands
- Built-in bandspread tuning
- Switch-selection of AM, CW — variable BFO

Listen to exciting foreign broadcasts from around the globe. Check out the amateur radio operators in every country in the world. Listen in to ships at sea...hear informative weather reports. Easy slide-rule tuning and a log scale make it simple to return to favorite spots on the dial. And when you're through roaming the world, turn the band selector switch and enjoy your own local AM stations. Built-in bandspread tuning makes it easy to separate closely spaced stations. Tunes AM, CW at a flip of a switch. Has variable BFO for crystal-clear CW. Features front panel headphone jack for private listening or connection of an external speaker; built-in speaker; switchable automatic noise limiting; relative signal strength meter; built-in AM rod antenna plus connection for external SWL antenna. A dual gate MOSFET mixer stage provides greater signal handling capability and lower noise. Ceramic IF filters give sharp selectivity and eliminate IF alignment. Zener diode regulated oscillator power supply prevents pulling and drift. Goes together in about 15 hours. Start the new year with a new SWL hobby, order your Heathkit SW-717 today.

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 & RF amplifier; 2N3393, Audio preamplifier; 2N5232A, IF amplifier, AGC amplifier; 2N5308, IF amplifier; MPF105, oscillator; S2090, final audio amplifier; S2091, final audio amplifier; X29A829, Audio driver. **Power Supply:** Transformer operated; full-wave bridge rectifier. **Voltage Requirements:** 120/240 VAC, 50-60 Hz, 8 W. **Dimensions:** 5 1/4" H x 14 1/2" W x 8" D.

B) 6-band solid-state SWL portable... 129.95

- Tunes 190 kHz–30 MHz in 6 bands
- Switch-selection of AM or SSB/CW
- Rechargeable battery operation

Truly versatile performance for SWLs who appreciate solid-tuning. For hams who need a reliable standby receiver. For campers, hunters, travelers and vacationers who need a portable ready to go when they are. Features 190 kHz to 30 MHz coverage in six switch-selected bands.

AM or SSB/CW reception at a touch of a switch. Automatic volume control keeps volume constant. Switchable automatic noise limiter for quieter reception. Loaded with professional versatility; relative signal strength meter, external antenna connection, receive/standby switch, muting connection, headphone jack, built-in 500 kHz crystal calibrator. Runs on its own rechargeable nickel-cadmium battery with built-in charger. Built-in carrying handle and whip antenna.

Kit GR-78, 14 lbs., mailable**129.95**

GR-78 SPECIFICATIONS — Frequency coverage: Band A, 190 kHz-410 kHz; Band B, 550 kHz-1300 kHz; Band C, 1.3 MHz-3.0 MHz; Band D, 3.0 MHz-7.5 MHz; Band E, 7.5 MHz-18.0 MHz; Band F, 18.0 MHz-30 MHz. **Meter:** Indicates relative signal strength. **Intermediate frequency:** Band A thru E: 455 kHz; Band F (Double conversion): 1st IF, 4.034 MHz; 2nd IF, 455 kHz. **Sensitivity*:** 0.2 uV – 10 uV depending on band and portion thereof. **Selectivity:** 7.5 kHz ±1 @ 6 dB down. **Audio output:** 300 milliwatts @ 10% distortion. **Battery:** 9.6 VDC 500 mAh Nickel-Cadmium rechargeable. **Battery charge rate:** The battery is always being charged at 20 to 25 mA when the built-in trickle charging circuit is connected to an external power source with the Receiver turned off. A full battery charge will be maintained if the Receiver is connected to an external power source and used an average of 5 hours daily at a normal listening level. **Overall size:** 6 1/4" H x 11 1/2" W x 9" D.

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

C) Professional 9-band SWL receiver...269.95

- Reliable 10-tube circuit
- Preassembled & aligned LMO
- Automatic noise limiter

Our finest communication-quality receiver for the SWL. Features 9 switch-selected bands covering 49, 41, 31, 25, 19 & 16 meter shortwave; 11 meter CB; 80, 40 & 20 meter amateur. 5 kHz crystal filter supplied for excellent AM, CW & SSB reception...optional SSB & CW filters available.

Kit SB-310, less speaker, 24 lbs., mailable**269.95**

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

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

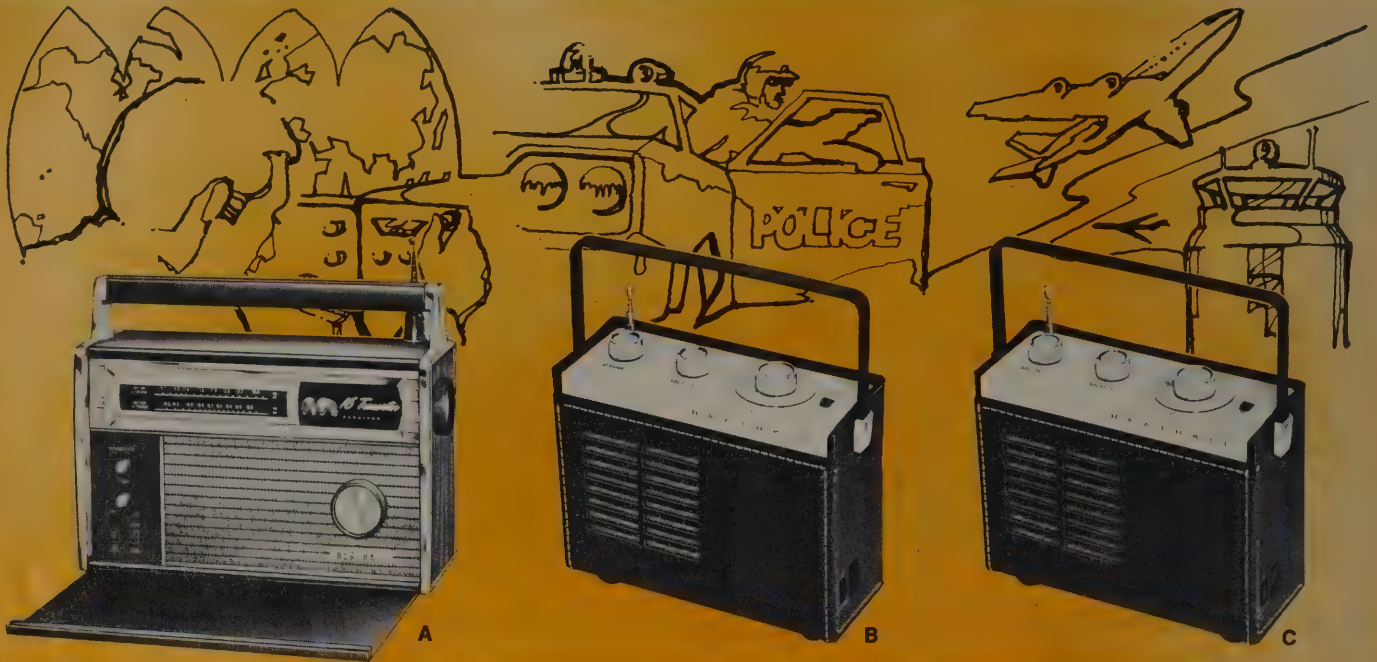
SBA-310-1, SSB filter, 1 lb., mailable**21.95**

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

SBA-310-3, 13 & 15M modification kit, 1 lb., mailable**9.95**

SB-310 SPECIFICATIONS — Frequency range (Megahertz): 3.5–4.0; 5.7–6.2; 7.0–7.5; 9.5–10.0; 11.5–12.0; 14.0–14.5; 15.0–15.5; 17.5–18.0; 26.9–27.4. **Sensitivity:** Less than 0.3 uV for 10 dB signal-plus-noise to noise ratio for SSB operation. **Selectivity:** AM, 5.0 kHz @ 6 dB down; 15 kHz max. @ 60 dB down (crystal filter supplied). CW, 400 Hz @ 6 dB down; 2.0 kHz max. @ 60 dB down (crystal filter available as an accessory). SSB, 2.1 kHz @ 6 dB down; 5.0 kHz max. @ 60 dB down (deluxe SSB crystal filter available as an accessory), or 2.1 kHz @ 6 dB down; 7.0 kHz max. @ 60 dB down (regular SSB crystal filter available as an accessory). **Power requirements:** 105-125 or 210-250 VAC, 50-60 Hz, 50 W. **Cabinet dimensions:** 6 5/8" H x 14 7/8" W x 13 3/8" D. **External connections:** Front panel: phones. Rear apron: antenna, mute 500 ohm audio output, speaker 8 ohm, hi-fi output, 1 spare socket, line cord socket. **Tube complement:** 10 tubes (13 functions). **Diode complement:** 8.

Heathkit portable shortwave receivers



A) Price reduced \$20 on this famous Heathkit 10-band Portable...now 139.95

With the GR-43A you get super-selective AM, that brings in even those crowded low power stations, plus super sensitive FM with a tuner and IF section that meets hi-fi specs. You listen in on seven bands of world-wide shortwave, and a low frequency (150-400 kHz) band that lets you check on marine weather. And all this great reception comes in a rugged all-metal portable cabinet with hinged drop down protective front panel and a hinged rear panel that gives easy access to circuitry, earphone jack and battery compartment. The built-in 5-ft. whip antenna extends fully and rotates for best FM and SW listening.

The solid-state circuitry has 16 transistors, six diodes plus 44 factory-built & aligned RF circuits to assure you of instant heat-free operation; peak performance at all times; plus easy kit assembly. Two separate AM and FM tuners are factory-built, ready to install—no need for delicate alignment.

For normal indoor listening, a battery-saver switch reduces battery drain up to 35% yet delivers a healthy 500 milliwatts so there's no ear strain when listening outdoors. A 10-position selector drives the rotating turret dial so you can easily view any band. There's even a logging scale to help relocate unknown frequencies. Also has a dial light for nighttime use; AFC with on-off switch for drift-free FM; an 8½ revolution tuning knob to separate stations easily, and a combination on-off switch and tone control.

Other features include built-in ferrite rod AM antenna, large 4 x 6-in. speaker and accessory earphone for private listening. The GR-43A uses six "D" cells and one C cell to power the dial light. It also runs on 120 VAC as it "float" charges the batteries with the optional converter/charger. The Heathkit GR-43A is our finest portable radio—and at the new reduced price, it's an even better buy.

Kit GR-43A, 19 lbs., mailable. **Was 159.95 — Now only 139.95**
GRA-43-1, converter/charger, 1 lb., mailable **6.95**

GR-43A SPECIFICATIONS — AM SECTION — Tuning range: Longwave — 150-400 kHz. Broadcast — 550-1600 kHz. Shortwave — 2-4 MHz; 4-9 MHz; 31 M — 9.2-10.2 MHz; 25 M — 11.2-12.4 MHz; 19 M — 14.5-16.1 MHz; 16 M — 16.8-18.8 MHz; 13 M — 20.2-22.4 MHz. **Sensitivity:** At external antenna input for a 10 dB signal-plus-noise to noise ratio, Longwave — 12 uV; Broadcast — 10 uV; 2-4 MHz — 5 uV; 4-9 MHz — 3 uV; 31 M — 3 uV; 25 M — 2 uV; 19 M — 2 uV; 16 M — 2 uV; 13 M — 2 uV. **IF:** 455 kHz. **FM SECTION — Tuning range:** 88-108 MHz. **Sensitivity:** 1½ uV for 20 dB of quieting; 2 uV for 30 dB of quieting; 3 uV for 40 dB of quieting. **IF:** 10.7 MHz. **GENERAL — Audio output:** Normal, 500 mW; Battery Saver, 160 mW. **Speaker:** 4x6". **Batteries:** 6 size D cells, 1 size C cell (not supplied). **Size:** 10½" H x 13½" W x 5½" D.

B) Heathkit Fire, Weather and Police Monitor...49.95

Receives narrow and wide band FM, 152-174 MHz, with 2.0 uV sensitivity. Has controls for 6-to-1 vernier tuning, single channel crystal (crystal not supplied), squelch. All solid-state construction. Portable battery operated. Includes carrying handle that doubles as stand, built-in whip antenna, external antenna jack, rugged brown leatherette case.

Kit GR-88, 5 lbs., mailable **49.95**
Kit GRA-88-1, accessory AC power supply, 2 lbs., mailable **8.50**

GR-88 SPECIFICATIONS — Tuning range: 152-174 MHz. **Antenna input:** 50-75 ohms. **Sensitivity:** 2.0 uV or less for 20 dB quieting. **IF frequency:** 10.7 MHz. **IF selectivity:** ±40 kHz @ 6 dB down. **Image rejection:** 40 dB or greater. **IF rejection:** 80 dB or greater. **Audio output:** 250 mW at less than 10% distortion. **Speaker:** 3" round, 24 ohms, permanent magnet. **Transistor complement-tuner:** (2) 2SC784 and (1) SE-5006. **Transistor complement-IF audio:** (5) 2N2369, (4) 2N3393, (1) X29A829, (1) 2N2430, (1) 2N2431, (1) 40481. **Diode complement:** (2) 1N191 and (2) 1N4646. **Batteries:** Six 1.5 V "C" cells, not supplied. **Dimensions:** 7½" H x 8¾" W x 3½" D.

C) Heathkit Aircraft Monitor...49.95

All solid-state receiver for aircraft band, 108-136 MHz, with 1.5 uV sensitivity. Controls for vernier tuning, single channel crystal (crystal not supplied), squelch. Has brown leatherette carrying case with convertible handle/stand, built-in whip antenna and external antenna jack. Accessory AC power supply available.

Kit GR-98, 5 lbs., mailable **49.95**
Kit GRA-88-1, accessory AC power supply, 2 lbs., mailable **8.50**

GR-98 SPECIFICATIONS — Tuning range: 108-136 MHz. **Antenna input:** 50 to 75 ohms. **Sensitivity:** 1.5 uV 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:** 7½" H x 8¾" W x 3½" D.

Low cost AC power supply...8.50

When you use your monitor at home plug it into 120 VAC and save the batteries for away from home use. Goes together fast and fits right inside the case of the GR-88 and GR-98 monitor portables.

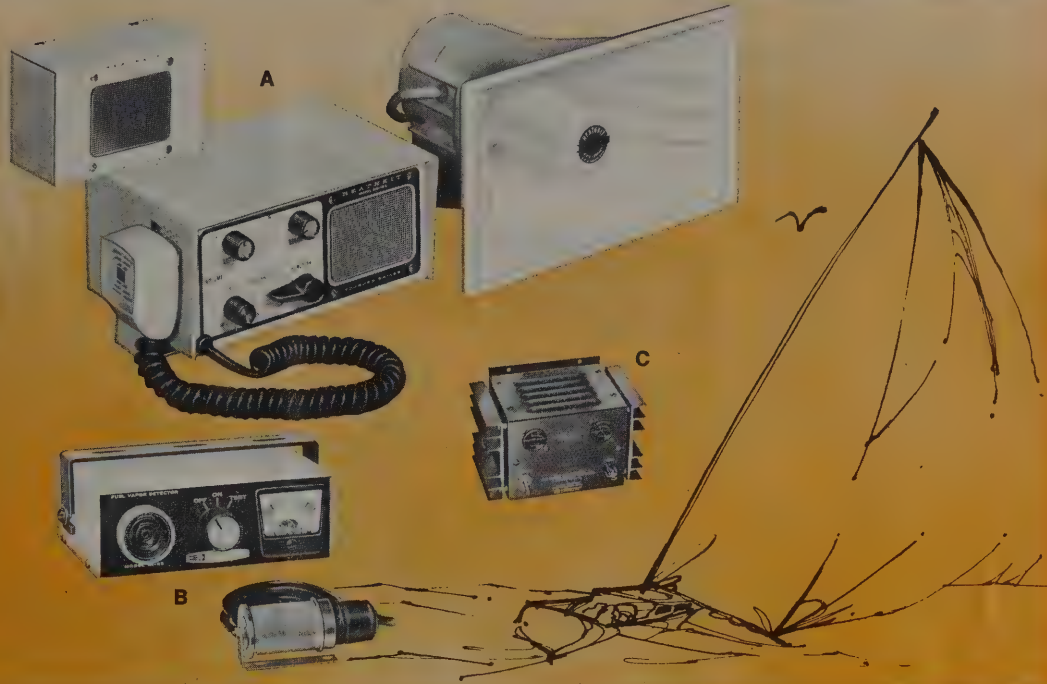
Kit GRA-88-1, 2 lbs., mailable **8.50**

Heathkit marine electronics



**Heathkit Marine —
BOATING AND FISHING GEAR
AT PRICES EVERY WEEKEND
SKIPPER CAN AFFORD**

Communication, instrumentation, or fishing. Whatever your needs afloat, Heathkit equipment makes the voyage safe, fun and convenient — for a price that's considerably lower than that of any comparable gear. Devote a few fun-filled hours this winter to an easy-to-build Heathkit marine project. You'll enjoy of the rewards of your handwork and smart shopping for seasons to come.



A) Heathkit 5-Function Foghorn/Hailer makes safety the order of the day...89.95

- Includes bothorn, listener, intercom

The Heathkit MD-19A fits you out with a powerful 55-watt foghorn plus gives your ship four additional communication conveniences in the bargain. The MD-19A is a foghorn, a booming hailer, a distinctive bothorn, a sensitive listener and a handy onboard intercom—with access to all functions on one compact control panel. The easy-to-build solid-state design gives you more for your money in terms of initial cost, reliability, and self-service features. The automatic foghorn emits the low-pitched blast required of power driven vessels. Rate and duration controls at the rear of the master control station permit variation of the blast to suit local customs or personal preference. When in the foghorn mode, the amplifier delivers the full 55-watt capability to the universal-mounting weatherproof horn for maximum volume. Pick up the microphone, switch over to the hailer position, and you have verbal communication over a considerable distance, with a separate front-panel gain control for adjusting volume to conditions. Depress the front-panel spring-return switch and you have a full-volume bothorn.

For even greater safety underway, the MD-19A automatically becomes a listener between foghorn blasts and at the completion of any other function regardless of mode-switch setting. It detects and amplifies distant sounds and brings them to the bridge loud and clear. And finally, you can add up to two optional MDA-19-1 matching remote speakers to give the helmsman instant two-way communication with compartments below.

The Heathkit MD-19A Foghorn/Hailer system is styled to complement the most luxurious craft. The finish is bright white enamel trimmed out in marine blue. The unit runs on any 12 VDC ship's electrical system with either positive or negative ground. The kit includes 20-ft. deck speaker cable and gimbal mount, assembles easily with circuit-board/wiring-harness construction. This year set out at sea with a total safety/convenience communications package—the Heathkit MD-19A.

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.

B) Heathkit Fuel Vapor Detector with visible & audible alarms...47.95

- Dependable solid-state circuitry
- Assembles and installs in just 3 hours

The Heathkit MI-25 Fuel Vapor Detector is peace of mind for the inboard and I/O power boater, great for motor sailers too. It puts both visual and audible indicators in the cockpit, so the captain is always aware of engine compartment fumes and possible hazardous conditions. When turned on the meter shows safe-dangerous-explosive status, and the alarm automatically sounds if fumes are present. A built-in "fail-safe" circuit that sounds the alarm in the event of component malfunction and a switch-controlled self-test circuit assure maximum reliability. Plus, the MI-25 has built-in relays to operate bilge blower and auxiliary warning devices. The detector head, mounted in the engine compartment, utilizes silicon transistor circuitry for long-life dependability, connects to gimbal-mounted control station with heavy duty cable. The assembly manual gives complete installation and check-out procedures.

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 to +50°C. Audio alarm: 2500 Hz.

C) Heathkit Low Cost Power Inverter...34.95

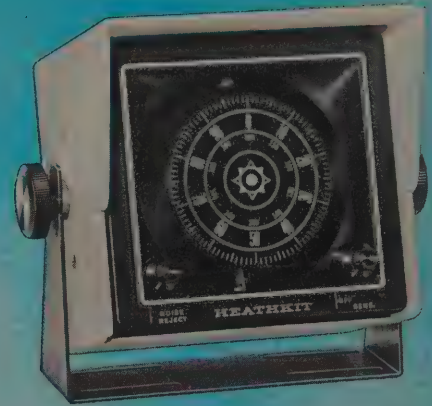
- All transistor circuitry
- Two AC receptacles

The Heathkit MP-10 is the ideal source of AC power for small appliances. An excellent choice for boatmen, campers and others who need 6 or 12 volt DC converted to 117 VAC. The all transistor circuitry delivers up to 175 watts continuous, sufficient power for electric razors, lamps and the like. Two AC receptacles built into the inverter accept standard household line plugs. Not recommended for tape recorders, record players, compressor type refrigerators, or any other equipment requiring a high starting current or sine wave AC. The easy-to-follow manual makes assembly an easy step-by-step operation. Order your Heathkit MP-10 today.

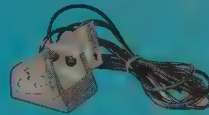
Kit MP-10, 8 lbs., mailable **34.95**

MP-10 SPECIFICATIONS — Power source: 6 or 12 V 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.

Fit out now with Heathkit marine electronics



Through-hull transducer is ideal for permanent installation in larger boats with displacement hulls.



Transom-mount transducer is recommended for high-speed craft with planing hulls.



Heathkit Digital Depth Sounder with extra-bright NUMITRON® display... 139.95

- Fully legible even in direct sunlight
- Indicates depth to 199 feet
- Solid-state design — no discs or motors

With the Heathkit MI-101 Digital Depth Sounder, you'll know the depth at a glance. Bright numerical display tubes and solid-state digital circuitry eliminate the need to interpret dials or meter scales. A dual-range scale has automatic switching to give depth from 2.5 to 19.9 ft. in increments of 0.1 ft. — from 20 to 199 ft. in increments of 1 ft. A red warning light alerts you to shallow waters 10 ft. or less.

A single knob provides on-off control and light intensity adjustment for perfect visual display whether the unit's below deck or up on the bridge. Noise rejection is automatic. Gain control is automatic, too, for maximum sensitivity. The MI-101 utilizes 42 silicon transistors, seven TTL integrated circuits, with a regulated power supply that maintains accuracy over a wide range of varying DC supply voltages. And, since there are no discs or motors, the MI-101 is completely silent in use.

Features a weatherproof, splashproof Cyclopedia® case with blue and white finish accented by grey tinted plastic window that turns midnight black when the MI-101 is not in use. Includes matching gimbal mounting bracket. Order your Heathkit Digital Depth Sounder with permanent through-the-hull transducer or high speed transom mount. Kit assembles in about 8 hours, includes 15-ft. cable for through-hull installation, 25-ft. for transom mount. Send for the MI-101 today, and fit out for spring with the latest in marine electronics.

Kit MI-101-1, with through-hull transducer, 6 lbs., mailable **139.95**

Kit MI-101-2, with transom transducer, 8 lbs., mailable **139.95**

MI-101-1 & -2 SPECIFICATIONS — Ranges: 2.5-19.9' and 20-199', automatically switched. Sounding frequency: 200 kHz. Sounding rate: Maximum of 11/sec on both ranges for a total of 22/sec. Normal rate of approx. 1/sec. Accuracy: ±2% ±1 digit. Current drain: 300-500 mA. Power requirements: 10-17 VDC @ 500 mA. Display: 7 segment incandescent display tubes — 3 digit red warning indication for depths 10' or less. Controls: Display intensity with on-off switch. Transducer: Barium titanate ceramic element encased in watertight housing. Dimensions: 2¼" H x 6⅝" W x 8½" D (less gimbal hardware).

Heathkit flasher-type Depth Sounder for value-minded boaters... 79.95

- Reads to 200 feet, shows terrain & vegetation
- Separate readout for logs & obstacles
- Choice of transducers

Comparable to, or better than, depth sounders costing twice as much, the Heathkit MI-19, in easy-to-assemble kit form, is within reach of the boater on a budget.

The Heathkit Depth Sounder shows depth down to 200 ft. Shows varying terrain and vegetation. Detects and gives separate readout for underwater floating logs and similar obstacles. Even spots schools of fish.

Dependable solid-state circuitry gives the MI-19 maximum reliability with minimum power drain. There's an adjustable sensitivity control that lets the skipper set the sounder for maximum signal strength without extraneous echoes. Heath's exclusive built-in noise rejection circuit permits installation of the transducer close to the engine without ignition interference. The MI-19 can be powered by ship's 12 VDC system or an external 12 VDC lantern battery.

Seaworthy design includes such features as the sun-shielded calibrated dial, corrosion-resistant metal cabinet, stainless steel hardware, waterproof transducer with marine brass fittings. You choose either thru-hull transducer for permanent large-boat installation or high-speed transom-mount transducer for smaller craft.

Kit MI-19-1, with thru-hull transducer, 6 lbs., mailable **79.95**

Kit MI-19-2, with transom transducer, 8 lbs., mailable **79.95**

MI-19-1 & -2 SPECIFICATIONS — Range: 0-200' on hard bottom. Sounding: Rate, 1440/min or 24/sec. Frequency, approx. 200 kHz. Accuracy: Within 5% 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 a watertight housing. Controls: Sensitivity, with on-off switch; noise rejection level. Transistor and diode complement: 9 transistors, 5 diodes. Power requirements: 120 mA at 12-14 VDC with one return pulse. Dimensions: 5⅝" H x 6⅞" W x 5¾" D.

Plan this year's fishing around Heathkit gear



Complete with portable transducer transom mount



MI-104

24⁹⁵



The Heathkit Fish Spotter lets you fish like the pros for only...89.95

- Detects schools & individual fish
- Reads depth to 200 feet
- Fully portable case & transducer

Gives the discerning angler all the features he looks for in spotters costing far more. The Heathkit MI-29 is capable of detecting schools or individual fish, indicating underwater terrain type, reading depth to 200 ft.

Completely self-contained in weatherproof all-metal case, it's powered by two 6 volt lantern batteries — available almost anywhere — and it utilizes solid-state circuitry for minimum drain. Cells last up to 80 hours in normal use.

Portable transducer can be suspended over the side of the boat, or quickly installed on the hull with the suction-cup mount supplied.

The MI-29 provides the exclusive Heath noise rejection circuit that lets you place the transducer near the engine without ignition interference; adjustable sensitivity control for achieving maximum signal while eliminating multiple echoes; sun-shielding case; glare-free dial, and weather-resistant operation manual. Assembles in 8-10 hours.

Kit MI-29, with transducer, 8 lbs., mailable **89.95**

MI-29 SPECIFICATIONS — Range: 0-200' on hard bottom. **Sounding:** Rate 1440/min or 24/sec. Frequency, approximately 200 kHz. **Accuracy:** Within 5% 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 a watertight housing. **Controls:** Sensitivity, with on-off switch. Noise rejection level. **Power requirements:** 120 mA at 12 VDC. **Batteries:** 2 required (not supplied). 6V lantern type NEDA #908 or 916, Burgess F4M, Everready #409 or 509, Ray-O-Vac #941. **Dimensions:** 7" H x 6 1/4" W x 10 1/8" D.

Heathkit Thermo Spotter shows you the water temperature where fish will bite

- Ideal for still fishing, or thermo-plotting your favorite trolling grounds
- Self-contained "fishing reel" design

Scientific studies show that fish live and feed at specific water-temperature levels, and the new Heathkit Thermo Spotter makes finding those levels as easy for you as reeling out a line. Completely self-contained, the unit has 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 just lower the line, press the spring-loaded meter button for temperature readout, then check depth as indicated by marks on the cable. You can use it for still fishing, or for plotting the various temperatures around your favorite fishing area prior to trolling.

Simple, straight-forward design contributes to the Thermo Spotter's low price, fine performance, and convenience. The circuit provides accuracy well within $\pm 3^{\circ}\text{F}$. when properly calibrated. And all electronics are located inside the reel hub so there are no rubbing contacts to malfunction. Kit includes operational manual with fish temperature preference charts prepared by Stanley J. Lievense, Fisheries Division, Michigan Department of Natural Resources; reference thermometer; sensor line depth marking material. You can assemble the kit easily in a couple of hours. And you can put it to good use for skin diving or checking swimming pool temperatures, too. Add this handy fishing aid to your tackle box now.

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

MI-104 SPECIFICATIONS — **ELECTRICAL:** Circuit: Bridge type with thermistor sensor in one arm. Indicator: 50 μA meter. Temperature scale: $32^{\circ}\text{-}86^{\circ}\text{F}$ ($0^{\circ}\text{-}30^{\circ}\text{C}$). Accuracy: Within $\pm 3^{\circ}\text{F}$. Current drain: Less than 3 mA when in use. Battery: Size AA penlight cell (NEDA 15). **PHYSICAL:** Case: Molded high-impact plastic. Cable length: 100 ft. Reeling speed: 1 ft./turn (approx.). Dimensions: $10\frac{1}{4}" \times 5\frac{3}{4}" \times 3\frac{3}{4}"$.

HOW TO ORDER

1. 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 opposite). 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.

2. 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 an order at the same time, call 616-983-3961 weekdays from 8 a.m. to 4:30 p.m. EST for proper routing.

3. VISIT OUR FACTORY SALES/SHOWROOM... located on Hilltop Rd. in St. Joseph, Mich. Open Mon-Fri, 8:30 a.m. to 5 p.m. (Sat. 9 a.m. to 3 p.m.). See and hear Heathkit products in action... take your kit along... or arrange shipment to your home.

METHODS OF PAYMENT

1. CASH — Do not send currency or postage. Send personal check or money order only.

HOW TO FIGURE PARCEL POST & UPS CHARGES

Use the zone chart below and the first 3 digits of your zip code to determine your zone. Then refer to the Parcel Post or UPS rate charts below for charges for each model per shipping weight given in price line. For example, if your Zip Code is 10036, use the first

2. C.O.D. — A 20% deposit is required on all C.O.D. orders received 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). C.O.D. shipments cannot be made if balance is over \$200.

3. 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.

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 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.

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
006-009	8	260-261	3	370-386	4	478	3
010-069	5	262-278	4	387	5	479-489	2
070-089	4	279	5	388	4	490-491	1
090-099	5	280-283	4	389-397	5	492	2
		284-285	4			493-495	1
		286-293	4	400-406	3	496-499	3
100-108	5	294-295	5	407-409	4		
109	4	296-297	4	410-412	3	500-516	4
110-119	5	298-299	5	413-422	4	520-524	3
120-123	4			423	3	525	4
124-126	4	300-303	4	424-426	4	526-528	3
127-128	4	304	5	427-432	3	530-534	2
129	5	305-307	4	433-436	2	535-539	3
130-152	4	308-329	5	437-457	3	540	3
153	3	330-334	6	458	2	541-542	3
154-160	3	335-338	5	460-462	3	547-548	4
161	3	339	6	463-464	2	549	3
162-163	4	350-352	4	465-468	1	550-568	4
164-165	3	354	5	467-469	2	567	5
166-199	4	355-359	4	470-472	3	570-572	4
		360-361	5	473	2	573-588	5
200-232	4	362	4	474-475	3	590-597	6
233-237	5	363-369	5	476-477	4	598-599	7
238-259	4						

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.

APO and FPO Airmail Parcels... not over 30 lbs. and not over 60" length and girth combined can be sent "Airmail" 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 "Airmail" on your order.

IMPORTANT

- Figure the postage charges for each model number separately using the indicated shipping weight for that model.
- Then, total the individual charges so determined and remit the full amount for Parcel Post.
- 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 below.

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

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)

(Figure charges on each kit individually)

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
37 lbs.	2.65	3.00	3.65	4.70	5.75	7.25	8.60
38 lbs.	2.70	3.05	3.70	4.80	5.90	7.45	8.80
39 lbs.	2.75	3.10	3.80	4.90	6.05	7.60	9.00
40 lbs.	2.80	3.15	3.85	5.00	6.15	7.75	9.20
41 lbs.*	2.85	3.20	3.95	5.15	6.25	7.95	9.40
42 lbs.	2.90	3.25	4.00	5.25	6.40	8.10	9.60
43 lbs.	2.95	3.30	4.10	5.35	6.55	8.25	9.80
44 lbs.	3.00	3.35	4.15	5.45	6.65	8.40	10.00
45 lbs.	3.05	3.40	4.20	5.55	6.80	8.55	10.20
46 lbs.	3.10	3.50	4.30	5.65	6.90	8.70	10.40
47 lbs.	3.10	3.55	4.40	5.75	7.00	8.90	10.60
48 lbs.	3.15	3.60	4.45	5.85	7.15	9.05	10.80
49 lbs.	3.20	3.65	4.50	5.95	7.30	9.20	11.00
50 lbs.	3.25	3.70	4.60	6.05	7.40	9.35	11.15
51 lbs.	3.30	3.80	4.70	6.15	7.50	9.50	11.35
52 lbs.	3.35	3.85	4.75	6.25	7.65	9.65	11.55
53 lbs.	3.40	3.90	4.80	6.35	7.80	9.80	11.75
54 lbs.	3.40	3.95	4.90	6.45	7.90	9.95	11.90
55 lbs.	3.45	4.00	4.95	6.55	8.00	10.10	12.10
56 lbs.	3.50	4.10	5.05	6.60	8.10	10.25	12.25
57 lbs.	3.55	4.15	5.15	6.70	8.25	10.40	12.45
58 lbs.	3.60	4.20	5.20	6.80	8.40	10.55	12.60
59 lbs.	3.65	4.25	5.25	6.90	8.50	10.70	12.80
60 lbs.	3.65	4.30	5.35	7.00	8.60	10.85	12.95
61 lbs.	3.70	4.35	5.45	7.05	8.70	11.00	13.10
62 lbs.	3.70	4.40	5.50	7.15	8.85	11.15	13.30
63 lbs.	3.75	4.45	5.55	7.25	9.00	11.30	13.45
64 lbs.	3.80	4.50	5.60	7.35	9.10	11.45	13.65
65 lbs.	3.85	4.60	5.70	7.45	9.20	11.60	13.80
66 lbs.	3.90	4.65	5.80	7.50	9.30	11.75	13.95
67 lbs.	3.95	4.70	5.85	7.60	9.40	11.85	14.15
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.

UNITED PARCEL SERVICE (UPS) 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 & East Texas. See below for 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 so 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 below.
- 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	ANY FRACTION OF A POUND OVER THE WEIGHT SHOWN TAKES THE NEXT HIGHER RATE							
	RATES TO							
	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	
1 lb.	\$0.55	\$0.57	\$0.60	\$0.62	\$0.65	\$0.68	\$0.72	
2 "	.60	.64	.69	.74	.80	.86	.94	
3 "	.65	.71	.79	.86	.95	1.04	1.16	
4 "	.70	.78	.88	.98	1.10	1.22	1.38	
5 "	.75	.85	.98	1.10	1.25	1.40	1.60	
6 "	.80	.92	1.07	1.22	1.40	1.58	1.82	
7 "	.85	.99	1.17	1.34	1.55	1.76	2.04	
8 "	.90	1.06	1.26	1.46	1.70	1.94	2.28	
9 "	.95	1.13	1.36	1.58	1.85	2.12	2.48	
10 "	1.00	1.20	1.45	1.70	2.00	2.30	2.70	
11 "	1.05	1.27	1.55	1.82	2.15	2.48	2.92	
12 "	1.10	1.34	1.64	1.94	2.30	2.66	3.14	
13 "	1.15	1.41	1.74	2.06	2.45	2.84	3.36	
14 "	1.20	1.48	1.83	2.18	2.60	3.02	3.58	
15 "	1.25	1.55	1.93	2.30	2.75	3.20	3.80	
16 "	1.30	1.62	2.02	2.42	2.90	3.30	4.02	
17 "	1.35	1.69	2.12	2.54	3.05	3.40	4.24	
18 "	1.40	1.76	2.21	2.66	3.20	3.60	4.48	
19 "	1.45	1.83	2.31	2.78	3.35	3.82	4.68	
20 "	1.50	1.90	2.40	2.90	3.50	4.00	4.90	
21 "	1.55	1.97	2.50	3.02	3.65			

Heathkit Catalogs for your friends...

Everyone interested in electronics will want the new Heathkit Catalog — it's the world's biggest kit catalog!

We'll be happy to send your friends their own personal catalogs.

Name _____

Address _____

City _____ State _____ Zip _____

Name _____

Address _____

City _____ State _____ Zip _____

Name _____

Address _____

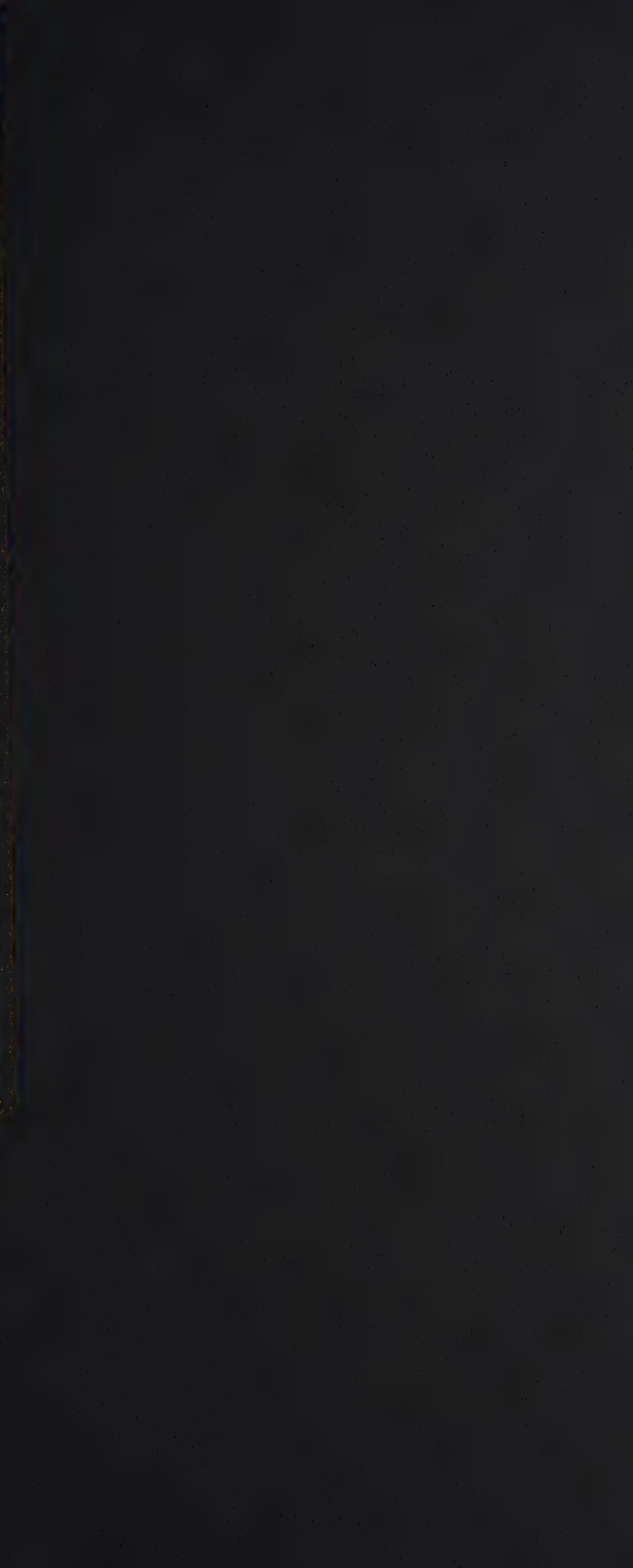
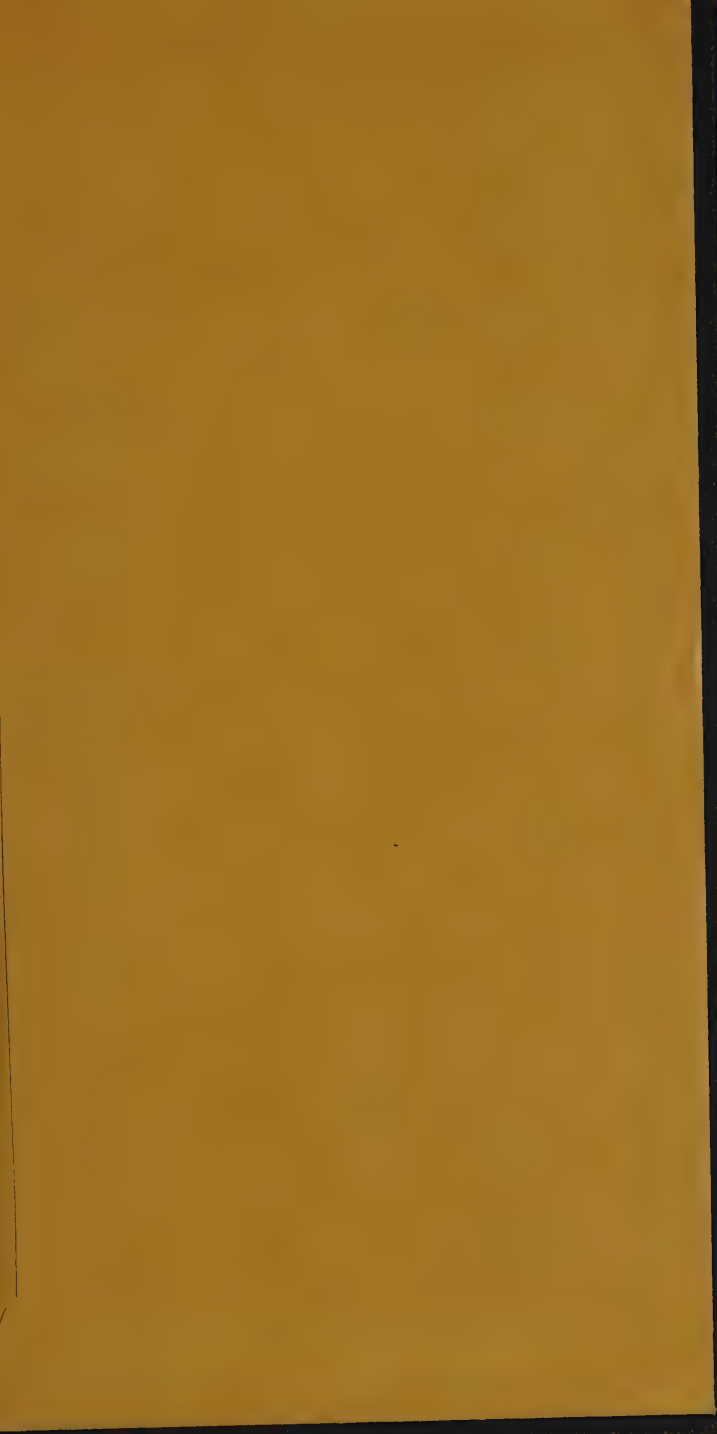
City _____ State _____ Zip _____

Name _____

Address _____

City _____ State _____ Zip _____





NAME _____

ADDRESS _____

CITY & STATE _____ ZIP _____

PLACE
STAMP
HERE

HEATH COMPANY
BENTON HARBOR,
MICHIGAN 49022

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 at the right. The periodic rate for the *finance charge is 1½% per month* and is equal to an *annual percentage rate of 18%* before deducting payments & 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.

REGULAR REVOLVING CHARGE

PAY MONTHLY	CHARGE UP TO
\$10	\$150
15	200
20	250
25	300
30	350
35	400
40	450
45	500
50	550

EXTENDED REVOLVING CHARGE

PAY MONTHLY	CHARGE UP TO
\$20	\$400
25	500
30	600
35	700
40	800
45	900
50	1,000
55	1,100
60	1,200

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

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.

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.

REVOLVING CHARGE AGREEMENT

TO: HEATH COMPANY, BENTON HARBOR, MICHIGAN 49022

I hereby purchase the merchandise listed on the reverse side at the time sale price which is the cash sale price including shipping charge and tax, if any, less down payment, if any, plus the *finance charge (annual percentage rate 18%)* which, in lieu of being added to this contract in total as of the date hereof will be added monthly at the *periodic rate of 1½% per month* on the previous months ending balance of my account before deducting payments & credits or adding purchases made during the current billing period. A minimum *finance charge* not exceeding 50¢ may be assessed on balances up to \$33. 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). 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. 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.

Date _____

Sign Here _____

CREDIT APPLICATION

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

ADDRESS _____

CITY _____ STATE _____ ZIP CODE _____ If Military Give Rank _____

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.)

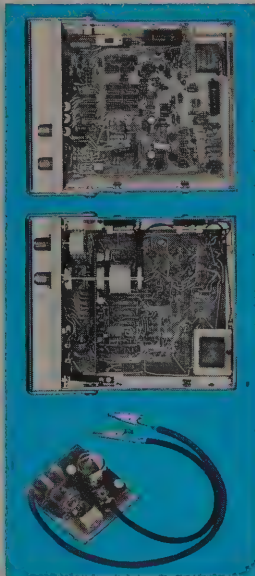
First Credit Reference _____ Address _____ Present Balance \$ _____ Monthly Payment \$ _____

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)

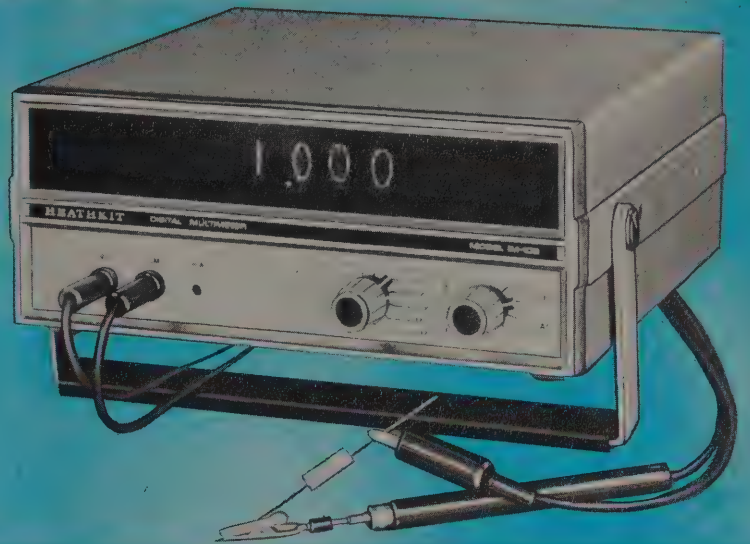


Heathkit Solid-State Digital Multimeter



Top and bottom views show state-of-the-art design of the IM-102. Note extensive use of ICs in solid-state circuitry; neat, clean circuit board layout for ease of assembly.

Heath-designed DC calibrator, included, for obtaining near lab accuracy in your own shop. Manual gives transfer method for VAC calibration using internal circuitry.



Heathkit IM-102 meets lab specs for only... 229.95

- 3½ digits for 100 uV resolution on 200 mV range, 1V on 1000V
- Furnished DC calibrator gives 0.2% accuracy VDC (can be lab calibrated to 0.1%)

The Heathkit IM-102 offers you a true Digital Multimeter (circuitry and readout) at far less than you'd pay for comparable wired DMM's. Plus, the IM-102 gives you accuracy that's better than many wired digital multimeters currently available... obviously superior to most analog type instruments.

The IM-102 accurately measures AC and DC voltages and currents, and resistance with no need to change probes or switch the meter for changes in DC polarity. The unit automatically displays a positive or negative DC voltage and current indicating the correct amplitude and polarity.

Five overlapping ranges measure voltage from 100 uV to 1000 V on DC (either polarity); 5 ranges cover 100 uV to 500 V on AC; 10 ranges measure 100 nanoamperes to 2 amperes on AC or DC, and 6 ranges of resistance measurement from .1 ohm to 20 megohms. Input impedance is exceptionally high—approximately 1000 megohms on 2 V range (10 megs on higher ranges), with overload protection built-in on all ranges. Decimal point is automatically placed with range selection and overrange is indicated with a front panel light.

High quality precision components, 3½ digits and ease of calibration contribute to the IM-102's lab-grade accuracy. Analog to digital conversion is accomplished by a patented, dependable Dual Slope Integrator, that does not depend upon a stable clock frequency for accuracy.

A Heath-designed and assembled precision DC calibrator is furnished with each IM-102. An internal circuit and a unique transfer method provides accurate AC voltage calibration.

The all solid-state design incorporates cold cathode readout tubes and

a "memory" circuit to assure stable, non-blinking operation. It has a detachable 3-wire line cord (no batteries needed), dual primary power transformer, isolated floating ground and completely enclosed, lightweight aluminum cabinet with die-cast zinc front panel and tinted viewing window.

Kit includes standard banana jack connectors complete with test leads. Assembles in approximately 15 hours. The new Heathkit IM-102 Digital Multimeter will be the pride of your bench. Order yours today.

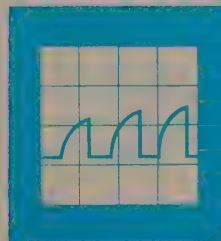
Kit IM-102, 9 lbs., mailable 229.95

IM-102 SPECIFICATIONS — DC VOLTMEETER — 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, 200k 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 20M. **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 VOLTMEETER (Average responding, RMS calibrated) — 5 ranges:** 200mV, 2V, 20V, 200V, 1000V. **Input impedance:** 1 megohm @ 150 pF. **Overload protection:** 250 V RMS on 200mV and 2V, 500 V on higher ranges. **Accuracy:** With DC calibrator, ±0.75% ±1 digit for 40Hz-10kHz, ±1% ±1 digit for 10kHz-20kHz on 200 mV and 2V ranges; ±0.75% ±1 digit for 40Hz-5kHz, ±1.5% ±1 digit for 5kHz-10kHz on 20V and 200V ranges; ±1.5% ±1 digit for 40Hz-7.5kHz 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 on all 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, 8W nominal. **Operating temperature:** 10°C-40°C. **Reference:** 25°C, ±1°C. **Size:** 3" H x 7" W x 7.9" D.

ID-1041 High Voltage Probe... 6.95

Ideal for use with the new IM-102 Digital Multimeter when 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.

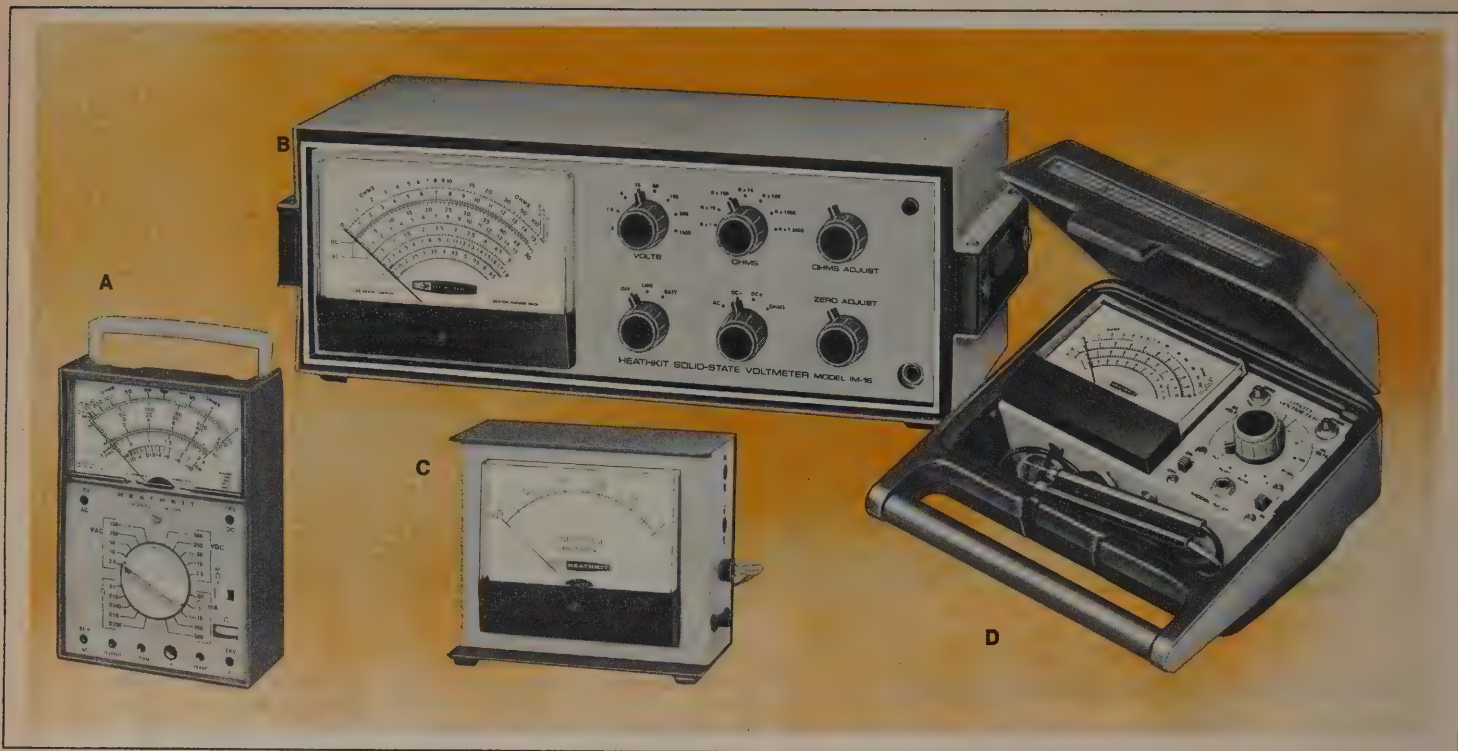
Kit ID-1041, 1 lb., mailable 6.95



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.

There's a handy Heathkit meter



A) Rugged, accurate Heathkit VOM for general purpose duty... 47.95

- High impact Lexan® portable case
- Ruggedized taut-band meter

The highly versatile IM-105 VOM 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 panel for extra convenience. Other professional features include DC polarity reversal switch, ohms zero adjustment by front thumbwheel, easy-to-build modular printed circuit board construction, self-storing handle. For one of the most versatile meters you can buy, order your new IM-105 now.

Kit IM-105, 4 lbs., mailable 47.95

IM-105 SPECIFICATIONS — DC VOLTAGE RANGES — 0.25, 2.5, 10, 50, 250, 500, 1000 & 5000 V full scale. Accuracy: ±3% of full scale. Input resistance: 20,000 ohms/V. AC VOLTAGE RANGES — 2.5, 10, 50, 250, 500, 1000 & 5000 V full scale. Accuracy: ±4% of full scale. Input resistance: 5000 ohms/V. Input capacity: Less than 20 pF. Frequency response: 2.5, 10 & 50 V ranges: ±5%, 10 Hz to 100 kHz; 250, 500 V ranges: ±5%, 10 Hz to 50 kHz. DC CURRENT RANGES — 0.05, 1.0, 10, 100, 500 mA & 10 A full scale. Accuracy: ±3% of full scale. Voltage drop: Approximately 0.25 V at full scale. RESISTANCE RANGES — x1 (20 center scale), x10, x100, x1k, x10k. Accuracy: ±3 degrees of arc. Source voltage: x1 through x1k ranges: 1.5 V. x10k range: 15 V. DECIBEL RANGES: (0 dB = 1 mW in 600 ohms): -10 to +50 dB. GENERAL — Voltage dividers: ±1% metal film resistors on most ranges. Meter: 4½", 50 uA, ruggedized, taut-band movement. Meter protection: Combined fuse and diode overload protection. Meter temperature coefficient: 15 to 35° C, ±0.1% (or 0.1 degree of arc) per degree C. Operating temperature range: 0-55° C. Batteries (not supplied): One 1.5 V "D" cell (NEDA #14); one 15 V (NEDA #208). Dimensions: 7" H x 5" W x 2¼" D. Test Leads: Supplied.

B) Heathkit Solid-State Volt-Ohm Meter... 52.50

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: ±3% of full scale. AC VOLT-

METER — 8 Ranges: 0.5, 1.5, 5, 15, 50, 150, 500, 1500 V. Input resistance: 1 megohm. Accuracy: ±5% of full scale. **OHMMETER** — 7 Ranges: x1 (10 ohm center scale), x10, x100, x1k, x10k, 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: 5¾" H x 16¾" W x 7¾" D.

C) Heathkit Line Voltage Monitor... 16.95

Gives constant check of AC line voltage. 2% accuracy when calibrated from source of known accuracy. 90-140 VAC range. Not recommended 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 at 95 VAC, and 135 VAC, ±5% 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.

D) Heathkit Solid-State Volt-Ohm Meter; a fantastic value at just 22.50

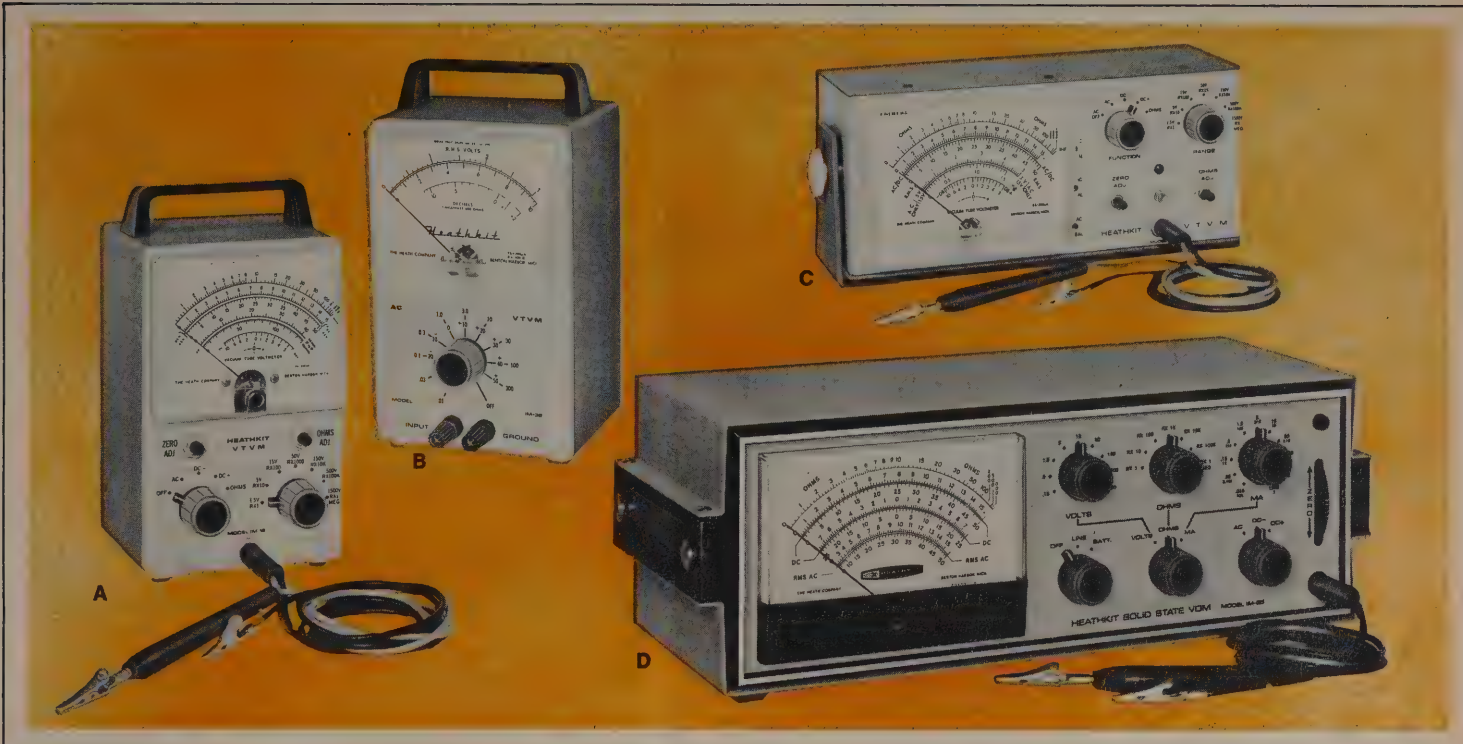
- Tough polypropylene case with built-in handle and snap closure

The perfect buy for homeowners, hams, servicemen, hobbyists, modelers—everyone. All solid-state with FET input. Features include portable battery operation, zero & ohms adjust controls, accessory probe jack, DC polarity reversing switch, three built-in test leads, fast, easy 3-5 hour assembly. Check around before you buy—the IM-17 would be a real bargain at twice the price. Not recommended for use in RF fields.

Kit IM-17, 5 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. **OHMMETER** — Four ranges: Rx1, x100, x10k, x1 meg. **POWER SUPPLIES** — Ohms circuit: 1.5 V "C" Cell. 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.

to fit your needs and your budget



A) Heathkit IM-18 VTVM; versatility at low cost...29.95

One probe makes all measurements. Seven AC, seven DC & seven ohms ranges for wide versatility. Extended frequency response; measures rms and p-p. Fast, easy assembly.

- Kit IM-18, 5 lbs., mailable29.95
- Assembled IMW-18, 6 lbs., mailable55.95

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 1000 megohms. Meter: 4 1/2" 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: 7 3/8" H x 4 1/4" W x 4 1/4" D.

B) Heathkit IM-38 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 & development, lab analysis, general servicing.

- Kit IM-38, 5 lbs., mailable41.95
- Assembled IMW-38, 6 lbs., mailable59.95

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, 10 megohms shunted by 22 pF on ranges .01 to 3 V. Accuracy: Within 5% of full scale. Power requirements: 120/240 VAC, 50/60 Hz, 10 W. Dimensions: 7 3/8" H x 4 1/4" W x 4 1/4" D.

C) Heathkit Service Bench VTVM...39.95

Same excellent performance as IM-18 with extra convenience features: separate 1.5 & 5 VAC scales; 6-in. meter; front panel calibration controls; convenient gimbal mounting.

- Kit IM-28, 7 lbs., mailable39.95
- Assembled IMW-28, 7 lbs., mailable59.95

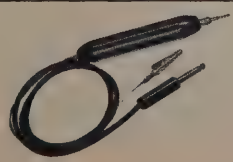
IM-28 SPECIFICATIONS — DC VOLTMETER — Ranges: 0-1.5, 5, 15, 50, 150, 500, 1500 V full scale; up to 30,000 V with accessory probe. Input Resistance: 11 megohm (1 megohm in probe) on all ranges; 1100 megohms with accessory probe. Circuit: Balanced bridge (push-pull) using twin triode. Accuracy: ±3% of 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: Half-wave 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). OHMMETER — 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: 1 1/2 V, "C" cell. Power Requirements: 120/240 VAC, 50-60 Hz, 10 W. Dimensions: 5" H x 12 1/8" W x 4 3/4" D.

D) Deluxe Heathkit Solid-State Hi-Z Volt-Ohm Meter...85.00

Provides wide choice of functions and ranges: nine ACV & DCV ranges; 11 AC & DC mA ranges; seven resistance ranges. Not recommended for use in RF fields.

- Kit IM-25, 11 lbs., mailable85.00
- Assembled IMW-25, 11 lbs., mailable120.00

IM-25 SPECIFICATIONS — DC VOLTMETER — 9 Ranges: 0.15, .5, 1.5, 5, 15, 50, 150, 500, 1500 V full scale. Input resistance: 11 megohms on all ranges. Accuracy: ±3% of full scale. DC MILLIAMMETER — 11 Ranges: 0-.015, .05, .15, .5, 1.5, 5, 15, 50, 150, 500, 1500 mA full scale. Input resistance: 0.10 ohm (1500 mA) to 10 k ohm (.015 mA). Accuracy: ±4% of full scale. AC VOLTMETER — 9 Ranges: 0-.15, .5, 1.5, 5, 15, 50, 150, 500, 1500 V full scale. Input resistance: 10 megohm shunted by 175 pF (measured at probe tip). Accuracy: ±5% of full scale. Frequency response: ±2 dB, 10 Hz to 100 kHz. AC MILLIAMMETER — 11 Ranges: 0-.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: ±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.



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., mailable5.00
 Assembled PKW-3, 1 lb., mailable7.00



30 KV DC Probe for extremely high voltages; multiplier of 100 on DC ranges of 11 meg. input; 1100 meg-ohm input for hi-Z circuits. 2% resistor.
 Kit 336, 1 lb., mailable6.50
 Assembled 336W, 1 lb., mailable7.95

Another price-shattering Heathkit counter—the new IB-1101 with 100MHz capability for just 269⁹⁵



A solid-state frequency counter at an unprecedented low price!

- Measures frequency from 1 Hz to over 100 MHz
- Wide range input without adjustment
- No special instruments needed for calibration

Until now the "low cost counter" classification could be stretched no farther than instruments measuring up to 15 MHz. Instruments above that range were complex, costly and often more counter than you could ever use. We've changed all that with the Heathkit IB-1101, the frequency counter you've been waiting for. A truly low-cost unit in kit form, with 100 MHz capability and a list of features to rival many high-price counters. Compare for yourself.

The Heathkit IB-1101 has an exclusive Heath-designed input circuit that will accept input levels from less than 50 mV to more than 200 V, 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 read the least significant Hz digit of a frequency greater than 100 kHz, you simply switch the range selector from the MHz position to kHz. To make accurate readout and operation even easier, the decimal point is automatically positioned with range selection 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 of the Heathkit IB-1101 minimize the possibility of circuit loading.

The IB-1101 is designed for years of trouble-free operation, easy assembly and self-service. 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. The dual primary power transformer, three-wire line cord and a well regulated supply assure stable operation during long periods of operation.

You can build your IB-1101 in approximately 10 enjoyable hours. The 26 digital IC packages, and readout tubes plug into individual sockets. All other components, including shielded MOSFET, 10 silicon transistors, nine diodes and two zener diodes mount neatly on one double-sided fiberglass board. Only two initial adjustments are necessary after completion. The input sensitivity control has a built-in variable-level signal source for the first, and a standard AM radio can be used as the time-base oscillator adjustment standard. And the manual includes complete circuit description and diagrams plus troubleshooting information for quick, easy instrument servicing should your IB-1101 ever need it.

The Heathkit IB-1101 is housed in a lightweight, compact aluminum case with zinc-diecast front panel, tinted viewing window, BNC input connectors and tilt/stand handle. If you've always wanted a better counter, but could never quite justify the price, here's your chance—the great new Heathkit IB-1101.

Kit IB-1101, 8 lbs., mailable 269.95

IB-1101 SPECIFICATIONS — Frequency range: 1 Hz to over 100 MHz. Accuracy: ± 1 digit \pm time base stability. Sensitivity: 50 mV rms, to 50 MHz. 100 mV rms, 50 MHz to 100 MHz. Gate time: 1 ms or 1 sec., with auto reset. Input impedance: 1 megohm, shunted by less than 15 pF. Maximum input voltage: 250 V rms at 0-5 MHz decreasing to 3 V rms @ 100 MHz. Maximum dc input 250 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 15 MHz Frequency Counter...199.95

Cold-cathode readout tubes in computer-type circuitry give stable non-blinking five-digit readout. And the overrange indicator and Hz/kHz switch provide the capability of an eight-digit counter. A special low drift, temperature compensated 1 MHz crystal oscillator provides a highly stable time base. The 26 ICs, seven transistors, a MOSFET and six diodes provide easy six-hour assembly.

Kit IB-101, 7 lbs., mailable 199.95

IB-101 SPECIFICATIONS — Frequency range: 1 Hz to greater than 10 MHz. Accuracy: ± 1 count \pm time base stability. Gate times: 1 ms or 1 sec. with automatic reset. **INPUT CHARACTERISTICS** — Sensitivity: 1 Hz to 1 MHz, less than 100 mV rms. 1 MHz to 15 MHz, less than 250 mV rms. After 30 minutes warmup. Trigger level: Automatic. Impedance: 1 Megohm shunted by less than 20 pF. Maximum input: 200 V rms, DC — 1 kHz. Derate at 48 V per frequency decade. **TIME BASE** — Frequency: 1 MHz, crystal controlled. Aging rate: Less than 1 PPM/month after 30 days. Temperature: Less than ± 2 parts in 10⁻⁷°C. 20-35° C after 30 minutes warmup. $\pm 0.02\%$ from 0 to 40° C. **GENERAL** — Power requirements: 120/240 VAC, 50/60 Hz, 8 W. Ambient temperature range: Storage, -55-80° C; Operating, 0-40° C. Cabinet dimensions: 3 $\frac{3}{8}$ " H x 8 $\frac{1}{4}$ " W x 9" D not including handle.

Heathkit 175 MHz Scaler...99.95

Divides input frequencies from 2 MHz to 175 MHz with scaled output fed to any compatible counter with 1 megohm input. Front panel switch-selection of 10:1 or 100:1 scaling ratios; resolution down to 10 Hz, with a counter having one-second time base. With frequencies within the range of the counter being used, a 1:1 switch position gives straight-through counting without scaling.

Kit IB-102, 7 lbs., mailable 99.95

IB-102 SPECIFICATIONS — Frequency range: 2 MHz-175 MHz. Resolution: Counter with 1 ms time base — divide by 10=10 kHz; divide by 100=100 kHz. Counter with 1 sec. 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-100 MHz. 125 mV, 100 MHz-175 MHz. Impedance: Divide by 1, same as frequency counter. Divide by 10 and 100, 50 ohms. Amplitude (maximum): 3 V rms. **OUTPUT** — Amplitude (minimum): 1 V across 1 megohm and 20 pF load. Rise time: 20 ns. Fall time: 10 ns. Offset from ground: Adjustable from zero to ± 500 millivolts. **GENERAL** — Power requirements: 120/240 VAC, 50/60 Hz, 5 W. Ambient temperature range: Storage, -55° C-80° C. Operation, 10° C-40° C. Dimensions: 3 $\frac{3}{8}$ " H x 8 $\frac{1}{4}$ " W x 9" D (not including handle).



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



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

New Heathkit 10MHz, triggered scope for a low, low 229⁹⁵

Here's a 5-inch triggered sweep scope at a price you can't afford to pass up!

- DC-10 MHz response
- 50 ns sweep rate
- Calibrated attenuator
- AC-DC coupling

Here's maximum flexibility in a general purpose oscilloscope—at a price in keeping with Heath's policy of offering you the most instrument for your dollar. Providing a big 6x10 cm screen with lighted graticule for easy, accurate measurement, the Heathkit IO-103 is the ideal tool for the service shop performing audio and television maintenance. Yet it has the precision and sensitivity needed for general lab work. It's an ideal accessory for the ham shack, too.

The IO-103 offers you a wide bandwidth and complete calibration. Response on the vertical channel is DC-10 MHz ± 3 dB, with less than 50 ns rise time. The calibrated attenuator switch has nine positions, with variable control. And sweep is adjustable in seven calibrated steps, from 100 ms/cm to 100 ns/cm, with variable control between. Horizontal expansion gives x2 magnification $\pm 5\%$ for a 50 ns/cm sweep rate.

And there's triggered sweep, too—unheard of on a scope at this low price. You select either normal or automatic modes. In the normal mode, setting the point at which the sweep starts on the waveform can be adjusted by a separate control. Other individually controlled triggering options include "plus-or-minus" for selecting waveform slope; AC-DC which removes any DC component in the signal, or permits direct coupling for triggering by DC level changes or very low frequency AC signals. Exclusive Heath circuitry provides increased repetition rate on the upper sweep ranges when in the automatic trigger mode. This gives you a much brighter base line for easier viewing, plus better waveform definition.

Other deluxe features of the IO-103 include switch-controlled AC-DC coupling; provisions for external triggering signals and horizontal deflection signal; front-mounted connectors for vertical inputs and 1 V peak-to-peak signal for checking calibration. The transformer operated, silicon rectifier power supply can be wired to operate from 110-130, or 220-260 VAC lines. Both amplifiers and sweep circuit power supplies are Zener regulated for greater display stability. The primary circuit is fused for overload protection.

Quality engineering—easy assembly—simple operation—self servicing capability—make the budget-priced Heathkit IO-103 one of the greatest scope values on the market today. Order one for the shack, shop, lab or classroom today.

Kit IO-103, 37 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.

High frequency compensated probe

Ideal for use with the new Heathkit IO-103 or the IO-105 Dual Trace Scope. Essential for examining high frequency waveforms, and for use in circuits where a low impedance probe would cause loading or distortion problems.

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

PKW-101 SPECIFICATIONS — Input impedance: 10 megohm shunted by 11.5 pF. Compensation: Allows matching to any 1 megohm scope input shunted by 15-47 pF. Bandwidth: DC to 30 MHz. Attenuation: x10. Voltage rating: 500 Volts, AC & DC. Scope connector: BNC. Probe: Spring-loaded outer hook connector and fine-pointed inner tip combination. Length: 3 $\frac{1}{2}$ feet.



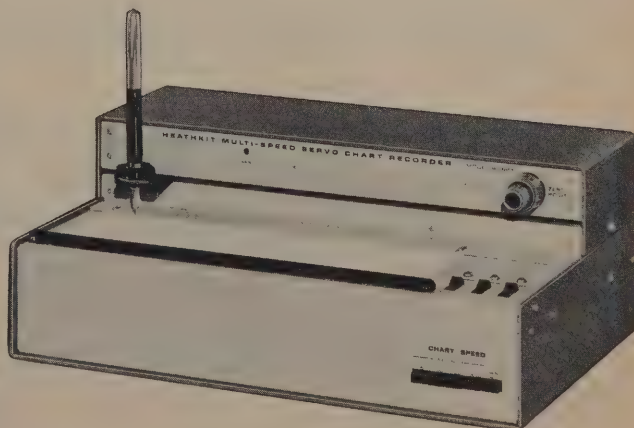
Heathkit 12-speed Chart Recorder...149.95

Can measure and record any phenomena that varies with time that can be converted to proper DCV level. Push button selects 12 different speeds, from 5 sec/in. to 200 min/in. Chart drive uses incoming line frequency as a standard—digital logic provides accuracy easily equal to expensive gear-train assemblies. Two input ranges permit accurate voltage measurements of 1 mV and 10 mV full scale. Includes light-operated modulator, temperature-stabilized reference voltage, course and fine zero position controls, universal pen holder.

Kit IR-18M, 14 lbs., mailable **149.95**

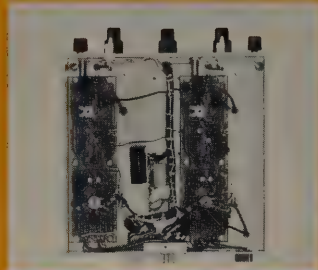
IRA-18-1, 3 rolls chart paper (140 ft./roll), 5 lbs., mailable **9.95**

IR-18M 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: $\frac{1}{2}$ amp slow-blow (120 VAC). Dimensions: 6" H x 15" W x 9 $\frac{1}{2}$ " D.





New Heathkit Dual-Trace Scope— DC-15 MHz and triggered sweep for an amazing 399⁹⁵



Printed circuit boards and the famous check-by-step Heathkit manual make assembly easy.



Easy-access side panels simplify maintenance, aid in classroom demonstration.

An uncompromising solid-state scope for an incomparable price

- Full bandwidth in automatic and normal modes
- Complete dual-trace capability
- X-Y mode with 5° or less phase shift
- 8x10 cm rectangular flatface CRT

The new Heathkit IO-105 brings you 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 waveforms. Full bandwidth is featured from 20 V/cm to 50 mV/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 to 20 V/cm, ±3%. **Variable gain (uncalibrated) thru entire range.** **Vertical display in sweep mode:** Channel 1, Channel 2, Channel 1 & 2 alternately; or Channel 1 & 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/cm (uncalibrated & not adjustable). 100 K ohm minimum input impedance, DC to 100 kHz. **X-Y MODE — Sensitivity:** 0.05 V/cm to 20 V/cm, ±3%. **Frequency response:** -3 dB @ 100 kHz (Channel 2). **Phase shift between channels:** ±5° or less from DC to 50 kHz within graticule limits. **TRIGGERING — Delay:** Approx. 600 ns. **Auto:** Zero crossing ±½ cm of zero crossing. **Norm:** Within viewing area. **Source:** Channel 1, Channel 2, or Channels 1 & 2. **Polarity:** + or - slope. **Coupling:** AC or DC. **Sensitivity:** Internal, ½ cm; external, 100 mV minimum, 7 V max. **GENERAL — Blanking in:** TTL compatible (Logic 0-blank). **Gate out:** 3.5 V minimum. **Input connections:** Vertical, BNC; horizontal, binding post; external trigger, binding post on ¾" center with ground. **CRT accelerating potential:** 2200 VDC regulated. **CRT type:** 8x10 cm, rectangular, flat-face, D14-107GA. **Retrace suppression:** DC coupled unblanking of the CRT. **Graticule:** 8 cm x 10 cm grid, edge lighted. **Power requirements:** 105-125 or 210-250 VAC, 50/60 Hz, 60 W. **Warm-up time:** CRT heating time, approx. 30 seconds; for full calibration, approx. 15 min. **Overall dimensions:** 12¾" H x 10⅞" W x 15" D. **Note:** Specifications measured at 25° C with 120 VAC line voltage.

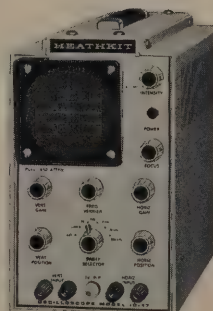
Heathkit Low Cost 3-inch Scope...82.50

- Wide 5 MHz bandwidth—30 mV sensitivity

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. Make a new year's resolution—order yours today.

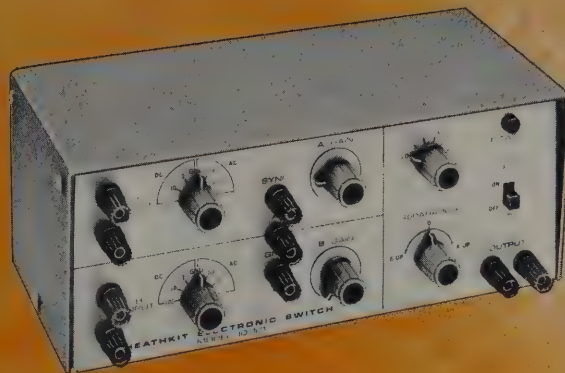
Kit IO-17, 16 lbs., mailable 82.50



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:** 9½" H x 5½" W x 14½" D.



Heathkit IO-102 & ID-101— two-channel scope capability for cost conscious techs



Heathkit IO-102 5-inch Solid-State Scope...119.95

- All solid-state circuitry
- DC coupled vertical amplifier
- Wide response
- 5" flat-face CRT with standard camera mount bezel dimension
- External sweep & sync inputs
- Built-in 1 V p-p reference source
- Variable sweep, 10 Hz–500 kHz

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. Both horizontal and vertical amplifiers and sweep circuit have zener-regulated power supplies. 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 to obtain full two-channel capability.

Kit IO-102, 31 lbs., mailable119.95

Assembled IOW-102, 29 lbs., mailable179.95

Assembled PKW-101, 1 megohm scope probe,
1 lb., mailable19.95

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. All amplifier supplies regulated. **Power Requirements:** 110-130 or 220/260 VAC, 50/60 Hz, 35 W. **Overall Dimensions:** 12 $\frac{3}{4}$ " H x 9 $\frac{1}{4}$ " W x 16 $\frac{1}{4}$ " D, including knobs, handle, feet, etc.

Heathkit Electronic Switch...39.95

- Two channel versatility for single-channel scopes
- Wide DC-5 MHz bandwidth—DC coupling

The new Heathkit ID-101 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. The ID-101 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 + 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. Ideally suited for digital circuits; amplifier input and output for gain and distribution checks; simultaneous monitoring of both channels of a stereo amplifier.

Kit ID-101, 6 lbs., mailable39.95

ID-101 SPECIFICATIONS — Signal frequency response: DC-5 MHz +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 $\frac{3}{4}$ " D.

Heathkit low cost scope probes



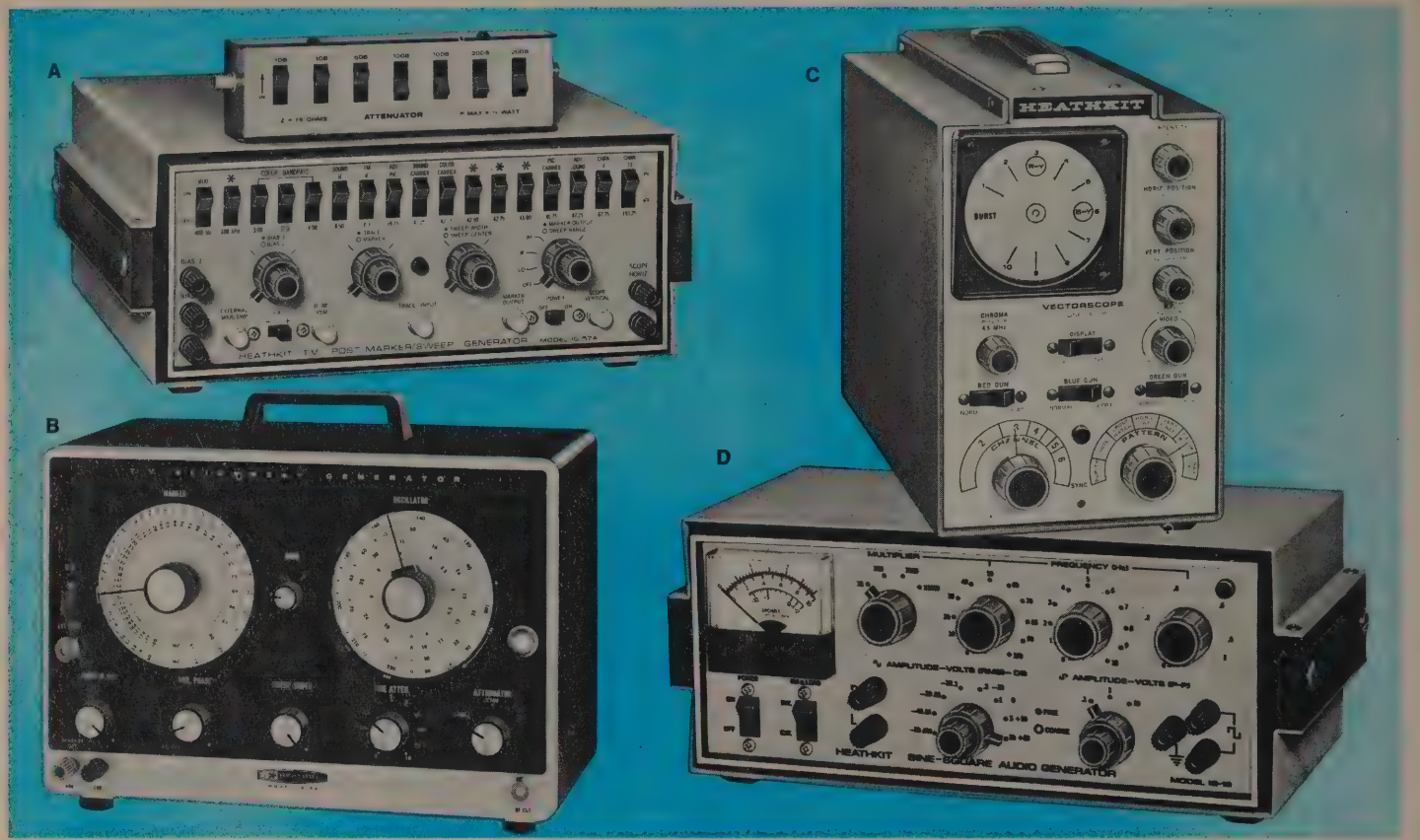
Low capacitance scope probe kit. Provides direct or x10 attenuated operation; trimmer capacitor provides proper match to scope. Wiring options 3.3 megohm or 1 megohm. Ideal for use with IO-102.

Kit PK-1, 1 lb., mailable4.95

Scope demodulator probe. For distortion checks & observation of RF & IF signal modulation. Functions as an AM detector, 30 V rms, 500 VDC max. Ideal for IO-102.

Kit 337-C, 1 lb., mailable5.00
Assembled 337W-C, 1 lb., mailable6.50

Inflation-fighting values in Heathkit cost-of-labor-



A) Post-marker sweep generator... 139.95

A scope, VTVM and the Heathkit IG-57A are all you need to align virtually any modern B & W or color TV receiver completely, quickly and accurately. Compact size, convenient controls add to instrument's versatility. Available in factory-assembled or easy-to-build kit form. Check the specs. Check the price. You'll see why the IG-57A is a top-value in TV service instrumentation.

Kit IG-57A, 15 lbs., mailable **139.95**
Assembled IGW-57A, 15 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 $\pm 0.05\%$. 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.

B) Economy TV sweep generator... 69.95

Provides all signal sources required for FM & TV alignment...TV front end channels 2-13. Controllable inductor sweep oscillator for stable, linear sweep, 3.6-200 MHz...0-42 MHz max. sweep width. Built-in markers: 4.5 MHz crystal and multiples...19 to 60 MHz variable (57-180 MHz on harmonics). Fixed step & variable attenuators.

Kit IG-52, 14 lbs., mailable **69.95**
 Export model available for 120/240 VAC, 50-60 Hz; write for prices.

C) Vectorscope/color generator...124.95

Accurately performs all chroma signal adjustments. Vector pattern indicates the ten color bars generated, amplified and demodulated by color receiver circuitry; accurately represents chroma signal fed to CRT

guns. Produces 12 patterns plus clear raster for purity adjustments. An outstanding test gear value.

Kit 10-101, 12 lbs., mailable **124.95**

10-101 SPECIFICATIONS—PATTERNS—Purity: Produces a snow-free raster for purity adjustments. Dots*: 9x9 produces a display of 110 small dots. 3x3 produces a display of nine dots for convergence adjustments. Crosshatch*: 9x9 produces a display of 11 vertical and 10 horizontal lines. 3x3 produces a display of three vertical and three horizontal lines for convergence and linearity adjustments. Horizontal Lines*: 9x9 produces a display of 10 horizontal lines. 3x3 produces a display of three horizontal lines for vertical linearity and pin-cushion adjustments. Vertical Lines*: 9x9 produces 11 vertical lines. 3x3 produces a display of 3 vertical lines for horizontal linearity and convergence adjustments. Color Bars*: 9x9 produces a display of ten standard color bars. 3x3 produces a display of three standard color bars. A visual fingerprint (voltage pattern) of all ten color bars in the form of a petal pattern is displayed for color circuit servicing. Gray Scale: Provides a wide bar crosshatch pattern with six shades of brightness for color gun level adjustments. OUTPUT SIGNALS—Video: Greater than ± 1 volt peak-to-peak composite signal for composite signal injection beyond the video detector. RF: Variable to approximately 50,000 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: 120/240 VAC, 50/60 Hz, 20 W. 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.

D) Solid-state sine-square wave generator... 69.95

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. 5 $\frac{1}{2}$ " H x 13 $\frac{1}{4}$ " 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 of 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 V rms (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 indication: 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: $\pm 5\%$ 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: .1 V and 1 V ranges: 52 ohm; 10 V range: up to 220 ohm.

saving test gear and service instruments



A) TV vector monitor...49.95

- Aids in nine critical adjustments
- Designed expressly for color TV servicing
- Full 3-in. flat-faced CRT

The Heathkit IO-1128, designed for use with the IG-28 Color Bar & Dot Generator or similar unit, 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.

Designed expressly for vector pattern display and color TV servicing. Not just a converted oscilloscope with unwanted "extras." Individual red, blue and green guns of grid-driven CRTs may be turned off by front panel switches for extra convenience in tri-gun purity and convergence adjustments. Rear panel grid-cathode switch keeps the vector pattern in the same relative position, regardless of how the CRT is driven. Four-conductor cable with insulation-piercing alligator clips allows easy attachment to receiver.

Other features are full 3-in. flat-faced cathode ray tube—a Heath exclusive. 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. Lightweight, compact case with carrying handle and self-contained line cord and cable retainers. Wiring harness design helps you built it in about 6 hours.

Kit IO-1128, 10 lbs., mailable 49.95

IO-1128 SPECIFICATIONS — Switches: Power on-off, red gun, blue gun, green gun on front panel. Chroma switch on rear panel. Controls: Intensity, horizontal position, vertical position, focus (screwdriver adjust), astigmatism (screwdriver adjust). **Graticule with radial pattern:** For use with all colorbar generators which produce vertical color bars (offset carrier). **Cathode ray tube:** 3RPIA, flat-faced CRT (green trace on white background). **Power requirements:** 120/240 VAC, 50/60 Hz, 10 W. **Dimensions:** 6½" H x 5¾" W x 12¾" D.

B) Color bar/pattern generator...79.95

The ideal signal source for all color & B&W TV servicing. Highly stable, extremely versatile, loaded with extra convenience features—all at a low kit price. Produces 12 patterns plus raster—dots, cross hatch, vertical & horizontal bars, color bars and shading bars in the familiar 9x9 display—plus exclusive Heath 3x3 display of all these patterns. A crystal controlled master oscillator and associated logic circuitry provide a rock-stable divider chain that eliminates instability and need for

adjustment.

Kit IG-28, 8 lbs., mailable 79.95
Assembled IGW-28, 10 lbs., mailable 114.95

IG-28 SPECIFICATIONS — Output signals: Video—Greater than ±1 V peak-to-peak composite signal for composite signal injection behind the video detector. RF—Variable to 50,000 uV 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: 5½" H x 13½" W x 8" D.

C) FM stereo generator...79.95

Provides audio and composite stereo signals for multiplex adjustments, and an RF carrier modulated by these signals for tuner and receiver adjustments. For accurate adjustment of subcarrier transformers, use the phase test. Variable level crystal controlled 19 kHz pilot signal permits checking lock-in range of stereo receivers. Built-in sweep and marker signals for overall RF & IF alignment check. RF carrier signal adjustable ±2 MHz from the normal frequency for alignment on a clear portion of the band. Front panel controls select either right or left channel signals or phase test. No balancing required for equal channel modulation level. Switch-selection of frequencies, either direct or modulated RF, of 400 Hz, 1 kHz, 5 kHz, 38 kHz and one of two SCA frequencies.

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:** 5½" H x 9" W x 9" D.

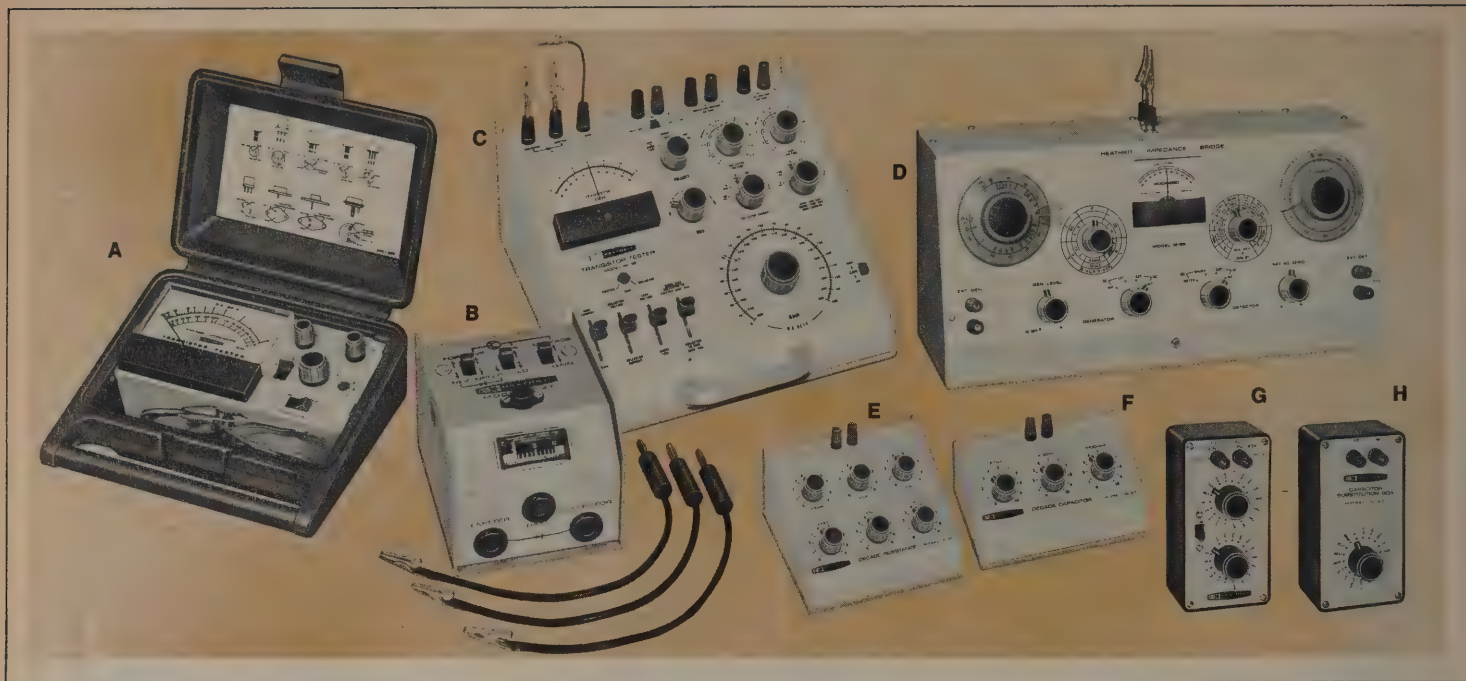
D) General purpose RF generator...32.95

Extended 100 kHz to 220 MHz range with 2% accuracy. Unmodulated and 400 Hz modulated output. 400 Hz output for audio checks.

Kit IG-102, 7 lbs., mailable 32.95

IG-102 SPECIFICATIONS — Frequency range: Band A, 100 kHz to 320 kHz; Band B, 310 kHz to 1.1 MHz; Band C, 1 MHz to 3.2 MHz; Band D, 3.1 MHz to 11 MHz; Band E, 10 MHz to 32 MHz; Band F, 32 MHz to 110 MHz. **Calibrated harmonics:** 100 MHz to 220 MHz. **Output:** Impedance: 50 ohms; Voltage, 100,000 uV. **Modulation:** Internal, 400 Hz, 30% depth; External, approx. 3 V across 50 k ohms for 30%. **Audio output:** Approx. 10 V open circuit. **Power requirements:** 120/240 VAC, 50/60 Hz, 15 watts. **Dimensions:** 9½" H x 6½" W x 5" D.

Up-date your service bench this year



A) In-circuit transistor checker... 25.95

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 1/2", 200 μ A meter. Battery powered circuit (less batteries).

Kit IT-18, 4 lbs., mailable 25.95

IT-18 SPECIFICATIONS — D. C. Beta: x1 range — 2 to 100, x10 range — 20 to 1000. **Out-of-circuit accuracy:** \pm 5%. **In-circuit accuracy:** Indicates good or bad (accuracy depends upon circuit being tested); I_{ceo} (out-of-circuit only) — 0-5000 μ A; I_{cbo} (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 1/2" H x 8 1/2" W x 7 1/8" D (including handle).

B) Portable transistor/diode checker... 6.95

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 1/8" H x 3 1/8" W x 3 3/4" D.

Kit IT-27, 2 lbs., mailable 6.95

IT-27 SPECIFICATIONS — Transistor test: Leakage, short, open, and current gain. **Diode test:** Forward and reverse current. Also serves as a continuity checker. **Switches:** Forward-Reverse/PNP-NPN, Diode/Hi-Lo, Leakage-Gain. **Power supply:** Self-contained, two 1.5 volt size "C" flashlight cells (not supplied). **Dimensions:** 3 1/8" H x 3 1/8" W x 3 3/4" D.

C) Lab transistor checker... 67.50

Complete DC analysis of PNP & NPN transistors up to 15 amps and diodes up to 1.5 amps. 5 1/2" H x 10 3/4" W x 10 1/4" D.

Kit IM-36, 9 lbs., mailable 67.50

IM-36 SPECIFICATIONS — Meter: Current ranges: 15 μ A, 150 μ A, 1.5 mA, 15 mA, 150 mA, 1.5 A, 15 A. **Voltage Ranges:** 1.5 V, 5 V, 15 V, 50 V, 150 V (100 k ohm/V). **Power supply:** Internal, 7 1.5 V size D batteries (not supplied) provide 1.5, 3, 4.5, 6, 7.5, 9 V collector supply for gain or leakage and 1.5 V for bias. External, 0-50 V for gain, 0-150 V for leakage and 0-5 V for bias. **Bias control:** Permits any collector current from 10 μ A to 15 A for gain tests. **Gain control:** 3% wire-wound control has calibrated scales to give DC Beta directly when meter is at null. **Lever switch:** Four spring return levers will individually select the following tests: Base Current, Gain, Collector Voltage, Collector Current, Leak Voltage, Short Test, I_{cbo} and I_{ceo} or diode currents. **Two voltage selector switches:** Gain and Leak Test Voltages can be individually preset at different voltage levels. **Two current range switches:** Collector and Leak currents can be individually preset on different adjacent ranges. **Transistor and diode connections:** Universal transistor socket and binding posts. **External power supply connections:** Binding posts for Gain, Leak and Bias supplies.

D) Impedance bridge... 89.95

Four separate bridge circuits measure resistance, capacitance, low & high Q inductance. Built-in generator and amplifier; battery-type vacuum tube circuitry for fast warmup. 1/2% 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 micro-ampere meter. **AC Measurements:** Built-in 1000 Hz generator. Terminals on panel for external generator at other frequencies. **Detector:** Vacuum tube detector and amplifier, using built-in meter. Terminals provided for external detector. **Resistance:** 0.1 ohm to 10 megohm. **Capacitance:** 100 pF to 100 μ F. **Inductance:** 0.1 mH to 100 H. **Dissipation Factor:** (D) 0.002 to 1. **Storage Factor:** (Q) 0.1 to 1000. **Accuracy:** 1/2% decade resistors used. **Tube Complement:** (2) 1U4, (2) 1L4. **Power Supply:** Transformer and silicon rectifier. **Power requirements:** 120/240 VAC, 10 watts. **Dimensions:** 8" H x 17" W x 6" D.

E) Decade resistance box... 29.95

Kit IN-17, 4 lbs., mailable 29.95

IN-17 SPECIFICATIONS — Range: 1 ohm to 999,999 ohms in 1 ohm steps. **Resistors:** Precision 1/2% accuracy, 1 W. **Minimum DC resistance:** 25 ohms or less at terminals with all switches at zero. **Dimensions:** 5" H x 7 1/2" W x 6 5/8" D.

F) Decade capacitance box... 19.95

Kit IN-27, 3 lbs., mailable 19.95

IN-27 SPECIFICATIONS — Range: 100 pF to 0.111 μ F increments of 100 pF. **Voltage rating:** 350 VDC continuous; 500 VDC intermittent; 1000 VDC instantaneous test. **Accuracy of incremental capacity:** \pm 1%. **Stray capacitance:** 10 to 15 pF at terminals. **Dimensions:** 4" H x 7 1/8" W x 5" D.

G) Resistor substitution box... 7.95

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 5 3/8" L x 3 1/8" W x 3" H.

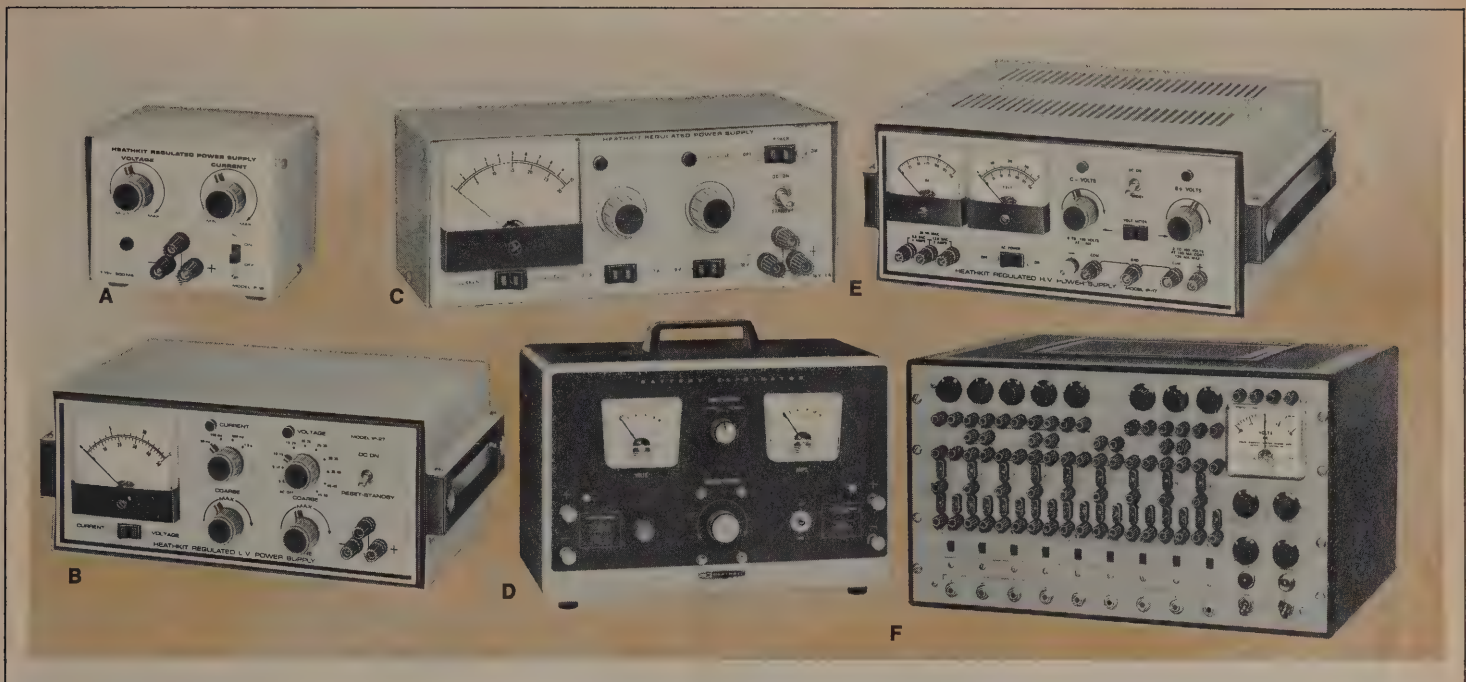
Kit IN-37, 2 lbs., mailable 7.95

H) Capacitor substitution box... 7.50

Select any of 18 EIA standard capacitors from 100 pF to .22 μ F. All rated at 600 V except three lowest and two highest values, 500 & 400 V respectively.

Kit IN-47, 2 lbs., mailable 7.50

with these Heathkit test equipment values



A) Solid-state 1-15 VDC regulated supply

Ideal for transistor work, has regulated, adjustable voltage with current limiting, programming; "floating" outputs for positive or negative ground. (Requires VOM for adjustment.)

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

IP-18 SPECIFICATIONS — Voltage output: 1-15 VDC, continuously adjustable. Load regulation: Less than 50 mV variation from no load to full load. Line regulation: Less than 50 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.

B) Solid-state 0.5-50 VDC regulated supply

Provides regulated DC voltage, output current limiting. Panel meter switches from voltage to current. Relay protected from short circuits and overloads. For higher outputs, connect several IP-27 supplies in series or parallel.

Kit IP-27, 16 lbs., mailable **.79.95**

Assembled IPW-27, 14 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 µV. Transient response: Less than 25 usec. 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.

C) Solid-state 1-30 VDC regulated supply

1-30 VDC solid-state regulated supply. Delivers up to 30 VDC at 1 amp with less than 50 mV variation and less than 20 mV using Remote Sensing. Two continuously variable, switch-selected voltage ranges (1-10 VDC & 1-30 VDC).

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 & 10mA-1A, continuously adjustable. Transient response: 25 µs. Output impedance: 0.3 ohms or less to 100 kHz. Meter accuracy: 3% of full scale. Meter ranges: One switch determines voltage or current reading. 2 voltage ranges: 0-10 V, 0-30 V. 2 current ranges: 0-100 mA, 0-1A. External programming: AC or DC programming. 5000 ohm load on DC. Power requirements: 120/240 VAC, 50/60 Hz, 50 W, at full load. Dimensions: 6 1/2" H x 10 3/4" W x 4 3/8" D. overall.

D) 6 & 12 VDC variable battery eliminator

Switches to 6 or 12 VDC. Has separate filtered and unfiltered outputs, low AC ripple, separating voltage & current meters.

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.

E) Variable 0-400 VDC regulated supply

Separate filament and high voltage transformer permit switching all high voltages off while changing test circuit. Separate meters for simultaneous observation—voltmeter can be switched to monitor bias. AC & DC outputs isolated from ground and each other (3/4-in. spacing).

Kit IP-17, 21 lbs., mailable **.69.95**

Assembled IPW-17, 19 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.

F) Heathkit EC-1 Analog Computer

The Heathkit EC-1 Analog Computer vividly illustrates the electronic analogies to mathematical problems. Helps solve such complexities as fluid flow, damped harmonic motion, and flight of a projectile in a viscous medium. Has 9 DC operational amplifiers; built-in regulated power supply—three initial condition power supplies; five variable-coefficient potentiometers; built-in oscillator for re-cycling computer through problem. Switching allows amplifier balance without removing problem setup. Provides a fascinating experience for students. Simple assembly and operation.

Kit EC-1, 57 lbs., mailable **.225.00**

EC-1 SPECIFICATIONS — Amplifiers: Open loop gain approximately 1000. Output: -60 & +60 V at .7 mA. Power supplies: ±300 V at 25 mA electronically regulated, variable from +250 to +350. Negative 150 V at 40 mA. Repetitive operation: Multivibrator cycles to repeat solution; permits observation of effect of changing parameters on solution. Power requirements: 120/240 VAC, 50-60 Hz, 100 W. Dimensions: 10 1/2" H x 19" W x 15" D.

Smart techs save with Heathkit test gear



A) Harmonic distortion meter...67.50

Kit IM-58, 13 lbs., mailable 67.50

IM-58 SPECIFICATIONS — Frequency: 20 Hz — 20,000 Hz in three ranges. Distortion: 1, 3, 10, 30, 100% full scale. Voltmeter: 1, 3, 10, 30 V full scale. Input resistance: 300 k ohm. Minimum input voltage for distortion measurements: 0.3 V. Output Voltage for monitoring: 2.5 V at full scale meter reading. Accuracy: Voltmeter, $\pm 5\%$; Distortion, $\pm 5\%$ of full scale, +0.1% distortion. Tube complement: 0A2, 6X4, 58Y9, 12AT7, 12AX7, 12BY7. Power requirement: 120/240 VAC, 50/60 Hz, 30 W. Dimensions: 8½" H x 13" W x 7" D.

B) Audio intermodulation analyzer...69.95

Kit IM-48, 9 lbs., mailable 69.95

IM-48 SPECIFICATIONS — Frequency response — AC VTVM: 10 Hz — 100 kHz ± 1 dB. Wattmeter: 10 Hz — 50 kHz ± 1 dB. I.M. analyzer high pass filter: 2000 Hz — 12,000 Hz. I.M. analyzer low pass filter: 10 Hz — 600 Hz. AC VTVM range: .01, .03, .1, .3, 1, 3, 10, 30, 100, 300 V rms full scale. dBm: -40, -30, -20, -10, 0, +10, +20, +30, +40, +50. Reads from -65 to +52 dBm. Wattmeter: 0.15 mW, 1.5 mW, 15 mW, 150 mW, 1.5 W, 15 W, 150 W, full scale. Maximum continuous power 25 W, intermittent power to 50 W. I.M. analyzer: 1%, 3%, 10%, 30%, 100% full scale. Input impedance — AC VTVM: 1 megohm or 4, 8, 16 or 600 ohm switch selected. I.M. analyzer: 1 megohm or 4, 8, 16 or 600 ohm switch selected. Wattmeter: 4, 8, 16, or 600 ohm internal load, 10,000 ohm across external load. Output impedance — low and high frequency output: 3000 ohm (600 ohm when shunted with 750 ohm resistor). Internal generator frequencies — low frequency, 50/60 Hz (line frequency); high frequency, approximately 6 kHz. Accuracy — AC VTVM and wattmeter: Within 5% of full scale. I.M. analyzer: Within 10% of full scale. Power requirements: 120/240 VAC, 50/60 Hz, 20 watts. Dimensions: 8½" H x 13" W x 7" D.

C) Precision lab RF generator...69.95

Kit IG-42, 15 lbs., mailable 69.95

IG-42 SPECIFICATIONS — Frequency ranges: Band A, 100 — 290 kHz; Band B, 280 — 1000 kHz; Band C, 0.95 — 3.1 MHz; Band D, 2.9 — 9.5 MHz; Band E, 9 — 31 MHz. RF Output: Impedance, 50 ohms — voltage, 100,000 uV max. Attenuator: Coarse, 10:1 per step, 5 steps — Fine, 10:1 continuous, indicated on meter. Amplitude modulation: CW, internal 400 Hz or external audio frequencies. Modulation depth: 0 — 50% variable, indicated on meter. Tube complement: 6AF4, 6AV5, 12AU7, OB2. Power requirements: 120/240 VAC, 50/60 Hz. Dimensions: 8½" H x 13" W x 7" D.

D) Mutual-conductance tube tester...199.50

Kit TT-1A, 33 lbs., mailable 199.50

TT-1A SPECIFICATIONS — Power requirements: 120 VAC, 60 Hz, 10-60 W. Testing Circuits: Gm: mutual conductance for amplifiers, 0-24,000 umho. Emission: rectifiers & diodes. Leakage: direct reading ohmmeter. Grid current, ¼ 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: 13½" H x 17¾" W x 8" D.

E) Visual-Aural signal tracer...25.95

Kit IT-12, 6 lbs., mailable 25.95

IT-12 SPECIFICATIONS — Power supply: Transformer operated. Speaker: 3½" permanent magnet. Probe & test leads: 4' input lead for RF and audio w/ switch in probe body. Tube complement: V1-12AX7 high gain dual triode, input cascade amplifier. V2-12CA5 beam power output tube. V3-1629 electron beam visual indicator. Power requirements: 120 VAC 50/60 Hz, 25 W. Dimensions: 7½" H x 4½" W x 4" D.

F) Low distortion audio generator...49.95

Kit IG-72, 8 lbs., mailable 49.95

Assembled IGW-72, 9 lbs., mailable 74.95

IG-72 SPECIFICATIONS — Frequency: 10 Hz to 100 kHz, switch selected, 2 significant figures and multiplier. Distortion: Less than 0.1% from 20 to 20,000 Hz. Output: 6 ranges: 0 to .003, .01, .03, .1, .3, 1 V RMS into external 600 ohm load or with internal load into Hi-Z. 2 ranges: 0 to 3, 10 V RMS into a minimum of 10,000 ohms. -60 dB to +22 dB in 8 steps, -60 dBm to +2 dBm (0 dBm = 1 mW into 600 ohms). Power requirements: 120 VAC, 50/60 Hz, 40 W. Dimensions: 6½" H x 9½" W x 5" D.

G) Low cost tube checker...72.50

Kit IT-17, 12 lbs., mailable 72.50

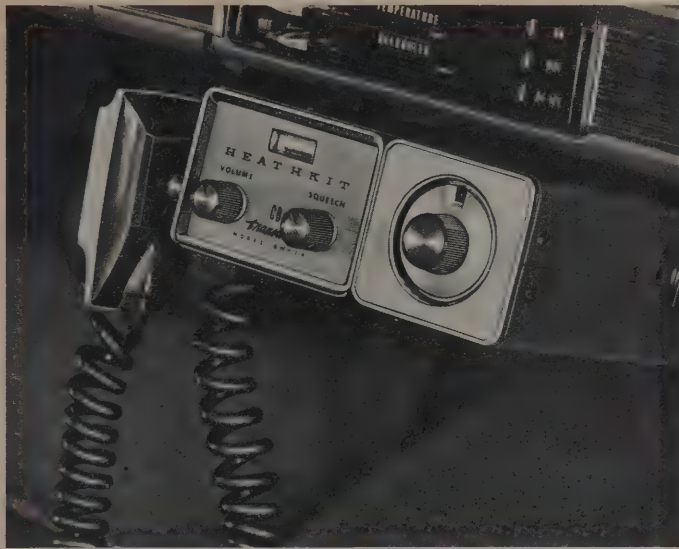
IT-17 SPECIFICATIONS — Tests: Emission, short, leakage, open element, filament continuity. Sockets: 4-pin, 5-pin, 6-pin, 7-pin combination and pilot light, 7-pin miniature, octal, loctal, 10-pin miniature, 9-pin novar, 9-pin miniature, 12-pin compactron, 5-pin nuvistor, 7-pin nuvistor. Meter: 1mA BAD-7-GOOD 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 V AC. Element test voltages: 30, 100, 250 V AC. Power requirements: 120 VAC, 50/60 Hz. Dimensions: 8½" H x 13" W x 5½" D.

H) Capacitor checker...39.95

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 uif 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: 9¾" H x 6¾" W x 5" D.

Heathkit automotive communications



Heathkit 5-watt CB Transceiver...89.95

- Reliable solid-state design
- 23-channel capability
- 3-watts minimum RF output

The compact, solid-state GW-14A delivers instant, reliable two-way communications from car to car, home to office. 23-channel capability with crystal-controlled reliability. The 14-transistor, six-diode circuit provides instant operation, long life and minimum battery drain—draws a modest 0.75 amps in transmit mode—only 0.12 amps on receive. Husky three watts RF minimum output insures reliable communications over maximum range.

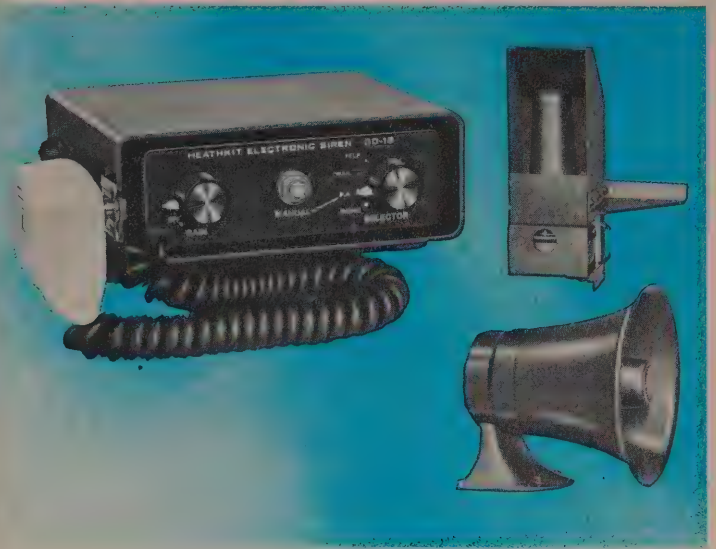
Kit GW-14A, 8 lbs., less crystals, mailable **89.95**

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**

GW-14A SPECIFICATIONS — **RECEIVER SECTION** — Intermediate frequency: 455 kHz. Sensitivity: 1/2 uV or less for a 10 dB signal plus noise to noise ratio. Selectivity: Adjacent channel attenuation is down 30 dB. Audio power output: 3 W minimum. **TRANSMITTER SECTION** — Nominal power input to final RF amplifier: 5 W. Frequency control: 3rd overtone quartz crystal as selected by the 23-position channel selector switch. Frequency control effectiveness: Operating frequency will be within .005% of nominal crystal frequency over an ambient temperature range of -20 to +130 degrees F. Modulation: High level AM limited to less than 100%. Output impedance: 50 ohms nominal. Output circuit: Twin "PI" matching network. Power output: 3 W minimum into 50 ohm load. **GENERAL** — Controls: Squelch; off/on volume; channel selector. Tuning meter: For receiving, S-9 corresponds to approximately 100 uV signal input. For transmitting, the meter indicates the presence of power output and modulation peaks. Power requirements: Positive 12 V system (13.5 V); receiver current drain, standby — 120 mA; transmitter current drain — 750 mA. Dimensions: 2 7/8" H x 7" W x 11" D.



Heathkit GD-18 Siren / PA System

- For authorized emergency vehicles
- 20-watt loud-speaker power
- Choose either concealed or exposed horn

Functions as an electronic siren—a full 55 watts of power with adjustable pitch. Functions as a PA system with 20 watts of power for booming voice communication. Functions as a radio call alert—lets you hear calls away from your vehicle. Choice of speakers—either concealed or exposed horn. Concealed speaker requires 4 1/2" x 4 1/2" x 13" behind grille.

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**

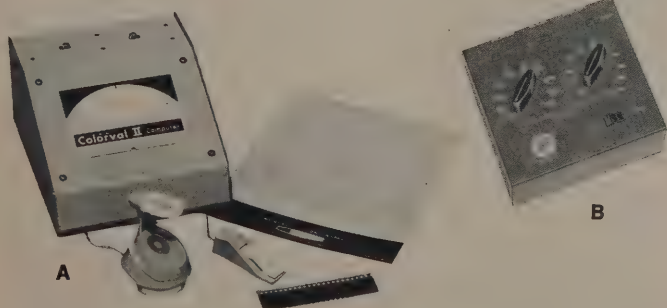
GD-18A (GD-18 & exterior horn), 16 lbs., mailable **104.95**

GD-18B (GD-18 & concealed horn) 16 lbs., mailable **104.95**

GD-18 SPECIFICATIONS — Siren Output Power: 55 W, normal intermittent duty. PA or Radio Output Power: 20 W continuous. Wail Frequency Range: Approx. 550 Hz — 1300 Hz (pitch control at center). Wail Sweep Rate: Approx. 6 sec. per cycle. Yelp Sweep Rate: Approx. 1/2 sec. per cycle. Radio input Sensitivity: 0.3 V rms min. for rated output. Speaker Requirement: 16 ohm, 75 W (nominal) weatherproof, horn loaded driver. Controls: Gain (PA and Radio); manual siren button (in PA only); Function selector switch; provision for external remote manual siren switches; Siren pitch adjust; Radio input level adjust. Power Requirements: 12 — 15 VDC, pos. or neg. ground; 5.5 amp. max. Idle Current: 1.25 amp. or less. Dimensions: 2 3/4" H x 8 3/8" W x 7 5/8" D (less gimbal bracket). Finish: Gunmetal gray, wrinkle finish.

GDA-18-1 SPECIFICATIONS — Impedance: 16 ohms. Frequency Range: 275 — 8000 Hz. Dispersion: 100°. Power rating: 75 W. Dimensions: 8 3/4" Dia. x 8 7/8" H x 8 1/4" L. Material: Bell & base, aluminum. Finish: Corrosion resistant baked gray enamel. Mounting Base: Sand cast aluminum.

GDA-18-2 SPECIFICATIONS — Impedance: 16 ohms. Frequency Range: 300 — 3000 Hz. Power Rating: 75 W. Material: Sheet metal enclosure. Finish: Corrosion resistant baked gray enamel. Dimensions: 4 1/2" H x 13" W x 4 1/2" D.



Heathkit photographic gear

A) 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**

B) Heathkit Electronic Photo Timer. 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**

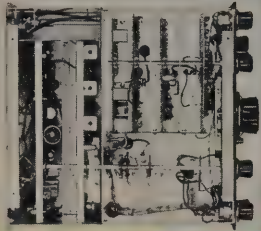
Heathkit SB Separates — benchmark



SB-303



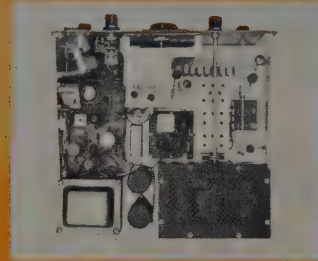
SB-401



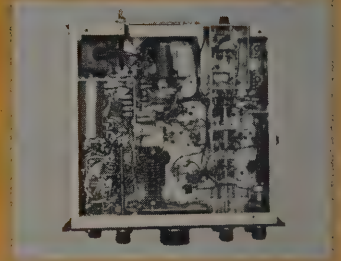
Plug-in bandswitch, power supply and IF/audio amplifier boards mount on chassis bottom.



Exclusive Heath extender boards make test, adjustment and service fast and easy.



Top and bottom chassis views show clean, open layout of the SB-401. This design facilitates error-free assembly and maintenance.



The Heathkit SB-303 Receiver brings home the signal others can't find... 319.95

- Receives USB, LSB, AM, CW & RTTY, 80-10 meters
- 15 MHz WWV reception

The Heathkit SB-303—nucleus of the famous SB-series separates—has the signal seeking capability the general and advanced ham wants. And when you compare the specs and features with those of any other comparably priced receiver, the SB-303 comes on ever stronger.

The advance-design all-solid-state circuitry gives you 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 to assure peak performance and incredibly smooth linear tuning. A new RF attenuator lets you adjust sensitivity for optimum signal handling.

What really counts in any receiver is solid all-around performance under varying conditions—and the "303" has the specs to deliver. Sensitivity: less than a quarter of a microvolt for 10 dB S+N/N. Selectivity: 2.1 kHz on SSB with the built-in crystal filter, with low cost crystal filters available for both AM & CW. Image Rejection: 60 dB or more. IF Rejection: 50 dB or more. Spurious response, Dial accuracy, AGC characteristics—check them all and compare the "303" against the competition. You'll see how far the "303" comes out ahead.

Compare the performance features. The new "303" offers as standard the features and versatility required for today's operations, yet most other receivers offer only endless (and costly) options. The new "303" gives complete SSB/CW transceive compatibility with the famous "400" or "401". Three-position AGC (off, fast & slow) is also standard on the "303". The new 25 kHz and 100 kHz crystal calibrator lets you spot the new subbands quickly, easily, without interpolation and error. Work the high bands? The "303" has antenna and power connections already installed for up to two VHF converters, and front panel switch selection eliminates changing cables. Four spare sockets on the rear panel allow connection of a wide range of Heath station accessories.

New construction techniques speed assembly, reduce chance of error.

Point-to-point wiring has been virtually eliminated with the use of wiring harnesses. All nine circuit boards plug-in—and the special extender boards supplied enable you to bring a board out of the compact chassis while the "303" is operating to check voltage and resistance readings without probing into tight spaces, and, of course, the famous Heath manual guides you a step at a time, with clear, unambiguous instructions and giant foldout pictorials.

The new SB-303 is the most value-packed, hottest performing receiver ever available. Send for a free spec sheet and make the comparison yourself.

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**

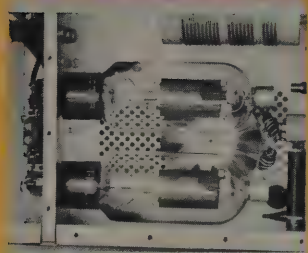
SB-303 SPECIFICATIONS — Frequency range (MHz): 3.5 to 4.0, 7.0 to 7.3, 14.0 to 14.5, 15.0 to 15.3, 21.0 to 21.5, 28.0 to 30. Intermediate frequency (IF): 3.395 MHz. Frequency stability: Less than 100 Hz drift/hr. after 10 min. warmup under normal ambient conditions. Less than 100 Hz drift for $\pm 10\%$ line voltage variation. Frequency selection: Built-in Linear Master Oscillator. Modes of operation: SSB, CW, AM, RTTY. Sensitivity: Less than 0.25 μ V for 10 dB S+N/N for SSB operation. Overall gain: Less than 1.5 μ V input for 0.5 audio output (single tone SSB). AGC characteristics: Blocking — Greater than 3.0 V CW/SSB/RTTY. Dynamic Range — Greater than 150 dB CW/SSB. RF Attenuator — Variable 0-40 dB nominal. Selectivity: SSB — 2.1 kHz @ 6 dB down, 5.0 kHz maximum at 60 dB down (crystal filter supplied). CW — 400 Hz at 6 dB down, 2.0 kHz maximum at 60 dB down (crystal filter available as an accessory). AM — 3.75 kHz at 6 dB down, 10 kHz maximum at 60 dB down (crystal filter available as an accessory). RTTY — 2.1 kHz at 6 dB down, 5.0 kHz maximum at 60 dB down (uses SSB crystal filter). Image rejection: 60 dB or better. IF rejection: 3.395 — greater than 55 dB. 8.595 — greater than 50 dB. Spurious response: All below 1 μ V equivalent signal input. Temperature ranges: 10°C–50°C ambient. Dial accuracy: Electrical — Within 400 Hz after calibration at nearest 100 kHz or 25 kHz point. Visual — Within 200 Hz. Calibration: Every 100 kHz or 25 kHz. Dial Accuracy: No more than 50 Hz. Antenna input impedance: 50 ohm nominal unbalanced. Audio response: SSB — 350-2450 Hz nominal at 6 dB. CW (with accessory filter) — 800-1200 Hz nominal at 6 dB. AM (with accessory filter) — 200-3500 Hz nominal at 6 dB. RTTY — 1840-3940 Hz nominal at 6 dB. Audio output impedance: Speaker — 8 ohm. Headphones — Low impedance. Audio Output Power: 4 W at less than 10% distortion. Muting: Open external ground at Mute socket. Power Requirements: 120/240 VAC, 40 W max. Front Panel Controls: Main tuning dial; function switch; mode switch; band switch; AGC switch; converter 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-vo; speaker; HFO out; LMO out; BFO out; CW shift; 3 spare sockets; 3-wire line cord socket; accessory socket, VHF Converter, +15 VDC @ 25 mA, switched. RTTY Keyboard. Cabinet Dimensions: 6 $\frac{5}{8}$ " H x 12 $\frac{1}{4}$ " W x 13" D. Overall Dimensions (with knobs & feet installed): 7 $\frac{1}{4}$ " H x 12 $\frac{3}{4}$ " W x 14" D.

for amateur operators the world over

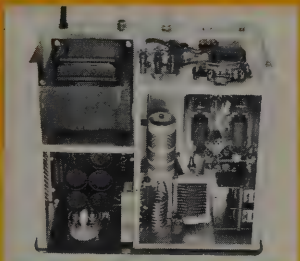
Accessories that improve any rig



SB-200



Two 572B (or T-160-L) in parallel give years of top performance. Large fan provides maximum cooling.



Rugged, well rated components are used throughout. Partitioned chassis gives added strength, isolates parts.

Heathkit SB-401 Transmitter...299.95

Covers 80-10 meters; USB, LSB & CW. Single front panel switch selects transceive or independent operation of "401" and 300-series receiver. Usable with any receiver when optional SBA-401-1 crystal group is installed. Built-in 120/240 VAC power supply. Modular sub-pack packaging and assembly procedure add to kit-building ease.

Kit SB-401, 36 lbs., mailable299.95

SBA-401-1 crystal pack, 1 lb., mailable29.95

SB-401 SPECIFICATIONS — Emission: SSB (upper or lower sideband) and CW. Power input: 170 W CW, 180 W P.E.P. SSB. Power output: 100 W (80-15 meters), 80 W (10 meters). Output impedance: 50-75 ohm — less than 2:1 SWR. Frequency range: (MHz) 3.5-4.0; 7.0-7.5; 14.0-14.5; 21.0-21.5; 28.0-28.5; 28.5-29.0; 29.0-29.5; 29.5-30.0. Frequency stability: Less than 100 Hz/hr. after 20 min. warmup. Carrier suppression: 55 dB below peak output. Unwanted sideband suppression: 55 dB @ 1 kHz. Intermodulation distortion: 30 dB below peak output (two-tone test). Keying characteristics: Break-in CW provided by operating VOX from a keyed tone (Grid block keying). CW sidetone: 1000 Hz. ALC characteristics: 10 dB or greater @ 0.2 mA final grid current. Noise level: 40 dB below rated carrier. Visual dial accuracy: Within 200 Hz (all bands). Backlash: Less than 50 Hz. Oscillator feedthrough or mixer products: 55 dB below rated output (except 3910 kHz crossover which is 45 dB). Harmonic radiation: 35 dB below rated output. Audio input: High impedance microphone or phone patch. Audio frequency response: 350-2450 Hz \pm 3 dB. Power requirements: 80 W STBY, 260 W 147 down @ 120/240 VAC, 50/60 Hz. Dimensions: 6 $\frac{5}{8}$ " H x 14 $\frac{7}{8}$ " W x 13 $\frac{3}{8}$ " D.

Heathkit SB-200 1kW Amplifier...229.95

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., mailable229.95

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; broad-band 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.



Heathkit SB-600 Station 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 and HP-23A power supplies. Measures 6 $\frac{1}{2}$ " H x 10" W x 10 $\frac{1}{2}$ " D.

Kit SB-600, 7 lbs., mailable19.95



Heathkit SB-620 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., mailable129.95



Heathkit SB-630 Station Console. Four control-monitor units in one. Has 24-hour clock with digital readout; SWR meter for proper matching; hybrid phone patch, and automatic resettable electronic 10-minute timer with red "identify" light and buzzer. SB styled cabinet measures 6 $\frac{5}{8}$ " H x 10" W x 11 $\frac{1}{8}$ " D.

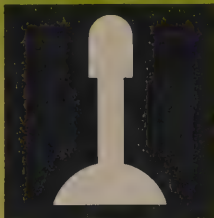
Kit SB-630, 10 lbs., mailable89.95



Heathkit SB-610 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. Manual includes complete instructions for interpreting waveforms. Grey cabinet measures 6 $\frac{5}{8}$ " H x 10" W x 11 $\frac{1}{8}$ " D.

Kit SB-610, 14 lbs., mailable89.95

Heathkit SB-102/SB-220 dynamic duo



AT HEATH, AMATEUR RADIO IS MORE THAN A BUSINESS ...IT'S OUR HOBBY.

And small wonder, when you consider there are over 60 active hams here at Heath — including our President, Dave Nurse — involved in virtually every phase of company operations. The interest, enthusiasm and talent of these licensed

operators has kept the company responsive to the communication needs of our customers...and has helped make Heathkit Amateur gear a traditional value leader for hams the world over.



Heathkit SB-102 80-10 meter Transceiver...385.00

- Solid-state, factory-built LMO
- Less than 100 Hz/hr. drift after 10 min. warmup
- Sensitivity better than 0.35 uV for 10 dB S+N/N

Proud descendant of the SB-100 & 101, the Heathkit SB-102 represents a quantum jump forward in improved stability and linearity. The already excellent frequency stability and dial linearity characteristics of the "101" have been improved by the addition of 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-23A**, AC power supply, 19 lbs., mailable **51.95**
- Kit HP-13A**, DC power supply, 7 lbs., mailable **69.95**
- SBA-100-1**, mobile mount, 6 lbs., mailable **15.95**

SB-102 PARTIAL SPECIFICATIONS — RECEIVER SECTION — SSB selectivity: 2.1 kHz min. at 6 dB down, 5 kHz max. at 60 dB down — 2:1 nominal shape factor — 6:60 dB. **CW selectivity:** (With optional CW filter) 400 Hz min. at 6 dB down, 2.0 kHz max. at 60 dB down. **Output impedance:** 8 ohm & high impedance. **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 PEP 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 to 75 ohms with less than 2:1 SWR. **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. **RF compression:** (TALC): 10 dB or greater at 0.1 mA final grid current. **GENERAL — Frequency stability:** Less than 100 Hz per hour after 10 minutes' warm-up. Less than 100 Hz for ±10% line voltage variations. **Modes of operation:** USB, LSB, CW. **Dial resettability:** Within 200 Hz, all bands. **Electrical dial accuracy:** Within 400 Hz after calibration at nearest 100 kHz point. **Dial mechanism backlash:** Less than 50 Hz. **Calibration:** 100 kHz crystal. **Size:** 6 3/4" H x 14 7/8" W x 13 3/4" D.

Heathkit SB-220 2 kW Linear Amplifier...369.95

- 2000 watts PEP SSB input
- 1000 watts on CW and RTTY
- Requires only 100 watts drive
- 120/240 VAC wiring option

The Heathkit SB-220 brings to your ham shack a complete 2 kW amplifier in a compact desk-top unit. The "220" 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.

Fast, easy tune-up. Just set band-switch, push CW-Tune/SSB rocker switch to CW-Tune position, adjust Tune & Load controls for maximum relative power. Push rocker switch to SSB position and you're ready with a full 2 kW PEP input. In the CW-Tune position you've got a full gallon on CW or RTTY.

Other features include ALC to the driving unit to prevent overdriving; front panel switch-selected monitoring of grid current, relative power and high voltage; easy, enjoyable 20 hour assembly.

- 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 transmit 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.

Top value 5-band SSB-CW Transceiver



Clean, open chassis layout for easy assembly. Note completely shielded final, upper left.



Convenient chassis-side control of meter zero adjust, bias, VOX delay, sensitivity, & anti-trip.



Rear panel connection for key, speaker, ALC, spare equipment, power supply & antenna.

Heathkit HW-101 Transceiver...259.95

- Better than 0.35 uV sensitivity for 10 dB/S+N/N
- Image & IF rejection better than 50 dB
- Rock-solid tuning 80 through 10 meters

The HW-101 is a further refinement of the widely acclaimed HW-100 Transceiver. Heath engineers have improved the receiver circuitry and dial drive, and added front-panel SSB/CW filter selection. Overall performance is better—but the price remains unbelievably low. Sensitivity better than 0.35 uV for 10 dB S+N/N has been obtained by refinements in the receiver circuit. Image and IF rejection are better than 50 dB. 36-to-1 knob to dial ratio in a new ball bearing drive mechanism delivers 34 smooth revolutions per 500 kHz band segment. Couple this with new preselector circuitry and thermal stabilized FET VFO with 5 kHz readout and you get rock-solid drift-free tuning from 80 through 10 meters. And the built-in 100 kHz crystal calibrator and zero reset button provide accurate, stable calibration. Front-panel, crystal filter selection now lets you convert the HW-101 to CW reception at the flick of a switch. The optional SBA-301-2 crystal filter installs in minutes, giving the HW-101 the same remarkable two-way capability provided by its big brother, the Heathkit SB-102. CW filter offers razor sharp 400 Hz selectivity to carve a QSO out of the QRM. Built-in SSB crystal filter delivers 2.1 kHz selectivity at 6 dB down for superior SSB copy.

Kit HW-101, 21 lbs., mailable **259.95**
Kit HP-23A, AC power supply, 19 lbs., mailable **51.95**

- Kit HP-13A**, DC power supply, 7 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 side-tone:** Internally switched to speaker or headphone in CW mode. Approximately 1000 Hz tone. **Microphone input:** High impedance with a rating of -45 to -55 dB. **Carrier suppression:** 45 dB down from single-tone output. **Unwanted sideband suppression:** 45 dB down from single-tone output at 1000 Hz reference. **Third order distortion:** 30 dB down from two-tone output. **RF compression (TALC*):** 10 dB or greater at .1 mA final grid current. **GENERAL:** **Frequency coverage:** 3.5 to 4.0; 7.0 to 7.3; 14.0 to 14.5; 21.0 to 21.5; 28.0 to 28.5; 28.5 to 29.0; 29.0 to 29.5; 29.5 to 30.0 (megahertz). **Frequency stability:** Less than 100 hertz per hour after 45 minutes warmup from normal ambient conditions. Less than 100 Hz for ±10% line voltage variations. **Modes of operation:** Selectable upper or lower sideband (suppressed carrier) and CW. **Dial calibration:** 5 kHz. **Calibration:** 100 kHz crystal. **Audio frequency response:** 350 to 2450 Hz. **Transistors:** MPF105 FET—VFO; 2N3393—Voltage regulator. **Rear apron connections:** CW key jack; 8 ohm output; ALC input; Power and accessory plug; RF output; Spare. **Power requirements:** 700 to 850 volts at 250 mA with 1% maximum ripple; 300 volts at 150 mA with .05% maximum ripple; -115 volts at 10 mA with .5% maximum ripple; 12 volts AC/DC at 4.76 amps. **Cabinet dimensions:** 6 $\frac{3}{4}$ " H x 14 $\frac{3}{8}$ " W x 13 $\frac{3}{8}$ " D.

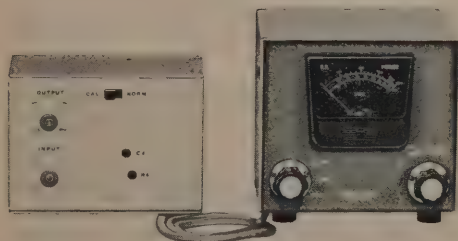
*Triple Action Level Control

Heathkit Wattmeter/SWR Bridge...just 29.95

The most versatile shack accessory you can own. With the HM-102, there's no doubt about proper operation or tune-up. Two switch-selected ranges allow measurement of RF output from 10-200 and 100-2000 W... built-in calibrator gives 10% accuracy from 80-10 M. Built-in SWR capability for proper tune-up, transmission line to antenna Z matching... ideal for antenna experimenters. 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:** ±10% of full-scale reading. **Power capability:** 10 to 2000 watts. **Impedance:** 50 ohms nominal. **Connectors:** UHF type SO-239. **Dimensions:** 5 $\frac{1}{4}$ " H x 5 $\frac{1}{4}$ " W x 6 $\frac{1}{2}$ " D.



Heathkit 80,40 & 20 meter single-banders



- Fixed or mobile operation
- 200-watt PEP input
- Built-in S-meter, VOX, PTT, ALC

This is the SSB transceiver that helped make single-band operation so popular. And the number of single-banders you hear on the air is proof of their popularity. These are truly high-performance transceivers designed to get you on the air on a budget. You get a choice of 80, 40, or 20 meter models, with a full 200 watts PEP input SSB. You also can choose either fixed or mobile operation with the appropriate Heathkit power supply (HP-23A or HP-13A).

Convenient operational features include single knob tuning with 2 kHz dial calibration; ALC input for use with external linear amplifiers; built-in S-meter, VOX and PTT. The microphone input and gain control are located on the front panel, as is the bias adjustment for ease of changing from fixed to mobile operation. A function switch position controls the optional HRA-10-1 crystal calibrator. The 11-pin power plug is compatible with SB Series power supply connections.

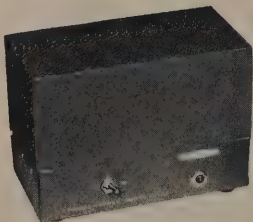
The receiver is a 10-tube superheterodyne with an outstanding 1 μ V sensitivity, 2.7 kHz selectivity, and slow release AVC action for optimum SSB reception. Renowned Heathkit experience in transceiver tuning circuitry design provides the single-banders with stable, smooth tuning, utilizing the temperature-compensated 1.5 to 1.8 MHz VFO. And the top-quality crystal lattice filter produces identical tuning characteristics for both upper and lower sideband signals, resulting in clean transmitted signals with the carrier and unwanted sideband at least 45

dB down. It all adds up to performance you'd expect in gear costing far more than this low Heathkit price.

Fast, easy assembly is another virtue of the Heathkit single-banders. Over 90% of the components mount on a heavy-duty circuit board, and the remainder of the circuit is connected using a pre-cut, color-coded wiring harness. Easy alignment, too, with just a VOM. The only other items necessary to get you on the air are microphone, antenna, power supply and speaker. (See amateur radio accessories.) Make '72 your year for a single-bander. Order your favorite HW transceiver 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
- GH-12A, Push-to-talk and VOX microphone, 1 lb., mailable 9.95
- Kit HRA-10-1, plug in 100 kHz crystal calibrator, 1 lb., mailable .. 9.95
- Kit HP-13A, DC Power Supply, 7 lbs., mailable 69.95
- Kit HP-23A, AC Power Supply, 19 lbs., mailable 51.95
- Kit HS-24, Mobile Speaker, 4 lbs., mailable 9.50

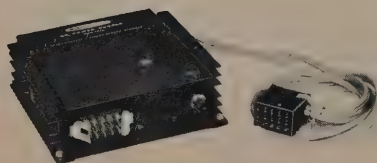
SPECIFICATIONS — RF input: 200 watts PEP. Sideband generation: Crystal lattice band-pass filter method. Stability: 200 Hz per hour after warm-up. Carrier & unwanted sideband suppression: 45 dB. Frequency coverage: HW-12A, 3.8–4.0 MHz; HW-22A, 7.2–7.3 MHz; HW-32A, 14.2–14.35 MHz. Receiver sensitivity: 1 μ V for 15 dB (S+N)/N ratio. Operation: LSB, USB. Audio output: 1 watt @ 8 ohms. Mike input: Hi-Z. Tube complement: Fourteen tube heterodyne circuit; (3) 6EA8's mic. amp. VOX relay amp., IF amp., RF amp., Recvr. mixer; (5) 6AU6's, VFO, VOX amp., IF amps., Xmtr. mixer; (1) 6BE6, VFO isolator (HW-12A), Het. osc. and mixer (HW-22A & HW-32A); (1) 12BY7 Driver; (1) 12AT7 Xtal. osc., product det., (1) 6EB8 Audio amp. and output; (2) 6GE5 RF output. Power requirements: 800 VDC @ 250 mA peak, 250 VDC @ 100 mA, -130 VDC @ 5 mA, 12 VAC or VDC @ 3.75 amperes. Cabinet dimensions: 6 $\frac{3}{4}$ " H x 12 $\frac{1}{4}$ " W x 10" D.



Fixed-station power supply for SSB rigs

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

HP-23A SPECIFICATIONS — Power requirements: 120/240 VAC, 50-60 Hz, 350 watts maximum. High voltage output: 820 VDC no load; 700 VDC @ 250 mA \pm 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 \pm 10%, (Low tap) 275 VDC, no load, 250 VDC @ 100 mA, \pm 10%. Less than .05% AC ripple @ 150 mA, continuous duty to 175 mA. Fixed bias: -130 VDC \pm 10%, no load; -100 VDC @ 20 mA. Adjustable bias: -40 to -80 VDC @ 1 mA maximum. Less than .5% AC ripple. Filament voltage: 6.3 VAC @ 1 mA maximum. Less than .5% AC ripple. Dimensions: 6 $\frac{3}{4}$ " H x 9" W x 4 $\frac{3}{4}$ " D.



Solid-state mobile power supply for SSB rigs

- Kit HP-13A, DC supply, 7 lbs., mailable 69.95

HP-13A 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. Adjustable bias voltage: -40 to -130 VDC @ 20 mA max. Duty cycle: Continuous. Switching frequency: 1500 Hz (approx.). Ambient temperature: -10° to 122° F. Dimensions: 2 $\frac{3}{8}$ " H x 7 $\frac{3}{8}$ " W x 7 $\frac{1}{8}$ " D.

Heathkit novice gear priced for beginners



The "hot" Heathkit HR-10B Five-band Receiver...79.95

- Tunes SSB, AM & CW on 80-10 meters
- Quality crystal filter for top selectivity
- Optional plug-in 100 kHz crystal calibrator
- 7-tube superheterodyne circuit
- RF amplifier for high sensitivity
- Preassembled & aligned tuner

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.

Get on the air at an uninflated price—order your HR-10B today.

Kit HR-10B, less speaker, 20 lbs., mailable79.95

Kit HRA-10-1, plug-in 100 kHz crystal calibrator, 1 lb., mailable9.95

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 IF Amplifier; 6EA8 2nd IF Amplifier-BFO; 6BJ7 Detector-AVC-ANL; 6EB8 1st Audio-Audio Output; 6X4 Rectifier. Power requirements: 120/240 VAC, 50/60 Hz, 50 watts. Cabinet size: 6½" H x 13¾" W x 11½" D.

The famous Heathkit DX-60B Phone & CW Transmitter...79.95

- 90 watts AM or CW, 80-10 meters
- Operates at reduced power for Novice Class
- Low pass filter eliminates TVI

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 tune-up 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 below provide maximum operating versatility. Easy assembly...requires only a VTVM for alignment. Get on the air with a rig that'll last a lifetime—order your Heathkit DX-60B today.

Kit DX-60B, 24 lbs., less crystals, mailable79.95

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.

The versatile Heathkit HG-10B-VFO on 80 thru 2 meters...47.50

- Separate calibrated scales for each band
- Precision vernier tuning
- Temperature-compensated circuitry

Features separate, accurately calibrated scales for each band. Smooth 28:1 vernier tuning. Temperature-compensated circuitry for drift-free tuning. Provides 5 V rms (enough to drive most transmitters) in the 3.5-4, 7-7.425 and 8-9 MHz ranges. "Spot" switch for easy off-the-air tuning. Compatible with virtually all grid-block keyed transmitters (DX-60 series, HW-16) and most cathode-keyed transmitters (DX-40). Alignment requires a receiver of known accuracy covering either the 80-2 meter bands or 3.5 to 8.222 MHz range.

Kit HG-10B, 12 lbs., mailable47.50

Special purpose Heathkit transceivers



Heathkit HW-16 Novice Rig—a high-performance CW transceiver, only 99.95

- Solid-state T/R switching and receiver muting
- 75-W input for novice CW, 90-W for general class
- Better than 1 uV sensitivity

The Heathkit HW-16 is one of the most outstanding values on the market for CW hams. Here are just a few of the reasons: provides optimum CW operation on the first 250 kHz of the 80, 40, and 15 meter bands; true "break-in" CW operation with solid-state TR switching and receiver muting; 75-watt input power level for novice class CW; up to 90 watts input power for general class operation; crystal control transmit with VFO receiver tuning; provisions for VFO control in "transmit" with the Heathkit HG-10B VFO; high quality crystal lattice filter for CW selectivity comparable to receivers costing far more; RF amplifier stage in receiver for better than 1 uV sensitivity; built-in sidetone; grid-block keying, keys beautifully with the Heathkit HD-10 Electronic Keyer; easy to assemble and put on the air, requiring only a VTVM, dummy load, and crystals for the bands in which you intend to operate. The HW-16 goes together with a combination of circuit board construction and rugged chassis mounting of components that makes assembly easy.

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.

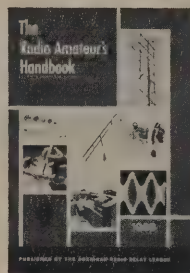
Heathkit crystal-controlled SSB Transceiver, specially designed for CAP use, only...124.95

- 200-W PEP SSB input
- Complies with FCC CAP SSB frequency tolerance

The Heathkit HW-18-1 provides you with a unique, low cost transceiver especially designed for CAP use. Provides 200 watts SSB input and 40 watts input with carrier for compatibility with AM stations. Complies with the FCC CAP frequency tolerance ruling of .005%. Two switch-selected, crystal-controlled channels, fixed-tuned for simple PTT operation. Transceiver operation has clarifier control to vary frequency ± 100 Hz. Solid-state T/R switching provided. Local/distance switch prevents receiver overload on strong local signals. Features carrier and sideband suppression of 45 dB; selectivity of 2.1 kHz; 1 uV sensitivity for 15 dB S+N/N. Other features are 50 ohm coax output; high impedance ceramic PTT mike and built-in speaker. Fixed base or mobile operation with Heathkit HP-13A or HP-23A power supplies. Mobile mount included. Requires voltmeter, ohmmeter and dummy load for alignment.

Kit HW-18-1, w/crystals for two channels, specify from list below, 16 lbs., mailable **124.95**

CAP Crystals: 4406.0, 4466.0, 4469.0, 4509.0, 4583.5, 4586.5, 4601.0, 4604.0, 4628.5, 4631.5 kHz channel frequencies, 1 lb., mailable each **4.95**



Amateur's handbook...4.50

The latest edition of the famous ARRL handbook. Favorite of thousands of hams & engineers for reliable, up-to-date info on radio communications & electronics. Covers theory, construction and operation of HF, UHF, FM and SSB equipment.

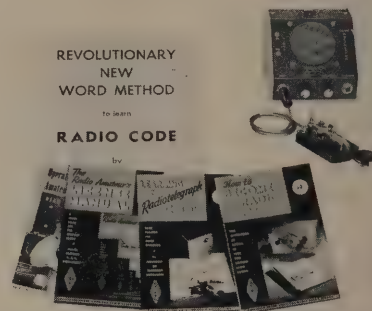
HDP-293, 3 lbs., mailable **4.50**



Code practice oscillator...9.95

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

Kit HD-16, 3 lbs., mailable **9.95**



Ham starter group...18.95

Perfect way to start your youngsters — Group includes 4 ARRL handbooks, HD-16 code practice oscillator, 3 code-teaching records.

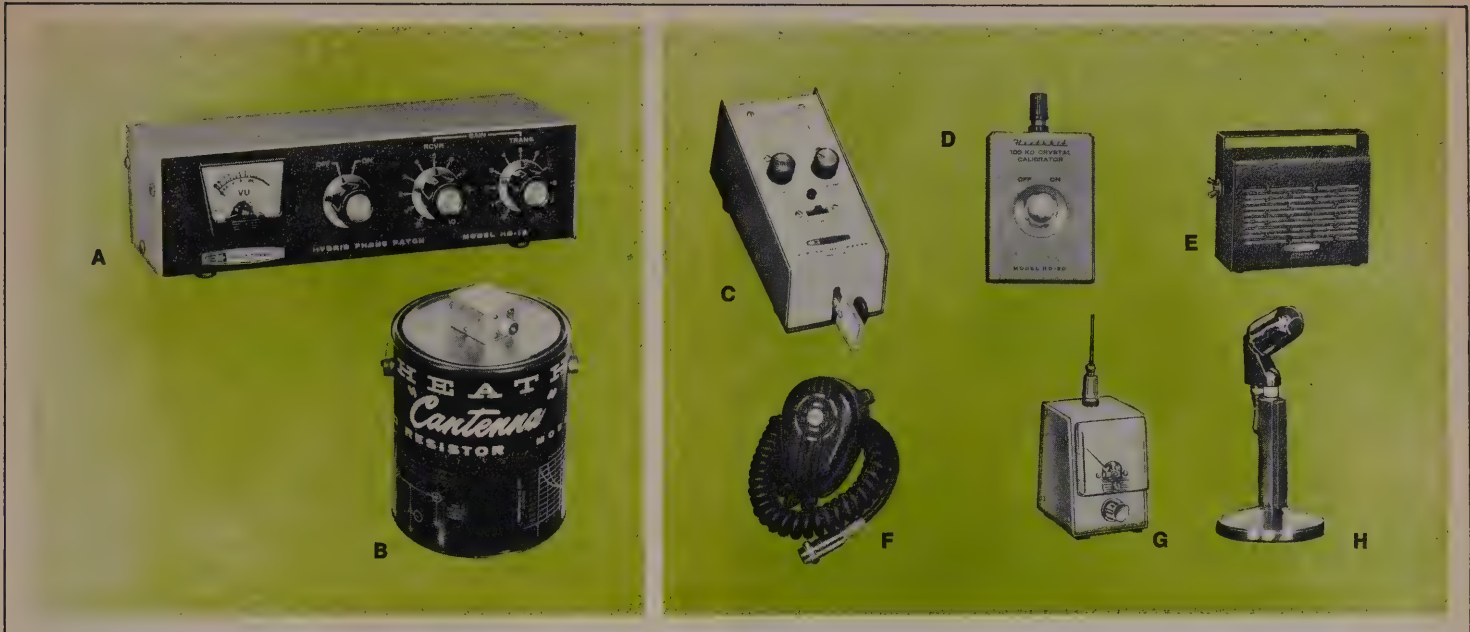
HDP-22, all above, 6 lbs., mailable ... **18.95**

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**

Equip your shack with Heathkit ham accessories



A) Heathkit hybrid phone patch—a useful addition to any shack...24.95

Features individual gain controls for receiver-to-line and line-to-transmitter audio level; convenient one-switch operation; VU meter for quick monitoring of audio levels; also indicates null depth; 30 dB isolation between transmit and receive circuits for positive VOX operation; matches 3-16 ohm speakers and hi-Z or 600 ohm inputs; operates VOX or PTT; matches SB-Series equipment in styling.

Kit HD-15, 3 lbs., mailable24.95

HD-15 SPECIFICATIONS — **Circuit:** Telephone hybrid circuit. Allows voice control or manual operation. Single switch places unit in full operation. **Telephone Line Input Impedance:** Approximately 600 ohm. **Meter:** Standard VU meter for constant output monitoring and null depth indication. **Null Depth:** At least 30 dB isolation between transmit and receive circuits. **Receiver Impedance:** Effective match from 3 to 16 ohm. **Transmitter Impedance:** 600 ohm or high impedance output. **Cabinet Size:** 9¼" L x 3¾" W x 2¾" H.

B) Heathkit "Cantenna" transmitter dummy load...10.95

The HN-31 features all specifications and power derating curve (maximum power input vs. time) screened onto the finish of the container—keeps the specifications at hand where you need them. HN-31 provides 50 ohm non-inductive load with SWR less than 1.5:1 for frequencies from 1.5 to 300 MHz. Coax fitting to transmitter line. Phono jack for relative power measurements. Oil coolant (capacity 1 gallon—oil not included) permits power up to 1 kw.

Kit HN-31, 3 lbs., mailable10.95

C) Heathkit solid-state electronic keyer...39.95

Features include dependable solid-state circuitry; speed range—15 to 60 words per min., slow-speed option—10 to 20 wpm; self-completing dashes; solid-state switching—no relays to stick or chatter—no contact bounce to punch holes in characters; built-in paddle—"feel" is adjustable to your fist during assembly; adaptable to either right or left handed operators; engineered to convert easily to semi-automatic operation if desired; variable dot-space ratio; "hold" switch for transmitter tuning; built-in side-tone and speaker; built-in transformer-operated power supply isolates the keyer from the power line; fused for protection; for use only with transmitters employing grid-block keying circuits, negative 105 volts @ 35 ma. maximum.

Kit HD-10, 6 lbs., mailable39.95

HD-10 SPECIFICATIONS — **Keying:** Speed range—15 to 60 wpm. Slow speed option—10 to 20 wpm. **Keying output:** Keyed line to chassis ground. **Voltage polarity:** Negative

to ground only. **Maximum open circuit or spike voltage:** 105 volts. **Key-closed voltage:** 0.2 volts max. **Key-closed current:** 35 milliamperes, max. **General-Audio:** Internal speaker or high impedance headphone jack. **Transistor complement:** (7) 2N407 PNP; (3) 2N2712 NPN; (1) 2N398A PNP. **Controls:** Off-Operate-Hold switch; Speed control; Dot-To-Space ratio control; sidetone volume control. **Rear panel connections:** Keyed line; receiver audio; battery +45 volts; battery +22½ volts. **External key options:** hand key, dash arm, dash, dot. **Power requirements:** AC operation, 105-125V. AC, 50-60 Hz. **Battery operation,** 45 volts with 22½ V. tap; 14 milliamperes. **Dimensions:** 4¼" H x 3¾" W x 10½" D.

D) 100 kHz crystal calibrator...14.95

Produces a signal every 100 kHz through 54 MHz. An ideal instrument for checking receiver dial calibration, band limits, receiver RF alignment etc. Can be calibrated with trimmer against WWV. Uses 9 V battery, not included.

Kit HD-20, 1 lb., mailable14.95

E) Mobile speaker...9.50

Rugged 8 ohm mobile speaker in steel forest green cabinet. Gimbal mount included. 4¾" H x 6½" W x 2½" D. A "must" for mobile "Single-Banders".

Kit HS-24, 4 lbs., mailable9.50

F) Heathkit mobile PTT mike...9.95

The GH-12A's high impedance ceramic element is well suited to the rugged work-out given to mobile equipment...it is virtually unaffected by the temperature extremes that sometimes occur in closed cars. The new deep green color styling matches both SB and HW Series equipment. Complete with cable, less connector.

Model GH-12A, 1 lb., mailable9.95

G) Heathkit RF relative power meter...12.95

A popular, inexpensive accessory for any "ham." The PM-2 features 0.3 volt rms sensitivity at the antenna and a frequency range from 100 kHz to over 250 MHz. The circuit requires no power...operates from the radiated transmitter signal. The magnetic base makes it ideal for measuring the relative power output of mobile rigs—just mount on the dash. Easy assembly and rugged construction.

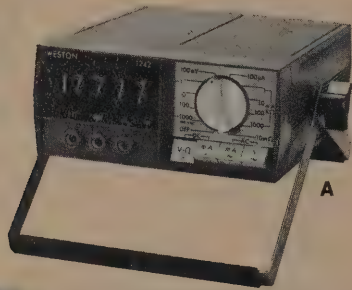
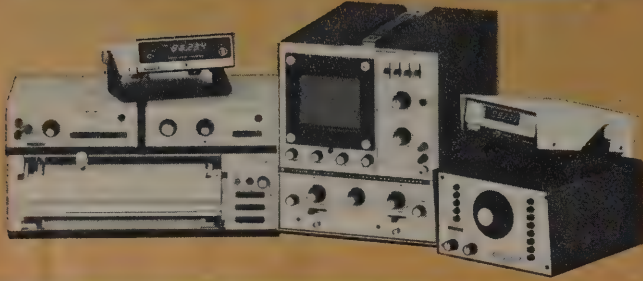
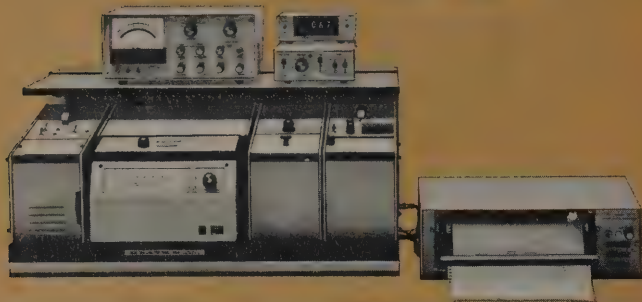
Kit PM-2, 2 lbs.12.95

H) Ham desk mike...29.95

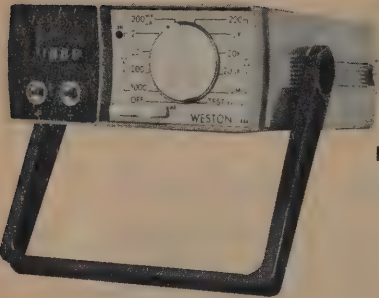
High impedance dynamic mike recommended for SB-series gear. Ideal SSB response. Grip-to-talk switch w/lock. Wiring diagram & cables included.

HDP-21A, 4 lbs., mailable29.95

HEATH
Schlumberger



A



B



Heath/Schlumberger Scientific Instruments

Heath/Schlumberger: a new name in lab-grade, factory assembled instrumentation.

The "Heath" part of our name comes from being a division of that well-known manufacturer of electronic kits.

But we don't make kits. In fact, we're a completely separate operation.

"Schlumberger" comes from being a member of that international corporation devoted to precision measurement through electronics. Schlumberger is a leading European manufacturer of instrumentation for many fields.

Our Heath background has given us a unique approach to designing instrumentation: we've learned that the simple, straightforward design is usually the best, and yields a slight cost advantage as well. From Schlumberger's half-century as a leading manufacturer of highly sophisticated instrumentation we've inherited a new point of view on precision, quality and functional versatility. Combine these two viewpoints and you've got Heath/Schlumberger Scientific Instruments...and sophisticated electronic measurement equipment at prices slightly lower than you're used to paying.

Heath/Schlumberger Scientific Instruments: it's the best of both worlds. Remember us. We're the group to watch.

a) New Weston Model 1242:

- 5 DC volts ranges, 200 mV-1000 V, 0.05% accuracy of reading
- 5 DC amps ranges, 100 uA-1A
- 5 AC volts ranges, 100 mV-500 V
- 5 AC amps ranges, 100 uA-1A
- 5 ohms ranges, 1k ohms-10 megohms
- 4½ digit readout
- Weighs just 4 lbs.

Assembled SM-1242, 6 lbs., mailable\$595.00

b) New Weston Model 4440:

- Portable...standard rechargeable battery pack provides 8-12 hours continuous operation.
- 3½ digit LED readout
- Measures AC/DC volts, 200 mV-1000 V
- 5 ohms ranges, 199.9 ohms-1.999 megohms
- Measures AC/DC current, 0-199.9 uA

Assembled SM-4440, 4 lbs., mailable\$285.00

Function Generator

The EU-81A Function Generator is a highly useful lab and design tool with dozens of applications: provides sweep and/or modulating signals...test servo system response...use as a VCO in PLL systems...provide frequency multiplication...test amplifier response, linearity and distortion...use as a variable BFO, a tone generator, a repetition rate generator.

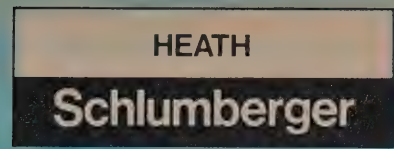
- Sine, square and triangle waveforms
- 0.1 Hz to 1 MHz range in seven decade steps
- Variable DC offset
- TTL-compatible sync output
- Variable 20-dB output level
- Fixed 20 dB attenuator

Assembled EU-81A, 8 lbs., mailable\$245.00

Frequency counters

- Choice of time bases: ± 1 ppm/yr (SM-104A) or ± 10 ppm (SM-105A)
- 80 MHz range
- 5-digit LED readout with kHz/MHz range switch gives 8-digit capability
- Triggers up to 50 MHz with only 100 mV input... to 80 MHz with just 250 mV
- BCD output to drive printer or computer (SM-104A)
- Write for brochures on either model

- a) Assembled SM-104A, 6 lbs. (less cables & connectors),
 mailable 500.00
- b) Assembled SM-105A, 6 lbs. (less cables & connectors),
 mailable 350.00



A



B

New universal counter/timer-dvm

The new EU-802D...a truly multi-purpose design and test instrument.

counter:

- DC-40 MHz range
- 100 mV rms sensitivity

period and time meter:

- Resolves to 1 usec ± 1 count
- Minimum pulse width of 15 nsec at 300 mV

events counter:

- 40 MHz maximum repetition rate
- 19,999 maximum number of events

digital voltmeter:

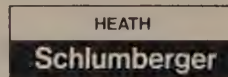
- 1, 10 & 100 V ranges with 100% overrange
- Accuracy of $\pm 0.1\%$ full scale on 10 & 100 V, $\pm 0.05\%$ on 1 V
- 10 megohm input impedance
- 100 uV resolution

Assembled EU-802D, 29 lbs., mailable 795.00



1972 Heath/Schlumberger Scientific Instruments Catalog

The new Scientific Instruments Catalog is now in production and will be available shortly. This year's catalog will take a slightly different form. The instruments catalog will cover general instrumentation, digital equipment, pH meters, recorders and the new Malmstadt-Enke Lab Station. An additional catalog will detail the expanding line of Heath/Schlumberger Spectroscopy equipment. In addition, several separate brochures will be mailed during the year covering a variety of products. This new system will enable us to serve your information needs faster and more efficiently. To receive information in the coming months, use the coupon to check those categories in which you are interested. This will ensure that you receive only the information you desire.



Heath/Schlumberger Scientific Instruments
 Dept. 570-19
 Benton Harbor, Michigan 49022

I am interested in the following product categories:

- General electronic instrumentation (scopes, counters, etc.)
- Spectroscopy (systems, modules, accessories)
- pH measuring equipment (meters, electrodes, etc.)
- Digital equipment (plug-in cards, modules, systems, etc.)
- Malmstadt-Enke Laboratory Station

Name _____

Title _____

Name of company or school _____

Address _____

City _____ State _____ Zip _____

Tune up for '72 with low-cost, top-value



**HEATHKIT AUTOMOTIVE —
DESIGNED TO HELP YOU
SERVICE YOUR OWN
VEHICLE AND SAVE**

Low cost Heathkit automotive test equipment is easy to build, easy to use. And it can help you save hundreds of dollars over the life of your cars, trucks, recreational vehicles, lawn and farm equipment. Clear, complete operational instructions, written in layman's language, show you how to do professional analysis and adjustment the very first time. There's even a section that shows you how to service the instruments themselves for greater savings. Put these money-savers to work for you now.

Heathkit Automatic 10-amp. Battery Charger...29.95

- Can't be hooked up wrong
- Completely automatic
- Can be left connected indefinitely

Ideal for motorists, boaters, campers and farmers, the Heathkit GP-21 Battery Charger is completely automatic, virtually foolproof. Simply won't overcharge, no matter how, or how long, it's hooked up. Just plug it into a conventional 105-130 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. The GP-21 automatically senses the condition of the battery and continuously adjusts to the needs of the cells.

A lifesaver for any 12-volt battery, the GP-21 will not start up unless it's correctly connected, ending ruined batteries because of reversed cables and "hot", sparking cables. Weighs less than 12 lbs., so you can take it with you. Features rust-proof aluminum chassis cabinet and stainless steel hardware. Assembles in a matter of hours. Order your GP-21 today for a supercharged new year.

Kit GP-21, 13 lbs., mailable29.95

GP-21 SPECIFICATIONS — Charge rate: 10 amperes maximum at 120 VAC line, decreasing to leakage rate of battery. **Output voltage:** Between 13.2 VDC and 13.6 VDC depending on battery condition. **Power requirements:** 105-130 VAC, 60 Hz, 200 watts maximum (at 10 amperes charge rate). **Dimensions:** 5½" H x 9" W x 6¾" D.

Heathkit Three-in-one Tune-up Meter...29.95

- Measures dwell, rpm, DC voltage
- Solid-state circuitry for ±3% accuracy
- Portable convenience

No car buff, "do-it-yourselfer" or professional alike, should be without this convenient and useful addition to his tune-up tool collection. The Heathkit ID-29 is three automotive test instruments in one. Measures dwell on all 4-cycle 3, 4, 6 or 8 cylinder engines with conventional (not solid-state) ignitions (0-20 degrees depending on number of cylinders). Has two rpm scales—0-1500 and 0-4500. Analyzes DC voltage from 0 to 15 volts. Operating the ID-29 is as simple as connecting two leads, with auto engine providing both signal and power. There's no need to reconnect probes to change from dwell to rpm measurement.

The Heathkit ID-29 features versatile operation, portable convenience and accurate performance. It can be used on both 6 and 12 volt systems without changing leads, can be operated day to day on engine after engine without recalibration. Stable solid-state circuitry assures accuracy within 3%. And the Heathkit 3-in-1 Tune-Up Meter is completely portable, too, enclosed in a rugged unbreakable case that's unaffected by water, oil, gasoline and most acids.

Kit ID-29, 5 lbs., mailable29.95

ID-29 SPECIFICATIONS — Dwellmeter: Four direct reading scales; 8 cyl. — 0-45 degrees; 6 cyl. — 0-60 degrees; 4 cyl. — 0-90 degrees; 3 cyl. — 0-120 degrees. **Tachometer:** Two RPM ranges; Low range — 0-1500 RPM; High range — 0-4500 RPM. **Voltmeter:** Direct reading scale, 0-15 VDC. **Power requirements:** 10 mA approximate average current. **Meter:** 4½", 1 mA (100 degree movement). **Accuracy:** ±3% of full scale. **Dimensions:** 4¼" H x 8½" W x 7¼" D (including handle).

The Hanson Basic Tester Set...12.95

- Ideal for do-it-yourselfers and professionals alike
- Puts four vital accessories in your garage or shop
- A tune-up tool "must" at this low, low price

The Hanson basic tester set brings you four fundamental tools used in all automotive tuneup work. Set includes Model 1604 Remote Starter Switch with push button and long leads for under the hood starting; Model 1605 Compression Tester that reads 0-300 lbs., has 15° offset to reach back cylinders; Model 1606 Vacuum/Fuel Pump Tester with 2½-in. three-color dial, calibrated 0-30 inches for vacuum and 0-7 lbs. for pressure; Model 1603 Engine Timing Light with molded plastic case, long leads and rubber covered connectors.

GFP-83, 4 lbs., mailable12.95



Heathkit automotive gear



Heathkit Solid-State Timing Light...19.95

- Completely self-contained
- Bright new high intensity flash
- High-impact plastic focusing lens

Provides a high intensity flash that won't wash out even in direct sunlight. And a high impact plastic focusing lens inside the barrel concentrates the beam into a clearly defined spot for even more accurate ignition set up. Just connect the two cables—one to the car's battery terminals, one to the number one spark plug. An adapter is included for distributor cap hook-up.

The slim-line housing is made of rugged, charcoal green high-impact plastic to resist oil, gas and corrosion—protect you from electrical shock. Other features include circuit protection against damage from reversing polarity and a built-in calibrator. Assembles in just two hours. Manual gives detailed operational instructions.

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: 6½" H x 10" L x 2" W.

Heathkit Ignition Analyzer...109.95

- Spots major ignition problems
- No need to switch leads
- In-shop or portable capability

Identifies shorted spark plugs, bad points, defective wiring, worn distributor parts, incorrect dwell time, coil and condenser problems, plus many more engine defects. Use it in the shop with its own built-in power supply, or "on-the-road" with an external DC to AC inverter. Provides instant selection of primary and secondary patterns in either parade or superimposed displays without lead switching. Expand the views for detailed analysis...10 to 1 horizontally or 2 to 1 vertically. Trigger circuit provides the steady "locked-in" pattern display. Goes together quickly and easily...no special skills or knowledge needed. Features a corrosion-resistant aluminum case with brushed aluminum front panel, and easy-to-clean enamel finish. Measures 8" H x 9½" W x 16" D. Use on any internal combustion engine with a conventional, non-transistor ignition system.

Kit IO-20, 19 lbs., mailable **109.95**

IO-20 SPECIFICATIONS — RPM Range: 400-5000 rpm. Displays: Secondary, Primary, Parade, Superimposed. Screen size: 4½" diameter. Dwell measurement: 4, 6 & 8 cylinder calibration on face plate. Pattern height: Secondary circuit, approx. 1"; Primary circuit, 6 volt system ¾", 12 volt system 1". Vertical expand ratio: 2 to 1. Horizontal expand ratio: 10 to 1. Cable length: 12' pick-up clamp; ground and secondary clip leads extend 2' beyond pick-up clamp. Power requirements: 120 VAC, 30 watts.



The Heathkit Solid-State Tachometer

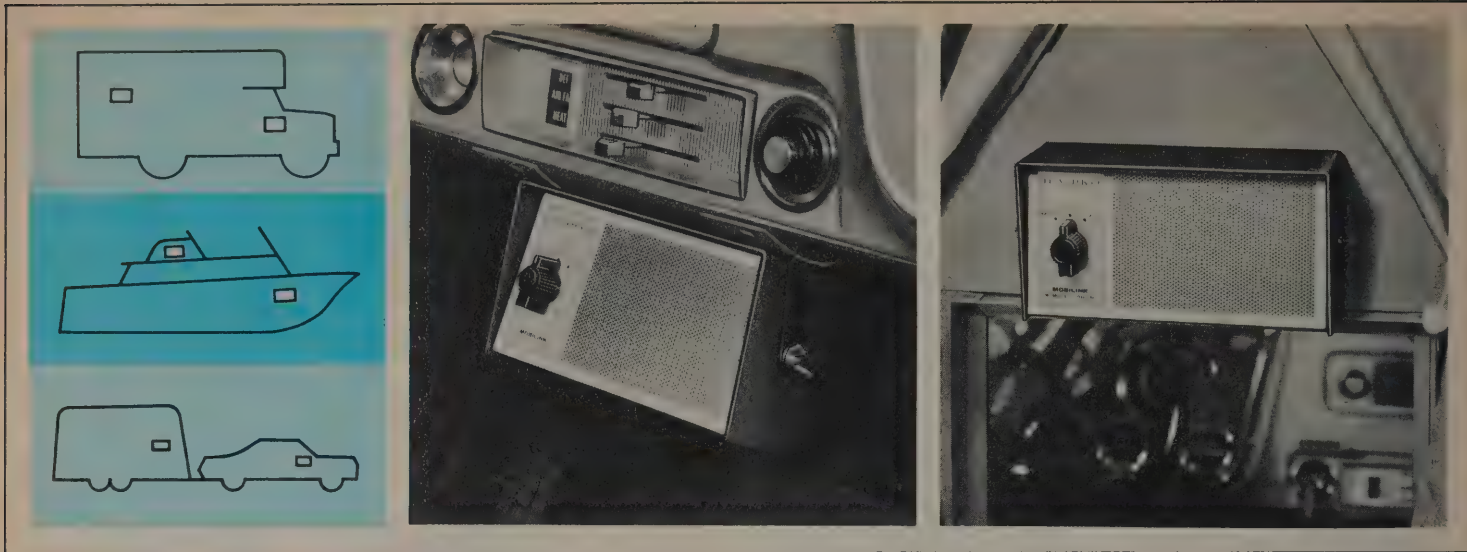
Can be used with any spark-type ignition system (1-6 cyl., 2 cycles; 2-8 cyl., 4 cycle). Two rpm ranges, 0-6000 & 0-9000. Temperature compensated for ±5% accuracy from 0° to 120°F. Wide angle 250° edge lighted dial with white indicator, adjustable pointer, non-scratch glass face. Available with black and chrome case, or for panel mount.

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, 5 μs rise time. Tach Connection: 30 volt negative pulse, 20 μs rise time. Meter Range: 0-6000 r/min. or 0-9000 r/min. Engine Capability: 1 to 6 cylinders, 2 cycles; 2 to 8 cylinders, 4 cycles. Accuracy: ±3% at calibrating temperature (when calibrated at full scale). ±5% from 0 degrees F. to +120 degrees F. Power Requirements: 10.5 to 17.5 volts DC, 25 mA at 12 volts DC, 125 mA with lamp. Dimensions: Model MI-18-1: 3¾" overall face diameter. Mounts in 3¼" hole, 2¼" overall case depth. Model MI-18-2: 3¾" overall face diameter. ¼" high. 3" overall case depth. Weight: MI-18-1, 14 oz. MI-18-2, 17 oz.

Heathkit Intercom for mobile families



Heathkit "Mobilink" Cab-to-camper Intercom...25.95

- All solid-state circuitry
- Doubles as remote cab-radio speaker

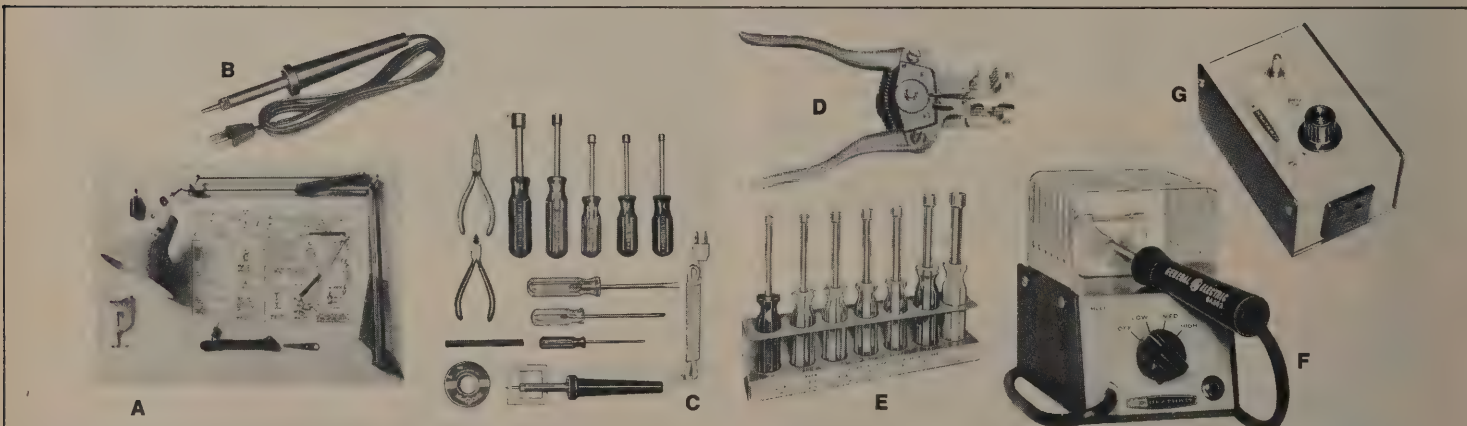
The Mobilink Intercom System gives families on the go instant 2-way communication between the driver's area and your home on wheels. You keep track of everyone without taking your eyes off the highway. Mom's free for navigating while knowing the kids are secure in back. Mobilink is great for boats, too, or any application where 12-volt, 250 milliamp DC power is available.

Three-position switch at the cab-mounted master selects "Standby", "Talk" and "Monitor" functions. In "Standby" mode, it is open to receive calls from the remote unit. To initiate a call, the driver turns and holds the knob in the spring-loaded "Talk" position. Turning the indi-

cator to "Monitor" enables those in the cab to listen to the remote for baby-sitting purposes. The camper-mounted remote also provides "Standby" and "Talk" settings as well as a "Radio" position which permits use of the intercom as a remote speaker connected directly to the cab radio. The GD-160 Mobilink kit includes both intercoms, brackets for horizontal or vertical mounting, 15-ft. connecting cable. An optional quick-disconnect plug permits unhitching camper or trailer without disturbing intercom wiring.

- Kit GD-160**, 5 lbs., mailable **25.95**
GDA-160-1, quick-disconnect plug, 1 lb., mailable **2.50**

GD-160 SPECIFICATIONS — Number of Stations: Two; one master and one remote. **Controls — Master Unit:** Three-position function switch: Std. by, Monitor, and Talk. Gain control; accessible through rear of cover. **Controls — Remote Unit:** Three-position function switch: Radio, Std. by, and Talk. **Circuit:** Transistor 3-stage class A amplifier. **Speaker/Microphone:** 25 ohm nominal, 3" x 5" weather resistant. **Power Output:** 1 watt. **Interconnecting Cable:** 5-conductor (fifteen feet furnished). **Power Requirements:** 13.2 volts DC at 250 milliamperes. **Dimensions:** Unit Size, 3 7/8" H x 7 3/4" W x 3" D. Required Mounting Area: 4" H x 8 3/4" W x 3 3/4" D.

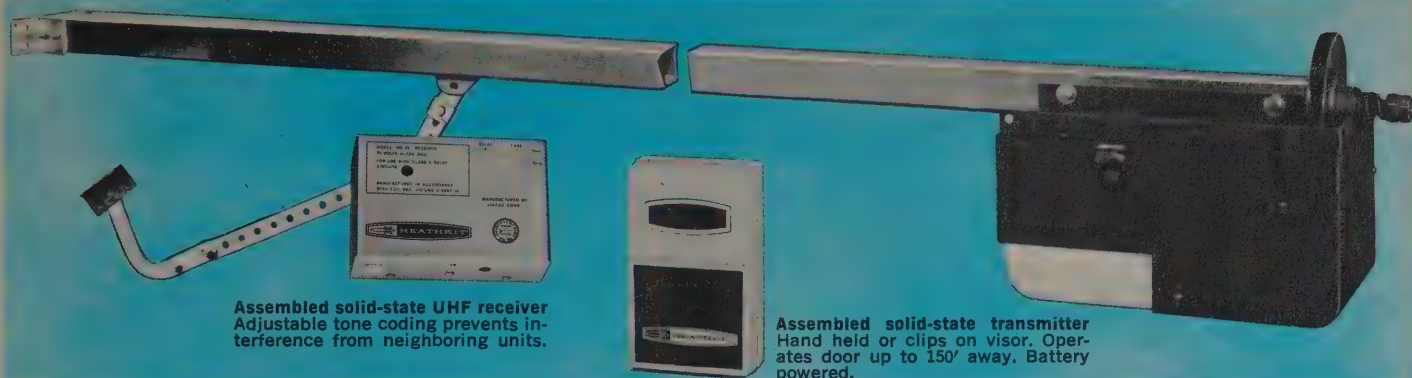


Kit building's even easier... with Heathkit quality tools

- A) Extension lamp kit:** 45-in. reach, 360° sweep; vented shade, moveable base clamp. Bulb not included.
Kit GDP-202, 5 lbs. (mfrs. list 14.50), mailable **12.95**
- B) Weller W-PS 25-watt pencil soldering iron;** 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) Kit builders tool set:** Combination wire stripper/diagonal side cutter midget long-nose pliers; three screwdrivers (3/32", 1/8", 3/16"); Weller W-PS soldering iron; 5 nut drivers (3/16", 1/4", 5/16", 3/8", 1/2"); nut starter; soldering aid; solder; and "Kit-Builder's Guide."
Model GH-25, 4 lbs., mailable **19.95**

- D) Speedex wire & cable stripper:** no. 10, 12, 14, 16, and 22 wire.
Model GDP-663, 2 lbs., (mfrs. list 9.95), mailable **6.50**
- E) Vaco hollow shaft nut driver set:** Seven drivers, most common nut sizes, 3/16", 1/4", 5/16", 11/32", 3/8", 7/16" and 1/2". Handles color-coded for easy identification.
Model GDP-204, 3 lbs., mailable **7.95**
- F) Heathkit soldering iron.** Low, medium and high heat ranges. 6-ft. cord, 117 VAC.
Kit GH-17A, 5 lbs., mailable **15.95**
- G) Heathkit motor speed control:** Saves power, blades, bits, saws, etc. A feedback circuit lets you slow down power tools while maintaining almost full torque.
Kit GD-973A, 3 lbs., mailable **17.95**

Save with Heathkit garage door openers



Assembled solid-state UHF receiver
Adjustable tone coding prevents interference from neighboring units.

Assembled solid-state transmitter
Hand held or clips on visor. Operates door up to 150' away. Battery powered.

Heathkit Screw-drive R/C Door Opener...139.95

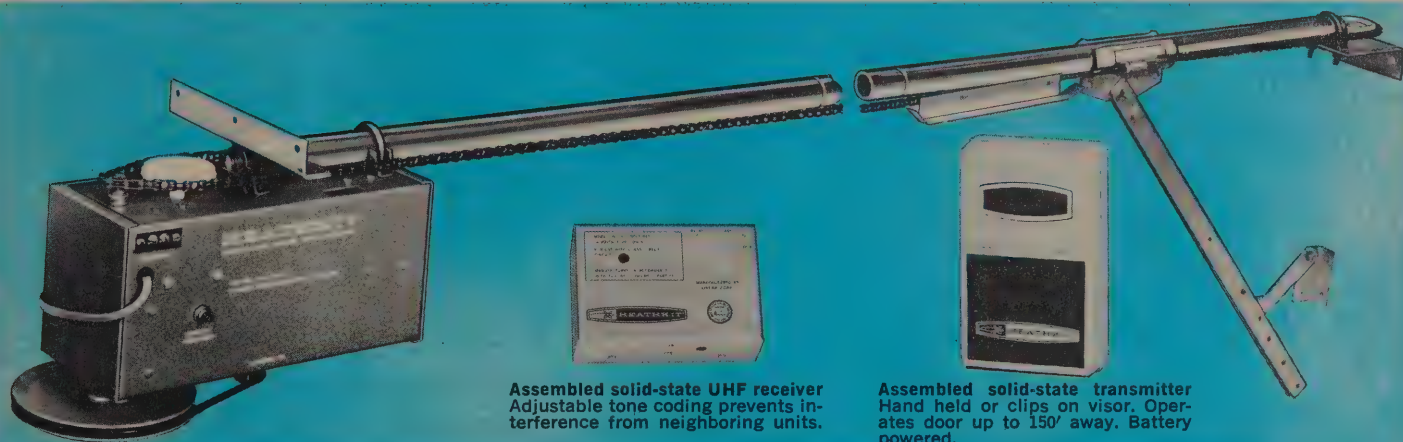
- Maintenance-free screw mechanism
- Safety reverse feature
- Time-delay overhead light

Open the door, turn on the light right from your car. The compact push-button UHF transmitter that stays in your pocket or purse, or clipped to the overhead visor, is your personal electronic key. The Heathkit 209 system features a husky 1/4 h.p. electric motor with circuit overload protection, dependable maintenance-free 8 1/2 ft. screw drive mechanism, and time-delay safety lamp. It opens and closes 7 1/2' overhead track, jamb and pivot doors smoothly and quietly. Assembly is fast and easy—goes together in an evening. All electronics are factory wired and aligned, ready to use. Point-to-point wires have attached push-on con-

nectors, which attach to terminals. And it installs in just a few hours.

- 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**
- GDP-99**, transmitter, 1 lb., mailable **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" long x 12" high x 9" wide. 117 VAC 1/4 HP. **Open and Close Time:** Approximately 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 11 circuit. **R.F. Frequencies:** 290 to 320 MHz. **Useful Temperature Range:** -50°F. to +140°F.



Assembled solid-state UHF receiver
Adjustable tone coding prevents interference from neighboring units.

Assembled solid-state transmitter
Hand held or clips on visor. Operates door up to 150' away. Battery powered.

Heathkit Economy R/C Garage Door Opener...99.95

- Powerful 1/4 hp motor
- Automatic reversing safety feature

A powerful 1/4-h.p. motor protected by circuit breaker; unbelievably quiet mechanism; solid-state control via a pocket size push-button transmitter and reliable in-garage receiver; a built-in light that goes on when the door goes up, goes out when it closes. Automatic reversing, uncommon in an opener at this low price, provides maximum operating safety. Should the door meet an obstruction while closing, it immediately returns to the fully open position. And this system is adjustable for sensitivity. The door can also be reversed while in motion—travelling up or down—by simply pressing the transmitter button. Closes and locks the door securely. Has a quick-release pin to disconnect mechanism from door in event of power failure. Assembles and in-

stalls in just a few hours. Compact UHF transmitter, with handy overhead visor clip, and garage receiver are shipped ready to use.

- Kit GD-309-A**, system with 1 transmitter, 60 lbs., mailable **99.95**
- Kit GD-309-B**, system with 2 transmitters, 60 lbs., mailable . . . **114.95**
- Kit GDA-309-1**, mechanism only, 52 lbs., mailable **69.95**
- Kit GDA-309-2**, adaptor for jamb & pivot doors, 2 lbs., mailable . . **3.95**
- GDP-99**, transmitter, 1 lb., mailable **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 1/2"). **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:** Approximately 9 seconds (on 7' high door). **Safety:** Door travel reverse, returns to fully open position, and stops if obstructed while closing. **Overhead Mounting Clearance:** 2 1/2" 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, 1/4 horsepower, capacitor-run, 1500 rpm. **Power requirements:** 120 VAC, 60 Hz, 660 W (excluding lamp). **Dimensions:** 123" long x 10" high x 8 1/2" wide.

TRANSMITTER SPECIFICATIONS: See above.

Home convenience and security systems



Heathkit solid-state wireless intercom system

With the new GD-113 solid-state wireless intercom system the wiring is already installed...your household electrical system serves as the transmission line. Just assemble the units you require and plug them in...that's all there is to it. The GD-113 has three separate channels. In a 6-intercom system, you can carry on three separate conversations simultaneously. In a 3-station network one unit can talk with another without disturbing the third. Front panel pushbuttons make channel selection fast and easy. A push of the spring-loaded "Talk" button puts you in instant communication with the station of your choice, and for extended conversations there's a "Dictate" button. A front panel Volume control adjusts loudness and the internal automatic gain control regulates volume so that it stays nearly constant under varying signal conditions. An internal squelch adjustment suppresses noise in the receiver when no signal is present.

Because there's no wiring to install, you can move your GD-113s around at will...monitor the nursery tonight...use in the workshop tomorrow. Each GD-113 uses about the same amount of current as an electric clock, so you can leave them plugged in all the time. Assembly is fast and fun with the famous Heathkit manual...about 6 hours per unit. Measures 4 1/8" H. x 8 1/2" W. x 6 3/4" D.

Kit GD-113, 5 lbs., mailableeach **29.95**

Heathkit solid-state home intercom system

Know what's happening on the home front without leaving the kitchen or your favorite easy chair. With Heathkit Indoor-Outdoor intercom components you design and build your personal communication system just the way you want it. GD-110 Master Intercoms accept up to six channel inputs, so that you have a seven intercom system. You can identify front-door visitors, monitor the nursery, talk to the gang at the pool or patio, etc. Several Masters with their Remotes can be interconnected to form even larger networks. Masters can be wired to monitor any four of the six channels while individual Remote Units can be

rendered "private" to shut out any monitoring. Master controls include channel selectors; "All Call", for paging, emergency alert, locating children; "Dictate" which holds open spring-loaded "Talk" button for extended conversation. Indoor Remote stations have "Talk" and "Dictate" modes. Both Master and Remote indoor units are finished in attractive mist green; fit on countertop, desk or table, or mount on wall. Goes outdoors, too—the weatherproof outdoor Remote is activated by the Master station and has no external controls. Kit includes hardware and double-stick tape for easy installation. Master measures 4 1/2" H x 8 1/2" W x 6 3/4" D; Remote—3 3/4" H x 6" W x 5 3/4" D; Outdoor Remote—5 5/8" H x 3 5/8" W x 2 5/8" D.

Kit GD-110, Master Station, 4 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' cable for indoor units, 2 lbs., mailable**5.95**

GDA-110-4, 100' cable for outdoor units, 3 lbs., mailable**2.95**

Heathkit 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.

Kit GD-77, 4 lbs., mailable**49.95**

B) Fire detector/transmitter triggers Receiver Alarm upon detecting very low density smoke or 133°F. heat. "Fail-safe" circuit, adjustable smoke sensitivity. Remote heat sensors can be added.

Kit GD-87, 4 lbs., mailable**49.95**

C) Utility transmitter accepts any switch or sensor that produces a closed circuit, such as Heathkit GDA-97-1 miniature magnetic-reed switch or GDA-97-2 miniature micro switch for doors and windows, or GDA-97-3 133°F. heat sensor switch. "Fail-safe" circuit.

Kit GD-97, 3 lbs., mailable**35.95**

GDA-97-1, 1 lb., mailable**1.80**

GDA-97-2, 1 lb., mailable**2.00**

GDA-97-3, 1 lb., mailable**2.25**

Table radios for every room in your home



Heathkit solid-state AM/FM radio...49.95

- Automatic "Snooze Alarm"
- Rear-panel accessory socket

A) "Snooze Alarm" wakes you to music in the morning, 10 minutes before the alarm goes off. Enjoy the clear, bright sound of FM, or news & weather on AM with just a turn of a knob. Auxiliary clock-controlled 120 watt socket on rear panel for perking coffee in the morning. Back-lighted clock dial for easy reading at night. Built-in AM & FM antennas. AGC on AM; AFC on FM. Fast, easy circuit board assembly. Compact powder blue cabinet measures just 5 $\frac{5}{8}$ " H x 10" W x 4 $\frac{7}{8}$ " D. Color coordinated grille cloth supplied or custom design your own. Order an easy way to get up in the morning...the Heathkit GR-58.

Kit GR-58, 6 lbs., mailable49.95

Heathkit solid-state AM table radio...24.95

- 7-transistor, 3-diode circuit
- Automatic Gain Control

B) Seven-transistor, 3-diode circuit assures top performance, long life. Automatic gain control keeps volume constant. Ferrite rod antenna, extra untuned RF stage and high sensitivity for excellent reception. Husky audio output to the big 3x5" speaker for clean, natural sound. Full wave transformer power supply eliminates annoying line hum. Styled in handsome gold & brown with matching grille cloth supplied...or design your own to match drapes or carpet. An excellent "first" kit...easy, enjoyable with the famous Heathkit manual. Measures 5 $\frac{1}{4}$ " H x 10" W x 4 $\frac{7}{8}$ " D.

Kit GR-28, 5 lbs., mailable24.95

Heathkit solid-state AM clock radio...32.95

- 10-minute "Snooze Alarm"
- Accessory socket on rear panel

C) Features "Snooze Alarm" that wakes you up with music ten min-

utes before the alarm goes off. Auxiliary rear panel clock-controlled 120 W socket ideal for perking coffee, turning lights on. Back-lighted clock dial is easily read at night. High sensitivity, extra untuned RF stage and built-in antenna. AGC provides constant volume under varying signal conditions. Attractive coral cabinet with matching grille...or add your own grille. Compact...5 $\frac{5}{8}$ " H x 10" W x 4 $\frac{7}{8}$ " D.

Kit GR-38, 6 lbs., mailable32.95

Heathkit solid-state AM/FM table radio...39.95

- AFC on FM, AGC on AM
- Built-in AM & FM antennas

D) Delivers the clear, refreshing sound of FM...news, weather & "pop" sound of AM. AFC on FM for drift-free tuning...AGC on AM keeps volume constant. Built-in AM & FM antennas for better reception. Back-lighted dial for easy reading in the dark. Avocado green cabinet with matching grille cloth or design your own grille. 5 $\frac{1}{4}$ " H x 10" W x 4 $\frac{7}{8}$ " D.

Kit GR-48, 5 lbs., mailable39.95

Heathkit deluxe solid-state FM/FM stereo table radio...69.95

- 5 uV sensitivity
- Stereo indicator light

E) An inexpensive, fun project to put the pleasing sound of stereo FM in any room of the house. Automatic frequency control provides drift-free tuning. High 5 uV sensitivity delivers impressive station-pulling power. Automatic switching to stereo and stereo indicator light provided. Adjustable phase control for maximum stereo separation. Two 5 $\frac{1}{4}$ " wide-range speakers and 2 $\frac{1}{2}$ watts (EIA) of audio provide life-like stereo reproduction. Adjustable tone control allows you to vary the sound to suit your taste, from deep, rich bass to clean, natural highs. Assembled & aligned front end for better performance, easier assembly. Attractive walnut finish wood cabinet included blends easily with any decor. Measures just 9 $\frac{1}{4}$ " H x 19" W x 6 $\frac{1}{2}$ " D. Easy 10 hour assembly.

Kit GR-36, 24 lbs., mailable69.95

You can service Heath-kitchen Appliances

New Heathkit Minimizer for nearly everything you throw away...199.95

- Compresses cans, bottles and kitchen trash into one neat, odor-free package
- Use it as is or build it in
- Simple to assemble—with conventional tools

With the Heathkit Minimizer household trash is in the bag. One neat, deodorized package holds up to a week's worth of disposables for an average family of four. This Heath-kitchen appliance costs less than any other comparable compactor, assembles easily in an evening—and, since you learn how it goes together, you can perform any periodic adjustments or servicing yourself. That's what "cost-of-labor-saving" is all about. In addition, there are Heathkit Electronic Centers nation-wide with factory-trained service people to help you, plus the famous Heath Tech Correspondents you can call or write, and the new "plain language" warranty standing behind your Minimizer.

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 a 2000-lb. force to reduce refuse to almost 1/4 of its original size, packaging the material in fold-lock, plastic-lined disposable bag. 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.

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.

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 120 VAC conventional 3-wire grounded household outlet. Kit includes five plastic-lined bags, one 9-oz. can of deodorant.

Kit GU-1800, 203 lbs., Express/Frt. **199.95**

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 1/2" maximum height x 15" W x 25 1/2" D. **Bag:** Disposable plastic-lined paper bag. **Deodorizer spray:** 9-oz. can.



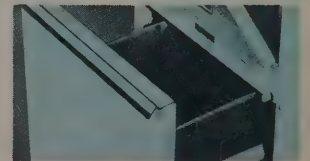
Bag lock-folds for neat disposal



Safety key-lock switch



Built-in deodorizer



Accepts up to one week's trash before emptying

The Heathkit Microwave Oven can change your ideas about cooking...379.95

- Cuts cooking time up to 70%
- Extra large oven cavity
- Operates on regular household current

The microwave oven—the revolution in cooking—is yours in easy-to-build kit form. You save on initial cost and, since you assemble it, you're bound to save on service calls too. The Heathkit Microwave Oven 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 four minutes, baked beans in seven, a 5-lb. roast in 45. For entertaining—or fixing leftovers—dishes prepared earlier can be quickly reheated. Frozen foods can be defrosted in two to three 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 cookbook, written for Heath by Home Economist Ann Balcam, that provides recipes and timing charts for your favorite dishes.

Microwaves pass through glass, plastic, even paper utensils, so you can cook and serve on the same dishes. Oven and cookware remain cool. Splatters won't burn on. Everything cleans up with a damp cloth.

The Heathkit Oven uses standard household current, and since it cooks faster and more efficiently it uses less power than conventional ranges.

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. Its compact size is perfect for camper or boat. Optional roll-around cart with handy utensil-holding lower shelf adds convenience and mobility.

Only the Heathkit GD-29 has three door interlocks; two electrical, one 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.

Using the incomparable Heathkit manual, assembly is completed in just two or three evenings. Most of the work is mechanical, requiring only screw drivers, with very few solder connections. Order your GD-29 Microwave Oven now, and start the new year right.

Kit GD-29, 97 lbs., Express/Frt. **379.95**

GDA-29-1, Cart of hardwood solids, walnut finish, sturdy 5/8" x 1" tubing and sealed-in disc casters, 31 5/8" H x 27" W x 15 5/8" D., 20 lbs., Express/Frt. **27.50**

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.

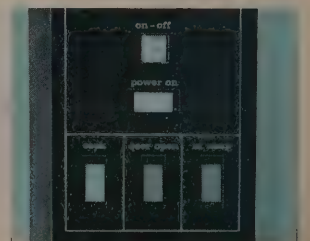
GD-29 SPECIFICATIONS — **Power output:** 650 W minimum at 120 VAC, 60 Hz. **Frequency:** 2450 MHz ±50 MHz. **Microwave leakage:** 1 mw/cm² or less. **Magnetron tube:** Litton Industries, type L-5201. **Stirrer:** 3-blade, rotates at approximately 65 rpm. **Interlocks:** Door guide microswitch, door latch 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 1/8" H, including glass tray, 15 1/2" W x 14" D. **Power requirements:** 120/VAC, 60 Hz, 15 A. **Outside dimensions:** 15 1/8" H, 25 1/2" W, 14 3/4" D (15 1/4" D including handle).



Extra large oven cavity



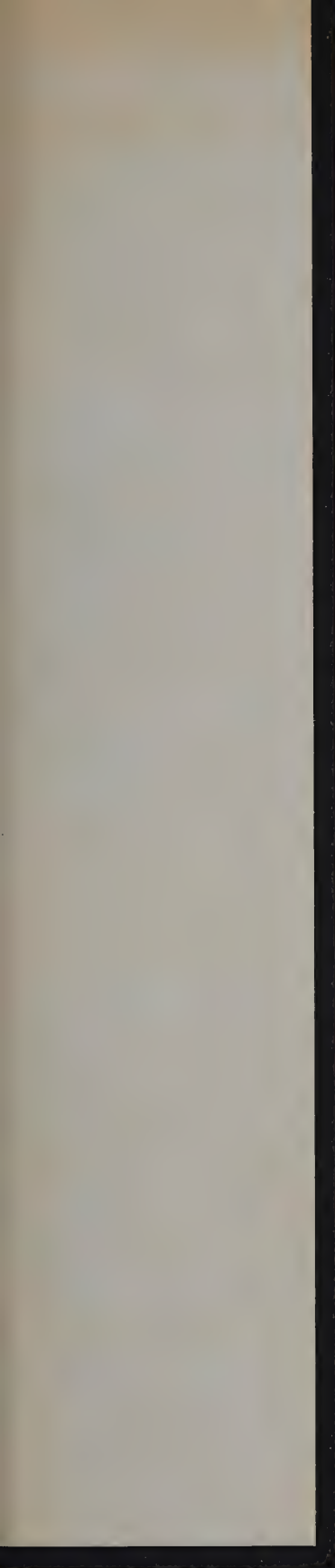
Automatic timer

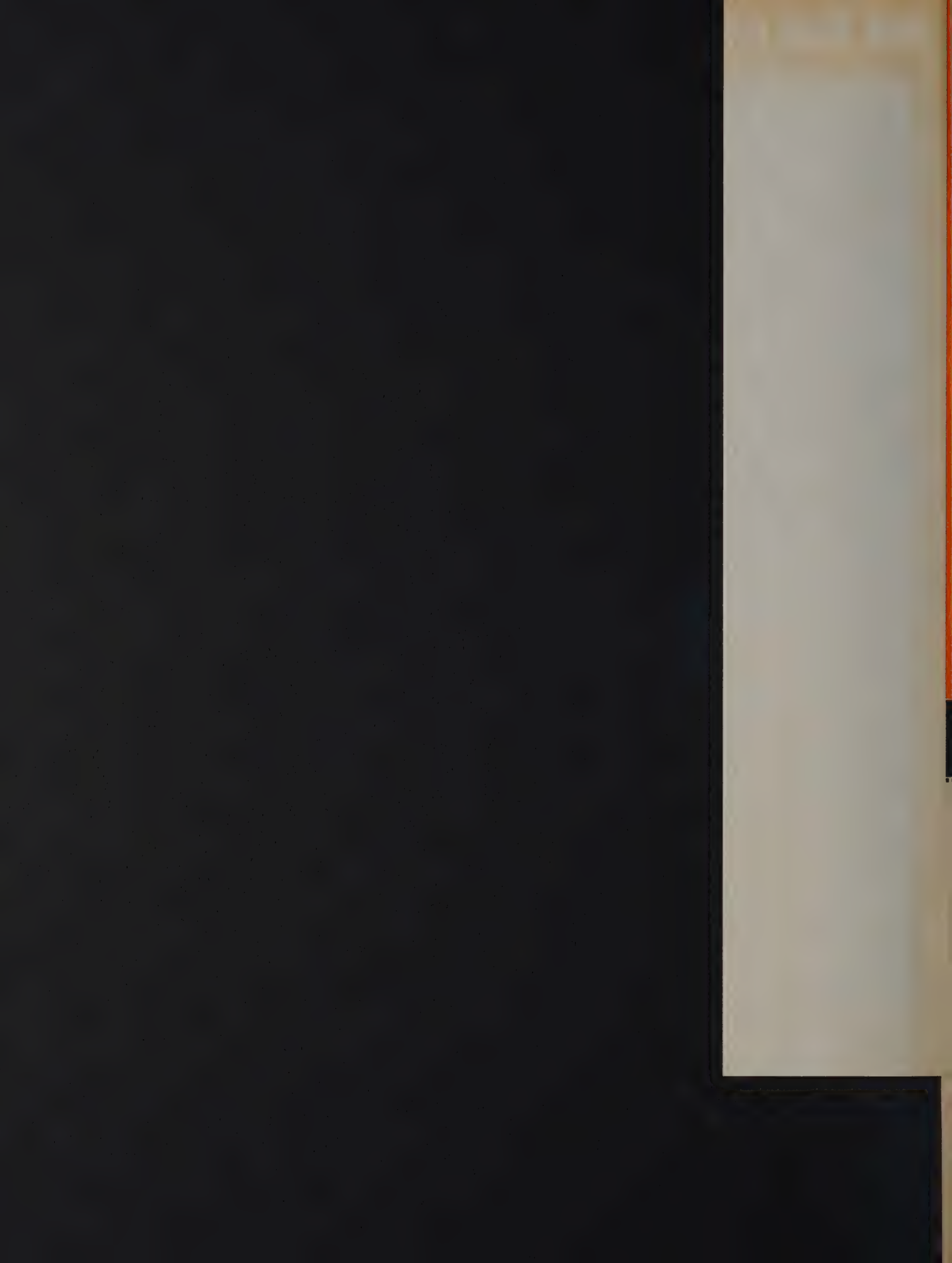


Front panel lights



Plugs into conventional 120 VAC 3-wire grounded outlet

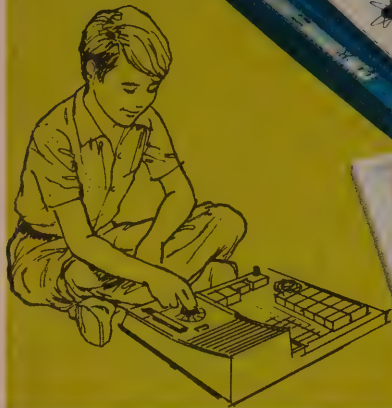




and that can make life a lot simpler



Heathkit Jr. learn-by-doing electronics



Electronic Workshop "25"



Electronic Workshop "12"

Heathkit Electronic Workshop Series

- Teaches basic electronic theory and design
- Safe battery operation
- Plug-in connections — no soldering required

Electronic Workshop "36" ...29.95

The Heathkit Electronic Workshop "36" is a completely self-contained electronic experimental laboratory designed to spark the interest and imagination of any pre-teen youngster. He'll spend fun-filled hours learning about and actually using the basic components of modern electronics...transistors, capacitors, resistors, and scores of others. He'll discover useful knowledge of how modern circuits actually work. Component modules snap into place on the working platform. Circuit connections are made by using circuit connector pins and wires supplied—no soldering required. And the circuits can be used over and over again—setting up any number of exciting and educational experiments. Power for the circuitry of all Electronic experiments is supplied by four ordinary inexpensive "D" size flashlight batteries (not included), so there's positively no shock hazard. And since all connections snap in, no soldering is required.

With the Electronic Workshop "36", your aspiring young Electronics Engineer will be able to assemble 36 interesting and educational electronic 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, parts and components for 36 different experiments.

Kit JK-1033, 11 lbs., mailable29.95

Electronic Workshop "25" ...24.95

Kit includes master control console, three working platforms, parts and components for twenty-five different 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.

Kit JK-1022, 8 lbs., mailable24.95

Electronic Workshop "12" ...19.95

Kit includes master control console, two working platforms, parts and components for twelve different 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, and electronic flasher.

Kit JK-1011, 6 lbs., mailable19.95

Heathkit Educational Series

- Valuable learn-by-doing courses
- Teaches basic fundamentals & practical applications
- Combination kit & textbook projects
- Great for beginner & professional alike



C



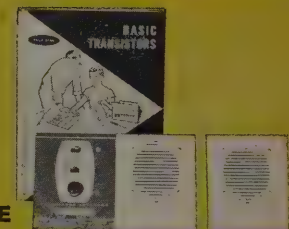
A



B



D

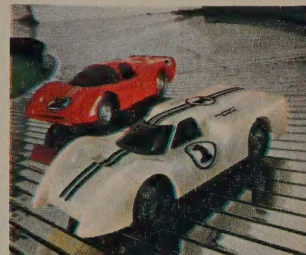


E

Heathkit "Slotless" Model Raceway



Hand-grip controllers have throttle and steering wheel. Just plug them into the power supply and you're ready to race.



Neatly detailed 1/32-scale car kits come with motors, dress-up decals. One Ferrari, one Ford J included with kit.

Steering & acceleration—it's in your hands with the Mini Auto Race Kit IV...129.95

With the new Heathkit Mini Auto Race Kit IV you actually do the driving on a slotless track. Up to four cars, with independent acceleration, deceleration, stopping and turning capability, blaze down the straights and negotiate the turns with amazing realism. Drivers steer inside or outside and open the throttle to pass! Take the corners high or low. Feather the throttle and set-up the wheel for breath-taking 4-wheel drifts through the turns. "Draft" bumper to bumper through the chute. You can even turn around completely and backtrack. Never before has a 1/32-scale track so faithfully reproduced the individual driver's skill. And since M.A.R.K.-IV cars go where you steer them, "slotless" motoring can be more than racing. You can stage stunt and precision driving shows, set-up pylons for realistic rallies, re-enact actual full scale races of the past, demonstrate the tricks and techniques of the world's greatest drivers.

M.A.R.K.-IV motoring employs a simple but totally new control concept. Each car is driven by two motors, one for each rear wheel. Each motor has its own control circuit, which responds to only one specific frequency. Control signals originate in the control handle plugged into the power supply, which in turn sends independent signals through the

track and to the cars via brush contacts underneath the vehicles. When the steering wheel on the controller is turned, it slows the motor at one wheel while speeding up the other, causing the car to turn. The throttle control increases the speed of both motors simultaneously for acceleration. Each car and controller combination has its own specific frequencies, assuring independent operation of all cars (up to 4) on the track.

The Heathkit GD-79 Mini Auto Race Kit IV gives you everything you need to get started in "slotless" racing. Enough track for an 8' x 4' oval with guard rails. Power transformer that can be wired for either 110 or 220 VAC household current with plug-in jacks for up to 4 controller handles. Two cars (Ferrari and Ford J). Two hand-grip controllers with identification decals to match cars. As your interest in M.A.R.K.-IV racing grows you can purchase additional cars and track sections to form figure 8's, banked ovals, road racing circuits or drag strips.

Kit GD-79, 23 lbs., mailable **129.95**

Kit GDA-79-1, one extra car, controller and frequency module, 3 lbs., mailable **21.95**

GD-79 SPECIFICATIONS — Track: Physical dimensions: Straight section 13" x 16 1/2" L. Curved section 13" W x 45°. **POWER SUPPLY:** Power requirements: 120/240 VAC, 50/60 Hz. 45 W at maximum load. **Cabinet dimensions:** 3 1/2" H x 5" W x 8 3/8" D. **CAR:** Body: 1/32 scale Ferrari and Ford J. Drive: Gear driven. Gear ratio: 7:1. Front tire: 7/8" x 1/4" W. Rear tire: 2 3/8" x 3/8" W. Weight: 3 oz. Wheelbase: 2 1/4".

Learn the fundamentals of electronics and basic electronic instruments

A) How to understand & use your VTVM

Theory & applications of the VTVM. Power supply & text lets you learn-by-doing. For beginner or professional.

Kit EF-1, text & 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**

B) How to understand & use your signal generator

Text covers theory, and use of RF and AF generators. Textbook a valuable reference.

Kit EF-3, text, test chassis & 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**

C) 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**

D) Basic radio—2 parts kit/course

Build a crystal set. Improve it chapter by chapter to a regenerative tube-type radio. In Part II modify it further for a 2-band superhet receiver. Requires EK-1 meter.

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**

E) 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**

This year run with championship gear

A) New Sub-Miniature IC Servo...24.95

The new Heathkit Sub-Miniature Digital Proportional Servo weighs in at 1.25 oz., measures a mere 1 7/8 in. from mounting ear to mounting ear. An integrated circuit makes it possible to trim the fat, yet retain an amazing 3-lbs. thrust—the same provided by many larger servos. Performance features include 90° rotation in 0.6 second; 1% position accuracy; ceramic variable control feedback element; nylon gears and molded nylon case. Includes four rotary outputs and is compatible with all Heath RC Systems, and many others. Just 18 components install quickly and simply on the printed circuit board. Order the GDA-19-42 for your model car, boat or plane today.

Kit GDA-19-42, 2 lbs., mailable **24.95**

GDA-19-42 SPECIFICATIONS — Input signal: Pulse, 1-2 msec. wide; 4 V P-P. Thrust: 3 lbs. at rotor. Rotary output travel: 90° rotation. Temperature range: 0°-160° F. Power requirements: Battery, 4.8 V CT; idle current, 15 mA maximum; stall current, 450 mA nominal; no load current, 80 mA. Gear train backlash: Less than .002". Mechanical output: 1 large rotary arm, 1 small rotary arm, 1 offset rotary arm, 1 rotary wheel. Position accuracy: 1.0%. Dimensions: 1 3/4" H x 2 3/4" W x 1 7/8" L (length includes mounting ears, height includes the outputs). Net weight: 1.25 oz.

B) Heathkit Miniature Servo...24.95

Extremely compact, high-reliability design. The new Heath IC Servo gives all the versatility and capability of any digital proportional servo...yet delivers it in 25% less space, with 30% less weight. One tiny integrated circuit takes the place of seven transistors and over 10 resistors and capacitors. The IC, variable ceramic feedback element, glass epoxy circuit board and nylon gears and outer case provide rugged reliability. Linear and rotary outputs and versatile mounting make the GDA-19-41 a universal servo for cars, planes and boats. Fully compatible with any Heath R/C system and many other brands as well.

Kit GDA-19-41, 1 lb., mailable **24.95**

GDA-19-41 SPECIFICATIONS — Input signal: Pulse 1-2 msec wide, 4 V P-P. Thrust: 3 lbs. at rack; 24 in./oz. at rotor. Travel time: 0.6 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 5/8" H x 7/8" W x 2 1/2" L (length includes mounting ears; height includes outputs). Net weight: 1.75 oz.

C) GD-19 5-Channel Systems—with Sub-Miniature, Miniature or Standard Servos!

Order your GD-19 System with the new Sub-Miniature Servos for an incredibly light 12-oz. flying weight; with Heathkit Miniature Servos for 14 oz.; with GDA-19-4 servos for 16.6 oz. All systems consist of four servos; Heathkit Miniaturized Receiver with three ceramic IF Filters for increased selectivity without bothersome alignment, double-tuned front end, RF amplifier and dual AGC for interference-free reception, high impact nylon case; Slim Line Transmitter with factory-assembled high output RF stage, Kraft sticks for precise control; built-in charging circuit that charges both transmitter and receiver batteries with one cord; nickel-cadmium batteries. All GD-19 systems offer a choice of bands, exclusive Heath terminal blocks. Components assemble quickly and easily thanks to the famous Heathkit Manual.

System Kit GD-19S, with Sub-Miniature IC Servos, specify frequency desired, 11 lbs., mailable **224.95**

System Kit GD-19M, with Miniature Servos, specify frequency desired, 11 lbs., mailable **224.95**

System Kit GD-19, with standard servos, specify frequency desired, 11 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; 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: ±.005% on 27 MHz, ±.002% on 53 and 72 MHz. Temperature: 0°-160° F. RF output circuit: Pi-network. Modulation: On-off carrier keying. Approximate current drain: 100 mA. Controls: 5 channels; 4 with trim; on-off switch. Power supply: Internal 9.6 V nickel-cadmium battery. Rechargeable simultaneously with receiver battery at 35 to 40 mA from 120 V. Dimensions: 6 5/8" H x 6 3/4" W x 2 3/4" 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°-160° F. Sensitivity: 5 uV or better. Selectivity: 6 dB at ±4.0 kHz, 30 dB at ±9.0 kHz. Approximate current drain: 6 mA. Intermediate frequency: 453 kHz. Power supply: Heath GDA-19-3 battery pack. Controls: On-Off switch. Dimensions: 2 5/2" H x 2" W x 2 3/2" 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 1/2" W x 2 3/8" D. Net weight: 3.9 oz.

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 3/8" W x 3 1/4" L (length includes mounting ears; height includes arms). Net weight: 2.5 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.)

D) Low-Cost 3-Channel System...129.95

Ideal for R/C newcomers. Perfect for cars, boats, small planes and gliders, the 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 (GDA-19-4). Kit includes all cables, connectors and charging cord, plus free soldering iron to make assembly even easier.

System Kit GD-57, specify frequency, 8 lbs., mailable **129.95**

Kit GDA-57-1, transmitter, battery, charging cord; specify frequency desired, 5 lbs., mailable **54.95**

Kit GDA-57-2, receiver only, specify freq., 3 lbs., mailable **34.95**

GDA-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. Dimensions: 6 1/2" H x 6 1/8" W x 2 3/4" D.

GDA-57-2 SPECIFICATIONS — RECEIVER — RF Carrier Frequency: 1 frequency crystal-controlled on 27 MHz, 53 MHz or 72 MHz. Operating temperature: 0°-160° F. Power supply: Heath GDA-19-3 Battery Pack. Dimensions: 1 1/8" H x 1 3/8" W x 2 3/2" 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). Frequencies available: Same as with GD-19 systems.

E) Heathkit Servo Simulator...19.95

A versatile, low cost accessory for any R/C'er. Provides two functions: 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. Lamps indicate charging rate.

Kit GD-206, 2 lbs., mailable **19.95**

Kit GDA-19-3, receiver battery pack only; 1 lb., mailable **9.95**

F) Heathkit "Thumb® Tach"...19.95

Two rpm ranges: 0-5000, 0-25,000. Precision circuitry keeps tach accurate even with aging battery. Ideal for needle valve adjustments, selection of glow plugs, gears and props—permits peaking engine for rpm changes you can't hear.

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

G) Veco .19 Engine...29.95

Designed exclusively for R/C-car side-winder mounting, with fins in line with forward motion to provide maximum cooling. Has solid aluminum hemispherical head, coupled exhaust/intake throttle control linked to carburetor for smooth idle. Includes glo plug.

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

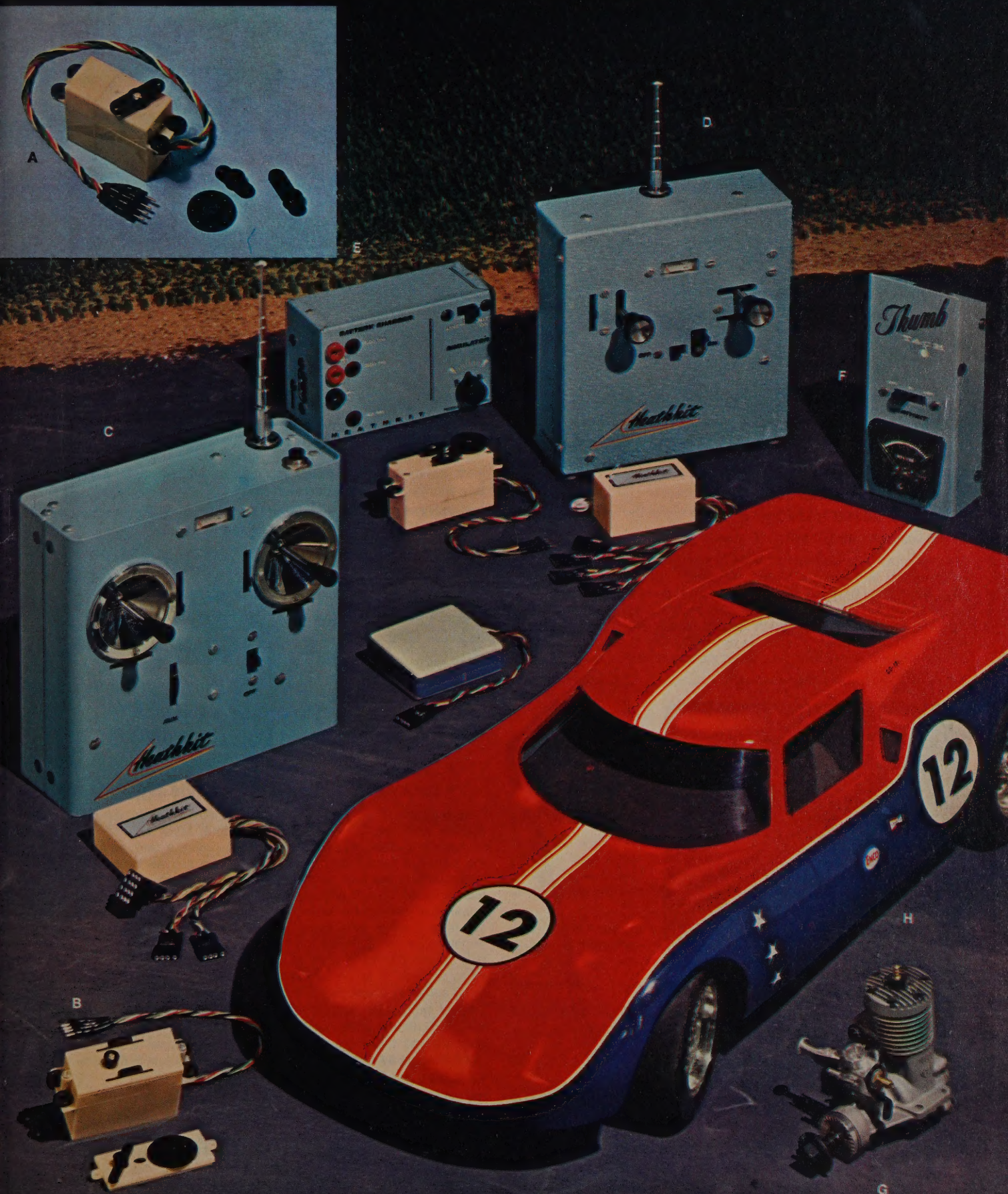
H) Heathkit "Spectre" R/C Car...29.95

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, Heathkit manual for easy assembly.

Kit GD-101, R/C car only, 11 lbs., mailable **29.95**

GD-101 SPECIFICATIONS — GENERAL — Chassis: 16 gauge chrome plated steel. Body: GT-Sports, 1/4 scale, high-impact plastic. Drive: Gear driven, live rear axle. Gear ratio: 5.5:1. Clutch: 1" centrifugal-type, adjustable. Brake: Neoprene-cork shoe. Suspension: Front coil spring. Front tire: 3" x 1.125". Rear tire: 3.250" x 1.375". Weight: 6 lbs. 6 oz. (approximately) without radio equipment. Engine requirements: .15 to .23 cubic inches (2.5 to 3.5 cubic centimeters) displacement, R/C throttle glow plug model airplane engine. Fuel tank capacity: 4 oz. Approximate running time (1 tank of fuel): 15 to 30 min. depending on average running speed. Speed: 0 to 25 mph (0 to 200 mph scale). CAR DIMENSIONS — Wheelbase: 12". Track (front): 7 1/8". Track (rear): 7 1/4". Length: 19 3/4". Height (body): 5". Width (body): 8 7/8". Ground clearance: 3/8".

from the Heathkit RC stable



Coming in April...

the new Heathkit Electronic Desk-Top Calculator

you asked for.

And it's only \$129⁹⁵

Reserve yours now...
send coupon below.



New kits in this issue

Heath Company,
Benton Harbor, Michigan 49022

Gentlemen: Please reserve _____ new Heathkit Electronic Desk-Top Calculator(s) for earliest delivery. I understand that I will be notified when to send my order and advised of expected delivery date.

Name _____

Address _____

City _____ State _____ Zip _____

Here's the calculator kit you asked us to make...featuring addition, subtraction, multiplication and division capability; full 8-digit readout with overflow indicator; floating and non-floating decimal point; provision for multiplying and dividing by a constant; two clearances ("Clear All" and "Clear Display"); high-visibility 1/2" high 7-segment neon display indicators; dependable large scale integrated circuitry (LSI) with discreet display interface; strong fiberglass circuit board construction; compact high-impact plastic case 3 3/8" H x 6 1/8" W x 10 1/4" D; fast easy assembly in one or two evenings...all for only 129.95!

Reserve your Heathkit Electronic Calculator now for earliest delivery. In order that you may be one of the first to have this exciting new Heathkit Electronic Calculator on your desk, you can reserve yours now. Send no money...just fill out the reservation coupon and mail it today!

New 100 MHz 5-digit frequency counter, p. 48



New Heathkit low-cost 10 MHz triggered sweep scope, p.47



New Heathkit 25" color TV with detent UHF/VHF power tuning, and new remote controller, p. 2

Index

	Pages
AMATEUR RADIO: novice, CW & SSB gear, accessories	56-63
AUTOMOTIVE: cab-to-camper intercom, battery charger, timing light, tune-up meter, ignition analyzer, tachometer	66-68
2-way radio, siren	55
CITIZENS BAND: mobile & fixed base transceivers	55
EDUCATIONAL: Heathkit Jr. Electronic Workshop Series, basic electricity, radio & transistor kits, "how-to" courses	74
HOME APPLIANCES: garage door openers, intercoms & home protection systems	69 & 70
electronic oven & waste compactor	73
MARINE: foghorn-hailer, fuel-vapor detector, radiotelephone, power inverter, digital & flasher-type depth sounders, fish spotters	37-39
MUSIC: electronic organs & accessories, guitar amps, distortion booster, metronome ..	32 & 33
PHONOGRAPHS: portable stereo	31
PHOTOGRAPHY: color computer, timer	55
RADIOS, GENERAL: AM & AM/FM table models ..	71
Portables	34
RADIOS, SPECIAL: stationary & portable shortwave, police & aircraft receivers, accessories	35 & 36
R/C MODELING: "Slotless" Raceway, R/C car, 3 & 5 channel systems, servos, tach, servo simulator	75-77
SCIENTIFIC INSTRUMENTS: spectroscopy systems, chart recorder, counter, function generator	64 & 65
SERVICE EQUIPMENT: multimeters, counters, scopes, generators, power supplies, testers, etc.	43-54
STEREO/HI-FIDELITY: receivers, amps, speakers, turntables, compacts, cassette & cartridge decks, 4-channel decoder, cabinets ...	12-30
TOOLS: soldering irons, hand tools	68
TELEVISION: solid-state & tube-type color, portables, cabinets, antennas, cables, rotors	2-10

HEATHKIT

Schlumberger

HEATH COMPANY
BENTON HARBOR,
MICHIGAN 49022

ADDRESS CORRECTION REQUESTED

RECEIVING DUPLICATE COPIES
OR INCORRECT ADDRESS?

If you receive extra copies of this catalog, please send us the address labels from any undesired copies and we will delete these from our mailing lists. Also, if your address is incorrect, send us the address label along with your correct name and address (including ZIP code) and we will make the necessary changes.

All prices quoted are Mail Order, Net F.O.B. Benton Harbor, Michigan and apply to United States and Possessions only. Prices and Special Offers herein effective Jan. 5, 1972. All prices and specifications subject to change without notice. Printed in U.S.A.

BULK RATE
U.S. POSTAGE
PAID
Heath Company