

# HEATHKIT®

SUMMER CATALOG

1969

Factory Mail Order Prices

Valid Until Aug. 15

ATTENTION TIME PAYMENT  
CUSTOMERS ONLY

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14 New Kits In This Issue . . .  
new creative fun at greater savings . . .  
for your summer vacation enjoyment;  
for Dad and Grad gifts

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rotating shafts—  
ideal for R/C  
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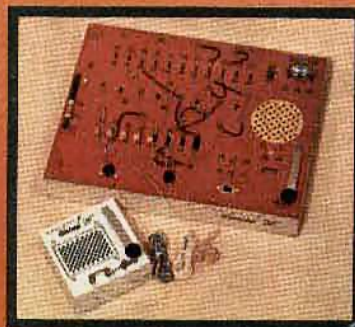
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HEATH COMPANY

a Schlumberger subsidiary

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Catalog Supplement 800/93

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# NEW! Heathkit® "681" Color TV



GR-681  
**\$499<sup>95</sup>**  
 \$50 dn., \$30 mo.

## The New GR-681 With Built-In Automatic Fine Tuning Plus Power Channel Selection . . . The World's Most Advanced Color TV!

- Built-in Automatic Fine Tuning for perfect pictures on all VHF/UHF channels • Built-in Power Tuning • Built-in remote control • Top quality American brand 295 sq. inch viewing area picture tube with anti-glare safety glass • Automatic degaussing • Exclusive built-in self-servicing aids • 3-stage video IF strip reduces interference, improves reception • New improved receive blanking circuit • Exclusive Heath Magna-Shield improves color purity • Gated Automatic Gain Control for steady, jitter-free pictures • Automatic Color Control circuit reduces color fading • Two Hi-Fi sound outputs—listen thru the built-in 6" x 9" speaker or connect to your hi-fi system • Bridge-type low voltage power supply • All critical circuits factory assembled and aligned • Two VHF antenna inputs • Circuit breaker protection • 2-year picture tube warranty, 90 days on all other parts • Easy to build

The Most Advanced Color TV On The Market. A strong claim, but the new "681" can meet it and we invite a critical comparison with every other color TV available—there isn't one around that has all of these features.

**Built-In Automatic Fine Tuning (AFT)** . . . solid-state circuitry and an integrated circuit combine to eliminate touchy fine tuning forever. The AFT circuit always tunes in the best color picture exactly, automatically, on all 83 channels. And, the AFT module is completely factory assembled and aligned . . . just wire it in.

**Built-In Remote Control** . . . the compact, lightweight cable-type remote control allows you to turn the "681" on & off and change VHF channels from the comfort of your chair. Or add the optional GRA-681-6 Wireless Remote Control described below.

**Bridge-Type Low Voltage Power Supply** . . . for superior regulation and better all-around performance. High & Low AC taps are provided for areas where the house power is higher or lower than 120 volts, which causes shrinking or enlarging of the picture on other sets. Just connect to the proper tap and the "681" will give you perfect picture size.

**Power Tuning** . . . just push the button on the front panel and the VHF channel selector rotates until you reach the station you want.

**Automatic Degaussing Circuit** . . . demagnetizes & "cleans" the picture everytime you turn the set on from a cold start; eliminates manual degaussing when you move the set too.

**Dynamic Pincushioning Correction Circuit** . . . keeps all four edges straight for a full, distortionless picture.

**2-Speed, Transistor UHF Tuner** . . . for fast selection of all UHF channels or fine tuning of individual stations.

**Two VHF Antenna Inputs** . . . 300 ohm balanced & 75 ohm coaxial inputs.

**Exclusive Heathkit Features That Can't Be Bought On Any Set, At Any Price** . . . like the self-servicing aids that allow you to perform the periodic convergence and color purity adjustments that all color TV sets require. And the tilt-out dynamic convergence secondary adjustment control panel that lets you adjust the convergence, when you decide it's needed. These self-servicing aids can save you up to \$200 in service calls over the life of your set and you'll always get perfect pictures. The exclusive Heath Magna-Shield surrounds the picture tube & protects it from stray magnetic fields that ruin color purity.

**Choice Of Installation** . . . mount your new "681" in a wall, your own custom cabinet or one of the beautiful Heath factory assembled cabinets shown on next page. And the universal main control panel can be mounted at the top, bottom or right side of the chassis for even greater custom mounting versatility.

**Easy To Build** . . . all critical circuits (AFT, VHF & UHF tuners, 3-stage IF strip and high voltage power supply) are factory pre-assembled & pre-aligned. The famous Heathkit manual guides you the rest of the way with simple, clear instructions and giant foldout pictorials.

Put the best of color TV in your home this year with the new top-of-the-line "681."

**Kit GR-681**, all parts including chassis, tubes, mask, UHF & VHF tuners, AFT, cable-type remote control and 6" x 9" speaker, 135 lbs., (REA or motor frt.) . . . \$50 dn., as low as \$30 mo. . . . \$499.95

**GR-681 SPECIFICATIONS**—Picture size: Rectangular viewing area approx. 295 sq. inches (23" diagonally, 20" horizontal, 16" vertical). Tube size: 25" overall diagonal measurement. Deflection: 90°. Focus: Electrostatic. Convergence: Magnetic. 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; 3 K. Frequency response; ±1 dB, 50-15,000 Hz. Harmonic distortion; less than 1%. Output voltage; 2 v. Audio output: Output impedance, 8 ohms. Output power, 2 watts. Frequency response, ±2 dB, 50-10,000 Hz. Harmonic distortion, less than 3%. **Automatic fine tuning:** VHF channels 2-13; UHF channels 14-83. **Power tuning:** Automatically selects any VHF channel and one preselected UHF channel. **Remote control:** Cable-type; controls on/off function and changes VHF channels. **Low voltage power supply:** Bridge-type; includes High & Low AC line taps. **Power requirements:** 110-130 V., 60 Hz AC, 330 watts.

### Cabinets For The GR-681

Early American Cabinet . . . . . \$99.95  
 Contemporary Walnut Cabinet . . . . . \$62.95  
 Mediterranean Oak Cabinet . . . . . \$119.50



Now . . . Control Your Heathkit



# Heathkit "295" Color TV

**These Handsome Factory-Assembled Cabinets Fit Either "681" or "295" Color TV's**



**Mediterranean Oak Cabinet... \$119.50**  
Factory assembled of selected furniture hardwoods, finished in luxurious oak; styled in newest Mediterranean motif. Stately bronze trim handle. Overall dimensions 45½" W x 20"D x 31" H. Assembled GRA-295-4, 85 lbs... Express or motor freight, no money dn., \$11 mo. \$119.50



**Deluxe Early American TV Cabinet... \$99.95**  
Made of a special combination of veneers and solids... all beautifully finished in popular Salem-Maple. GR-295 speaker and convergence panel mount behind grille cloth on right side. Measures 19¼" D x 31" H x 36" W. Assembled GRA-295-3, 67 lbs... Express or motor freight, no money dn., \$10 mo. \$99.95



**Contemporary Styled Walnut Cabinet \$62.95**  
Factory assembled of fine veneers and solids with oil-rubbed walnut finish. GR-295 speaker and convergence panel mount behind tilt-out grille cloth on right side. Measures a slim 19" D x 31" H x 34½" W. Assembled GRA-295-1, 56 lbs... Express or motor freight, no money dn., \$7 mo... \$62.95



GR-295  
**\$449<sup>95</sup>**  
\$45 dn., \$27 mo.

**You're Ready For This Year's Colorful TV Viewing With The Heathkit "295" . . .  
Now With 2-Year Picture Tube Warranty & Optional Wireless Remote Control**

- Top quality American brand color tube with 295 sq. inch viewing area, and anti-glare safety glass
- New improved phosphors for brighter, livelier colors • 27 tube, 10 diode, 1 transistor circuit • 24,000 volt regulated picture power • Automatic degaussing & mobile degaussing coil • Exclusive built-in servicing aids • Dynamic pincushioning correction circuit eliminates picture edge distortion • Extra B+ boost for improved picture definition • 3-stage video IF strip reduces interference, improves reception • Exclusive Heath "Magna-Shield" improves color purity • Gated Automatic Gain control (AGC) for steady, jitter-free pictures at all times • Automatic Color Control circuit reduces color fading • Deluxe VHF turret tuner with "memory" "fine tuning and gold/niborium contacts • 2-speed transistor UHF tuner for both fast station selection and fine tuning individual channels • Two hi-fi sound outputs . . . a cathode follower for playing thru your hi-fi system and an 8 ohm output for connection to special contained-field 6" x 9" speaker • All critical circuits prebuilt & aligned • Two VHF antenna inputs . . . 300 ohm or 75 ohm • Circuit breaker protection • Optional wireless remote control can be added at any time • 2-year warranty on picture tube, 90 days on all other parts • Tubes alone list over \$277

**Exclusive Features That Can't Be Brought In Ready-Made Sets At Any Price.** Like built-in servicing aids, so you can perform the periodic convergence and color purity adjustments that are required on all color TV sets . . . *without* calling in a TV serviceman

. . . *without* any technical skills or knowledge. Just flip a switch on the built-in dot generator and a pattern appears on the screen. Simple step-by-step instructions and detailed color photos in the manual show you exactly what to look for, what to do and how to do it. Results? Beautifully clean and sharp color pictures day in and day out. And up to \$26 savings in service calls throughout the life of your set. Exclusive Heath Magna-Shield. This unique metal shield surrounds the entire picture tube to protect against stray magnetic fields and improve color purity. In addition, Automatic Degaussing "cleans" the picture everytime you turn the set on from a cold start. Also permits you to move the set about freely from room to room. The one-piece swing-out chassis speeds kit assembly, installation, and service. Convergence Control Board . . . for fast, easy dynamic convergence secondary adjustment anytime you decide they are needed. Mounts behind special "tilt-out" speaker grille section for easy access . . . no awkward reaching around the back of the set, or mirrors to set up.

**Universal Main Control Panel.** Can be mounted at the bottom, top or right side of picture tube for more flexible in-wall installation.

**Easy To Build!** No special skills or knowledge needed. All critical circuits (VHF and UHF tuners, 3-stage IF assembly and high voltage power supply) are pre-built, aligned and tested at the factory. The assembly manual guides you the rest of the way with simple, non-technical instructions and giant pictorials. You can't miss.

**Kit GR-295,** all parts including chassis, tubes, mask, UHF & VHF tuners, and special extended-range 6" x 9" speaker 131 lbs. (REA or motor frt.), \$45 dn., as low as \$27 mo. . . . . **\$449.95**

**GR-295 SPECIFICATIONS**—Picture size: Rectangular viewing area approx. 295 sq. inches (23" diagonally, 20" horizontal, 16" vertical). Tube Size: 25" overall diagonal measurement. 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 14-82. Sound cathode follower: Output impedance: 3 K.. frequency response: ±1 dB, 50-15,000 Hz. Harmonic distortion, less than 1%. Output voltage: 2 v. Audio output: Output impedance, 8 ohms. Output power, 2 watts. Frequency response, ±2 dB, 50-10,000 Hz. Harmonic distortion, less than 3%. Power requirements: 110-130 v., 60 Hertz AC, 330 watts. Wall mounting: 20" D x 21" H x 26" W inside. Control panel assembly 6½" W x 7¼" H x 7" D.

## Color TV The Easy, Electronic Way

**With This New Wireless Remote Control**

Now you can add the comfort and convenience of full remote control to any rectangular tube Heathkit color TV, with these easy-to-build, easy-to-use remote control kits. All solid-state circuitry gives you armchair control of on-off, volume, color, tint and VHF channel selection. Available for models GR-681, GR-581, GR-481, GR-295, GR-227, GR-180 and GR-25 Heathkit color TV's . . . and best of all, they start at only \$59.95. See page 8 for all the details.





# Heathkit®

## "581"

### Color TV

### With AFT

Kit GR-581

**\$419<sup>95</sup>**

\$42 dn., as  
low as \$25 mo.



**The New "581" . . . Built-In Automatic Fine Tuning . . .**  
**227 Sq. In. Tube . . . Exclusive Heath Self-Servicing**  
**Features . . . Optional Wireless Remote Control**

• Built-in Automatic Fine Tuning for sharp, life-like color pictures on all UHF/VHF channels • Top quality American brand 227 sq. in. viewing area picture tube with anti-glare safety glass • Built-in automatic degaussing circuit and mobile degaussing coil • Exclusive Heath built-in self-servicing aids • 3-stage video IF strip improves reception and reduces interference • New improved blanking circuit eliminates retrace lines • Exclusive Heath Magna-Shield improves color purity • Gated Automatic Gain Control for steady, jitter free pictures • Automatic Color Control circuit reduces color fading • New improved low voltage power supply with high and low AC line taps • Dynamic top and bottom pincushioning circuit for straight picture edges • Deluxe VHF turret tuner with gold/niborium contacts • 2-speed transistor UHF tuner • Two hi-fi sound outputs—listen through the built-in 4x6" speaker or connect to your hi-fi system • 300 ohm and 75 ohm VHF antenna inputs • Circuit breaker protection • Add the new wireless remote control at any time • All critical circuits prebuilt and prealigned • Choice of installation • 2-year warranty on picture tube, 90 days on all other parts

Add the Extra Excitement and Enjoyment Of Color To Your TV Viewing . . . with the new Heathkit GR-581. The big 227 square inch picture tube delivers the brightest, sharpest color picture in the industry and the built-in AFT means a perfect picture on every channel, every time. Compare the important features of the new "581" against every other color set made . . . there isn't another available that combines such an advanced design with this low price.

**Factory Assembled And Aligned Automatic Fine Tuning**, using state-of-the-art integrated circuitry, delivers perfect color pictures on all 82 VHF/UHF channels. Critical fine tuning is gone forever . . . the AFT module does it all—instantly, automatically, exactly.

**Improved Bridge-Type Low Voltage Power Supply** gives better performance due to superior regulation. For areas of the country where the line voltage is above or below the nominal 120 VAC, high and low AC line taps are provided to be sure that the transmitted picture fits the screen.

**Built-In Automatic Degaussing Circuit** . . . eliminates having to degauss the picture tube every time the set is moved. Whenever the new "581" is turned on from a cold start, the automatic degaussing circuit demagnetizes and "cleans" the picture. And a mobile degaussing coil is also included for initial set-up.

**Exclusive Heath Magna-Shield**. This unique shield surrounds the entire picture tube and keeps out stray magnetic fields that can ruin the purity of the color picture.

**Two VHF Antenna Inputs** . . . allow you to use either 300 ohm twin-lead or 75 ohm coaxial cable to feed the antenna signal to the "581."

**Two Hi-Fi Sound Outputs**. Listen to your "581" through the built-in 4x6" speaker, or use the cathode-follower output to play the sound through your hi-fi set, and enjoy hi-fi sound. Provision is also included for adding an optional 6x9" speaker on the left side of the face mask.

**Add Optional Wireless Remote Control Anytime** . . . another Heath exclusive. Heathkit color TV's are the only sets on the market at any price that allow you to add the pleasure and convenience of full wireless remote control at any time in the future. Just buy the GRA-227-6 Wireless Remote Control kit (see p. 8) and follow the simple instructions . . . and then enjoy complete control of channel selection, on/off-volume, color and tint of your "581" from anywhere in the room, without moving from your chair.

**Exclusive Heathkit Self-Servicing Features**. Like all Heathkit Color TV's, the new GR-581 includes a built-in dot generator and full color photos in the manual so you can perform the simple purity and convergence adjustments required of all color sets at any time you feel they are necessary. Combined with the fully detailed and comprehensive trouble-shooting charts in the manual, these features allow you to eliminate costly TV service calls for minor adjustments and repairs, and enjoy sharp, colorful pictures always.

**Choice of Installation**. Only Heathkit Color TV offers you a three-way choice of installation. Buy only the chassis, tubes and face mask and install the "581" in a wall . . . it makes a neat, professional looking addition to any living room, den or family recreation center. Have a favorite old black and white cabinet? The manual includes detailed drawings with all required dimensions for converting it to house your new "581". Or choose either the factory assembled and finished Mediterranean Oak or Contemporary cabinet, or the new cart and cabinet combination.

**Easy Assembly**. Thousands of people have already experienced the unique satisfaction and thrill of assembling their own color TV, and you can too. All critical circuits—AFT module, VHF and UHF tuners, 3-stage IF assembly and high voltage power supply—come factory assembled and aligned. You build the rest, simply and easily, following the clear, easy-to-understand step-by-step instructions and giant fold-out pictorials. The vertical swing out chassis means fast, easy servicing, and the dynamic convergence control board can be placed so you can "touch-up" the picture anytime. Add the enjoyment and pleasure of color TV to your home now . . . with the new Heathkit GR-581.

Kit GR-581, all parts including chassis, tubes, mask, UHF & VHF tuners, and special limited-field 4 x 6" speaker, 114 lbs., (REA or motor frt.). . . \$42 dn., as low as \$25 mo. . . . . **\$419.95**

**GR-581 SPECIFICATIONS**—Picture size: 227 sq. inches approx. (22" rectangular picture tube). Deflection: Magnetic, 90°. Focus: Electrostatic. Convergence: Magnetic & Dynamic. Antenna input impedance: 300 ohm balanced or 75 ohm unbalanced. Tuning range: VHF channels 2 thru 13 and UHF channels 14 thru 83. Automatic fine tuning: On all VHF/UHF channels. 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 bandpass: 3.58 MHz. Sound cathode follower: Output impedance, 3000 ohm; frequency response, ±1 dB, 50-15,000 Hz; harmonic distortion, less than 1%; output voltage, 2 volts. Audio output: Output impedance, 8 ohm; output power, 2 watts; frequency response, ±3 dB, 50-10,000 Hz; harmonic distortion, less than 3%. Power requirements: 110-130 VAC, 60 Hz, 330 watts.



# Heathkit® "227" Color TV Now Costs Less ... Only \$379.95

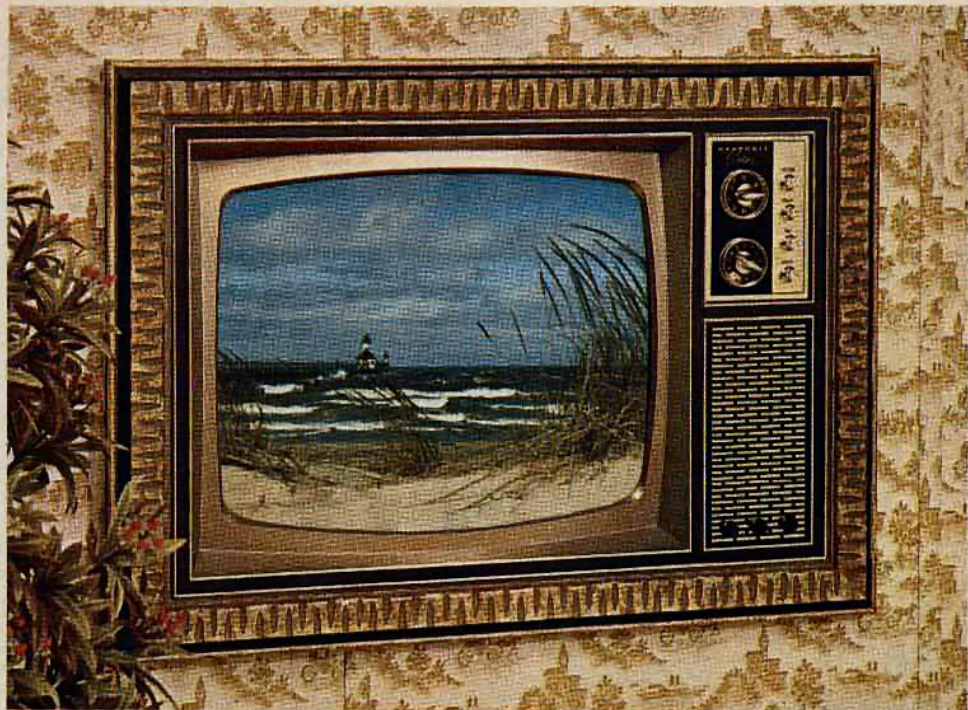
Now There Are 3 Beautiful  
Factory Assembled Cabinets  
For Your "581" Or "227"



Table Model TV Cabinet & Cart  
Buy Both & Save \$6.95

Here's an attractive way to house your new "581" or "227". Use the handsome walnut-grain satin finish wood cabinet by itself... rubber feet protect your table... measures only 18 $\frac{1}{8}$ " D x 29 $\frac{1}{8}$ " W x 20 $\frac{1}{2}$ " H. Or order the walnut-trimmed roll-around cart and enjoy portable convenience too.

GRA-227-3, stain-resistant cabinet, 45 lbs., no money dn., \$5 mo.	\$36.95
GRA-227-4, roll-around cart, 18 lbs.	\$19.95
GRS-227-5, cart & cabinet combo, 63 lbs., no money dn., \$5 mo. (save \$6.95)	\$49.95



Now Enjoy Your Favorite Programs, Exciting Sports Events, The Drama Of  
The Moon Landing... All In Bright, Vibrant Color... On The "227"

- Top quality American brand rectangular color tube with 227 sq. inch viewing area, and anti-glare safety glass
- New improved phosphors for brilliant, livelier colors
- 27 tube, 15 diode, 2 transistor circuit
- 24,000 v. regulated picture power
- Automatic degaussing & mobile degaussing coil
- Exclusive built-in servicing aids
- New improved low voltage power supply with more B+ for best operation
- Dynamic top and bottom pin-cushioning correction circuit eliminates picture distortion
- 3-stage video IF strip reduces interference, improves reception
- Exclusive Heath "Magna-Shield" improves color purity
- Gated Automatic Gain Control (AGC) for steady, jitter-free pictures at all times
- Automatic Color Control circuit reduces color fading
- Deluxe VHF turret tuner with "memory" fine tuning and gold/niborium contacts
- 2-speed transistor UHF tuner
- Two hi-fi sound outputs
- Special limited-field 4" x 6" 8 ohm speaker
- All critical circuits prebuilt & aligned
- 300 ohm or 75 ohm VHF antenna inputs
- Circuit breaker protection
- New wireless remote control can be added to set at any time
- 2-year warranty on picture tube, 90 days on all other parts

**Advanced Features Insure Peak Performance.** An improved low voltage supply provides more B+ for better operation. Automatic degaussing "cleans" and demagnetizes the set each time it's turned on from a cold start. Coupled with the exclusive Heath Magna-Shield, this means your picture tube is always free from stray magnetic fields, your color always pure and bright. Gated AGC and an automatic color control circuit combine to reduce color fade, and insure steady, jitter-free pictures always. There's a 2-speed transistorized UHF tuner for either fast station selection or individual channel fine tuning. The deluxe VHF turret tuner has "memory" fine tuning that eliminates readjustment each time you return to a channel. Two VHF antenna inputs... 300 ohm balanced or 75 ohm coax. Two hi-fi sound outputs... a cathode-follower for play through your hi-fi system, or listen through the built-in 4x6" speaker included. There's also provision for mounting an optional 6x9" speaker to the left of the face mask.

**Easy Assembly.** All critical circuits—VHF & UHF tuners, 3-stage IF assembly and high voltage power supply—are prebuilt, aligned and tested at the factory. And the vertical swing-out chassis makes for fast, easy servicing and installation. The dynamic convergence control board can be placed so that it is easily accessible anytime you wish to "touch-up" the picture.

**Color Adds A New Dimension To TV Viewing.** See your favorite programs, fabulous TV spectacles, action-filled sports events... all in lively, realistic color... on the Heathkit "227".

**Famous Heathkit Exclusives.** Like the famous Heathkit "681", "295" and "180" color TV's, the Heathkit "227" features a built-in dot generator plus full color photos and simple instructions so you can set-up, converge and maintain the best color pictures at all times. Add to this the detailed trouble-shooting charts in the manual, and you put an end to costly TV service calls for periodic picture convergence and minor repairs. Add Remote Control Anytime. The GR-227, like all Heathkit Color TV's is designed so you can add wireless remote control to it at any time, even after you have been using it. Just order the Remote Control kit, build it and wire it in... that's all there is to it. Another Heathkit exclusive.

**Choice Of Installation...** put your "227" in a wall, or a favorite old B&W cabinet. Or add either Heath assembled and finished Contemporary or Mediterranean oak. And the new Cart and Cabinet combo not only looks sharp, but gives your new "227" convenient mobility around the house too.

**Kit GR-227, all parts including chassis, tubes, mask, UHF & VHF tuners, and 4" x 6" speaker, 114 lbs. \$38 dn., as low as \$23 mo. ... \$379.95**

**GR-227 SPECIFICATIONS**—Picture size: Approx. 227 sq. in. rectangular. Deflection: Magnetic 90°. Focus: Electrostatic. Convergence: Magnetic & dynamic. Antenna input impedance: 300 ohm balanced, 75 ohm unbalanced VHF. Picture IF carrier frequency: 45.75 meg Hz. Sound IF carrier frequency: 41.25 meg Hz. Color subcarrier frequency: 42.17 meg Hz. Video IF bandpass frequency: 3.58 meg Hz. Sound IF frequency: 4.5 meg Hz. Tuning range: VHF channels—2-13 & UHF—14-83. Tube & diode complement: 27 tubes, 15 diodes, 2 transistors. Sound cathode follower: Output impedance 3k ohms, frequency response  $\pm 1$  dB, 50-15,000 Hz. Harmonic distortion less than 1%. Output voltage 2V. Audio output: Output impedance—8 ohms; output power—2 watts; frequency response— $\pm 2$  dB, 50-10,000 Hz; harmonic distortion—less than 3%. Power requirements: 110-130 V., 60 Hz AC 330 watts. Wall mounting (Mask): 17-9/16" H x 26-7/16" W. Chassis room: 19 1/2" H x 28" W x 19" D. (This is with 1/4" clearance on sides and the top.)



Exciting Mediterranean Oak

Beautiful Mediterranean motif factory assembled and finished in luxurious oak. 40" W x 19 $\frac{1}{2}$ " D x 29" H. Assembled GRA-227-2, 70 lbs., no money dn., \$10 mo. ... \$99.95



Contemporary Walnut Cabinet

Factory assembled of fine furniture grade hardwoods and finished in rich walnut. Measures 31 $\frac{1}{2}$ " W x 29 $\frac{1}{2}$ " H x 19 $\frac{1}{2}$ " D. Assembled GRA-227-1, 54 lbs., no money dn., \$6 mo. ... \$59.95





# Heathkit® "481" Color TV With AFT

GR-481

**\$359<sup>95</sup>**

\$36 dn., \$22 mo.



## The New "481" With Built-In Automatic Fine Tuning . . . 180 Sq. In. Tube . . . Exclusive Heath Self-Service Features . . . Optional Wireless Remote Control

• Built-in Automatic Fine Tuning on all VHF/UHF channels for perfect color tuning • Famous American name brand picture tube with 180 square inches of viewing area • 3-stage video IF strip improves reception and reduces interference • Automatic degaussing • Improved retrace blanking circuit • Exclusive Heath Magna-Shield reduces interfering magnetic fields, improves color purity • Gated Automatic Gain Control for steady, jitter-free pictures • Automatic Color Control Circuit for brighter, livelier colors without fading • Exclusive Heath built-in self servicing aids • Two hi-fi sound outputs—listen through the built-in 4x6" limited field speaker or connect to your hi-fi set through the cathode follower output • Deluxe VHF turret tuner with gold/niborium contacts • Improved bridge-type low voltage power supply with high and low AC line taps • Two VHF antenna inputs • All critical circuits pre-built and factory aligned for easier assembly • Optional wireless remote control can be added to "481" at any time • Choice of installation • Easy to build • 2-year warranty on picture tube, 90 days on all other parts

The new Heathkit GR-481 has all the performance and features of "big" sets, and at a much lower price. Compare these advanced performance features against any other 180 sq. in. set on the market . . . we think you'll find that the new "481" comes out a value winner in all respects.

**Automatic Fine Tuning.** The new Heathkit "481" uses an all solid-state AFT circuit with a space-age Integrated Circuit to deliver perfectly tuned, beautiful color pictures on all 82 VHF/UHF channels. Touchy fine tuning for each change in channel is gone forever . . . the factory assembled and tested AFT module does it all, quickly, easily and accurately. And the AFT can be disabled should you want to manually fine-tune a station.

**180 Square Inches Of The Brightest, Most Realistic Color You'll Ever See** . . . thanks to Heath's established engineering excellence in color TV circuitry. The exclusive Heath Magna-Shield surrounds the entire picture tube to keep out stray magnetic fields that disrupt the color purity of your picture, and an Automatic Color Control Circuit plus 24,000 volts of regulated picture power keep the color bright and clear without annoying fading. A factory assembled and adjusted 3-stage IF strip delivers sharp, interference-free pictures from distances that will amaze you and new rare earth phosphors and smaller dot size on the screen itself combine to give the brightest color picture in the industry, even under high ambient light conditions.

**Exclusive Heath Self-Servicing Features** . . . that can't be bought on any other set at any price. Like all Heathkit color TV's, the new "481" features a built-in dot generator and easily accessible convergence control panel to aid you in doing your own purity and convergence adjustments. The main chassis swings out on hinges for easy service too. Combined with the full color pictures and very comprehensive trouble-shooting charts in the manual, these Heath self-servicing features can save you up to \$200 over the life of your set, by letting you do the periodic adjustments that are required of all color sets.

**Optional Wireless Remote Control** . . . another Heath exclusive. All Heathkit color TV's are designed so that you can add the optional wireless remote

control at any time after you build the set, and enjoy full control of your "481" from anywhere in the room. The wireless remote is easy to build and easy to install, using simple, plain language instructions and giant fold-out pictorials similar to the ones you'll use to assemble your new "481." For a complete description of the unique Heath remote control, see page 8.

**Extra Convenience Features** . . . like the two hi-fi sound outputs. Listen through the special built-in limited-field 4x6" speaker or for fidelity very much like a good hi-fi set, use the cathode follower output and play the "481" sound through your hi-fi or stereo. There are also two VHF antenna inputs . . . a 300 ohm balanced input for antennas using twin lead and a 75 ohm coaxial input for use with shielded coaxial cable. The "481" also comes with a 2-speed transistorized UHF tuner that allows either fast station selection or fine tuning of individual stations. And the new bridge-type power supply has both high and low AC line taps for areas where the house voltage is above or below the nominal 120 VAC. This feature insures that the transmitted picture fits the screen . . . just connect to the proper tap during assembly.

**Choice of Installation.** Only Heathkit Color TV offers all these possibilities . . . buy only the chassis, tubes and face mask and mount your new "481" in a wall or your own custom cabinet . . . custom mounting dimensions are given in the manual. Or choose any of the factory assembled and finished Heath cabinets . . . oil-rubbed Contemporary Walnut . . . Early American with its popular Salem-Maple finish . . . or add portable convenience to your "481" with the TV cabinet and roll-around cart.

**Easy To Build** . . . no special skills or knowledge is required. The famous Heathkit manual, with its clear, plain English instructions, giant fold-out pictorials and large detail drawings leads you a step at a time through the complete assembly and adjustment. To make assembly even easier, all critical circuits (VHF and UHF tuners, AFT module, 3-stage IF assembly and high voltage power supply) are pre-built, aligned and tested at the factory. Start enjoying the finest 180 square inches of color TV you'll ever see . . . order your "481" now.

**Kit GR-481**, all parts including chassis, tubes, mask, UHF & VHF tuners, and special limited-field 4"x6" speaker, 102 lbs. (REA or motor frt.) . . . \$36 dn., as low as \$22 mo. . . . **\$359.95**

**GR-481 SPECIFICATIONS**—Picture size: 180 sq. in. approx. (19" rectangular tube). Deflection: Magnetic, 90°. Focus: Electrostatic. Convergence: Magnetic & Dynamic. Antenna input impedance: 300 ohm balanced or 75 ohm unbalanced. Tuning range: VHF channels 2 thru 13; UHF channels 13 thru 83. Automatic fine tuning: On all VHF-UHF channels. Picture IF carrier: 45.75 MHz. Sound IF carrier: 41.25 MHz. Color subcarrier: 42.17 MHz. Sound IF frequency: 4.5 MHz. Video IF bandpass: 3.58 MHz. Sound cathode follower: Output impedance, 3000 ohm; frequency response, ±1 dB, 50-15,000 Hz; harmonic distortion, less than 1%; output voltage, 2 volts. Audio output: Output impedance, 8 ohm; output power, 2 watts; frequency response, ±3 dB, 50-10,000 Hz; harmonic distortion, less than 3%. Power requirements: 110-130 VAC, 60 Hz, 330 watts.



# Deluxe Heathkit® "180" Color TV...With The Performance Features You've Read About... Now Only \$329.95

Choose Any Of These Three  
Factory-Assembled Cabinets  
For Your New "481" or  
"180" . . .



Table Model TV Cabinet & Cart  
Buy Together & Save \$4.95!

Handsome walnut-grained vinyl-clad wood cabinet . . . measures only 18 3/4" H x 27 1/2" W x 19 1/2" D with rubber feet.  
GRA-180-3, cabinet only, 36 lbs., no money dn., \$5 mo. . . . \$24.95  
Roll around cart has walnut-finished woods with "pale brass" accents.  
GRA-180-4, cart only, 22 lbs. . . . \$19.95  
GRS-180-5, cart & cabinet combo, 58 lbs., no money dn., \$5 mo. . . . \$39.95



Contemporary Walnut Cabinet

Has a beautiful oil-rubbed walnut finish. Measures a compact 18 3/4" D x 28 3/4" W x 29" H. Assembled GRA-180-1, 41 lbs., (REA or motor freight) no money dn., \$5 mo. . . . \$49.95



Deluxe Early American Cabinet

Factory assembled with a special combination of veneers and solids, finished in popular Salem-Maple. GR-180 speaker mounts on right side of 1-piece face mask. Measures 18 3/4" D x 28 3/4" W x 31 3/4" H.  
Assembled GRA-180-2, 48 lbs., (REA or motor freight) no money dn., \$8 mo. . . . \$75.00



## The Heathkit GR-180 . . . Your Best Buy In A Color TV . . . Built-In Self-Servicing . . . Optional Wireless Remote Control

- Top quality American brand 180 sq. inch rectangular color tube with anti-glare safety glass • Rare earth phosphors plus smaller dot size for brighter, livelier color and better picture definition • 27 tube, 15 diode, 2 transistor circuit • 24,000 volt regulated picture power • Automatic degaussing • Exclusive Heath Magna-Shield covers entire tube to assure color purity at all times • Built-in servicing facilities to adjust and maintain set at peak performance • Automatic color control circuit to reduce color fading • Gated automatic gain control (AGC) for steady, flutter-free pictures • Extra B+ boost for improved picture definition • 2-speed transistor UHF tuner • Deluxe VHF turret tuner with "memory" fine tuning and gold/niborium contacts • 3-stage IF strip reduces interference, improves reception • Hi-fi sound output • Circuit breaker protection • Vertical swing-out chassis for easier servicing & installation in Heath cabinets • All critical circuits pre-wired and tested • New wireless remote control can be added to the "180" at any time—a Heathkit exclusive • 2-year warranty on picture tube, 90 days on all other parts • Tubes alone list over \$245

The Heathkit "180" represents the maximum value per dollar ever offered in a deluxe color TV. It features the same high performance features as the Heathkit GR-295 (page 3) except for the 180 square inch rectangular picture tube . . . same exclusive Heathkit self-servicing features for purity and convergence adjustments so you can maintain a perfect color picture at all times . . . same type Magna-Shield that surrounds the picture tube to keep out stray magnetic fields and improve color purity . . . same automatic degaussing everytime you turn your "180" on from a cold start . . . same factory assembled and tested VHF & UHF tuners, 3-stage IF assembly and high voltage power supply for even easier kit building . . . same vertical swing-out chassis for easy servicing and adjustment. Plus the unique Heathkit design that lets you add the new wireless remote control at any time after you've built the "180". And you can install your new "180" any of three ways . . . in a wall, a favorite old TV cabinet, or in any of the smartly styled Heath factory assembled cabinets. The "180" also has two VHF antenna inputs—300 ohm balanced or 75 ohm coax . . . two hi-fi sound outputs too—listen through the built-in special contained-field 4x6" speaker, or connect to your hi-fi system with the built-in cathode follower output.

Your best buy in a color TV is the Heathkit GR-180 . . . order yours now.

### Read What The Experts Say About Heathkit Color TV:

**HUBERT LUCKETT, EXECUTIVE EDITOR, POPULAR SCIENCE MAGAZINE:** "For those who tremble at the thought of tackling something so fantastically complicated, let me encourage you with borrowed quote: 'The only thing you have to fear fear itself.'"

"The second most impressive thing about the kit is the instruction manual (the most impressive thing is the viewing quality of the color picture). If you can read and understand ordinary English, the manual is like having a master teacher at your elbow pointing out every step." "—the circuitry, features and performance match or exceed those of sets selling at twice the price. Some of the features, such as the built-in servicing aids, can't be bought in ready-made sets any price."

**AUDIO MAGAZINE:** ". . . sets similar in appearance seem to run around \$700 without the built-in service feature like the dot generator. Add to this the saving in service costs which the average set would require, since the builder would undoubtedly service his own set throughout its life, and the Heathkit GR-295 is a real bargain." "Besides that, it is capable of a great picture."

**Kit GR-180,** all parts including chassis, tubes, mask, UHF & VHF tuners, and special limited-field 4" x 6" speaker, 102 lbs., (REA or motor frt.) . . . \$33 dn., \$28 mo. . . . \$329.95

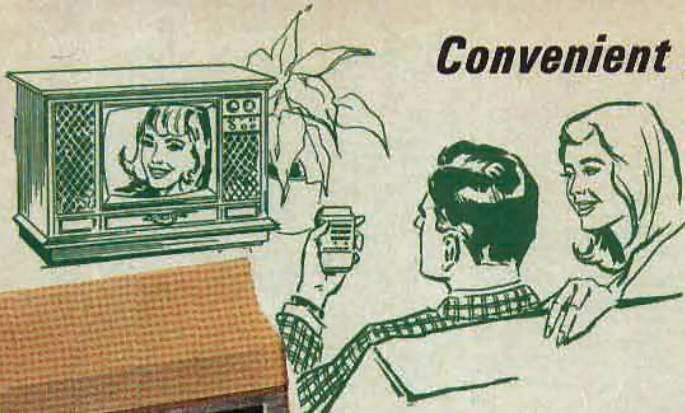
**GR-180 SPECIFICATIONS—Picture size:** Rectangular viewing area approx. 180 sq. inches (18" diagonally, 16" horizontally, 12" vertically). **Tube Size:** 19" overall diagonal measurement. **Deflection:** Magnetic 90°. **Focus:** Electrostatic. **Convergence:** Magnetic and Dynamic. **Antenna Input Impedance:** 300 ohm balanced, 75 ohm unbalanced VHF. **Picture IF carrier frequency:** 45.75 Meg. Hz. **Sound IF carrier frequency:** 41.25 Meg. Hz. **Color subcarrier frequency:** 42.17 Meg. Hz. **Video IF bandpass frequency:** 3.58 Meg. Hz. **Sound IF frequency:** 4.5 Meg. Hz. **Tuning range:** VHF channels 2-13 & UHF channels 14-83. **Tube & Diode Complement:** 27 tubes—15 diodes, 2 transistors. **Sound cathode follower:** Output impedance 3K ohm, frequency response ±1 db, 50-15,000 Hz. **Harmonic distortion** less than 1%, output voltage 2V. **Audio output:** Output impedance—8 ohm; Output power—2 watts; Frequency response—±2 db, 50-10,000 Hz. **Harmonic distortion—**less than 3%. **Power requirements:** 110-130 V., 60 Hz AC, 330 watts. **Wall mounting (mask):** 15-9/16" H x 24-3/16" W. **Chassis room:** 17 1/2" H x 26" W x 18" D. 1/4" clearance.

Pay Your Heath Account In 30 Days — No Carrying Charges



# Wireless Remote Control For Your Heathkit® Color TV

## Convenient Push-Button Control Of All These Functions . . .



- Turns The Set On And Off
- Adjusts Volume Level • Changes VHF Channels
- Increases And Decreases Color • Adjusts Tint

### Works With Heathkit Color TV Models GR-681, GR-581, GR-481, GR-25, GR-295, GR-227, and GR-180

The Heathkit Color TV Remote Control is designed to enable you to adjust your Heathkit Color TV to your liking . . . turn it on and off, adjust the volume, decrease or increase the color, adjust the tint, even change VHF channels . . . all without having to move from the comfort of your chair to do it . . . just push a button on the compact, hand-held transmitter, and ultrasonic sound does the rest, conveniently, effortlessly. The Remote Control is available for all rectangular tube Heathkit sets . . . GR-681, GR-581, GR-481, GR-25, GR-295, GR-227 and GR-180. (Not for use with GR-53 or GR-53A sets.)

Exclusive Heathkit Design permits you to install the remote control kit on any of the above models at any time . . . whether you just bought one or have been enjoying it for years. The manual gives complete, well illustrated instructions . . . just like the ones you used to put your Heathkit Color TV together.

The Remote Transmitter goes together quickly on one small circuit board. The different functions are obtained by pushing one of the rocker-type switches on the transmitter, which sends an interference-free ultrasonic signal to the receiver. Power is supplied by a readily available 9 volt transistor radio-type battery.

The Remote Receiver builds easily on one large, open circuit board. An integrated circuit takes the place of 26 different components to speed assembly. A meter is built into the receiver to facilitate final adjustment and eliminate any need for instruments or special skills. The receiver and the motors mount on the chassis of the set and are connected by a plug-in wiring harness.

Order your Heathkit Color TV Wireless Remote Control, and start enjoying maximum convenience.

- Kit **GRA-681-6**, 9 lbs., for use with Heathkit model GR-681 color TV., no money dn., \$6 mo. . . . . **\$59.95**
- Kit **GRA-295-6**, 9 lbs., for use with Heathkit models GR-295 and GR-25 color TV's., no money dn., \$6 mo. . . . . **\$69.95**
- Kit **GRA-227-6**, 9 lbs., for use with Heathkit models GR-581, GR-481, GR-227 and GR-180 color TV's., no money dn., \$6 mo. . . . . **\$69.95**

**SPECIFICATIONS**—Switch functions: On-Off Volume, VHF Channel Selector, Color Up—Color Down, Tint Green, Tint Red. Channel frequencies: On-Off Volume—40 kHz. VHF Channel Selector—38 kHz. Color Down—44 kHz. Color Up—42 kHz. Tint Red—36 kHz. Tint Green—34 kHz. Power requirements: Transmitter: 100 milliwatts @ 9 volts, supplied by a N.E.D.A. type #1604 battery. Receiver: 1.5 watts (idling) @ 120 VAC. Color: Beige (transmitter case). Meter: Receiver adjustment. Transmitter dimensions: 4 1/4" x 3 1/4" x 1 1/8". Weight: Transmitter: 8 oz. Total shipping wt.: 9 lbs.

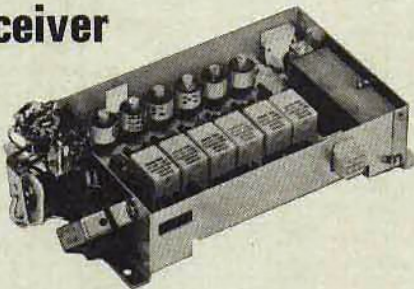
### Handheld Remote Transmitter

The Remote Transmitter is basically a Hartley oscillator circuit housed in a compact beige plastic case and powered by a 9 v. battery. The control frequencies are selected by pushing on one of the rocker type switches, which puts a capacitance in parallel with a coil. This frequency drives a capacity-type transducer, which sends the signal to the Remote Receiver.



### Remote Receiver

The Remote Receiver installs inside the TV set cabinet. The receiver microphone senses the signal and couples it to the integrated circuit where it is amplified and shaped. The output pulses go to the proper relay and activate it; the relays in turn control motor functions for channel, color, tint, etc.



### VHF Tuner, Color and Tint Motors



The Tuner motor mounts on the rear of the VHF tuner assembly (except for GR-681 models, where it is already installed) and rotates the VHF turret. The Color and Tint motors mount on their respective controls and rotate to adjust the Color and Tint either up or down.

### Heathkit® Cable-Type Color TV Remote Control

Now change VHF channels and turn your Heathkit color TV on and off from the comfort of your armchair with this new remote control kit. Features a handsome brown molded high impact plastic case with a patterned stainless steel sheath for added strength and beauty. The heavy-duty switch contacts are silver-plated to assure long life and trouble-free service. Its slim, compact size and feather weight fit comfortably in your hand for easy pushbutton operation. Use with Heathkit GR-581, GR-481, GR-25, GR-295, GR-180 and GR-227 color TV's. Includes flat 18' 3-wire cable. Build in an hour . . . just connect wire to remote control, and install motor to back of VHF tuner.

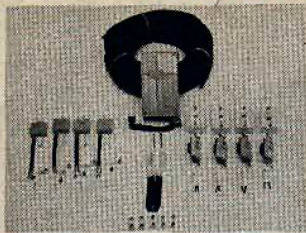
Kit **GRA-27**, 4 lbs. . . . . **\$18.95**



Enjoy Your Kits Now — Pay Later — With A Heath Account



# New Heathkit® TV Antennas And Accessories



## New! Heathkit 4-Way Coaxial TV & FM Distribution Kit

- Delivers an amplified, undistorted TV & FM signal to four rooms at once
- Features famous Jerrold components custom-designed for Heath
- Includes high quality coaxial cable—a necessity for excellent color TV reception

The new Heathkit Distribution System gives you B & W and color TV or stereo FM anywhere in the house. The distribution amplifier takes a single coaxial input from any all-channel antenna, amplifies all signals and feeds four outlets. Kit includes 200 ft. of coax cable, four matching transformers/frequency splitters, outlets, connectors and crimping tool.

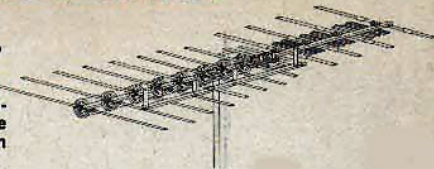
GD-248, 14 lbs., no money dn., \$11 mo. . . . . \$109.95

## New Heath 3-Way Coaxial Antenna For Deep Fringe Color Reception

- 33 Elements for peak performance
- Flat response across the entire TV/FM band
- Extra high gain
- Superior efficiency

Exceptional UHF/VHF/FM reception up to 150 miles, with this new Jerrold-designed log-periodic antenna. Color distortion and signal fading are virtually eliminated due to its very flat response. Has high gain, making it ideal for outlying areas. High directivity makes it perfect for stereo FM also. Comes complete with a low loss 300 to 75 ohm transformer at the antenna and a matching transformer/frequency splitter. Heavy duty square boom construction for years of service. For top performance, 75 ohm coaxial cable is a must.

GD-128, 15 lbs., (119¾"), (less mast and coaxial cable), no money dn., \$5 mo. . . (REA or Mtr. Frt. only) . . . . . \$34.95



## New VHF/FM Coaxial Antenna

This 17 element antenna is ideal for use in areas that suffer from distortion and poor color due to low signal levels and phase shifting. Receives up to 150 miles away under normal conditions. Made especially for Heath by the Jerrold Company, it features very high gain, pinpoint directivity, very flat response, precise impedance match and rugged construction. 75 ohm coax cable recommended.

GD-158, 14 lbs. (120" L.) (less mast & coaxial cable), no money dn., \$5 mo. . . (REA or Mtr. Frt. only) . . . . . \$24.95

## New Suburban-Fringe Area Antenna

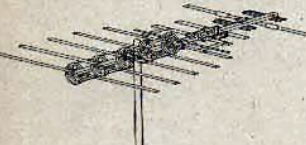
Receives UHF, VHF & FM signals up to 60 miles away, thanks to its 17 elements. The high directivity eliminates reception-destroying reflected signals. Unusually flat response across the entire TV-FM band for sharp color fidelity and excellent stereo FM. Rugged construction & corrosion resistant finish. 75 ohm coax cable recommended.

GD-138, 10 lbs. (110¼" L.), no money dn., \$5 mo. (REA or Mtr. Frt. only) . . . . . \$24.95

## New VHF/FM Suburban-Fringe Antenna

Uncompromising VHF and FM reception up to 60 miles away thanks to its superb design. Features 10 elements for very high gain, sharp directivity, flat response and a precise impedance match to achieve the very best performance from your set, whether B&W or color. Snap-into-place elements make easy assembly and sturdy, long-lasting construction. Coax cable recommended.

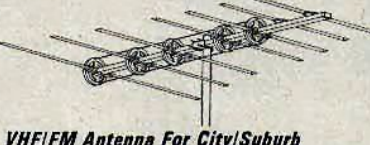
GD-168, 9 lbs. (99½" L.) (less mast & coaxial cable), (REA or Mtr. Frt. only) . . . . . \$19.95



## All-Channel Metro-Suburban Antenna

Fourteen elements give the high directivity required to eliminate reflected signals and the flat response necessary for sparkling color fidelity on all 82 channels plus FM. Square boom construction & weatherproof finish. Coax cable recommended.

GD-148, 7 lbs. (66½" L.) (less mast and coaxial cable), (REA or Mtr. Frt. only) . . . . . \$19.95



## VHF/FM Antenna For City/Suburb

An inexpensive and effective way to improve your VHF and FM reception. Under normal conditions the 7 element GD-178 will function admirably up to 60 miles from the signal source, and its highly directional qualities and very flat response guarantee better color fidelity & elimination of distortion. Coax cable gives the best installation & reception.

GD-178, 6 lbs. (55¼" L.) (less mast and coaxial cable), (REA or Mtr. Frt. only) . . . . . \$14.95



## Periodic-Type UHF Antenna

A high gain, broadband periodic type UHF antenna especially designed for Heath by Jerrold for outstanding deep fringe color reception of channels 14 through 83. May be easily combined with any existing VHF antenna. Coax cable recommended for installation.

GD-188, 4 lbs. (less mast and coaxial cable) . . . . . \$9.95



## High Quality UHF At A Very Low Cost

A high quality 300-ohm UHF antenna at an economy price. Receives all UHF channels (14-83) with high gain and excellent front-to-back ratio for rejection of unwanted signals. Reflector constructed of heavy galvanized steel mesh screen for years of dependable, trouble-free life.

GD-233, 6 lbs., less mast (REA or Mtr. Frt. only) . . . . . \$5.14



## Cornell-Dubilier AR-33 Pushbutton Antenna Rotator

The solid-state control can be operated either by dial or set-and-forget pushbuttons at a touch of a switch. Locate any of five pre-selected TV or FM stations quickly with pushbutton operation. ±1° accuracy and heavy duty rotor design. Complete instructions included. (5 wire power cable not supplied.)

GD-258, 16 lbs., no money dn., \$5 mo. . . . . \$49.95

## High Quality Alliance Tenna-Rotor



Rotates 360° in either direction and is instantly reversible, thanks to magnetic braking action. Sealed against moisture and lubricated for life. Uses standard 115 V 60 Hz house current. (5 wire power cable not supplied.)

GD-214, 11 lbs., no money dn., \$5 mo. . . . . \$23.45

## Reception-Proven Coaxial Cable For Color TV

Coax cable is a necessity for really superb, distortion-free color TV, and it can be run through pipes, near electrical lines, etc., without causing color-killing distortion. Will last ten to fifteen years under the most adverse conditions too.

GD-228, 50' coax w/connectors installed, 3 lbs. . . . . \$7.95  
GD-238, 75' coax w/connectors installed, 4 lbs. . . . . \$9.95  
GD-328, 100' coax w/connectors installed, 5 lbs. . . . . \$11.95

## 75-300 Ohm Matching Transformer/Frequency Splitter

Matches one all-channel 75-ohm coaxial downlead to 300 ohm VHF and UHF inputs on TV set. Provides excellent isolation between outputs and has low loss. Comes with extra coax connector, cable clamp, mounting hardware and instructions for mounting in rear of set.

GD-298, 1 lb. . . . . \$3.95

## Strong, Safe Antenna Roof Mount Kit



The perfect solution to the problem of where to put your new TV antenna. Mount it quickly and easily on your roof with this complete kit. Includes all necessary hardware: two 5' masts, mast base, 50 foot of 300 ohm transmission line, 50 foot of strong guy wire and all necessary standoffs, screw eyes and wire clamps.

GD-218, 9 lbs. (REA or Mtr. Frt. only) . . . . . \$6.95

## 75 Ohm Mixer-Splitter To Operate Two Sets

Operates two sets from one coax downlead, or combines two 75 ohm antennas into one lead. Provides 12 dB isolation and has low loss. Complete instructions and hardware included for indoor surface mounting.

GD-318, 1 lb. . . . . \$7.95

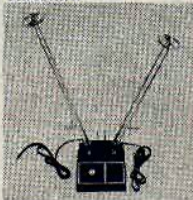
## Chimney Mount Your Antenna Efficiently With This Complete Kit



Nothing extra to buy—you get everything you need to do a first rate job of chimney mounting your new antenna. Kit includes two 5' masts, "Z" chimney mount, 50 foot of 300 ohm transmission line, five 3½" and two clip-type standoffs, two 10 foot steel straps and complete instructions.

GD-208, 10 lbs. (REA or Mtr. Frt. only) . . . . . \$6.95

## Premium 82-Channel Jerrold-Designed Antenna



A nationwide favorite because of its quality design, outstanding performance and low price. Ideal where an outdoor antenna would be difficult or impossible to install. And the 12 position selector switch provides optimum tuning on all channels. Twin folded dipoles provide real station-pulling power and are tarnish resistant.

GD-198, 3 lbs. . . . . \$9.95

## All-Channel Coupler With FM Tap

Coupling network for taking an FM signal off a coax line ahead of distribution system or TV set connection. 2.25 dB insertion loss and 12 dB isolation. Includes hardware and instructions.

GD-308, 1 lb. . . . . \$10.95



# NEWS AND VIEWS OF HEATHKIT®

**SPECIAL SUMMER SALE PRICES ON THESE KITS . . . BUY BEFORE AUGUST AND SAVE**

**AD-17 "Component Compact",** p. 28 . . . 30-watt stereo amplifier . . . BSR changer . . . handsome walnut cabinet . . . was \$109.95 . . . summer sale priced at only \$99.95 . . . save \$10 until August.

**TA-38 Solid-State 120-Watt Bass Amplifier,** p. 12 . . . was \$225.00 . . . now save \$25.05 at the special summer sale price of only \$199.95.

**TA-17 Solid-State 120-Watt Combo Amplifier,** p. 13 . . . the price will go back to \$175.00 in August, but you can save \$25.05 by buying now at the summer sale price of only \$149.95.

**TA-17-1 Matching 2-Way Speaker System,** p. 13 . . . two special 12" woofers with a horn driver. Summer sale priced at only \$99.95 . . . a saving of \$20.05.

**TA-16 60-Watt Guitar Amplifier,** p. 13 . . . buy now at the special summer sale price of only \$99.95 and save \$20.00.

**AA-13 16-Watt Mono Amplifier . . .** was \$29.95 . . . Last Call at only \$24.95 . . . save \$5.00!

## ATTENTION SB-300 Owners:

Improved audio quality when receiving in the AM mode can be obtained by placing a 470 k ohm, 1/2 watt resistor in parallel with diode CR3, located near V7 on the IF circuit board. Refer to the x-ray view of the IF board to locate the correct foil pattern and solder the resistor in place on the foil side of the circuit board.

## ATTENTION SB-100 Owners:

Improved ALC action when using the SB-100 with the SB-200 Linear Amplifier can be obtained by making the following change: Remove the center conductor of the violet coaxial cable from lug 5 of terminal strip BN and reconnect it to lug 4 of the same terminal strip.

## ATTENTION IM-25 Owners:

If you assembled your IM-25 from a manual dated 4-12-68 or earlier, there is a modification kit available free of charge to improve the transient protection for transistor Q7 when the instrument is in the DC mode of operation. Complete instructions and all necessary parts will be provided on request; just write to our Customer Relations Department mentioning the IM-25 modification.

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## ATTENTION GR-104A Owners:

If you purchased your GR-104A after March 1, 1969, there is a design change in your picture tube that has not yet been incorporated in your manual. When installing the 2nd anode lead, it will now connect to either the top or the side of these new picture tubes. If you need further assistance, please write our Technical Correspondence Department.

## Heath Company Plant Tours

Vacationing in Michigan? Stop by for a conducted tour of our plant. Daily tours at 10 am and 2 pm only, Monday through Friday until Oct. 1. Sales room open 8:30 to 5 Monday-Friday, Sat. 9-3 pm. Service department open 8-4 pm Monday through Friday. All times are Eastern Standard Time. The Heath plant is located on Hilltop Road at the south edge of St. Joseph, just 3.6 mi. north of exit 23 of I-94 from Chicago or 2 mi. from exit 27 if you are coming from Detroit on I-94.

## Some People Just Can't Wait To Get To Their Heathkit Electronic Center



When the urge strikes to build a Heathkit, some people just don't want to wait . . . as in the case of the driver of this car who visited the new Redwood City Store late one night last month. Even though he did inaugurate a drive-in service policy especially for his shopping convenience, he had to go away disappointed . . . there wasn't anyone there to wait on him.

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## PRESIDENT'S LETTER

Dear Friends:

Another of your many friends at Heath is Gene Fiebich, our Vice President of Engineering. For 20 years he has been responsible for the technical design and buildability of our kits. Perhaps some of you may recall the TS-3 TV Electronic Sweep Generator which was the first of Gene's products. In addition to his engineering function, Gene was instrumental in setting up Heath's first quality control and technical correspondents groups.

When Gene started, our engineering department was not large—in fact, he was one of three engineers. Now he directs the largest kit engineering group in the world, with its own RF measurements site, components testing lab, measurements standards lab, and computer-aided design facilities. Yet Gene is still perfectly at home at a lab bench, and still personally builds nearly every Heath product before it is introduced . . . but he stopped counting some time ago when the number passed two hundred kits.

Many "firsts" are credited to Gene and his engineers and they added to the list with this summer catalog in which there are more new products announced than in any previous issue.

He is devoted to the guiding principles established by Howard Anthony, the founder of Heath . . . state of the art design, the most product for the money, and making a complex subject simple. Gene's viewpoint puts you first in all matters. I'm sure you wouldn't have it any other way.

Sincerely,  
D. W. NURSE  
President

## Heathkit Electronic Centers (Sales & Service)

Anaheim, Calif. 92805 330 E. Ball Road Phone: 714-776-9420	Rockville, Md. 20852 (Washington D.C. area) 5542 Nicholson Lane Phone: 301-942-4506
Los Angeles, Calif. 90007 2309 S. Flower Street Phone: 213-749-0261	Detroit, Michigan 48219 18645 West 8 Mile Rd. Phone: 313-535-6480
Redwood City, Calif. 94063 (San Francisco area) 2001 Middlefield Rd. Phone: 415-365-8155	New York, N. Y. 10036 35 W. 45th St. Phone: 212-765-4590
La Mesa, Calif. 92041 (San Diego Area) 6363 Center Drive Phone: 714-461-0110	Cleveland, Ohio 44129 5444 Pearl Road Phone: 216-886-2590
Danver, Colorado 80212 5940 W. 38th Ave. Phone: 303-422-3408	Philadelphia, Pa. 19149 5318 Roosevelt Blvd. Phone: 215-288-0180
Chicago, Illinois 60645 3482-66 W. Devon Ave. Phone: 312-883-3920	Seattle, Wash. 98121 2221 Third Ave. Phone: 206-682-2172
Wellesley, Mass. 02181 (Boston area) 165 Worcester Street Phone: 617-237-1510	Milwaukee, Wis. 53216 5215 W. Fond du Lac Phone: 414-873-8250
Affton, Missouri 63123 (St. Louis area) 9296 Gravois Ave. Phone: 314-683-5102 (opening early Summer '69)	Heathkit Electronic Center Prices Slightly Higher.

## Authorized Service Centers (Service & Parts)

United Sound & Television Co. (three locations) 5063 Venice Blvd. Los Angeles, California Phone: 213-933-8141	Southern Authorized Factory Service 62 N.W. 27th Avenue Miami, Florida Phone: 305-642-2822
2010 W. Lincoln Ave. Anaheim, California Phone: 714-535-2151	Heathkit Service Center 248-A Broadway East Paterson, New Jersey Phone: 201-791-6835
2218 E. Colorado Ave. Pasadena, California Phone: 213-793-8141	



# Put The Sound Of Music In Your Home With These Heathkit®/Thomas Organs

**This Forty-Lesson Self-Teacher  
Thomas Record Course Is Free  
When You Buy Either Organ**



Sells For \$19.95, a fifty dollar value, and now it's yours FREE when you buy either TO-67 or GD-325D organs. Provides firm basis of musical knowledge. Includes four 33 1/3 RPM 12" records, comprehensive music book with many song favorites, gold-embossed white leatherette album. GDA-232-2, recorded lessons, 5 lbs., available separately. . . . \$19.95

## The Heathkit/Thomas Solid-State Theatre Organ

- All genuine Thomas factory-fabricated components • 19 organ voices . . .
- 15 keyboard, 4 pedal • Exclusive Thomas instant-play Color-Glo • 200 watts peak power produced by two separate transistor amplifiers • "Stereo" sound
- Two separate speaker systems . . . 2-speed Leslie, plus main system with two 12" speakers • Two 44-note keyboards • 28 notes of electronic chimes
- 13-note bass pedals • Selective repeat percussion • Selective attack percussion • Manual balance control • Keyboard and pedal sustain • Timbre mellow • 3 tremulant tabs . . . vibrato, tremolo & slow • Pedal percussion and volume • Expression pedal • Stereo headset outlet • Reverb • Walnut finish hardwood cabinet and bench

19 True Organ Voices . . . With Hundreds Of Voice Combinations Possible!  
15 keyboard voices, 4 pedal voices . . . all at the flip of a tab. For solo work . . . diapason 16', bass clarinet 16', trumpet 16', English horn 8', oboe 8', violin 8' and tibia 16', 8', 5 1/2' and 4'. For accompaniment . . . diapason 8', saxophone 8', French horn 8', oboe horn 8' and cello 8'. And now, four pedal voices . . . diapason 16', major flute 8', bass clarinet 8', and string bass 8'. And you'll soon learn voice combinations to produce the sounds for the Spanish guitar, zither, bagpipes, calliope, banjo, etc. Plus other variations for every musical mood . . . show tunes, classical, religious, even rock & roll.

Kit TO-67, organ & matching bench, 265 lbs. . .  
(Express or motor frt.), \$200 dn., as low as \$29 mo. . . . \$1095.00  
TOA-67-3, (7", 33 1/3 rpm demonstration record) . . . ppd. 50c

## Add The Full Orchestra Sound of Band Box Percussion

Automatically adds Bass Drums, two different Bongos, Castanets, Brush and Crash Cymbals, Blocks, Claves, Snare Drum and Drum Roll . . . ten different percussion instruments to the music you play. One or all may be pre-selected to sound as you play the lower manual, pedals or both. Adjustable volume control. Assembles easily in just 4 to 6 hours.



Kit TOA-67-1, 9 lbs., no money dn., \$15 mo. . . . \$155.00

Attention Heathkit/Thomas Organ Owners! The Thomas Band Box may be added to all previous and present Heathkit/Thomas organ kits. Special drawer and slides are required for support (except with new TO-67). Assembly manual covers installation into all model GD-232, GD-325 and GD-983 organs.  
TOA-67-2, 4 lbs. . . Band Box drawer and slides, no money down, \$5 mo. . . \$35.00

## America's Lowest Cost All-Transistor Organ . . . Heathkit®/Thomas "Artiste" With Color-Glo And Scandia Finish

- Exclusive Thomas Color-Glo to start you playing instantly • All genuine Thomas factory-fabricated components • 10 true organ voices • Variable repeat percussion . . . produces banjo, mandolin, balalaika effects • 13-note heel and toe bass pedals range C<sub>1</sub> through C<sub>2</sub> • 2 overhanging 37-note keyboards, range C<sub>2</sub> through C<sub>5</sub> each
- 75 watt peak music power amplifier • 12" speaker • Vibrato • Manual balance control • Transistorized plug-in tone generators, the heart of the organ, warranted for 5 years • Fully transistorized for better tone, longer life, trouble-free operation
- Beautiful oiled-walnut finish cabinet and bench

Compare The Features, Compare The Price. Features like two keyboards with 74 notes; 10 organ voices . . . trombone, reed, flute, oboe, cornet, violin, saxophone, horn, viola and diapason . . . all at the touch of a tab; variable repeat percussion for additional voice effects; 13-note bass pedals; instant-play Color-Glo; 12" speaker; variable vibrato; and cool all-transistor circuitry. It's all there at one low price including the bench . . . no extras to buy as with other organ kits.

The GD-325D makes a handsome piece of furniture you'll be proud to have in your home. Cabinet and bench have beautiful Scandia oiled-walnut finish.

Kit GD-325D, organ and matching bench, 172 lbs. . .  
\$44 dn., as low as \$26 mo. (REA or motor freight only) . . . \$439.95  
Export model available for 115-230 v. AC, 50-60 Hz; write for prices.  
GDA-325-1, (7", 33 1/3 rpm demonstration record) . . . ppd. 50c

### Add The Full Orchestra Sound Of Percussion With The Band Box Kit

Kit TOA-67-1, 9 lbs., no money dn., \$15 mo. . . . \$155.00  
Kit TOA-67-2, 4 lbs. . . Band Box drawer and slides . . . \$35.00

### Add 15 Different Rhythms With The Playmate Kit

Kit TOA-67-5, 6 lbs., no money dn., \$18 mo. . . . \$189.90



TO-67 (Without Band Box or Playmate)  
**\$1095<sup>00</sup>**

**New!  
Playmate Kit  
Creates Rhythms  
For Organ  
And Band Box**



Adds any of these 15 different rhythms to the music you play . . . Waltz, Viennese Waltz, Jazz Waltz, Fox Trot 2/4, Boogie 6/8, Swing, Rock, Watusi, Samba, Beguine, Cha Cha, Rhumba, Tango, Bolero, Bossa Nova. With just a push of a button you apply rhythm to the organ lower manual and foot pedals only, Band Box only . . . or for maximum musical effect to the lower manual, pedals and Band Box together. Also features adjustable Tempo Control, Downbeat Light, Downbeat Accent Button, and Touch Control which silences Band Box when organ's lower manual and foot pedals are not being played. Easy assembly and installation. For that full orchestra sound, add the Playmate to your Heathkit/Thomas organ now. The Band Box must be installed on the organ first.  
Kit TOA-67-5, 6 lbs. . . no money dn., \$18 mo. . . . \$189.90

Attention Heathkit/Thomas Organ Owners. The Playmate rhythm maker may be added to all previous and present Heathkit/Thomas electronic organs which have Band Box installed. No additional accessories are necessary to do this.



GD-325D  
**\$439<sup>95</sup>**

(including bench and FREE 40 lesson Self-Teacher-Record Course)



# Now ... Special Summer Sale Prices On Heathkit® Guitar Equipment



TO-68  
**\$299<sup>00</sup>**  
\$28 mo.



TA-38  
Summer Sale  
Until August  
Only  
**\$199<sup>95</sup>**  
\$19 mo.



The two 12" heavy duty aluminum dome speakers are designed to handle the full bass frequency range at high power levels without over-loading.



Each 12" speaker has a giant 3 pound 6 ounce magnet for greater sound output, for low distortion response and crisp, natural sound.

## Now—Swing With The Sound Of The Sixties With The Vox/Heathkit "Jaguar" Combo Organ

• All solid-state circuit . . . 91 transistors & 14 diodes for cool, instant operation, long trouble-free life • All genuine VOX factory-made parts • Separate bass output gives brilliant "stereo" bass effect • Four octave keyboard with 49 keys, range C<sub>2</sub> to C<sub>6</sub> • Flute, brass, bright and mellow tabs at 16', 8' & 4' pitch to create a variety of musical moods and effects • Vibrato and Bass Chord tabs • Reversible bass keys for full keyboard range or to play independent bass notes • "Walking" bass provides octave lower to C<sub>1</sub> • Special Contour control lets you change tone of any or all voices • Bass volume control • Foot-operated expression pedal • Heavy chrome-plated stand and waterproof carrying case • Build in 35 hours with circuit board construction . . . factory assembled keyboard

Pro Features . . . like a separate bass output or mixed bass and treble for brilliant "stereo" effect when used with two speakers. Reversible bass keys for full 49 key range or separate bass notes. Bass volume control for accent. Contour control for changing tonal quality as you wish. Vibrato tab for warmth. Bass Chord tab for richness. Four Voice tabs . . . Flute for pure, clean sound . . . Bright for brilliant, penetrating clarity . . . Brass for brash, old sound . . . Mellow for soft, melodic sounds. Keyboard range C<sub>2</sub> to C<sub>6</sub> a four octaves. Each note is a mixture of several tones for that unique Vox sound. Solid-state circuitry for cool, solid sound that lasts and lasts.

Building It Is Easy. All parts are genuine VOX factory-fabricated. Most parts mount on circuit boards for fast, easy assembly. Wiring harness makes interconnections simple. You'll finish in about 35 hours . . . and you'll save up to \$226 of the regular price! The Heathkit Vox "Jaguar" combo organ comes with all parts, expression pedal, factory assembled keyboard, assembled organ case with waterproof cover, plus assembled carrying case for the chrome plated stand.

Kit TO-68, organ, 91 lbs., no money dn., \$28 mo. . .  
Was \$349.95 . . . Now Only \$299.00

## Summer Sale On The TA-38 120-Watt Super Power Solid-State Bass Amp. . . Now Only \$199.95 . . . Save \$25.05 Until August

• All solid-state circuitry • 120 watts EIA music power output—240 watts peak power output • Extremely low IM and Harmonic Distortion • Full range Bass and Treble controls • Depth and Presence controls for a wide range of musical effects • Two 12" special design speakers with giant 3 pound 6 ounce magnets • Sealed sound chamber • Circuit-breaker protection • Line Reverse Switch for minimum hum • All front mounted controls and inputs • Handsome, rugged cabinet with built-in handles and ball-bearing casters for easy moving • Handy storage compartment with snap-off cover • 120 or 240 VAC operation • New optional heavy duty vinyl cover for extra protection while moving

Solid-State Sound. The 11 transistor, 11 diode circuit runs cool, and puts out 120 watts EIA music power, 100 watts continuous, 240 watts peak. This one can take everything you can give it. Two special design 12" speakers in a sealed sound chamber pack an incredible 6¾ lbs. of magnet assembly between them . . . and they'll handle every single watt . . . and deliver a sound you couldn't find in another system near this price.

Full Range Control. The extremely wide range of the Volume, Bass, Treble, Depth, & Presence controls can create a wide variety of tonal effects that would be difficult to find on any bass amp at any price. Two front panel inputs accept virtually any instrument that produces bass frequencies.

Kit TA-38, 130 lbs., no money dn., \$19 mo. . . was \$225.00,  
until August only . . . \$199.95  
Model TAA-38, protective vinyl cover, 5 lbs. . . \$11.95

## Choose These Famous Name Accessories For Extra Performance And Value



### New Heathkit "Fuzz" Booster

Add The "Mod" Sound To Your Guitar . . . with the new Heathkit Fuzz Booster. Just plug it in between your guitar & amplifier and you've got that unique sound. Housed in a convenient foot-switch . . . just push the switch to add the fuzz, push again to play it straight. Controls allow variation of tone & degree of fuzz. Runs on 1.5 V AA penlight cell (not supplied.)  
Kit TA-28, 4 lbs. . . \$17.95

### NEW! Atlas Porto-Stand

Solve your mike stand transportation and set-up problems fast . . . with the new Atlas "Baby Boom," the world's first all-in-one mike floor stand, boom, cable hanger and 2 lock-on attachments. . . in its own carrying case. Snaps together in seconds—disassembles in seconds . . . transports completely in the case . . . even has a pocket for the mike.  
GDP-49, 20 lbs., no money dn., \$5 mo. . . \$28.10

### A Shure Model 515SAC Unidirectional

High Z input, wide 80-13,000 Hz response, on-off switch with lock.  
GDP-278, 3 lbs., no money dn., \$5 mo. . . \$24.70

### B Shure Model 585 SAVC Unidirectional Unisphere

Volume control right on body of mike. Built-in wire mesh screen eliminates "pop." High impedance.  
GDP-288, 3 lbs., no money dn., \$5 mo. . . \$43.81

### Heathkit Guitar Headphone Amplifier

Practice Your Guitar Playing In Private . . . only you can hear when you use this handy little unit. Plugs directly into your guitar and runs on one 9 V battery. Two headphone outputs so both you and your teacher can hear your playing. Will operate any headphone to 2 Megohms. Build it in an evening.  
Kit TA-58, 2 lbs. . . \$9.95

### Atlas "Banshee" Speaker-Horn

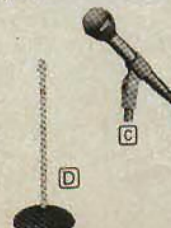
Put your vocals out in front with this high power "Banshee" horn. Handles up to 125 watts of peak power and the 16 ohm impedance matches almost any PA or instrument amp. Tripod extends from 5 to 10 feet and includes an "easy-off" adapter for mounting.  
Model TDP-18, speaker-horn, 22 lbs., no money dn., \$8 mo. . . \$71.15  
Model TDP-28, tripod, 25 lbs., no money dn., \$5 mo. . . \$28.22

### C AKG Model D-707TS Dynamic

50-15,000 Hz ±3½ dB response. On-off switch built into mike connector & 200 ohm to Hi-Z transformer built into phone plug.  
GDP-268, 3 lbs., no money dn., \$5 mo. . . \$49.50

### D Atlas Model MS-10C Floor Stand

2-section chrome tube adjusts from 35" to 63". 10" base. ¾"-27 thread.  
GDP-106, 11 lbs. . . \$6.32

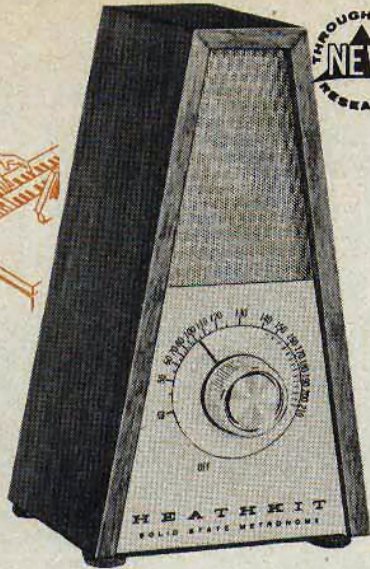


Open A Heath Account — No Money Down, Easy Terms



# Heathkit® Musicians' Accessories

## New Heathkit TD-17 Electronic Metronome . . . Solid-State Construction . . . High Accuracy



THROUGH HEATH RESEARCH  
**NEW**

Kit TD-17  
**\$12<sup>95</sup>**

- Adjustable from 40 to 210 beats per minute • Very accurate • All solid-state construction for long, trouble-free life • Adjustable volume • Battery operated • Handsome cherry finish • Easy circuit board assembly

Now, In Answer To Many Requests, There's A Heathkit Electronic Metronome . . . the new TD-17. We were asked for a metronome that would be inexpensive enough for a student to use, yet accurate enough to please a professional musician. The new Heathkit TD-17 meets these requirements perfectly.

**An Important Tempo-Teaching Aid.** Beginning music students often have difficulty remembering what tempos are signified by such words as "Allegro," "Andante," etc. The use of the new TD-17 will help them by providing an audible, repeatable reference for all tempos, and make practice more enjoyable by giving them a "feel" for the speed of the music they are playing.

**The Ideal Choice For Student Use.** The Heathkit Electronic Metronome is very easy to use . . . just set the tempo you desire on the large, easy-to-read dial and adjust the volume with the handy control on the back panel. For reference purposes, there's a chart on the bottom panel that converts tempos in different time signatures to beats per minute. The TD-17 is adjustable from 40 to 210 beats per minute and because it uses no wind-up spring mechanisms, its accuracy is both excellent and unchanging. Two 9 volt batteries in the all solid-state circuit last 300 hours and make battery changing a rare occurrence.

**Simple, Fast Assembly.** The new TD-17 goes together on one small circuit board. Construction time is about two hours. Finished in handsome cherry, the TD-17 will look right in any music room. Order yours now.

Kit TD-17, 2 lbs. . . . . **\$12.95**

Model GDA-48-1, 1 lb., battery for TD-17 (requires 2) . . . . . **ea. \$1.30**

**TD-17 SPECIFICATIONS**—Range: Continuously variable from 40 to 210 beats per minute; calibrated in 5 beats per minute intervals. **Battery requirements:** 18 volts; two long life 9 volt batteries (NEDA #1602)—(batteries not supplied). **Battery life:** Approximately 300 hours. **Cabinet:** Cherry-finished birch solids and veneers. **Overall Dimensions:** 6 3/4" H x 3 3/4" W x 4" D. **Net weight (less batteries):** 11 oz.

## Super-Power Solid-State 120-Watt Combo Amp. . . . At Special Summer Savings of \$25.05 . . . Now Only \$149.95

- Delivers 120 watts of EIA music power (240 watts peak power) into two TA-17-1 speakers (or other 4 ohm load), 90 watts into one TA-17-1 speaker (or other 8 ohm load) • Will drive any 4 to 16 ohm speaker combination • Cool all-silicon transistor circuitry • Built-in switchable Harmonic Modifier ("fuzz") • Brightness switch for that brassy sound • Separate bass and treble boost • Tremolo variable in rate and depth • Dual spring-type variable reverb • Dual foot-switch for on-off control of tremolo and reverb • Independent 2 input guitar channel • Independent 2 input channel with special tone control for bass guitars, combo organs • Independent 2 input channel with bass & treble tone controls for microphones or phonographs • Special "test-as-you-build" feature to prevent damage to components • "Piggyback" design with carrying handles for stacking and portability • Black vinyl-covered compressed-wood cabinet • Circuit breaker protection • New optional heavy-duty vinyl amplifier cover for protection in transit

More Than Enough Scene-Shaking Sound To Take Out Any Gig, Large Or Small, Indoors Or Out. Delivers a whopping 120 watts through two Heathkit TA-17-1 speaker systems, or 90 watts through one TA-17-1. Runs at maximum power without danger of overload thanks to special volume control circuits in both guitar & bass channels. Versatile too . . . you can play guitar through it, or bass guitar, combo organ, accordion, singer's mike, even a record changer.

Kit TA-17, 44 lbs., amplifier only. . . no money dn., \$14 mo. . . . .

was \$175.00. . . until August only. . . . . **\$149.95**

Model TAA-17, 2 lbs., optional protective cover for TA-17. . . . . **\$9.95**

## Matching 2-Way Speaker Systems . . . Only \$99.95 Until August . . . Save \$20.05

- Two special-design 12" woofers with 27 oz. magnets, fiberglass voice coils • Special horn driver for greater brilliance • 8 ohm system impedance • Black vinyl-covered compressed wood cabinet with metal corners, extruded aluminum front frame, dark blue grille cloth • Carrying handles and casters • Size: 25 7/8" W x 14 1/2" D x 38" H

Kit TA-17-1, one speaker system, 116 lbs., no money dn., \$10 mo. . . . .

was \$120. . . until August only. . . . . **\$99.95**



TA-17  
Summer Sale  
Until August  
Only  
**\$149<sup>95</sup>**  
\$14 mo.

TA-17-1  
Summer Sale  
Until August  
Only  
**\$99<sup>95</sup>**  
\$10 mo.

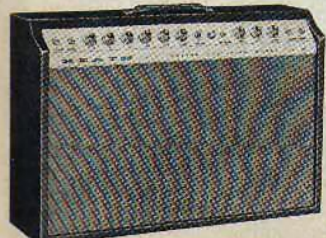


TA-27  
**\$79<sup>95</sup>**  
\$8 mo.

## Single Channel Guitar Amplifier . . . High Performance . . . Low Cost

- 20 watts of EIA power, 40 watts peak • Variable tremolo • Variable reverb with Hammond double spring delay unit • Single channel with two inputs handles lead & solo guitars, singer's microphone • Special design heavy-duty 12" speaker • Two foot switches in heavy die-cast metal housing for hands-free control of tremolo and reverb • Line bypass reversing switch reduces hum • Simple circuit board construction • 11 transistor, 6 diode circuit with "Fail-Safe" complementary transistor output • Heavy-duty transformer operated power supply with circuit breaker protection for 120/240 v. AC 50-60 Hz • Leather-textured black vinyl covered wood cabinet • Extruded aluminum front panel with chrome-plated knobs

Kit TA-27, 40 lbs. . . no money dn., \$8 mo. . . . . **\$79.95**



TA-16  
Summer Sale  
Until August  
Only  
**\$99<sup>95</sup>**  
\$10 mo.

## 60-Watt Dual-Channel Guitar Amplifier . . . Only \$99.95 . . . Save \$20.00

- 25 watts EIA music power, 60 watts peak power—maximum power from Fail-Safe Complementary Transistor Output Circuit • Two channels—one normal for accompaniment, microphone, etc.—the other for special effects, lead and solo guitars, has reverb and tremolo • 2 inputs each channel • Variable Reverb uses Hammond double spring delay unit • Specially designed LDR Tremolo circuit is variable in both speed and depth • Line bypass reversing switch for hum reduction • 2 special design 12" heavy-duty ceramic magnet speakers • Two foot switches in heavy die-cast housing for hands-free control of tremolo and reverb • One simple to build circuit board with 13 transistors and 6 diodes • Heavy-duty power transformer—120 v. or 240 v. AC 50/60 Hz • Leather-textured black vinyl covered cabinet of 3/4" stock . . . measures 28" W x 9" D x 19 3/4" H • Black and white patterned grille cloth • Extruded aluminum front panel with black nomenclature and chrome-plated knobs with black inserts

Kit TA-16, 52 lbs. (REA or Motor Freight), no money dn., \$10 mo. . . . was \$119.95 . . . until August only . . . . . **\$99.95**





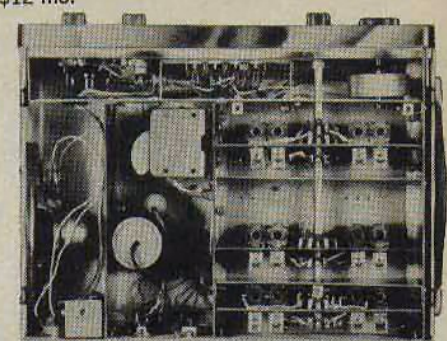
# Heath Marine Accessories . .



MR-18  
\$124<sup>95</sup>

Expected Shipping Date July

no money dn., \$12 mo.



Bottom view of the new MR-18 RDF shows the three vertical bandswitch boards that snap out for easy service. Note the clean but compact layout and solid, rugged construction.

## NEW Heathkit® MR-18 Mariner Solid-State 4-Band Radio Direction Finder Tunes AM, CW, and SSB Stations

- Fast, accurate direction finding • Built-in Sense Circuit eliminates 180 degree ambiguity • Compass-Rose calibrated in 2° increments • Reliable solid-state construction using modern Field Effect Transistors • Low current drain • 4 ceramic filters in IF for sharp selectivity and elimination of IF alignment • Built-in product detector for SSB & CW reception as well as AM detector • Built-in switchable Automatic Noise Limiter • Extended frequency coverage from 180 kHz to 11.5 MHz in four bands • RDF capability to 4 MHz • Collapsible 35" whip antenna for Sensing & shortwave reception • Rechargeable nickel-cadmium battery included • Charges from 120/240 VAC or 13.5 VDC ship's power with built-in charger • Up to 10 hours of continuous duty with a full charge • Portable—includes carrying handle • Snap-on mounting base • Handsome white wrinkle finish with chrome, blue and black trim • Easy to build

An Accurate Solid-State RDF And Extended Coverage Receiver In A Single, Compact Package . . . that's the new Heathkit Mariner. As a basic navigation aid, the MR-18 is of prime importance for vessels underway at night or out of sight of land, and it also functions as a sensitive, selective marine radio receiver. The new Mariner RDF incorporates many advanced design concepts unavailable on any but the most costly units, and no other RDF at any price has all of them. Here are the features that make the new MR-18 a truly exceptional value in marine electronics.

**Fast, Accurate Direction Finding.** Set the 6½" Compass-Rose to your boat's magnetic heading, then turn the low impedance rod antenna to obtain a null indication on the sensitive Tune-Null meter . . . that's all there is to it. A Sensing circuit & sense antenna are also built-in to allow you to determine the location of unknown stations, and eliminate the 180 degree ambiguity common with many RDF's. For accuracy the compass rose is calibrated in 2 degree increments, and the Mariner has RDF capability up to 4 MHz for extra versatility.

**Sensitive Solid-State Receiver.** The new MR-18 covers 180 kHz to 11.5 MHz in four switch-selected bands for reception of medium and high frequency marine channels, standard broadcast, WWV & CHU time standards and much more. The use of modern Field Effect Transistors in the mixer, local oscillator and product detector make the new MR-18 a stable receiver & four state-of-the-art ceramic filters in the IF strip deliver sharp selectivity and eliminate IF alignment forever. The Mariner keeps you prepared for single sideband too . . . there's a built-in product detector for receiving SSB and CW, as well as standard AM. A switchable Automatic Noise Limiter is also included to limit annoying static and ignition noise.

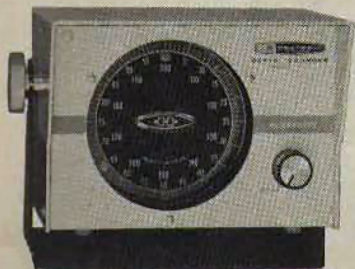
**Built For Rugged Shipboard Duty.** The new Mariner operates from a rechargeable nickel-cadmium battery that's included with the kit and will run up to 10 hours on a full charge. The charging circuit is built-in, and permits charging the MR-18 from either 120 or 240 VAC and 13.5 VDC ship's power. A spring-return dial light switch limits battery drain. Construction is solid, with rigid chassis and side panels, modular snap-out circuit boards and a handy snap-on mounting base to secure the Mariner underway. The 3x5" weather resistant speaker delivers 300 mW of sound so it can be heard anywhere on board, and there's a headphone jack for private listening. The compact size (6½" H x 11¾" W x 8¾" D) makes it easy to stow, and a built-in handle permits easy carrying. Styled in durable white wrinkle finish with marine black, blue and chrome accents.

**Easy To Build.** The Mariner goes together quickly on 5 circuit boards, and a wiring harness speeds construction. Assembly time is about 15-17 hours. Put the most advanced RDF available on your boat now . . . the new Heathkit Mariner.

**Kit MR-18, 12 lbs., no money dn., \$12 mo. . . . . \$124.95**

**MR-18 SPECIFICATIONS—Frequency range:** Longwave band, 180 kHz to 420 kHz. Broadcast band, 540 kHz to 1610 kHz. Marine band, 1.6 MHz to 4.05 MHz. Shortwave band, 3.95 MHz to 11.5 MHz. **Sensitivity (For 6 dB signal plus noise-to-noise ratio):** Longwave band, 70 uV/meter. Broadcast band, 40 uV/meter. Marine band, 20 uV/meter. Shortwave band, 2 uV. **Audio output power:** 300 mW @ 10% maximum distortion. **Speaker:** 3x5" weather resistant. **Direction indicator:** 6½" diameter compass rose calibrated in 2 degree divisions. **Null & tuning indicator:** Sealed meter, 80 uA full scale. **Antennas:** Direction Finder: low impedance, balanced loop; wound on a heavy ferrite bar; free to rotate through 365 degrees. Sense: whip antenna, extendable to 35". **Image rejection:** Longwave band, 60 dB; broadcast band, 50 dB; marine band, 40 dB; shortwave band, 25 dB. **BFO (Beat Frequency Oscillator):** Tuned at 455 kHz. **Diode complement:** (2) 1N191 crystal diode AM detector & crystal diode noise limiter, and (3) silicon diode rectifiers. **Transistor complement:** (1) 2N2715 RF amplifier; (1) 40604 FET mixer; (1) MPF-105 FET oscillator; (4) 2N3694 first IF amp, second IF amp, AGC amp & BFO; (1) 40604 FET product detector; (1) 2N3393 audio preamp; (1) X29A29 audio preamp; (1) 2N2430 audio amp; (1) 2N2431 audio amp; and (1) 2N2715 sense amp. **Power capabilities:** 9.6 volts, 500 milliamperes-hour rechargeable nickel-cadmium battery. Power input socket for 13.5 to 15 VDC charging. Power input socket for 120 or 240 VAC, 50/60 Hz charging. **Battery charge rate:** Battery is always being charged at 20 mA when the built-in trickle charging circuit is connected to an external power source even with the front panel switch OFF. At this charge rate, a full battery charge will be maintained if the Radio Direction Finder is connected to an external power source and is used an average of 10 hours daily at a normal listening level. When the radio direction finder is not connected to an external power source, at full charge battery life is 10 hours at a normal listening level. **Battery drain:** 50 mA @ 50 mW audio output level; 25 mA at no audio output. **Dimensions:** 11¾" W x 6¾" H x 9" D (add ½" to height when the mounting plate is to be included). **Net weight:** 10 lbs.

## Heathkit Solid-State Depth Sounder Tells You How Deep



MI-11A  
\$69<sup>95</sup>  
\$7 mo.



- Readable to 1 foot divisions with 5% accuracy • Reaches down to 200 feet on hard bottoms
- Sensitive all solid-state circuitry for instant operation & reliable performance • Self-contained or boat battery powered for added convenience • Simple, stable circuit board construction

**Avoid The Embarrassment—Danger—Cost of Running Aground . . .** The MI-11A "senses" shoal depths with 5% accuracy on all readings. It probes down to 200' on hard bottoms, 100' on soft muddy bottoms. You can anchor off that favorite beach with confidence . . . cruise rivers and inland waterways with new assurance . . . even spot schools of fish with your Heathkit Depth Sounder. Includes Transducer, less batteries.

**Kit MI-11A, 8 lbs. . . no money down, \$7 mo. . . . . \$69.95**  
**Transducer Transom Mount; Model MIA-11, 2 lbs. . . . . \$8.95**

**MI-11A SPECIFICATIONS—Dial:** 0-200 feet in one foot divisions. **Range:** 0-200 feet on hard bottoms, 0-100 feet on soft bottoms. **Frequency:** 200 kHz. **Sounding rate:** 1440 soundings per minute, or 24 per second. **Accuracy:** Within 5% of actual depth. **Depth indication:** Neon lamp flashing at 0 feet and again at indicated depth. **Transducer:** Barium titanate ceramic element encased in a waterproof housing with solid brass fittings; attached 15 foot length of 2 conductor shielded cable. May be mounted permanently to the hull or temporarily with a transom mount. **Controls:** Combined ON/OFF-Sensitivity. **Power supply:** 13.5 volts from nine self-contained size C flashlight cells, or external 12 volt battery. Flashlight cells are contained in three leakproof plastic housings. **Battery drain:** 100 milliamperes. **Average battery life:** Up to 25 hours intermittent operation. **Dimensions:** 7¼" W x 5¼" H x 7½" D.



# Fair Weather Prices . . . Foul Weather Friends



MD-19  
**\$84<sup>95</sup>** \$9 mo.  
 (less remote)

## NEW . . . Heathkit Solid-State MD-19 . . . Five New Functions For Your Boat . . . As Low As \$84.95

- Five different functions—Foghorn . . . Hailer . . . Boathorn . . . Listener . . . Intercom • All solid-state construction for maximum reliability • Powerful 30 watt amplifier • Individual controls for both rate and duration of Foghorn.
- Separate gain controls for both Listen and Hail functions • Boathorn and Foghorn always at full volume • Weather resistant horn included with kit
- Foghorn automatically returns to listen mode between blasts • Addition of Remote Speaker Accessory gives communication between compartments on boat • Operates on 12 VDC ship's power • Comes with 20 feet of deck speaker cable and versatile gimbal mounting bracket • Handsomely styled in marine blue and white • Easy to assemble

The new Heathkit solid-state MD-19 is the simple, low-cost way to add those extra shipboard conveniences you've been thinking about. Here are all the details on the new MD-19.

**Foghorn . . .** automatically sounds low pitched foghorn blast required for power-driven vessels underway per Inland & International Rules of the Road. Rear panel rate and duration controls permit variation of the blast to suit local custom or personal preference. For maximum safety, the amplifier always delivers the full 30 watts in the foghorn mode to the special weatherproof, universal mounting horn that comes with the kit. **Hailer . . .** gives clear, understandable communication over a considerable distance and a separate front panel gain control lets you adjust volume to suit conditions.

**Boathorn . . .** depress the front panel spring-return switch and the MD-19 produces a typical boathorn blast at full volume.

**Listener . . .** detects and amplifies weak sounds and a separate gain control makes them clearly audible at the bridge. For extra safety, the MD-19 automatically returns to the Listen position regardless of function switch setting.

**Intercom . . .** can be used with up to two MDA-19-1 Remote Speakers . . . lets you communicate with other compartments on the boat.

Handsomely styled in marine blue and white and operates from 12 VDC ship's power; positive or neg. gnd. Fast, easy circuit board-wiring harness construction. Put five new functions on your boat now . . . the Heathkit MD-19 way.

Kit MD-19, 8 lbs., no money dn., \$9 mo. . . . . **\$84.95**  
 Kit MDA-19-1, Remote Speaker, 2 lbs. . . . . **\$9.50**

**MD-19 SPECIFICATIONS—**Output power: 30 watts continuous. Boat horn frequency: Approximately 260 Hz. Foghorn frequency: Approximately 180 Hz. Foghorn rate: Approximately 2 to 90 seconds, variable. Foghorn duration: approximately 2 to 20 seconds, variable. Speaker: 8 ohm weather resistant horn. Microphone: Ceramic with push-to-talk switch. Controls: Call volume; Listen volume; Station select; Function rate and duration. Power requirements: 12 VDC nominal, 5 A maximum. Id. current: 750 mA or less. Dimensions: 4 3/4" H x 9 3/4" W x 7 1/4" D. Color: White wrinkle and dark blue. Net weight (including horn): 9 lbs. 9 oz.



BOATHORN



HAILER



FOGHORN



INTERCOM



LISTENER

### A Heathkit Solid-State Fuel Vapor Detector

Dependable solid-state circuitry gives assurance against explosion from accumulated gasoline fumes. "Fail-Safe"—sounds alarm in case of component failure. Meter reads "Safe-Dangerous-Explosive" and sounds alarm when fumes are present. Runs on 12 VDC. Rustproof marine black & white cabinet measures only 2-1/16" H x 5-11/16" W x 5" D.

Kit MI-25, 3 lbs., no money dn., \$5 mo. . . . . **\$39.95**

### B Heathkit MP-14 Inverter Delivers AC Power Anywhere

Delivers up to 500 watts intermittent, 400 watts continuous & adjustable AC voltage output is regulated at 60 Hz to operate high current, high wattage devices (operates anything in power rating except motor driven devices with high starting currents). Ideal for test & scientific equipment operation at remote locations. 12-14.5 VDC operation.

Kit MP-14, 29 lbs., no money dn., \$10 mo. . . . . **\$99.95**

### C Low Cost Heathkit Marine Power Converter

Converts 6 or 12 VDC to 117 VAC square wave, up to 175 watts continuous. Not recommended for high starting current and/or sine wave applications. Write for bulletin.

Kit MP-10, 8 lbs., no money dn., \$5 mo. . . . . **\$29.95**  
 Assembled MPW-10, 8 lbs., no money dn., \$5 mo. . . . . **\$39.95**

### D Heathkit Marine Radiotelephone Ground System

Poor grounding most often causes inadequate radiophone range. MD-14 provides more than enough. Two 8' tapered copper tubes, bolt thru keel (min. 9' L, max. 5" thick) & 1 thru-hull fitting.

Kit MD-14, 20 lbs. (Mtr. Frt. or Exp. only), no money dn., \$5 mo. . . . . **\$29.95**

### E Heath Recommended University Deck Speaker

Handles up to 25 watts. 8 ohm impedance; 200-13,000 kHz response. Ideal with MWW-14A & MWW-15 Radiophones.

Model MDP-104, 7 lbs., mfr's list \$34.00 . . . . . Net **\$20.29**

To add even more to your boating pleasure this season, check out the new MI-18 Solid-State Tachometer on page 17 and the new GR-88 VHF-FM Monitor Receiver on page 18.

**A MI-25**  
**\$39<sup>95</sup>**  
 \$5 mo.

**B MP-14**  
**\$99<sup>95</sup>**  
 \$10 mo.

**C Kit MP-10**  
**\$29<sup>95</sup>** \$5 mo.  
 Wired MPW-10  
**\$39<sup>95</sup>** \$5 mo.

**D MD-14**  
**\$29<sup>95</sup>**  
 \$5 mo.

**E MDP-104**  
**\$20<sup>29</sup>**

Pay Your Heath Account In 30 Days — No Carrying Charges



# Heath Radiophones

**A** MWW-15  
\$375<sup>00</sup>

as low as \$22 mo.

**B** MWA-15-1  
\$99<sup>00</sup>  
\$10 mo.

**C** MWW-14A  
\$289<sup>95</sup>  
\$27 mo.

## **A** Heath 150-Watt Radiotelephones—Performance Plus

• 150 watt input • Very low current drain for a 150-watt 'phone • 8 crystal-controlled channels • Covers 2-3 & 4-5 MHz marine bands • Tunes AM broadcast • Built-in 15 watt deck hailer • Full provisions for use with MWA-15-1 Remote Unit • High-performance solid state receiver with RF amplifier stage • Ceramic Transmitters® for more selectivity • Built-in heavy duty power supply • FCC type-accepted for commercial (party boat) use & DOT approved • Completely assembled & tested • Owner's manual includes all information for installation & operation

Advanced Features Not Found On Many Other Radiotelephones—Never At Such A Low Cost . . . such as automatic noise limiting, variable squelch control, provisions for remote monitoring, panel meter for receive/transmit signal strength, separate antenna loading for maximum power on each channel, rust-proof exterior hardware, relays sealed against dust and corrosion, fungus-proof spray on components, capability of being installed at any angle, and an honest 80 watts output. And you can install this radiophone yourself! The owner's manual is complete in every respect. All FCC license information, and forms are included. Crystals for 2182 & 2638 kHz are included . . . specify additional channels (2 crystals/channel) . . . see listing below. Just have the final tune-up made by a 1st or 2nd class FCC licensed technician.

Assembled MWW-15, 31 lbs. . . \$38 dn., as low as \$22 mo. . . . \$375.00

Assembled MWW-15R, 41 lbs. 150 watt 'phone plus remote control . . . write for credit details. . . . \$474.00

Assembled MWA-15-1, Radiophone remote control unit, 10 lbs. . . . no money down, \$10 mo. . . . \$99.00

Extra transmit & receive crystals (specify), 1 lb. . . . each \$2.95

**MWW-15 SPECIFICATIONS—RECEIVER:** Frequency range: Marine, 2-5 MHz; Broadcast, 540-1620 kHz. Sensitivity: (providing 10 dB S/N ratio or better) Marine channels, 2 microvolts; Broadcast, 10 microvolts. Audio output: 3 watts to internal speaker/provision for external speaker; 15 watts to PA "deck-call." Transistor complement: (1) 2N1526 R.F. Amplifier; (4) 2N1525 Marine Crystal Oscillator Mixer, 2nd I.F. & 3rd I.F.; (1) T1364 1st I.F.; (3) 2N1274 AGC Amplifier, 1st & 2nd Audio; (2) R265A (2N1039) Audio Output; (4) SP838, (2) Modulator—(2) Power Inverter; (11) Diodes. **TRANSMITTER:** Frequency range: 2-5 MHz marine bands. RF Input: 150 watts. RF Output: 80 watts. Transmitter tube complement: (1) 12BY7 Colpitts Oscillator; (1) 6HF5 Power Amplifier. Power requirements: 12 volts DC. Receiver only, 0.6 amp. Standby, 2.9 amp. Transmit, 20 amps. Dimensions: 6½" H x 11¼" W x 17" D.

## Heath 25 Watt Radiotelephone For Medium Range Craft

• Choose the complete MWW-13AS system for owner installation on outboards • Choose the MWW-13A for installation on any boat with FCC licensed technician checkout • Features 4 crystal-controlled transmit & receive channels • Covers 2-3 MHz marine bands • Exceptionally low current demands • Receives AM standard broadcast • Built-in heavy-duty solid-state power supply • FCC type accepted • Compact, factory assembled & ready to install • Supplied with crystals for 2182 kHz (calling & distress frequency) & 2638 kHz

Assembled MWW-13AS, Complete system for do-it-yourself installation on outboard powered boats only, includes radiophone, antenna & instructions, 22 lbs. . . (Express or Motor Frt.) no money dn., \$18 mo. . . \$189.95

Assembled MWW-13A, Radiophone for technician installation on any boat, 17 lbs. . . no money down, \$16 mo. . . . \$164.95

MDP-93, 13' Fiberglass Antenna, 5 lbs. . . .

(Motor Freight or Express only), no money dn., \$5 mo. . . . \$34.95

MDP-103, Swivel lay-down base mount, 2 lbs. . . . \$9.95

Extra transmit & receive crystals (specify) 1 lb. . . . each \$2.95

**MWW-13A SPECIFICATIONS—Frequency range:** 2-3 MHz Broadcast: 550-1600 kHz. Receiver sensitivity for 10 dB S/N ratio: Marine—3 microvolts—Broadcast—10 microvolts. Audio output: 3 watts to internal speaker. Transistor complement: (1) 2N1526 Mixer; (1) 2N1525 Oscillator; (1) T1364 1st I.F.; (1) 2N1274 1st Audio; (3) 2N1039 Audio Driver & Power Converters; (2) 2N1525 2nd & 3rd I.F.'s; (2) 2N301 Audio Output Modulator; (6) diodes, AVC, overload, Squelch, Noise Limiter & Detector. Transmitter RF input: 25 watts. RF Output: 13 watts. Transmitter tube complement: (1) 6AK6 Oscillator; (2) 6AQ5 amp. Power requirements: 12 V DC; broadcast receiver only, .350 amps.; standby, 1.2 amps.; transmit, 5 amps. Dimensions: 4½" H x 8¼" W x 10¼" D.

## **B** Full Remote Control Operating Facilities For Heath Radiotelephones

• The smartest remote control to complement the bridge of any boat • Full remote control for MWW-14A or MWW-15 radiophones • Includes on/off, volume, squelch, mode switch, and channel selector • Telephone handset • Universal gimbal mounting bracket • Completely factory assembled with detailed installation/operating manual included • Styled to match MWW-14A & MWW-15 • Includes 25' of interconnecting cable with all connectors preassembled

Choose MWW-15R Or MWW-14AR For The Radiophone And Remote Combination . . . all channel switching provisions are factory installed and both units are ready to place in your boat. If you already own an MWW-14A or MWW-15, order MWA-15-1 . . . this includes the Remote, all necessary hardware (25' of cable with connectors assembled), plus channel switching drive motor and instructions for installation in your Heath radiophone. Assembled MWA-15-1, 10 lbs. . . no money dn., \$10 mo. . . . \$99.00

## **C** Heath MWW-14A . . . Unequaled Value & Performance In A 75 Watt Radiotelephone

• 6 crystal-controlled transmit and receive channels (2-5 MHz) • Exceptionally low current demands for a 75-watt radiophone • AM broadcast band tuning • 15 watt deck hailing capability • Transistorized receiver • Factory assembled & tested • FCC type accepted for "party-boat" use and D.O.T. approved

Here Is A 75-Watt Input Radiotelephone That Brings Marine Electronics Up To Date. Compact size, modern solid-state circuitry, and a design "human engineered" for convenience have made the MWW-14A an outstanding example of modern marine electronics. Look over the styling . . . read the specifications. You'll agree the MWW-14A is your best buy in its power class.

Valuable Owner's Manual . . . gives full installation and operating instructions. Requires FCC licensed technician for tune-up. Crystals for 2182 & 2638 kHz included.

Assembled MWW-14A, 30 lbs., no money dn., \$27 mo. . . . \$289.95

Assembled MWW-14AR, 41 lbs. . . 75-watt Radiophone plus Remote Control . . . \$39 dn., as low as \$25 mo. . . . \$388.95

Extra transmit & receive crystals (specify), 1 lb. . . . each \$2.95

**MWW-14A SPECIFICATIONS—RECEIVER:** Frequency range: Marine, 2-5 MHz. Broadcast, 540-1620 kHz. Sensitivity: (providing 10 dB S/N ratio or better) Marine channels, 2 microvolts; Broadcast, 10 microvolts. **TRANSMITTER:** Frequency range: 2-5 MHz marine bands. Final power input: 75 watts. RF output: 40 watts. Power requirements: 12 volts DC. Receiver only, 0.6 amp. Standby, 2.9 amp. Transmit, 16 amps. Dimensions: 6½" H x 11¼" W x 17" D.

## 18' Radiophone Antenna

Husky, 2-section fiberglass antenna. Bottom section 10' long, top 8' whip. Complete with lay-down swivel base & high-impact side-mount.

MDP-13, 12 lbs., Express or Motor Freight Only.

no money down, \$6 mo. . . . \$59.95

## 24' Marine Antenna

Ideal for use with MWW-15. 2-section fiberglass. Bottom section 13' long, top an 11' whip. Complete with lay-down swivel base & high-impact side-mount.

MDP-74, 14 lbs., Express or Motor Freight Only.

no money dn., \$7 mo. . . . \$69.95



MWW-13A  
\$164<sup>95</sup>  
\$16 mo.

**NOTE:** Latest FCC proposal on SSB implementation will permit above radiotelephones installed prior to Jan. 1, 1971 to be used until Jan. 1, 1977.



# Heath Automotive Accessories



NEW  
Kit ID-29  
**\$29<sup>95</sup>**  
\$5 mo.

## NEW! Heathkit Solid-State Auto Tune-Up Meter . . . Measures Dwell, RPM and DC Volts On 3, 4, 6 & 8 Cylinder 4-Cycle Engines . . . Only \$29.95

- Three automotive test instruments in one • Measures Dwell on all 4-cycle, 3, 4, 6 or 8 cylinder engines • Two RPM scales—0-1500 and 0-4500 revolutions • Measures DC voltage from 0 to 15 volts • Dwell and VDC scales are direct reading • Uses only two leads • Running engine provides both signal and power . . . uses no batteries • Both Dwell & RPM measurements can be taken without reconnecting leads • Can be used on both 6 and 12 volt systems without switching or changing leads • No recalibration is necessary from day to day or engine to engine • Very stable all solid-state circuitry • 3% accuracy • Completely portable . . . handy for road testing . . . comes in its own carrying case that's unaffected by water, oil, gasoline and most acids • Easy to build

The Most Value Ever Offered In A Tune-Up Meter. The new Heathkit ID-29 provides very accurate Dwell, RPM and DC Voltage measurement functions in a simple, compact, portable case . . . and it requires no batteries. It's the perfect accessory for the hobbyist doing his own tune-ups, emergency road service personnel, or shop repair mechanic. Compare the ID-29 against any similar instrument at any price. We think you'll find that the ID-29 represents a really remarkable value.

Amazing Versatility And Convenience. The new ID-29 connects directly to the coil primary for both Dwell and Tach measurements. For breaker point settings, just set the function switch to the Dwell position, and read Dwell angle directly from the big 4½" meter. To check RPM, turn the function switch to either the High (0-4500 RPM) or Low (0-1500 RPM) position, select the proper number of cylinders with the Cylinder switch and read the meter. The unique solid-state circuit design of the new ID-29 eliminates troublesome extra leads, time-consuming lead changing when going from one function to another and best of all, there are no batteries to worry about . . . the two leads pick up both signal and power from the engine itself. And there's even a handy DC Voltmeter built-in . . . great for chasing down electrical system faults in a hurry. Can be used with either 6 or 12 volt systems, without switching or lead changing. And the new ID-29 doesn't require recalibration when changing from one car to another or from day to day either . . . two simple adjustments after assembly maintain the calibration for many months. The black polypropylene case has a built-in lead storage compartment and is resistant to virtually everything. Weighs only 2½ pounds for easy carrying.

Simple To Build. The ID-29 goes together fast . . . just one simple circuit board to build, chassis parts mounting, two simple calibration steps and you're done. Assembly time is about 5 hours. Get the most versatile Auto Tune-Up Meter on the market . . . order your ID-29 now.

Kit ID-29, 4 lbs., no money dn., \$5 mo. . . . . **\$29.95**

**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:** 8½" W x 4¼" H x 7¼" D (including handle). **Net weight:** 2½ lbs. Recommended for use with standard ignition systems only.



## Heathkit Tune-Up And Repair Equipment

### Low Cost Auto Ignition Analyzer And Timing Light Kits

- Spots ignition troubles—shows results of corrective action • Just flip a switch to select any of 4 different patterns without switching leads
- Expand any view horizontally or vertically for a "closer look" • Easy to use—detailed instruction manuals provided for assembly and operation
- Use on any internal combustion engine with conventional non-transistor ignition system

The IO-20 and ID-11 are a valuable combination for the auto hobbyist, garage mechanic or service station operator. Detects and visually displays virtually everything that can go wrong with an ignition system. Order yours now.

Kit IO-20, 18 lbs . . . no money down, \$10 mo. . . . . **\$99.50**

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

Kit ID-11, Timing Light Accessory for IO-20, 3 lbs. . . . . **\$17.95**



## Heathkit Solid-State Tachometer For Cars, Boats, Motorcycles

- Unique inductive pickup allows operation with virtually any spark-type engine • Usable with almost any ignition system—conventional, magneto, capacitive-discharge, transistor • Two RPM ranges—0-6000 & 0-9000 • Temperature-compensated for ±5% accuracy from 0° to 120° F (±3% at calibration temp.)
- Wide-angle 250° edge-lighted dial • Stainless steel hardware • Chrome plated parts are heavy die-cast metal • Adjustable red line to remind you of top RPM limit • Can be wired so dial light will brighten & dim with panel lights • Non-scratch glass face—great for dune buggies & motorcycles • Splash-proof case—ideal for boat use • Can be panel mounted or installed in its own handsome black & chrome case
- Fast enjoyable assembly—all components mount on unique circular circuit board that fits inside the case—only one unit to install

Kit MI-18-1, (For panel mounting), 3 lbs. . . no money dn., \$5 mo. . . . . **\$29.95**

Kit MI-18-2, (includes mounting case & hardware), 3 lbs. . . no money dn., \$5 mo. . . . . **\$32.**

**MI-18 SPECIFICATIONS—Trigger Sensitivity (Minimum Requirements).** Pickup Coil: 25 mA peak, 5 uS rise time. **Tau:** Connection: 30 volt negative pulse, 20 uS 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. 3¼" overall face diameter. 4¼" high. 3" overall case depth. **Weight:** MI-18-1: 14 oz. MI-18-2: 17 oz.

MI-18-1  
Panel Mount  
**\$29<sup>95</sup>**  
\$5 mo.



MI-18-2  
with Case  
**\$32<sup>95</sup>**  
\$5 mo.

Dash-mounted, the MI-18 looks sharp . . . requires only a 3¼" hole, 2¼" deep.



Budget-Saver — Charge It To Your Heath Account — No Money Down



# NEW! Heathkit® Portable Monitor Receivers



## New Heathkit GR-88 Solid-State VHF-FM Monitor Receiver . . . Covers 152 to 174 MHz . . . Tunes Police, Fire, Marine, & Weather Broadcasts

- Receives both narrow and wide band FM signals • 152-174 MHz coverage • Highly sensitive • Very selective • Six-to-one vernier tuning control plus single channel crystal control • Noise-operated squelch control quiets background noise • All solid-state construction for long, trouble-free life • Portable—battery operated • Convenient carrying handle doubles as a stand • Built-in whip antenna • Built-in external antenna jack for fixed station installation • Accessory AC power supply available • Rugged brown leatherette case • Easy assembly with a factory assembled and aligned tuner and circuit board construction

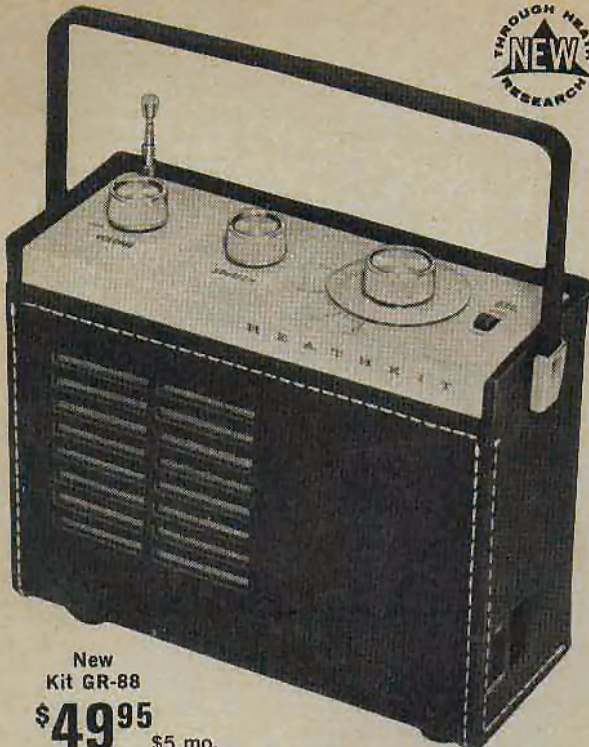
The new Heathkit GR-88 Monitor Receiver is the ideal way to "get full monitoring capability of the VHF-FM bands at lowest cost . . . police and fire departments . . . commercial radio services . . . Marine channels . . . Weather Bureau broadcasts. Check these features and compare the new Heathkit GR-88.

**Full Coverage With Maximum Operating Convenience . . .** The new GR-88 receives both narrow and wide band FM from 152-174 MHz, and the six-to-one vernier tuning control makes separating those closely spaced stations easy. For fire and police, personnel, emergency vehicle drivers, boat owners and pilots, or anyone who wants to monitor one channel almost continuously, the GR-88 has a crystal-control feature . . . plug in the crystal of your choice, tune to the approximate frequency and flip the front panel switch to "Xtal"—you're on frequency immediately, without guesswork or lost time. The adjustable squelch control lets you quiet background noise, but still hear your station when it's transmitting, and the 40 kHz selectivity, 2.0 uV sensitivity and built-in whip antenna make pulling in those weak stations simple. The GR-88's small size, light weight, durable finish and long battery life make portable operation just a matter of picking it up by the built-in carrying handle. For fixed station use, the handle converts to a tilt-stand . . . add the accessory AC power supply (it fits inside the GR-88 case), plug an external antenna into the jack provided and you're ready to go.

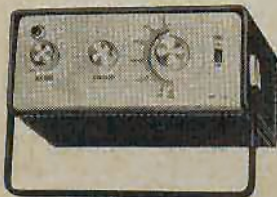
**Easy Assembly.** The GR-88 goes together on one simple circuit board, and the factory assembled and aligned tuner makes it even easier. Add the GR-88 to your monitoring facilities now.

**Kit GR-88, 5 lbs., no money dn., \$5 mo. . . . . \$49.95**

**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:  $\pm 40$  kHz @ 6 dB down. Image rejection: 40 dB or greater. IF Rejection: 80 dB or greater. Audio output: 250 mW at less than 10% distortion. Speaker: 3" round, 24 ohms, permanent magnet. Transistor complement—Tuner: (2) 2SC784 and (1) SE-5006. Transistor complement-IF & Audio: (5) 2N2369, (4) 2N3393, (1) X29A829, (1) 2N2430, (1) 2N2431, (1) 40481. Diode complement: (2) 1N191 and (2) 1N4646. Batteries: Six 1.5 volt "C" cells, not supplied. Dimensions: 8 3/4" W x 7 1/2" H x 3 1/2" D. Net weight: 3 lbs. without batteries.



New Kit GR-88  
**\$49.95**  
\$5 mo.



Neat front panel layout . . . whip antenna, volume, squelch & tuning controls plus crystal switch. Note the convenient handle that doubles as a stand.



## NEW Heathkit GR-98 Solid-State Aircraft Monitor Receiver . . . 108 to 136 MHz Coverage . . . Ideal Home Monitor; Doubles As Portable Monitor In Car And Emergency Receiver In Aircraft

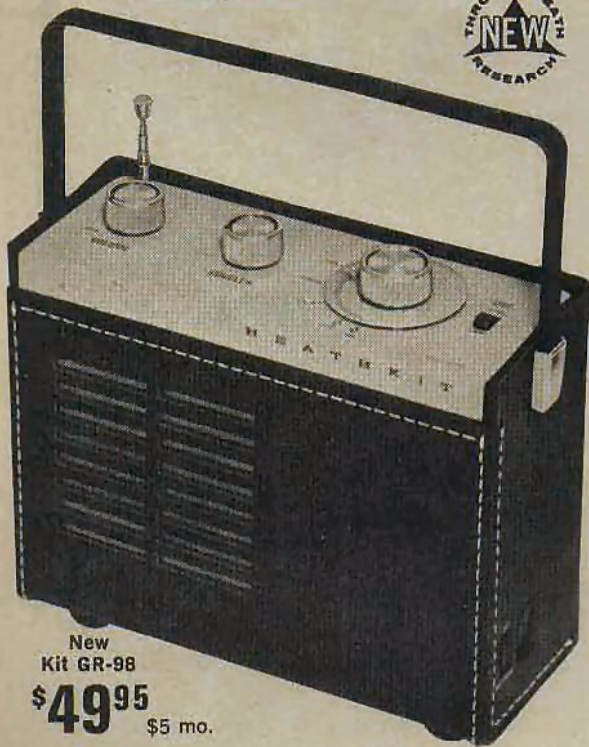
- Tunes the complete Aircraft Band—108 to 136 MHz • All solid-state circuitry • Completely portable • Built-in whip antenna • Handsomely styled, rugged brown leatherette case with tilt-stand/carrying handle combination • Excellent sensitivity and selectivity • Vernier tuning • Adjustable squelch control • Single channel crystal-control feature • Built-in external antenna jack • Accessory AC power supply available • Fast, enjoyable assembly with circuit board construction and factory assembled and aligned tuner

The new Heathkit GR-98 is designed for portable or fixed-station monitoring of the aircraft frequencies. As a low cost, top-performing Aircraft Monitor Receiver it has no equal . . . here's why.

**A Complete Portable Or Fixed Monitoring Station In One Package.** The new GR-98 tunes from 108-136 MHz . . . lets you listen to private and commercial aircraft, airport control towers, even distress calls. The vernier tuning control makes it easy to sort out those closely spaced stations, and the adjustable squelch control eliminates annoying background noise but still lets you hear your station clearly. For tower and ground crew personnel, pilots and their families, etc., there's a single channel crystal control feature that puts you on your channel just by tuning to the approximate frequency and flipping the "Xtal" switch on the front panel. 1.5 uV sensitivity, 40 kHz selectivity and the built-in collapsible whip antenna make distant stations sound local. For fixed station monitoring, just set the GR-98 up on its tilt-stand, plug external antenna into the convenient jack, connect the accessory AC power supply that fits inside the GR-98 case, and listen. Simple circuit board construction, a preassembled, prealigned tuner and the famous Heathkit manual make the GR-98 a pleasure to build, and its excellent performance, rugged good looks and easy portability make it a pleasure to use. Send for your new GR-98 now.

**Kit GR-98, 5 lbs., no money dn., \$5 mo. . . . . \$49.95**

**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 milliwatts at less than 10% distortion. Speaker: 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 volt size "C" cells (not included). Dimensions: 8 3/4" W x 7 1/2" H x 3 1/2" D. Net weight: 3 lbs. without batteries.



New Kit GR-98  
**\$49.95**  
\$5 mo.

### Add This Low Cost AC Power Supply To Your Monitor Receiver

For permanent fixed station installation of your new GR-88 or GR-98, you'll want this convenient AC power supply. Goes together fast and mounts right inside the case of your Monitor Receiver. Save your batteries for portable operation . . . order your GRA-88-1 now.

**Kit GR-88-1, 1 lb. . . . . \$7.95**



New Kit GRA-88-1  
**\$7.95**



# Heathkit® SWL Receivers

*Keep Up On World Events . . . Anywhere . . . Anytime . . . With This Deluxe 10-Band AM/FM/Shortwave Transistor Portable*



- 10 bands tune Longwave, Standard Broadcast, FM and 2 MHz-22.5 MHz Shortwave Bands • 16 transistors, 6 diodes and 44 factory assembled and pretuned circuits
- Two separate AM & FM tuners and IF strips • Two built-in antennas • Battery saver switch cuts current drain up to 35% • Rotating tuning dial • Dial light • Four simple controls for tuning, volume, tone, AFC and band switching • 4" x 6" PM speaker • Earphone & built-in jack • Optional converter/charger available • Time zone map & "listener's guide"

Travel The Airwaves Of The World . . . with this deluxe "go-anywhere" 10-band portable. Orbits the globe to bring you dozens of foreign broadcasts, ships at sea, ham operators, weather stations, and Voice of America on the wide 2 MHz to 22.5 MHz shortwave spectrum. Features the same FM tuner and IF strip as used in deluxe Heathkit hi-fi components for the most quiet and sensitive FM ever heard on a portable. Uses communication-quality components in the AM bands for really long-distance reception. And for a new listening adventure you'll enjoy the aircraft and marine broadcasts on the 150-400 kHz Longwave band . . . plus the latest news, weather and sports on AM.

Other Features Include dial light for nighttime use, 8½ revolution tuning knob for easy tuning, built-in ferrite rod antenna for LW & AM, plus 5' telescopic whip for FM and shortwave, handsome jet black aluminum panels with die-cast end-pieces. Runs on 7 flashlight batteries (not included) or on optional charger/converter.

Kit GR-43A, 19 lbs. . . no money dn., \$13 mo. . . . . \$139.95  
Model GRA-43-1, Converter/Charger for 117 v. 60 Hz AC, 1 lb. . . . . \$6.95

**GR-43 SPECIFICATIONS—AM SECTION:** Tuning range: Long wave—150-400 kHz. Broadcast—550-1600 kHz. Shortwave—2.4 MHz; 4.9 MHz; 31 M—9.2-10.2 MHz; 25M—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. Long Wave—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. Intermediate frequency (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. Intermediate frequency (IF): 10.7 MHz. **GENERAL:** Audio output: Normal: 500 mw; Battery Saver: 160 mw. Speaker: 4x6" oval; permanent magnet; 3.2 ohm voice coil. Batteries: 6 size D cells; 1 Size C Cell. Dimensions: 13½" W x 5½" D x 10½" H including handle.

GR-43A  
**\$139.95**  
\$13 mo.

Separate AM & FM Tuners—44 R.F. Circuits . . . all factory assembled and aligned to assure finest performance and fast, easy assembly. Just mount entire section in place, and wire 3 small circuit boards.

Convenient! Both panels are hinged . . . close and open easily thanks to magnetic edges. Front cover can be removed when used at home.

Optional Charger/Converter . . . for 117 v. 60 Hz AC operation. "Float-charges" batteries while you listen . . . without battery drain.

GRA-43-1 . . . . . \$6.95



## Now The Heathkit SB-310 Professional SWL Receiver Is Even More Versatile . . . With The New 13 & 15 M Converter Kit

- Covers six short-wave broadcast bands (49, 41, 31, 25, 19 & 16 meters) . . . 80, 40 & 20 meter amateur bands . . . 11 meter CB • 5 kHz crystal filter included for AM, SSB and CW listening • 10-tube circuit • Crystal-controlled front-end for same rate tuning on all bands • 1 kHz dial calibrations—100 kHz per dial revolution • Separate RF and AF gain controls • Pre-built & Aligned LMO • Product detector for SSB • Automatic Noise Limiter • Calibrated "S" meter • Headphone jack • "Hi-Fi" output for connection to external audio system • New optional SBA-310-3 Modification Kit adds the extra excitement of 13 Meter International Broadcast and 15 Meter Amateur 'Phone Band • "Sub-pack" packaging for fast, easy assembly • World Radio-TV handbook included

Any SWL would be proud to own the superb SB-310, 10 switch-selected bands—49, 41, 31, 25, 19 and 16 meter shortwave, 11 meter CB and 80, 40 and 20 meter ham bands. And for additional enjoyment, add the new SBA-310-3 Modification kit for 13 & 15 Meter coverage. A 5 kHz crystal filter is included for crystal clear AM listening. Optional CW and switch-selected USB/LSB narrow bandwidth filters are available for optimum reception.

Famous Heath SB-Series Features . . . crystal-controlled front end for same rate tuning on all bands . . . truly linear tuning with 1 kHz dial calibrations . . . bands spread equal to 10 feet per MHz . . . prebuilt and aligned Linear Master Oscillator for "solid" tuning . . . separate RF and AF gain controls . . . calibrated "S" meter . . . switch-selected mode switch . . . separate diode (AM) and product (SSB, CW) detectors . . . built-in 100 kHz crystal calibrator . . . headphone jack for DX-ing . . . and many more professional features. Requires only a VTVM for final alignment.

Enjoy a lifetime of the finest shortwave listening available—order your SB-310 today.

Kit SB-310 (less speaker), 24 lbs. . . no money dn., \$23 mo. . . . \$249.00  
Kit SB-600, 8 ohms, 6" x 9" speaker, 6 lbs. . . . . \$18.95  
SBA-301-2, Optional deluxe CW filter for optimum CW (400 Hz @ 6 dB down; 2 kHz max. @ 60 dB down), 1 lb. . . . . \$20.95  
SBA-310-1, Optional SSB filter plus crystal for switch selection of USB



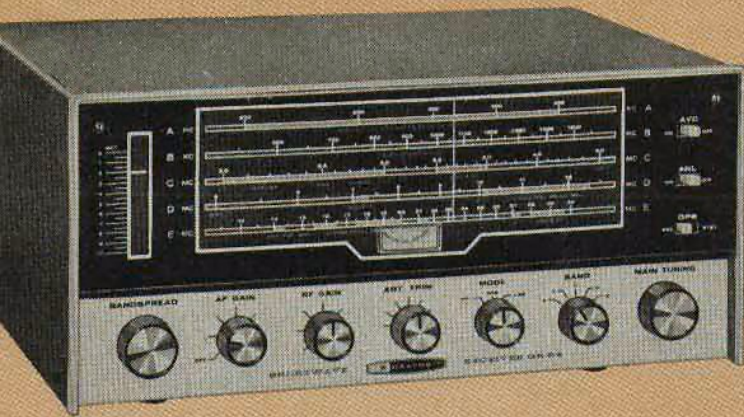
SB-310  
**\$249.00**  
(less speaker)  
no money dn., \$23 mo.

& LSB (2.1 kHz @ 6 dB down; 7 kHz max. @ 60 dB down), 1 lb. . . \$23.95  
SBA-310-2, Optional deluxe SSB filter plus crystal for switch-selection of USB & LSB (2.1 kHz @ 6 dB down; 5 kHz max. @ 60 dB down). Provides best SSB selectivity for maximum adjacent signal rejection. 1 lb., no money dn., \$5 mo. . . . . \$39.95  
SBA-310-3, optional 13 & 15 M Modification kit, 1 lb. . . . . \$9.95

**SB-310 SPECIFICATIONS—Frequency range (Megahertz):** 3.5 to 4.0, 5.7 to 6.2, 7.0 to 7.5, 9.5 to 10.0, 11.5 to 12.0, 14.0 to 14.5, 15.0 to 15.5, 17.5 to 18.0, 26.9 to 27.4. Intermediate frequency (IF): 3.395 MHz. Frequency stability: Less than 100 Hz drift per hr. after 20 min. warmup under normal ambient conditions. Less than 100 Hz drift for ±10% line voltage variation. 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 2.4 kHz @ 6 dB down; 7.0 kHz max. @ 60 dB down (regular SSB crystal filter available as an accessory). Image rejection: 60 dB or better. Dial accuracy: ELECTRICAL: Within 400 Hz on all bands, after calibration at nearest 100 kHz point. VISUAL: Within 200 Hz on  $c^{14}$  bands. Calibration: Every 100 kHz. Dial backlash: No more than 50 Hz. Antenna impedance: 50 ohms, nominal unbalanced. Audio output impedance: "Hi-Fi" cathode follower output, 1000 ohms. Matching speaker, 8 ohms. Matching headphones, high impedance. Audio output power: 1 watt with less than 8% distortion. Power requirements: 105-125 or 210-250 V AC, 50-60 Hz, 50 watts. Cabinet dimensions: 14½" W x 6½" H x 13½" D. Net weight: 17 lbs. 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.



# Tune In The World With Heathkit® Shortwave



**GR-54**  
**\$89<sup>95</sup>**  
 no money dn.,  
 \$9 mo.



**Long-Wire Shortwave Antenna**  
 Includes 75' Long-Wire Antenna. 30' lead-in wire, porcelain insulators and grounding hardware with complete instructions. Use with any shortwave receiver. Included FREE with GR-54.  
**GRA-72, 2 lbs. . . . . \$1.45**



**Superex Shortwave Headphones**  
 For DX-ing, Private Listening! Use with all Heathkit shortwave (except GR-43) and amateur radio receivers. Features single lead convenience, vinyl-clad headband (1 1/8" wide), dual coils, Alnico V magnets, 2000 ohm impedance. Not a kit.  
**GD-396, 1 lb. . . . . \$3.50**

## Listen To The Sounds Of An Exciting World . . . With This Deluxe 5-Band Shortwave Receiver

- 5 bands . . . 3 shortwave bands cover 2 MHz to 30 MHz, plus 550 kHz to 1550 kHz AM broadcast band, & 180 kHz to 420 kHz aeronautical & radio navigation band • Tuned RF stage for greater sensitivity • Crystal filter for sharp selectivity • Separate product detector for efficient SSB & CW reception • Switchable upper or lower sideband mode position • Built-in relative signal strength indicator • Electrical bandspread tuning • 6 tube-6 diode superhet circuit plus 2 silicon diode rectifiers • Built-in code practice monitor plus code key jack • Automatic noise limiter, automatic volume control & antenna trimmer control • "Velvet-touch" 16 revolution main tuning • Built-in 4" x 6" PM speaker • Built-in AM antenna plus external antenna terminals • Standard jack accepts headphones or external speaker • Safe transformer-operated power supply • Sleek low-boy styling—Charcoal gray metal cabinet • Antenna included

Compare To Sets Costing \$150 And More. Compare features like the crystal filter for extra-sharp selectivity . . . tuned RF stage for added amplification and image rejection . . . separate product detector for efficient SSB and CW listening, plus AM diode detector . . . switchable BFO control for upper and lower sideband tuning to eliminate "trial & error" SSB tuning . . . and complete controls for all functions. Assembles in 12 to 15 hours.

**Kit GR-54, 25 lbs. . . no money dn., \$9 mo. . . . . \$89.95**  
**GR-54 SPECIFICATIONS**—Frequency Coverage: Band A 180 kHz to 420 kHz; Band B 550 kHz to 1550 kHz; Band C 2 MHz to 5 MHz; Band D 5 MHz to 12.5 MHz; Band E 12.5 MHz to 30 MHz. Sensitivity: AM: Band A 1.6 uv; Band B 8 uv; Band C 1 uv; Band D 1.2 uv; Band E 6 uv. SSB/CW: Band A 0.7 uv; Band C 0.4 uv; Band D 0.5 uv; Band E 4 uv. Signal Level for 10 dB, signal plus noise to noise ratio. Selectivity: Crystal filter; 3 kHz minimum at -6 dB; 7.5 kHz maximum at -20 dB. Intermediate frequency: 1682 kHz. Antenna Input impedance: 50 ohms nominal—phone connector. Power requirements: 120/240 V 50/60 Hz AC, 45 watts. Controls: Bandspread, AF Gain/off-on switch; RF Gain; Ant. trim; Mode switch; Band switch; Main tuning; AVC switch; ANL switch; OPR switch; Meter adjust. Audio output impedance: 8 ohms nominal. Meter: Indicates relative signal strength. Speaker: Built-in 4" x 6" permanent magnet. Standard jack: Accepts 8 ohm ext. speaker, or headphones (50 ohm to 10 K ohm). Dimensions: 14 1/4" W x 6 3/4" H x 10 1/2" D.



### SWL Station Guide

Lists Worldwide AM, FM, TV and Shortwave stations, call signs, frequencies, transmitter power, address for QSL cards, program details, broadcast times. Over 300 pages.  
**GDP-315, 2 lbs. . . . . \$5.95**



### Heathkit "Q" Multiplier

Ideal for use with GR-64 or similar receivers with 450 to 500 kHz IF's. Creates extra-sharp selectivity through an effective "Q" of 4000, and provides notch for adjacent signal attenuation. 120/240 V 50/60 Hz AC power supply. Kit GD-125, 3 lbs. . . . . \$14.95

## Explore New Worlds With This Low Cost 4-Band Shortwave Receiver

- Covers 550 kHz to 30 MHz—includes broadcast plus 3 shortwave bands • 4-tube superhet circuit plus 2 silicon rectifiers • Built-in 5" PM round speaker • Illuminated 7" slide-rule dial with logging scale • Lighted bandspread tuning dial • Relative signal strength indicator • Variable BFO control • Built-in AM rod antenna • Simple circuit board construction • Headphone jack • Charcoal gray metal cabinet, black panel with green & white markings

Hear Live Broadcasts From Around The Globe . . . China, France, Latin America, hundreds of foreign countries. Tune in ham & CB operators, ship-to-shore, Voice of America, Radio Moscow and popular AM. Also features



**GR-64**  
**\$39<sup>95</sup>**  
 no money dn.,  
 \$5 mo.

high voltage, transformer-operated power supply; electrical bandspread tuning; terminals for external antenna; Q-multiplier input and noise limiter on/off switch. Assemble in 8-10 hours.

**Kit GR-64, 15 lbs. . . no money down, \$5 mo. . . . . \$39.95**

**GR-64 SPECIFICATIONS**—Frequency range: 550 kHz to 30 MHz in four bands. Controls: General coverage tuning, Bandspread tuning, Bandswitch, Noise Limiter—ON/OFF, Phone-Standby-CW switch, BFO control, Audio Gain, AC-ON/OFF, Headphone jack, Q-multiplier input. Power requirements: 120/240 V 50/60 Hz AC, 30 watts. Dimensions: 13 1/2" W x 6" H x 9" D.

## The Ideal Shortwave Radio For Beginning SWL's



**GR-81**  
**\$24<sup>95</sup>**  
 no money dn.,  
 \$5 mo.

- Covers 150 kHz to 18 MHz in 4 bands • Shock-free, transformer operated power supply • Provisions for long and short antennas • Headphone jack for private listening • Built-in speaker • Front panel controls for Volume, Regeneration, Band-switching, Main Tuning and Fine Tuning • Easy to build—from parts to programs in 6 short hours

**Kit GR-81, 12 lbs. . . no money dn., \$5 mo. . . . . \$24.95**

**GR-81 SPECIFICATIONS**—Frequency coverage: 140 kHz to 18 MHz on four bands. Tube complement: 12A7 Detector/1st Audio, 50C5 Audio Output, 35W4 Rectifier. Power requirements: 105-125 V 50/60 Hz only, 30 watts. Fused. Controls: Main tuning (calibrated), Bandspread, Bandswitch, Regeneration, on/off volume, phone jack. Dimensions: 10" W x 7" H x 7" D.

Budget-Saver — Charge It To Your Heath Account — No Money Down



# Heathkit® Home Accessories

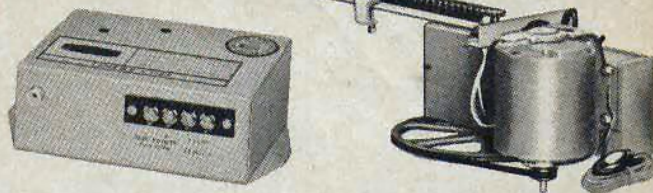


Miniature "Wireless" Transmitter . . . no larger than a pack of cigarettes . . . fits easily in pocket or purse. Operates up to 150 feet away from receiver.

Sensitive Transistor Receiver . . . operates on 250 to 300 MHz—requires no license. Selectable tone coding prevents interference with similar units in neighborhood. Installs in minutes.

Kit Form Mechanism Assembled Transmitter and Receiver

GD-177A  
**\$112<sup>95</sup>**  
no money dn.,  
\$11 mo.



## Open Your Garage Door Quickly, Conveniently . . . With This Heathkit Radio Control Mechanism

• New factory assembled VHF transmitter & receiver . . . operates over entire -50° F to +140° F temperature range • Miniature portable "wireless" transmitter • Operates up to 150 feet with no CB interference • Easy one-man installation • Operates overhead track, and most jamb & pivot doors up to 8' high • Foolproof safety device automatically disengages door when obstructed • No license required • 5-year warranty on transmitter & receiver, 1 year unconditional

GD-177A, 63 lbs. (REA Express or Motor Frt. only), mechanism, (1) transmitter, (1) receiver . . . no money down, \$11 mo. . . . . **\$112.95**  
GD-177B, 63 lbs. (REA Express or Motor Frt. only), mechanism, (2) transmitters, (1) receiver . . . no money down, \$12 mo. . . . . **\$124.95**  
GDP-147, 2 lbs. (1) transmitter, (1) receiver . . . no money dn., \$5 mo. . . . . **\$49.95**

GDP-157, 3 lbs. (2) transmitters, (1) receiver . . . no money dn., \$7 mo. **\$64.95**  
GDP-167, Transmitter only, 1 lb. . . . . **\$15.95**

**KIT MECHANISM SPECIFICATIONS**—125" long x 8 1/2" high x 13" wide, 100# max. operating force. Operates overhead track and most jamb & pivot doors up to 8' high. 117 v. AC 1/4 H.P. motor. Fused.  
**VHF TRANSMITTER SPECIFICATIONS**: Powered by standard 9-volt transistor type battery (Eveready No. 216 or equivalent). RF Frequencies: Approx. 250-300 MHz. Operating Range: Up to 150' from receiver (adjustable). Useful Temperature Range: -50° to +140° F. Size: 3 3/4" x 2 1/4" x 1 1/4". Weight: 5 ounces.  
**VHF RECEIVER SPECIFICATIONS**: 105 to 140 v. AC 0.8 watts nominal. RF Frequencies: approx. 250-300 MHz. Selectivity: 4 MHz @ 500 uv. Useful Temperature Range: -50° to +140° F. Size: Approx. 5 1/2" x 3 3/4" x 2". Power Requirements: 105 to 140 volts 60 Hz 0.8 watt nominal. Relay Voltage: 24 volts NEC Class II circuit.

## Unique Heathkit Home Protection System Alerts Your Family To These Emergencies . . .

- Intrusion
- Freezing
- Rising Water
- Power Failure
- Smoke & Fire
- Thawing
- High Temperature
- Changing Temperature

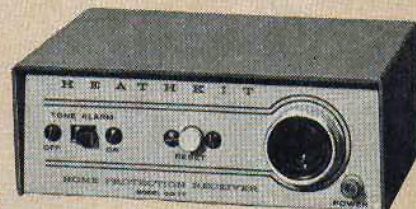
**Low Cost Protection.** The Heathkit Home Protection System gives you that priceless peace of mind that comes from knowing that you have provided for the safety of your family and property in times of emergency. The easy-to-build solid-state units use very little power and incorporate "fail-safe" circuitry. Simple installation . . . just plug the units into the nearest AC outlet. The AC power line connects the units, and the system can be used over long distances if all units are on the same side of the AC line transformer. Since alarm signals will appear on all AC lines on the same side of the outdoor pole transformer, a community alarm system can be set up . . . your neighbor can keep watch over your property when you're gone. The unique signaling method is virtually immune to random noise and signals generated by other devices. The system has almost limitless applications in homes, farms, industries . . . use as many units as you need and "customize" your installation.

**GD-77 Receiver Alarm . . .** designed for use with the Smoke Detector/Transmitter and Utility Transmitter. In case of emergency it sounds a high-pitched, very audible tone that will be heard anywhere in a normal size house . . . even while you're sleeping. Extra receivers may be added anywhere you want, or bells or buzzers may be plugged in to extend the audible range. The "fail-safe" circuit has a continuously charged nickel-cadmium battery that's automatically switched into the circuit & sounds the alarm if power fails; it also warns you if any of the other units malfunction or the receiver is accidentally disconnected.

**GD-87 Smoke-Heat Detector/Transmitter . . .** consists of a smoke detector, heat sensor and transmitter. When the smoke detector or heat sensor is activated, it generates a signal, triggering the Receiver Alarm. The sensitivity control can be adjusted to activate the circuit at very low smoke densities; the heat detector triggers automatically at 133°F. Its "fail-safe" circuit signals the receiver if a component should fail. The unit can be used by itself or external remote heat sensors can be added in any location.

**GD-97 Utility Transmitter . . .** accepts any type switch or sensor to detect any hazard you wish to guard against. Its transmitter actuates the Receiver Alarm. Your imagination is practically the only application limit. Any sensor that produces an open or closed circuit situation when actuated can be used. A heat sensor, magnetic reed and micro switch are available from the Heath Company which will suit many applications. The sensors may be used to act as alarms against heat & fire, intrusion, flood, or thawing or cooling in farming and food storage applications. Its "fail-safe" operation automatically generates a warning signal in the event of component failure. The indicator lamp lights when the unit is transmitting . . . an aid to localizing the problem area when more than one transmitter is used.

Kit GD-77, receiver-alarm, 4 lbs., no money dn., \$5 mo. . . . . **\$39.95**  
Kit GD-87, smoke-heat det./trans., 4 lbs., no money dn., \$5 mo. . . . . **\$49.95**  
Kit GD-97, utility det./trans., 2 lbs., no money dn., \$5 mo. . . . . **\$34.95**  
GDA-97-1, miniature magnetic-reed switch for windows and doors, 1 lb. . . . . **\$1.80**  
GDA-97-2, miniature micro switch for windows and doors, 1 lb. . . . . **\$2.00**  
GDA-97-3, 133°F. heat sensing switch, 1 lb. . . . . **\$2.25**



GD-77  
**\$39<sup>95</sup>** \$5 mo.

The Receiver Alarm of the Home Protection System is always ready to warn you of any emergency.



GD-87  
**\$49<sup>95</sup>** \$5 mo.

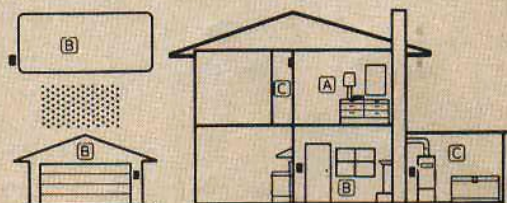
The Smoke-Heat Detector/Transmitter signals Receiver Alarm of fire & excess smoke.



GD-97  
**\$34<sup>95</sup>** \$5 mo.

The Utility Transmitter signals Receiver Alarm of intrusion, fire, flood and undesirable conditions.

### Installation Examples



### Explanation of Diagram

- (A) Receiver Alarm in Master Bedroom
- (B) Utility Transmitters in Pool Area, Garage & Living Room
- (C) Smoke-Heat Detector/Transmitters in hallway near bedrooms and in Utility Rooms

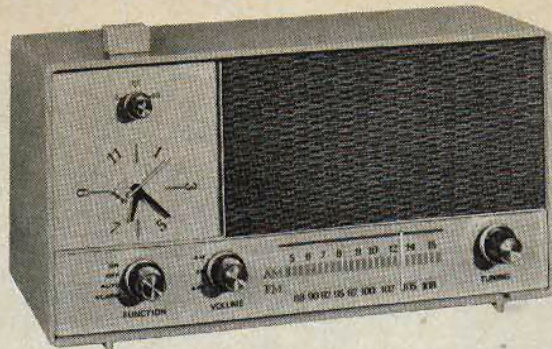
Open A Heath Account — No Money Down, Easy Terms



# Handy Household Helpers



GR-48  
**\$39<sup>95</sup>**  
\$5 mo.



GR-58  
**\$47<sup>95</sup>**  
\$5 mo.

## NEW! Heathkit GR-48 Solid-State AM-FM Table Radio

- Switch selection of AM or FM • All solid-state components for instant operation and long, trouble-free life • Automatic Frequency Control for FM for easy tuning • Constant AM volume with Automatic Gain Control • Built-in AM and FM antennas • Backlighted dial for easy reading at night • Attractive Avocado green cabinet with color coordinated grille cloth . . . or add your own personalized one • Simple, enjoyable circuit board construction

The Perfect Addition To Any Room In The House . . . the new Heathkit GR-48 solid-state AM-FM table radio. Pick the "pop" sound of AM, or the lifelike reproduction of pleasing FM . . . the front panel knob puts the choice at your fingertips. An AFC position on FM makes tuning those weak stations easy, and the AM volume is always constant, thanks to the AGC circuit. Built-in AM and FM antennas really pull those stations in, and there's even an external FM antenna connection for more distant stations. Handsome designer styling and an easy tuning, backlighted dial make the GR-48 an enjoyable, attractive accessory in any room. Assembly is fast and fun with the aid of circuit board construction and a preassembled, prealigned AM-FM tuner. Order yours now.

Kit GR-48, 5 lbs., no money dn., \$5 mo. . . . . **\$39.95**

**GR-48 SPECIFICATIONS—AM SECTION:** Tuning Range: 535-1620 kHz. Intermediate Frequency (IF): 455 kHz. Sensitivity: Better than 450 uv per meter for 20 dB signal-to-noise ratio. **FM SECTION:** Tuning Range: 88-108 MHz. Intermediate Frequency (IF): 10.7 MHz. Sensitivity: Better than 5 microvolts for 30 dB quieting. **GENERAL:** Speaker: 3" x 5" oval, 1 oz. permanent magnet, 400 voice coil. **Audio Output Power:** .8 watts. **Dimensions:** 5 1/2" high x 9 3/4" wide x 4 1/4" deep. **Weight:** 3 3/4 lbs. **Power Requirements:** 105-125 volts, 50-60 Hz only, 3 watts.

## NEW! Heathkit GR-58 Solid-State AM-FM Clock Radio . . . With "Snooze" Alarm

- All solid-state circuitry for clean sound and instant operation • Listen to AM or FM • Automatic Gain Control for constant AM volume • Automatic Frequency Control for easy FM tuning • Telechron\* Clock movement • "Snooze" Alarm turns radio on ten minutes before alarm sounds • Backlighted clock dial can be read in dark • Built-in AM & FM antennas • Auxiliary AC socket controlled by clock—great for turning lights on and off, or perking coffee in the morning • Compact powder blue cabinet with color coordinated grille cloth . . . or add your own personalized grille cloth • Easy to build circuit board construction • Heavy duty line cord accommodates high wattage appliances

Wake Up With Pleasing Music And Fresh Coffee . . . it's easy with the new Heathkit GR-58. Choose the morning news and weather on AM or the clear, bright sound of FM, with AFC for easy tuning. The "Auto" position on the clock turns only the radio on in the morning, or use the "Alarm" position for both alarm and radio. The clock controls the accessory socket on the rear of the stylish powder blue cabinet, so you can have fresh coffee perking when you wake up. The "snooze" alarm turns off the alarm for another ten minutes, but the radio keeps playing to wake you gradually . . . it will cycle continuously until the selector switch is reset. Simple circuit board construction and a preassembled, prealigned tuner speeds assembly. Order an easy way to get up in the morning . . . the new GR-58.

Kit GR-58, 6 lbs., no money dn., \$5 mo. . . . . **\$47.95**

**GR-58 SPECIFICATIONS—AM SECTION:** Tuning Range: 535-1620 kHz. Intermediate Frequency (IF): 455 kHz. Sensitivity: Better than 450 uv per meter for 20 dB signal-to-noise ratio. **FM SECTION:** Tuning Range: 88-108 MHz. Intermediate Frequency (IF): 10.7 MHz. Sensitivity: Better than 5 microvolts for 30 dB quieting. **GENERAL:** Speaker: 3" x 5" oval, 1 oz. permanent magnet, 400 voice coil. **Audio Output Power:** .8 watts. **Dimensions:** 5 1/2" high x 9 3/4" wide x 4 1/4" deep. **Weight:** 3 3/4 lbs. **Power Requirements:** 105-125 volts, 60 Hz only, 2 1/2 watts (clock only), 5 1/2 watts (maximum, radio on). **AC Socket Capacity:** 10 Amps. \*Reg. T.M. of General Electric Co.



GR-36  
**\$69<sup>95</sup>**  
\$7 mo.

## Enjoy The Sound Of Stereo FM In Your Home With This Deluxe Solid-State FM-FM Stereo Table Radio

- All transistor circuit for clean, natural sound—cool, instant operation • Automatic switching to stereo • Automatic stereo indicator light • Fixed Automatic Frequency Control for ease of tuning • Adjustable phase control for best stereo • Easy-to-read slide-rule dial • Tone control • Preassembled, prealigned "front-end" • Handsome, rich walnut finish wood cabinet • Assembles in about 10 hours

Kit GR-36, 17 lbs. . . no money down, \$7 mo. . . . . **\$69.95**

**GR-36 SPECIFICATIONS—Frequency coverage:** 88 to 108 MHz. **Sensitivity:** 5 microvolts. **Intermediate Frequency (IF):** 10.7 MHz. **Image Ratio:** —45 dB. **Capture Ratio:** 3 dB. **IF Rejection:** —80 dB. **AFC Correction:** 150 kHz per volt. **AM Suppression:** —40 dB. **Channel Separation:** 30 dB or more at 1000 Hz. **Antenna Input Impedance:** 300 ohms balanced. **Stereo Music Power Output:** 2 1/2 watts EIA. **Speakers:** Two 5 1/2" speakers, permanent-magnet type. **Power Supply:** Transformer operated. **Power Requirements:** 105-125 volts, 50/60 Hz, 6 watts. **Cabinet:** Wood, Walnut finish. **Dimensions:** 19" W x 9 1/4" H x 6 1/2" D. \*Rated by Institute of High Fidelity (IHF) standards

## Solid-State "Wireless" Intercom Saves Time, Steps & Your Voice

- No connecting wires between units . . . just plug into nearest AC or DC outlet • All transistor circuit—built-in power supply • Choice of 2 operating frequencies • Add as many units as you wish anytime • 2-tone beige plastic cabinets • Variable squelch to quiet background noise

Kit GD-51A (one station), 5 lbs. . . . . **\$22.95**

Kit GD-51-2 (pair), 10 lbs. . . no money down, \$5 mo. . . . . **\$45.90**

**GD-51A SPECIFICATIONS—Power requirements:** 105-125V. 50/60 Hz AC or DC. **Standby power:** 2.5 watts. **Transmit frequency:** 220 kHz & 180 kHz (switch selected). **Size:** 6 1/4" H x 8" W x 7 1/2" D.

## Always On Guard . . . Heathkit Solid-State Indoor-Outdoor Intercom System

- Master unit handles up to 5 remote stations • Ideal for home & small office • Weather-proof outdoor remote • Powerful, one-watt output for crisp, clear communications • Compact, designer-styled cabinets

Kit GD-121 Master Station, 6 lbs. . . . no money down, \$5 mo. . . . . **\$29.95**

Kit GD-131 Indoor Remote, 4 lbs. . . . . **\$8.95**

Kit GD-141 Outdoor Remote, 2 lbs. . . . . **\$5.95**

**SPECIFICATIONS—Power requirements:** 117 v ac 50/60 Hz 2.5 watts (idling), 3.5 watts (full output). **Transistors:** four 2N1274. **Dimensions:** 6 1/4" H x 8" W x 7 1/2" D (master), 5" H x 8" W x 6" D (indoor remote), 5 1/4" x 4 1/2" panel size (outdoor remote).



GD-51A  
**\$22<sup>95</sup>**

All 3 Units  
**\$44<sup>85</sup>**

no money dn., \$5 mo.



# Heathkit® Portables

## Deluxe 12" Diagonal B & W Transistor Portable TV

- 74 sq. inch (picture diagonal 12") 110° shell bond picture tube • 36 transistor, 26 diode circuitry including integrated sound circuit that replaces 39 component parts
- Plays anywhere . . . runs on household 117 v. AC, any 12 v. battery or accessory rechargeable battery pack • Instant "On" AC operation • Covers all channels, through 83 • UHF dual speed tuning • VHF "memory" fine tuning—no need to fit tune when switching channels • 3-stage IF for maximum gain with controlled bandwidth • Gated automatic gain control for steady, jitter-free pictures • Transformer regulated power supply • Circuit breaker protection • One-piece, swing-out chassis for easy assembly and servicing • Rugged high-impact, designer styled plastic cabinet with carrying handle • Preassembled and aligned tuners assure peak performance, speed construction . . . takes only 12 hours • Front panel-mounted speaker • 1-year warranty on picture tube, 90 days on all other parts

Now Enjoy TV Wherever You Go with the versatile Heathkit-GR-104A. Makes an ideal "extra" TV for any room in the house . . . bedroom, kitchen, den, rec room. Its light weight and compact shape make for easy carrying. And with the optional battery pack, you can take it fishing, camping, hunting, on a picnic, to the beach . . . anywhere your travels take you. You can even run it off your boat or car's 12 v. DC battery. Delivers 74 sq. inches of crisp black & white pictures. And the pictures come on instantly . . . no waiting around for set warm-up before you tune the picture. Includes a built-in telescopic VHF whip antenna, plus an 8" UHF loop that attaches to the back panel. Has inputs for 300 ohm antennas. Includes blue-gray plastic cabinet with pearl mask.

Kit GR-104A, portable TV for 117 v. AC and 12 v. DC operation, 27 lbs. . . no money dn., \$11 mo. . . . . **\$119.95**

Kit GRA-104-1, rechargeable battery pack and Outdoor sun shield, 9 lbs. . . no money dn., \$5 mo. . . . . **\$39.95**

GRA-104-2, Outdoor sun shield only, 1 lb. . . . . **\$1.95**

**GR-104A 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): Vertical linearity, Vertical height. Low voltage adjust, AGC. Transistor & Diode Complement: 36 transistors, 26 diodes, 1 picture tube. Power Requirement: 110-130 volts AC @ 0.35 amperes, 40 watts; 12 volts DC @ 1.7 amperes, 20 watts. Overall Size: 11 1/2" H, 15 3/4" W, 9-5/16" D. Net weight: 20 lbs.

## Heathkit AM-FM Solid-State Portable . . . Performance Others Can't Match

GR-17  
**\$43<sup>95</sup>**

no money down  
\$5 mo.

- Peak performing 12 transistor, 7 diode circuit • Pre-aligned AM-FM front end like those used in Heathkit hi-fi tuners • 4" x 6" oval speaker for bigger, better sound • 3 FM IF stages for 5 uV sensitivity • Tone control • Built-in telescoping whip antenna for FM • AFC on FM • Amplified AGC on AM • External earphone jack and earphone • Circuit board construction for fast, ea assembly

Lightweight, rugged, reliable performance . . . AM or FM at the flick of a switch . . . and what reception! The big 1/2" diameter ferrite rod antenna pulls in AM stations other portables can't get and the three tuned transformers and amplified AGC provide clear, stable listening. The FM section features a telescoping 34" whip antenna, three IF stages and 5 uV sensitivity for sharp, accurate tuning . . . and the AFC keeps that station locked in. The biggest sound around . . . the audio output to the 4" x 6" speaker is 350 milliwatts—enough to fill a house! And with the GR-17, you don't have to worry about fading power from weak batteries—the Zener diode biased IF strip keeps the gain constant down to minimum useable battery voltage. And this portable is easy on batteries too—runs 200-300 hours on a single set of 6 "D" cells in normal use . . . a lot longer with the optional converter/charger. Quality components, famous Heath engineering and low cost spell value. Order your's now and discover a real portable performer—the GR-17.

Kit GR-17, 6 lbs., no money dn., \$5 mo. . . . . **\$43.95**

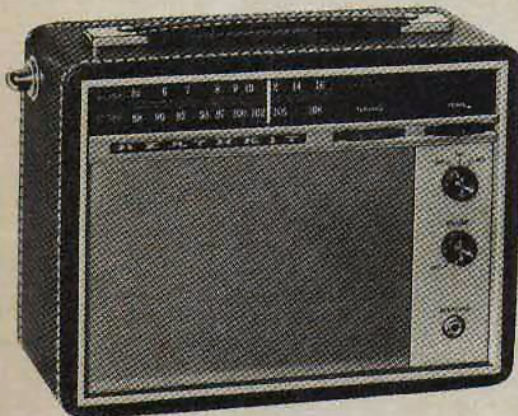
Model GRA-43-1, Converter/Charger for 117 v. 60 Hz AC, 1 lb. . . . . **\$6.95**



GR-104A

**\$119<sup>95</sup>**

\$11 mo.  
(less battery pack)



**GR-17 SPECIFICATIONS**—AM SECTION: Tuning range: 535 kHz-1620 kHz. Intermediate frequency (IF): 455 kHz. Sensitivity: 200 microvolts per meter for 20 dB signal-to-noise ratio. FM SECTION: Tuning range: 88-108 MHz. Intermediate frequency (IF): 10.7 MHz. Sensitivity: Better than 5 uV for 30 dB quieting. GENERAL: Speaker: 4" x 6" oval, permanent magnet, 16 ohm voice coil. Audio output: 350 mW. Batteries: Six 1 1/2 volt "D" cells (not supplied). Approximate battery life: 200 to 300 hours at normal listening levels. Current drain: Idling current; AM—approximately 15 mA. FM—approximately 18 mA. Normal listening level; AM—approximately 22 mA. FM—approximately 25 mA. Full volume; AM and FM—approximately 70 mA. Dimensions: 8 3/4" W x 6 3/4" H x 4" D. Net weight: 4 3/4 lbs. (with batteries).

## Deluxe 6-Transistor AM Portable . . . Bold, Crisp Sound

- 6 silicon transistor, 2 diode circuit • Uses 6 standard "D" size flashlight batteries (not included) . . . only 1/10 the operating cost of typical pocket-size portables • Large 4" x 6" permanent magnet oval speaker for "big-set" sound • Easy-to-read slide-rule dial • "Thumb-touch" controls • Vernier tuning • Tuned RF stage & double-tuned I.F. stage for greater sensitivity & selectivity • Big 1/2" diameter built-in rod antenna for distant station reception • Handsome black simulated leather case • Fast, simple circuit board construction

Kit GR-24, 5 lbs. . . no money down, \$5 mo. . . . . **\$28.25**

**GR-24 SPECIFICATIONS**—Tuning range: 535-1620 kHz. IF frequency: 455 kHz. Sensitivity: 50 uv/m for 10 dB signal-to-noise ratio at 50 mw output. Audio output: 250 mw @ 10% distortion. Speaker: 4" x 6" oval permanent magnet type. Battery: 6 "D" flashlight cells. Current drain: No signal: 11 ma; 50 mw audio output: 41 ma. Dimensions: 3 3/4" D x 8 3/4" W x 7" H (overall).

## Discover The Fun Of Kit-Building With This AM Portable . . .

### Includes Batteries & Tool Kit

- 6-transistor, 3-diode circuit • 4" x 6" speaker for "big-set" sound • Built-in ferrite rod antenna for distant station pickup • Pre-aligned coil and IF transformers assure peak performance • Rugged simulated tan leather case • Fast, simple circuit board construction

Goes From Parts To Programs In Just 4 To 6 Hours. Includes everything you need to begin this fascinating, kit-building hobby . . . solder, soldering iron, wire stripper & cutter, screwdriver, nut starter, alignment tool—even the batteries to power your new radio. Simple step-by-step instructions, giant pictures and diagrams, plus fast circuit board construction assure your success. And the sound? Clean, robust and sensitive . . . with a big console quality.

Kit GR-151A, radio, tool kit and 6 "C" cell batteries, 5 lbs. . . . . **\$20.65**



GR-24

**\$28<sup>25</sup>**

no money dn., \$5 mo.

GR-151A

**\$20<sup>65</sup>**





# Heathkit® Jr. Kits For Youngsters

**NEW! Heathkit Jr. JK-18 Electronic Workshop "35" . . . Features 35 Easy-To-Build, Educational Experiments**

- 35 fun-to-build, fun-to-use experiments teach basic electronic circuits • All solid-state components for long life • Safe—battery operated • Spring terminal connections eliminate all soldering . . . permit easy reassembly of any circuit
- Builds radios, transmitters, alarms & many more circuits • Simple instructions any youngster can follow • High quality parts used throughout • Parts store inside carton between experiments

Explore The Exciting World Of Solid-State Electronics . . . with the new Heathkit Jr. JK-18. While building the 35 different circuits, the youngsters will have hours of fun, learning about & using the basic components of modern electronics . . . transistors, capacitors, resistors, loudspeakers . . . discovering useful knowledge of how modern circuits actually work. Connections are solderless spring-terminal type, and the circuits run on four inexpensive & safe "D" cells (not supplied). All construction projects begin with a simple explanation of what the circuit does and how it is used. Then, using a large, detailed pictorial & famous Heathkit instructions, the circuit is built. When finished, the new circuit is tested and used. A large schematic diagram is furnished for each experiment and includes a simple but complete explanation of what each part does. Each part is identified by a drawing and its schematic equivalent as used in circuit diagrams so the builder learns to read schematics while experimenting. As new parts are used, they are identified in the same way, and a short explanation of its function is given.

Thirty-Five Different Experiments . . . the new JK-18 builds all of these fascinating circuits: Code Flasher, Continuity Tester, Battery Tester, Diode Tester, Transistor Tester, Rain Alarm, Timing Relay, Listening Device, Public Address Amplifier, Intercom, Voice Relay, Earphone Code Oscillator, Loudspeaker Code Oscillator, Flasher, Experimental Multivibrator, Electronic Organ, Burglar Alarm, Metronome, Siren, Light Meter, Light Sensing Alarm, Target "Hit" Alarm, Light Dependent Flasher, Light Dependent Oscillator, Sound Level Meter, Two, Three & Four-Transistor Radios, Automatic (Light Dependent) Radio, Field Strength Indicator, Code Transmitter, Voice Transmitter, Capacity Relay, Wheatstone Bridge, Capacity Bridge. Help a youngster discover the world of electronics . . . order the new JK-18 now.

Kit JK-18, 10 lbs. . . . . \$19.95



New  
Kit JK-18  
**\$19.95**  
/ available  
July



JK-27  
**\$13.95**

## Electronic Workshop "19" . . . Builds 19 Different Circuits

Perfect For Any Youngster Who Wants To Explore The Mysteries Of Electronics. Contains cartoon-illustrated principles of operation and simple, non-technical instructions for building 19 different projects . . . code flasher, burglar alarm, public address system, 5 different transistor radios, electronic timer, TV silencer, electric eye, metronome, code transmitter, voice transmitter, electronic flasher, intercom, audio signal injector, capacity & voice operated relays. Solderless, spring-type connectors speed assembly, and can be used repeatedly for building favorite projects. Operates on four safe C-size flashlight batteries (not included).

Kit JK-27, 4 lbs. . . . . \$13.95



**9-Watt Solid-State  
Single-Channel  
Guitar Amplifier**

JK-37  
**\$29.95**  
\$5 mo.

- 7 transistor, 3 diode circuit for cool, instant operation . . . peak performance at all times . . . long, trouble-free life • 9 watts EIA music power, 18 watts peak power • Tremolo variable in rate and depth for a variety of effects • Two inputs for solo guitars • Volume and tone controls • All front-panel mounted controls and inputs • Carrying handle for easy portability
- Red cabinet with red, silver & black striped grille cloth measures a compact 13½" W x 5⅞" D x 14" H

Perfect For That Youngster Just Starting To Play Guitar. Delivers a full 9 watts of music power, 18 watts peak power through a specially designed speaker. Even has variable rate and depth tremolo so he can create a wide variety of effects. All controls are front panel mounted for complete command of all the action. Measures a compact 13½" W x 5⅞" D x 14" H and has a storage area in back. Goes together in only 5 hours. Runs on 120/240 VAC, 50-60 Hz.

Kit JK-37, 14 lbs. . . . no money dn., \$5 mo. . . . . \$29.95

JK-17  
**\$19.95**

**Solid-State  
4-Speed Mono  
Portable  
Phonograph**



- Plays 16, 33⅓, 45 and 78 rpm mono records • Handles 7, 10 and 12" record sizes • Built-in 45 rpm adapter disc • Crystal cartridge with universal sapphire stylus for all types of records • Solid-state circuit for cool, instant operation, long life • Suitcase style cabinet of durable wood and hardboard, covered with ivory & desert gold polyethylene • Detachable lid • Pre-assembled turntable mechanism . . . just one tiny circuit board to build • 4" speaker • Steel top chassis plate

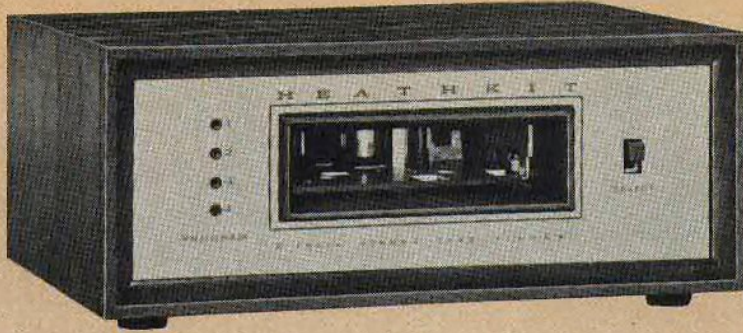
So Easy To Build Any Youngster Can Do It. They'll have fun building it, fun using it . . . listening to their favorite story albums and music. Will keep them busy during those "don't-know-what-to-do" times. Handsome suitcase style cabinet with detachable lid . . . lets them tote and use it anywhere.

Kit JK-17, 11 lbs. . . . . \$19.95

**JK-17 SPECIFICATIONS—AMPLIFIER:** Frequency Response: 80 Hz-10 kHz. Music Power Output: 600 Milliwatts EIA. Controls: Off-On, Volume. Speaker: 4", 16 ohm Voice Coil. **TRANSISTOR-DIODE COMPONENT:** 4 transistors, 1-Silicon Diode. **TURNTABLE:** Type: 4 Speed Phonomotor. Turntable Diameter: 8⅞". **CARTRIDGE:** Type: Crystal. Stylus: Universal sapphire 0.7 to 3 mil for all records. **GENERAL:** Power Requirements: 117 VAC 60 Hz 14 watts. Size: 12⅞" W x 11¼" D x 5⅞" H.



# Heathkit® Entertainment & Educational Kits



Expected Shipping Date July

NEW  
Kit GD-28  
**\$59<sup>95</sup>**  
\$6 mo.



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!

## NEW! Heathkit GD-28 Solid-State 8-Track Stereo Tape Player With Famous Motorola® Mechanism

**The Perfect Addition To Any Home Music System.** The new Heathkit GD-28 Stereo Tape Player 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. Its ease of operation and good reproduction make it an ideal background music source for home or office. An easy way to get extra enjoyment out of the stereo tape cartridges you use in your auto stereo system too.

**Simple Operation.** The new GD-28 is fully automatic . . . just plug in the cartridge of your choice and listen . . . a metal tape splice switches the play-head 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.

**Fast, Easy Assembly . . .** the all solid-state 6-transistor, 2-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. Total assembly time is about six hours. Comes complete with all necessary connecting cables too. And the smart looking, walnut grained polyurethane 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. . . no money dn., \$6 mo. . . . . **\$59.95**

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

## Enjoy Stereo Anywhere With This 4-Speed Transistor Portable

- Automatic or manual stereo and mono play of any size 16, 33 1/2, 45 & 78 rpm records • All solid-state circuit for cool, instant operation and long, trouble-free life • Ceramic cartridge with dual Diamond/Sapphire styli for LP's or 78's • Fold-up changer and easy-grip handle for portability • Volume, Stereo Balance and Tone Controls • Twin 4" x 6" speakers and "in-depth" cabinet design for crisp highs and deep bass others can't match • Safe, "shockproof" operation • Plays on any 120 v. 60 hertz source • 45 rpm adapter spindle • Preassembled, pressed wood cabinet covered in handsome avocado green and ivory polyethylene with red speaker grilles • Builds easily in just 3 to 4 hours

**Runs Cool, Looks Cool.** The 8-transistor amplifier delivers up to 1 1/2 watts per channel through the 4" x 6" speakers for real room-filling sound. And its avocado green and sunfire red suitcase styling make it easy to look at, easy to carry. Builds in one evening, keeps you entertained for years.

Kit GD-107, 29 lbs. . . (Express or motor freight) no money dn., \$5 mo. . . . . **\$51.95**

**GD-107 SPECIFICATIONS—CHANGER:** Type, Maestro Model 52-93. Speeds, 16, 33 1/2, 45, and 78 RPM. Record Sizes: 7", 10", and 12". Cartridge, ceramic. Stylus, 0.7 mil diamond for LP's, 3 mil sapphire for 78's. **AMPLIFIER:** Power output, 3 watts, 1 1/2 watts per channel EIA music power. Frequency response, ±5 dB 100 Hz to 10 kHz. Equalization: RIAA. Transistors and Diodes, 4 2N3393, 2 2N2430, 2 2N2431, 1 silicon diode. Speakers: 2 4" x 6", 25 ohm voice coils. Controls: volume, tone, and balance. **GENERAL:** Dimensions: 15" H x 8 1/2" D x 25 3/4" W. Power requirements: 120 V, 60 Hz AC, 15 watts.



GD-107  
**\$51<sup>95</sup>**  
\$5 mo.

## This 4-Speed Mono Phonograph Makes A Perfect Beginner's Kit

- Automatic monophonic play of 16, 33 1/2, 45 & 78 rpm records • Plays stereo records monophonically, too, without damage • All solid-state circuitry for cool, instant operation • Ceramic cartridge with dual Sapphire styli for LP's or 78's • Compact size, light weight and easy-grip handle for portable convenience • Separate volume & tone controls • Operates on any 120 V. AC household source • Includes 4" x 6" speaker, 45 rpm adapter spindle, and preassembled pressed wood cabinet covered with attractive, durable olive and ivory polyethylene • Easily assembles in just 1 to 2 hours

Kit GD-16, 25 lbs. . . no money dn., \$5 mo. . . . . **\$39.95**

**GD-16 SPECIFICATIONS—CHANGER:** Type, Maestro Model 52-79. Speeds, 16, 33 1/2, 45, and 78 RPM. Record Sizes: 7", 10" and 12". Cartridge, ceramic. Stylus, 0.7 mil sapphire for LP's, 3 mil sapphire for 78's. **AMPLIFIER:** Power output, 2 watts EIA music power. Frequency response, ±5 dB 100 Hz to 10 kHz. Equalization, RIAA. Transistors and diodes: 2 2N3393, 1 2N2430, 1 2N2431, 1 silicon diode. Speaker: 4" x 6", 25 ohm voice coil. Controls: volume and tone. **GENERAL:** Dimensions: 14" H x 7 3/4" D x 20 1/2" W. Power requirements: 120 v. 60 Hz AC, 15 watts.



GD-16  
**\$39<sup>95</sup>**  
\$5 mo.



### Basic Electricity Kit-Course

Students & Beginners . . . discover the basic principles of voltage, current, and resistance as you build this handy DC Volt-Ohm Milliammeter. Then use this VOM for further study (EK-2A) or for your home workshop . . . text becomes a useful reference.

Kit EK-1 (less batteries), 4 lbs. . . . . **\$21.50**



### Basic Radio-A 2-Part Course

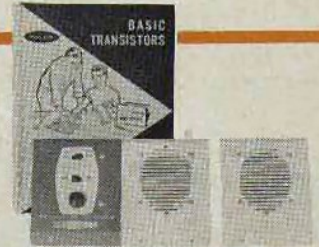
Part I—Elementary Theory; you complete a regenerative receiver.

Part II—complete a Two-Band Superheterodyne Receiver. Requires EK-1 VOM or equivalent.

Basic Radio Part I (EK-2A), 7 lbs. . . . . **\$19.95**

Basic Radio Part II (EK-2B), 5 lbs. . . . . **\$19.95**

AK-8, Cabinet for completed receiver, 3 lbs. **\$3.95**



### Basic Transistor Kit-Course

An Excellent Introduction For The Student, Or 1 fresher For The Technician . . . reveals the "How" and "Why" of transistors. Probes into the nature of matter. You learn theory and build a two-transistor radio, broadcaster, amplifier, oscillator, and 2 station intercom.

Kit EK-3, Basic Transistors, 4 lbs. . . . . **\$17.95**



# The World's Most Sophisticated Stereo Receiver... Is Also



Kit AR-15  
**\$339<sup>95</sup>**  
 (less cabinet)  
 \$34 dn., \$29 mo.

Wired ARW-15  
**\$525<sup>00</sup>**  
 (less cabinet)  
 \$53 dn.,  
 as low as \$31 mo.



## NOW . . . The Incomparable AR-15 Solid-State Stereo Receiver Is Eligible For The Heath 5% System Discount

- 69 silicon transistors, 43 diodes, 2 Integrated Circuits • 150 watts music power • Automatic Stereo switching • Automatic noise-operated FM squelch • Adjustable Phase Control • Automatic stereo indicator light • Stereo only switch to silence mono broadcasts • Individual front-panel input level controls for each channel of each source • Two stereo headphone jacks • Positive overload and short circuit protection • Easy circuit board construction

**World's Most Sophisticated Features.** Like Integrated Circuits and crystal filters in the IF amplifier section. The two IC's provide hard limiting, excellent temperature stability and increased reliability. Each IC is the size of a tiny transistor, yet contains 10 transistors, 11 resistors and 7 diodes. The crystal filters (another first in high fidelity from Heath) replace the usual transformers and provide an ideally shaped bandpass with steep skirts that offer a degree of adjacent channel selectivity not possible with conventional IF transformers. And since there are no coils, no alignment or adjustment is ever needed.

**World's Most Sensitive FM Tuner . . . Exclusive With Heath.** The special-design field effect transistor (FET) FM tuner consists of a cascode 2-stage FET RF amplifier and an FET mixer for high overload capability, excellent cross modulation and image rejection. The completely shielded tuner has a 4-gang variable capacitor and 6 tuned circuits for a selectivity of 70 dB even under the most adverse conditions. IHF sensitivity is 1.8 uv or better and harmonic and intermodulation distortion are both 0.5% or less.

**World's Most Powerful Stereo Amplifier Section.** The astounding 150 watts music power (100 watts RMS) is made possible by 4 conservatively rated, individually heat-sunk and protected output transistors powered by an unusually large power transformer and filter capacitor. **Positive Circuit Protection.** You don't have to worry about damage from overloads or short circuits of any duration thanks to the 4 current-limiting Zener diodes and 2 temperature-sensitive circuit breakers that protect the driver and output transistors. A special Hi-Temp indicator shows when the thermal breakers have opened.

**Other Features Include** all-silicon transistor circuitry, stereo only switch, loudness switch for full response listening even at low levels, two calibrated tuning meters (signal strength & center-tune), noise-operated squelch to hush between-station noise before you hear it, stereo threshold control, adjustable phase control for best stereo, plus

many more advanced features. Start enjoying the finest stereo listening with the AR-15.

And now the AR-15 is eligible for the 5% System Discount . . . just order the AR-15 with any turntable and a pair of speakers and deduct 5% from the total price.

**Kit AR-15 (less cab.), 34 lbs., \$34 dn., \$29 mo. . . . . \$339.95**  
**Assembled ARW-15 (less cab.), 34 lbs., \$53 dn., as low as \$31 mo. \$525.00**  
**Assembled AE-16, 10 lbs., optional walnut cabinet. . . . . \$24.95**

**AR-15 SPECIFICATIONS—Recommended System Mates:** All speakers & speaker systems, ppg. 36-38; all changers and turntables, ppg. 40-41. **AMPLIFIER SECTION: Dynamic Power Output Per Channel (Music Power Rating):** 8 ohm load; 75 watts. **Continuous Power Output, Per Channel\*:** 8 ohm load; 50 watts. **Power Bandwidth For Constant 0.5% Total Harmonic Distortion\*:** 6 Hz to 30 kHz. **Frequency Response (1 watt level):** ±1 dB, 8 Hz to 40 kHz. ±3 dB, 4 Hz to 80 kHz. **Harmonic Distortion:** Less than 0.5% from 20 kHz to 50 watts output. Less than 0.2% at 1,000 Hz with 50 watts output. Less than 0.2% at 1,000 Hz with 1 watt output. **Intermodulation Distortion (60 Hz: 6,000 Hz=4:1):** Less than 0.05% with 50 watts output. Less than 0.2% with 1 watt output. **Damping Factor:** 45. **Input sensitivity:** PHONO; 2.2 millivolts (overload 155 mv). TAPE; 200 millivolts (overload 4.5v). AUX; 200 millivolts (overload 4.5v). **Hum & Noise:** Volume control at minimum position; —80 dB. PHONO; (10 millivolt reference); —60 dB. TAPE & AUX.; (200 millivolt reference); —65 dB. **Channel Separation:** PHONO; 45 dB. TAPE & AUX.; 55 dB. **Output Impedance (each channel):** 4, 8 & 16 ohms. **Tap Output Impedance:** 120 ohms. **Input Impedance:** PHONO; 51 k ohm (\*\*RIAA equalized). AUX.; TAPE & TAPE MON.; 100 k ohm. **Tap Output:** 0.17 volt. **FM Section (Monophonic): Tuning Range:** 88 to 108 MHz. **Intermediate Frequency:** 10.7 MHz. **Frequency Response:** ±1 dB, 20 Hz to 15 kHz. **Antenna:** Balanced input for external 300 ohm antenna, unbalanced, 75 ohm. **Volume Sensitivity:** Below measurable level. **Selectivity:** 70 dB\*. **Image Rejection:** 90 dB. **IF Rejection:** 90 dB minimum\*. **Capture Ratio:** 1.5 dB\*. **AM Suppression:** 50 dB\*. **Harmonic Distortion:** 0.5% or less\*. **Intermodulation Distortion:** 0.5% or less\*. **Hum & Noise:** 65 dB\*. **Sensitivity:** 1.8 uv\*. **Spurious Rejection:** 100 dB\*. **FM SECTION (Stereo): Channel Separation:** 40 dB or greater. **Frequency Response:** ±1 dB, 20 Hz to 15 kHz. **Harmonic Distortion:** Less than 1% at 1,000 Hz with 100% modulation. **19 & 38 kHz Suppression:** 55 dB or greater. **SCA Suppression:** 50 dB. **AM SECTION: Tuning Range:** 535 to 1620 kHz. **Intermediate Frequency:** 455 kHz. **Sensitivity:** 12 microvolts at 1,000 kHz. **AM Antenna:** Built-in rod type, connection for external antenna. **Image Rejection:** 60 dB at 600 kHz. 40 dB at 1,400 kHz. **IF Rejection:** 70 dB at 1,000 kHz. **Harmonic Distortion:** Less than 1.5% at 400 Hz, 90% modulation. **Hum & Noise:** 45 dB. **GENERAL: Transistor & Diode Complement:** 69 transistors, 43 diodes & 2 integrated circuits. **Front Panel & Switches:** AM & FM Tuning; 535 to 1620 Hz and 88 to 108 MHz. SOURCE Switch; PHONO, AM, FM; TAPE & AUX. Dual Tandem VOLUME Control; Dual Tandem BASS Control; provides 15 dB boost and 17 dB cut at 20 Hz. Dual Tandem TREBLE Control; provides 15 dB boost and 15 dB cut at 20 kHz. The Bass and Treble controls can be disabled for FLAT frequency response. BALANCE Control. SPEAKERS Switch. POWER Switch. MODE Switch. TAPE MON. Switch. FM Switch. NOISE FILTER Switch. LOUDNESS Switch. PHASE Control. SQUELCH Control. STEREO THRESH (Threshold) Control. L & R AUX. Controls. AM-FM Level Controls. PHONO Level Controls. TAPE Level Controls. TAPE MONITOR Level Controls. SEP. ADJ (Separation Adjust) Control. 19 kHz Test-Adjust Switch. SIGNAL Meter V, R, Normal Switch. **AC Outlet Sockets:** Accessory outlets, rear chassis apron, one switched (350 watts maximum), and two unswitched (350 watts maximum). **Power Requirements:** 105-125 or 210-250 volt 50/60 Hz AC. **Dimensions:** Overall, 16 1/2" wide x 4 3/4" high x 14 1/2" deep. \*Rated IHF (Institute of High Fidelity) Standards. \*\*RIAA (Record Industry Association of America).



Available As Separate Components



AJ-15  
**\$189<sup>95</sup>**  
 (less cabinet)  
 no money dn.,  
 \$18 mo.

AA-15  
**\$169<sup>95</sup>**  
 (less cabinet)  
 no money dn.,  
 \$16 mo.

**Now, The Superb FM Stereo Tuner Section Of The Famous Heath AR-15 Receiver Is Available Separately.**

For the man who already owns a fine stereo amplifier, and in response to many requests, Heath now proudly offers the superb FM Stereo Tuner section of the famous AR-15 receiver. The new AJ-15 FM Stereo Tuner features the same exclusive design FET FM tuner with two FET r.f. amplifiers and FET mixer for best sensitivity, lowest cross modulation, lowest spurious response; the same exclusive design dual Crystal Filters in the I.F. strip for that perfectly shaped response curve with its degree of selectivity never-before achieved by any other . . . a design that gives you performance exceeding that of 8 I.F. transformers, yet it has none and never needs alignment; the same dual Integrated Circuit I.F. design for high gain, best limiting; elaborate Noise-Operated Squelch circuitry to hush between-station noise *before* you hear it; Stereo-Threshold switch to allow you to select the quality of stereo reception you will accept; Stereo-Only switch to allow you to silence all monophonic programs if you wish; Adjustable Multiplex Phase for cleanest, clearest FM stereo listening; two Tuning Meters, one for center tuning the station, one to indicate the maximum signal strength (also used during kit construction for adjustment of the 19 kHz pilot to max.). The same "Black Magic" panel lighting is used . . . no dial or control markings show when the tuner is turned off. In short, the new AJ-15 Stereo Tuner has all the fine FM tuning features of the AR-15 Receiver.

And it has new features . . . the cabinet is 2" shorter in depth to fit on a bookshelf more conveniently . . . the 3-position selector switch ("Mono" receives all stations but output is monophonic . . . "Auto" receives all stations and automatically switches to stereo . . . "Stereo" receives stereo stations only). Three pairs of outputs: one variable for basic amp. (no preamp. needed); two fixed for integrated amp., tape recorder, etc. Two variable output Stereo Phone jacks on the front panel. All controls are front panel mounted, including level and balance controls.

This is the finest FM tuner . . . by unanimous agreement. It belongs in your music system.

Kit AJ-15, 18 lbs., no money dn., \$18 mo. . . . . **\$189.95**  
 Assembled AE-18, 8 lbs., optional walnut cabinet. . . . . **\$19.95**

**AJ-15 SPECIFICATIONS**—FM monophonic and stereo specifications same as AR-15 (opposite). **Output Voltage:** Tape and Fixed, 1.5 v. rms nominal (100% modulation); Less than .5% Harmonic Distortion; Phone and Variable, 0 to 4 volts before clipping (100% modulation). Less than .5% Harmonic Distortion. **Output Impedance:** Tape and Fixed, approx. 9,000 ohms; Phone and Variable, 100 ohms. AC Outlet Socket unswitched, 350 watts max. **Power Requirements:** 105-125 or 210-250 volts 50/60 Hz AC 25 watts. **Dimensions:** overall: 16 1/4" W x 4 3/4" H x 12 1/2" D.

**Now, The Powerful Stereo Amplifier Section Of The Famous Heath AR-15 Receiver Is Available Separately**

If you already own a good stereo tuner, here's the amplifier to match it with . . . the amazing AA-15, featuring the same deluxe circuitry used in the famous Heathkit AR-15. 150 watts of Music Power are available to handle any music passage, and the ultra-wide range preamplifier (a 98 dB range) assures faithful reproduction, eliminates the possibility of overload. Harmonic and IM distortion are almost immeasurable . . . less than 0.2% at normal listening levels . . . less than 0.5% at full output on both channels. A 6 Hz to 30 kHz Power Bandwidth assures faithful reproduction of the original source, at any power level. A unique tone-flat switch allows you to bypass the tone control network for a completely flat response, and hidden secondary controls let you adjust the level of the incoming signal to be the same for any source. The advanced transformerless output circuitry with capacitor coupling mean lowest phase shift and distortion plus protection for your speakers. The massive power supply is electrostatically and magnetically shielded, electronically filtered and has enormous reserves of power. Current limiters and thermal circuit breakers prevent the output transistors from being damaged by short or open circuits. Complete controls and inputs, two front-panel stereo headphone jacks, remote speaker facilities and unique "Black Magic" panel lighting round out the picture of the most advanced stereo amplifier ever conceived. As one expert put it: "it's hard to imagine any other amplifier at any price could produce significantly better sound."

Kit AA-15, 28 lbs., no money dn., \$16 mo. . . . . **\$169.95**  
 Assembled AE-18, 8 lbs., optional walnut cabinet. . . . . **\$19.95**

**AA-15 SPECIFICATIONS:** Recommended System Mates and amplifier specifications same as AR-15 (opposite) except size. **Dimensions:** 16 1/4" W x 4 3/4" H x 12 1/2" D.

**Speaker Systems To Match The AR-15 Series**



Bookshelf Systems That Perform Like Floor Systems  
 . . . the new AS-38 & AS-48 on page 37.

Open A Heath Account — No Money Down, Easy Terms



## Heathkit "27" Solid-State Component-Compact . . . With The Famous Heathkit AR-14 Stereo Receiver



AD-27  
**\$179.95**  
\$17 mo.



With its solid walnut sliding tambour door closed the AD-27 is a quietly impressive piece of furniture . . . and it will play with the door either open or closed.

- All solid-state circuitry • 15-watts per channel music power output • Virtually flat response • Full range tone controls • Low Harmonic & IM distortion • 45 dB channel separation • Tandem Volume, Balance, Bass & Treble Controls • Transformerless output circuit • Electronically filtered power supply • Stereo headphone jack • Auxiliary input • Filtered tape output • Excellent sensitivity & separation in the FM tuner section • Smooth inertia flywheel tuning • Stereo indicator light • 4 stage IF • Automatic Frequency Control • SCA Filter • Low hum and noise • Balanced 300 ohm antenna input • Low harmonic distortion • High quality BSR turntable features low mass counterbalanced tubular aluminum tone arm • Shure diamond stylus magnetic cartridge • Plays all four speeds, manual or automatic • Vernier stylus pressure • Adjustable Anti-Skating Control • Cue-Pause Control • Beautiful oiled walnut cabinet with sliding tambour door that disappears inside cabinet • Can be operated with door closed or opened • Connections recessed in side of cabinet • Can be used as a room divider, bookshelf system, etc. • Sufficient power to operate most speaker systems

The New Heathkit "27" Was Designed To Change Your Mind About Stereo Compact Performance . . . it sounds as if it were made from high quality stereo components . . . in fact it is. Heath engineers took the highly praised Heathkit AR-14 solid-state stereo receiver, modified it physically to fit the handsome walnut cabinet and combined it with the top performing BSR McDonald 500A Automatic Turntable. The result is stereo performance that is thoroughly impressive in every respect. The amplifier delivers an honest 15 watts per channel and has output impedances from 4 to 16 ohms—more than enough to drive any reasonably efficient speaker system (and there are some good ones on pp. 36-38). Frequency response is virtually flat from 12 Hz to 60 kHz. The FM stereo tuner portion boasts 5 uV sensitivity and 27 dB channel separation. Harmonic & IM distortion throughout the system are both less than 1%. The BSR turntable has many performance features . . . cueing and pause control, counterbalanced aluminum tone arm, variable anti-skate control and comes with a famous Shure diamond stylus magnetic cartridge. Easy to build, a pleasure to listen to . . . the Heathkit "27" represents a remarkable value in stereo compacts. Order yours now.

Kit AD-27, 41 lbs., no money dn., \$17 mo. . . . . \$179.95

**AD-27 SPECIFICATIONS—Recommended System Mates:** All speakers & speaker systems, ppg. 36-38, except AS-10; all changers & turntables, ppg. 40-41. **FM Section:** Tuning range: 88-108 MHz. **Antenna input impedance:** 300 ohms, balanced input. **Sensitivity:** 5 uV. \* **Intermediate frequency (IF):** 10.7 MHz. **Hum & Noise:** —45 dB, 1 watt reference. **Audio frequency response:** Mono: 0 to —3 dB from 20 to 15,000 Hz. **Harmonic distortion:** 1% or less. \* **Image rejection:** —45 dB. \* **Capture ratio:** 4 dB. \* **AFC Correction:** 150 kHz per volt. **AM Suppression:** —35 dB. \* **IF Rejection:** —80 dB. \* **Separation:** 27 dB @ 1000 Hz. **Amplifier Section: Continuous power output:** 10 watts per channel. **Music power output:** 15 watts per channel. \* **Tape output:** 0.5 volt, with a 0.3 volt signal at the AUX input. **Speaker output impedance:** 4 thru 16 ohms. **Tape output impedance:** 3500 ohms. **Damping factor:** 50 or higher. **Hum & noise: Phono:** —47 dB. **Auxiliary:** —60 dB. **Frequency response (1 watt):** 12 Hz to 60 kHz ±1 dB, 6 Hz to 100 kHz ±3 dB. **Power bandwidth:** 5 Hz to 90 kHz. **Input Sensitivity:** Aux. 300 millivolts. **Channel Separation:** 45 dB or better at 1000 Hz. **Total Harmonic Distortion (at full output):** Less than 1% from 12 Hz to 60 kHz. **Intermodulation Distortion (at full output):** Less than 1% using 60 & 6000 Hz mixed 4:1. **Phono Equalization:** RIAA [Recording Industry Assoc. of America]. **Bass:** 16 dB cut & 15 dB boost @ 20 Hz. **Treble:** 13 dB cut & 15 boost @ 20,000 Hz. **Automatic Turntable Type:** BSR McDonald 500A. **Turntable speed:** 16 2/3, 33 1/3, 45 & 78 rpm. **Record size:** 7", 10", or 12". **Wow:** Less than 0.2%. **Flutter:** Less than 0.06%. **Cartridge type:** Shure model M44-7. **Stylus:** 0.7 mil diamond. **Tracking pressure:** 1.5 to 3 grams. **GENERAL: Power requirements:** 105-125 or 210-250 volts. 50/60 Hz, 32 watts idling, 65 watts full output, Plus 7.5 watts from automatic turntable motor. **Dimensions:** Overall: 21 3/4" W x 7 7/8" H x 14 1/8" D. **Net weight:** 29 lbs. \*Rated IHF (Institute of High Fidelity) Standards



AD-17  
Summer Sale  
Until August  
Only  
**\$99.95**  
\$10 mo.



To keep those favorite records clean and free from dust, order the attractive new protective cover. It's attractively styled in smoke gray see-through plastic with walnut sides to match the AD-17.

- 15 watts per channel music power output • All solid-state circuitry • Low Harmonic & IM distortion • Virtually flat frequency response • Full range Treble and Bass controls • 45 dB channel separation • Advanced transformerless output circuitry • Electronically filtered power supply • Auxiliary and unner inputs • Headphone jack • Tape outputs • Precision-crafted BSR turntable features cueing and pause control • Adjustable stylus pressure • Adjustable anti-skate control • Plays all four speeds, manual or automatic • 4-pole induction motor for low wow & flutter • Handsomely styled cabinet • Circuit board plus wiring harness for easy assembly • Attractive new optional see-through cover adds extra beauty & protects valuable records from dust

## Heathkit "17" . . . With The Famous AA-14 30-Watt Solid-State Stereo Amplifier And Optional Protective Cover . . . Now At Special Summer Savings

Quality Stereo Sound At A Budget-Saving Price. Heath engineers took the top rated AA-14 solid-state stereo amplifier, matched it with the precision BSR McDonald 400 Automatic Turntable, and put both these able performers in a handsome walnut cabinet. The 17 transistor, 6 diode amplifier delivers 15 watts music power per channel—more than ample to drive any reasonably efficient speaker system (see pp. 36-38). Frequency response is a wide 12 Hz to 60 kHz ±1 dB and harmonic & IM distortion are both less than 1% at full output. Wide range Volume, Bass, Treble & Balance controls give you full command and there's even a stereo headphone jack for private listening. Tuner and auxiliary inputs allow the addition of stereo FM and tape recording later if you wish. The BSR McDonald 400 Turntable incorporates many advanced design features . . . variable cueing and pause control, adjustable stylus pressure . . . anti-skate control . . . and comes equipped with a Shure magnetic cartridge. The 5% Heathkit System Discount makes the "17" an even more remarkable value. Order yours today.

Kit AD-17, 29 lbs., no money dn., \$10 mo. until August only . . . \$99.95  
Model ADA-17-1, protective cover, 5 lbs. . . . . \$12.95

**AD-17 SPECIFICATIONS—Recommended System Mates:** All speakers & speaker systems, ppg. 36-38, except AS-10; all changers & turntables, ppg. 40-41. **AMPLIFIER SECTION: Continuous power output:** 10 watts per channel. **Music power output:** 15 watts per channel. \* **Tape output:** 0.5 volt, with a 0.3 volt signal at the AUX input. **Speaker output impedance:** 4 thru 16 ohms. **Tape output impedance:** 3500 ohms. **Damping factor:** 50 or higher. **Hum & noise: Phono:** —47 dB. **Auxiliary:** —60 dB. **Frequency response (1 watt):** 12 Hz to 60 kHz ±1 dB, 6 Hz to 100 kHz ±3 dB. **Power bandwidth:** 5 Hz to 90 kHz. **Input impedance:** Aux. 180 K ohms, tuner 180 K. **Input sensitivity:** Aux.—300 mv; tuner—300 mv. **Channel Separation:** 45 dB or better at 1000 Hz. **Total Harmonic Distortion (at full output):** Less than 1% using 60 & 6000 mixed 4:1. **Phono Equalization:** RIAA [Recording Industry Assoc. of America]. **Bass:** 16 dB cut & 15 dB boost @ 20 Hz. **Treble:** 13 dB cut & 15 dB boost @ 20,000 Hz. **Automatic Turntable Type:** BSR McDonald 400. **Turntable Speed:** 16 2/3, 33 1/3, 45 & 78 rpm. **Record Size:** 7", 10", or 12". **Wow:** Less than 0.2%. **Flutter:** Less than 0.06%. **Cartridge Type:** Shure Magnetic. **Stylus:** 0.7 mil diamond. **Tracking Pressure:** 3 to 5 grams. **GENERAL: Power Requirements:** 105-125 or 210-250 volts, 50/60 Hz, 32 watts idling, 65 watts full output, Plus 7.5 watts from automatic turntable motor. **Dimensions:** Overall: 21 3/4" W x 8 1/4" H x 14 1/8" D. **Net weight:** 21 lbs. \*Rated IHF (Institute of High Fidelity) Standards

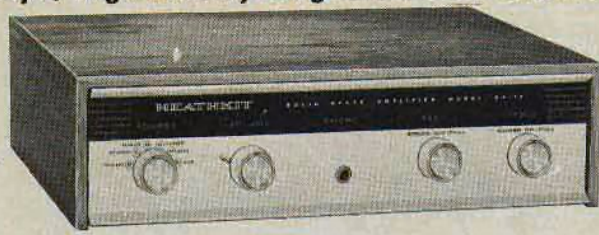


# Family of Solid-State Performers

The Famous Heathkit AA-14/AJ-14 . . . Rated First In Value By Leading Consumer Testing Groups, High Fidelity Magazines & Electronics Editors



AJ-14  
\$54<sup>95</sup> \$6 mo.  
(less cabinet)



AA-14  
\$64<sup>95</sup> \$7 mo.  
(less cabinet)

## The Famous AJ-14 FM Stereo Tuner . . . Concert Hall Realism At An Amazing Price

- 14-transistor, 5-diode circuitry for instant, heat-free operation and natural, transparent sound • 4-stage IF section delivers sensitivity and selectivity comparable to units costing much more • Stereo phase control for maximum separation and minimum distortion • Filtered outputs for direct "beat-free" stereo recording • Automatic Frequency Control for drift-free listening • Automatic stereo indicator light • Only 4 controls for simple operation—on-off, Tuning, Mono-Stereo & Phase • Pre-aligned, pre-assembled "front-end" tuner & one circuit board for fast, simple construction • Install any of three ways . . . wall, custom or either Heath Cabinet • Excellent team mate for the AA-14 stereo amplifier opposite

Kit AJ-14, 6 lbs., less cabinet for custom mounting . . . no money down, \$6 mo. . . . \$54.95  
Model AE-35, 4 lbs., beige metal cabinet . . . \$3.50  
Model AE-25, 4 lbs., genuine walnut veneer cabinet . . . \$9.95

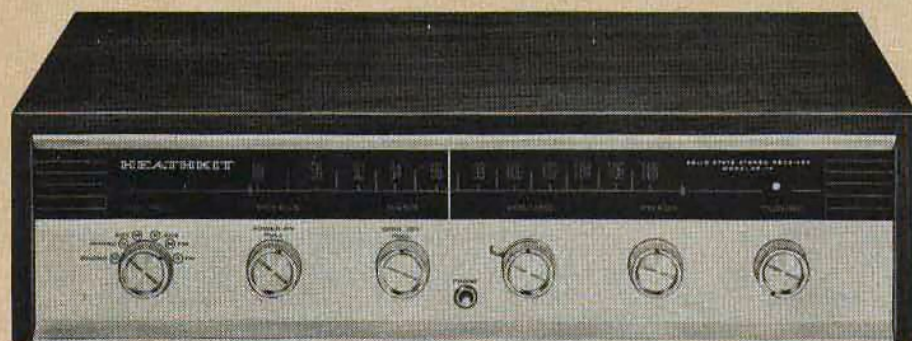
**AJ-14 SPECIFICATIONS (RATED IHF STANDARDS)**—Tuning range: 88 to 108 MHz. Antenna input impedance: 300 ohm, balanced input. Sensitivity (IHF): 5 microvolts. Intermediate frequency: 10.7 MHz. Audio frequency response (IHF): —3 dB to 0 dB. (20 to 15,000 Hz). Hum and noise (IHF): —50 dB. Output impedance: 20 K ohm. Output voltage: 0.7 volt with a 1,000 microvolt input signal. 400 Hz with 100% modulation. Harmonic distortion (IHF): 1% or less. Image ratio (IHF): —45 dB. Capture ratio (IHF): 3 dB. IF rejection (IHF): —80 dB. AFC correction: 150 kHz per volt. AM suppression (IHF): —40 dB. Channel separation: 30 dB or more at 1,000 Hz. (Channel separation is measured using a 98 MHz, 1,000 microvolt input stereo signal that is 100% modulated.) Power requirements: 105-125 V. or 210-250 V. AC, 50-60 Hz. Dimensions: With Walnut Cabinet 12 1/2" W x 3 3/8" H x 9 3/4" D. Custom mounting dimensions: Horizontal or vertical, cutout required 11 3/4" x 2 3/4", depth required from front of mounting surface 9 3/4".

## The Famous AA-14 Solid-State 30-Watt Stereo Amplifier . . . Wide Response . . . Low Distortion

- 17 transistors, 6 diodes • 15 to 50,000 Hz  $\pm 1$  dB response at full 15 watts music power output per channel • Less than 1% distortion • Front panel stereo headphone jack • 10 hours parts-to-power circuit board construction Kit AA-14, 11 lbs., less cabinet for custom mounting . . .

no money down, \$7 mo. . . . \$64.95  
Model AE-35, 4 lbs., beige metal cabinet . . . \$3.50  
Model AE-25, 4 lbs., genuine walnut veneer cabinet . . . \$9.95

**AA-14 SPECIFICATIONS—Recommended system mates:** All speakers & speaker systems, pgs. 36-38, except AS-10U, all changers & turntables pgs. 40 & 41. **Continuous power output:** 10 watts each channel—20 watts total. **Music power output (IHF):** 15 watts per channel. **Output impedance:** 4 through 16 ohm. **Damping factor:** 50 or better. **Hum and noise:** Phono: —60 dB. Tuner: —63 dB. Auxiliary: —63 dB. **Frequency response:** 12 to 60,000 Hz  $\pm 1$  dB; 6 to 100,000 Hz  $\pm 3$  dB. **Power response:** 15 to 50,000 Hz  $\pm 1$  dB; 7 to 90,000 Hz  $\pm 3$  dB. **Input sensitivity:** Phono: 4.5 mv; Tuner: 300 mv; Auxiliary: 300 mv. **Input impedance:** Phono: 47K ohm; Tuner: 180K ohm; Auxiliary: 180K ohm. **Channel separation:** 45 dB or better. **Total harmonic distortion (at Full Output):** .5% or less @ 1000 Hz; 1% or less @ 20 & 20,000 Hz. **Intermodulation distortion (at Rated Output):** Less than 1% (60 & 6,000 Hz, 4:1). **Phono equalization:** RIAA. **Front panel:** 6-Position Source Switch; Mono phono; Stereo phono; Mono tuner; Stereo tuner; Mono Auxiliary; Stereo Auxiliary; Volume Control; Bass Control; Treble Control; Phone Jack; Power Switch; Speaker Switch. **Rear Panel:** Fuse, AC Power Socket, Switched & Unswitched, Speaker Terminal Block, One Left & One Right Speaker Ground Terminal. . . Triple Phono Input Sockets. **Power requirements:** 105-125 volts or 210-250 volts, 50-60 Hz, 20 watts idling; 60 watts full output; (No load on AC power socket). **Dimensions:** With walnut cabinet 12 1/2" W x 3 3/8" H x 9 3/4" D. **Custom mounting dimensions:** Horizontal or vertical, cutout required 11 3/4" x 2 3/4", depth required from front of mounting surface 10 3/4".



Kit AR-14  
\$114<sup>95</sup> \$11 mo.  
(less cabinet)

Wired ARW-14  
\$169<sup>95</sup> \$16 mo.  
(with cabinet)

## The Famous Heathkit AR-14 30-Watt FM Stereo Receiver Is Now Available Kit Or Assembled

- All solid-state 31 transistor, 10 diode circuit for heat-free, trouble-free performance and longer life • Remarkable 15 to 50,000 Hz response  $\pm 1$  dB • 15 watts music power per channel • Very low Harmonic & IM distortion • Front panel stereo headphone jack for private listening • Adjustable phasing control for ideal stereo FM separation at all times • Stereo indicator light • Transformerless output circuit for lowest distortion, minimum phase shift and wider response • Circuit board-wiring harness construction for faster assembly with less chance of error • Measures only 3 3/8" H x 15 1/4" W x 12" D—ideal for bookshelf installation

America's Best Transistor Stereo Value now becomes an even better buy with the special 5% Heath stereo system discount. Just order the AR-14 with a turntable (see pgs. 40 & 41) and two speakers (see pgs. 36-38), and subtract 5% from the total price! And what performance! Delivers 30 of the coolest watts you've ever heard. And the FM tuner pulls in stations far and near . . . you'll discover stations you've never heard before. For beat-free stereo taping the tuner outputs are filtered.

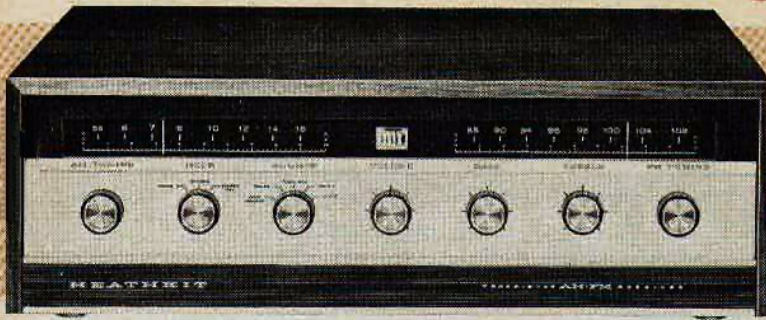
New Transformerless Output Circuit . . . for clear uncolored sound. Each channel has two complementary PNP and NPN transistors. This superior design delivers lower phase shift, minimum distortion and wider response. Other features include a stereo headphone jack for private listening; stereo indicator light; complete controls for full command of all functions; and choice of 3-way installation . . . wall, custom cabinet or either Heath factory-assembled walnut or beige metal cabinet. The attractive AR-14 anodized aluminum front panel looks great in any surroundings. Circuit board construction . . . build it in a weekend.

Kit AR-14, 18 lbs., less cabinet, no money down, \$11 mo. . . . \$114.95  
Assem. ARW-14, 22 lbs., with AE-55 cab., no money dn., \$16 mo. \$169.95  
Model AE-55, 6 lbs., walnut veneer cabinet . . . \$12.95  
Model AE-65, 6 lbs., beige steel cabinet . . . \$3.95

**AR-14 SPECIFICATIONS—Recommended system mates:** All speakers & speaker systems, pgs. 36-38, except AS-10; all changers & turntables, pgs. 40 & 41. **AMPLIFIER:** Continuous power output: 10 watts each channel—20 watts total. Music power output (IHF): 15 watts per channel. **Speaker output impedance:** 4 through 16 ohm. **Tape output impedance:** 3.5K ohm. **Damping factor:** 50. **Hum and noise:** Phono: —60 dB; Auxiliary: —63 dB. **Frequency response:** 12 to 60,000 Hz  $\pm 1$  dB; 6 to 100,000 Hz  $\pm 3$  dB. **Power response:** 15 to 50,000 Hz  $\pm 1$  dB; 7 to 90,000 Hz  $\pm 3$  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 & 6,000 Hz, 4:1). **Phono equalization:** RIAA. **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 & Unswitched; Speaker Terminal Blocks; One Left & One Right Speaker Ground Terminals; 1; Triple Phono Sockets. **Power requirement:** 105-125 volts or 210-250 volts 50/60 Hz; 32 watts idling; 65 watts full output; (No load on AC power sockets). **Dimensions:** Overall 15 1/4" W x 3 3/8" H x 12" D. **Mounting pilot:** Horizontal or Vertical; Cutout required 15" x 3 3/8"; Depth required from front mounting surface 11 1/2". **FM: Tuning range:** 88-108 MHz. **Antenna:** Balanced input for external 300 ohm antenna. **Intermediate frequency:** 10.7 MHz. **Sensitivity (IHF):** 5 uv for less than 3% total noise, distortion hum—30 dB. **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.







AR-13A  
**\$189<sup>95</sup>**  
 no money dn.,  
 \$18 mo.

**Deluxe 66-Watt Solid-State  
 AM/FM Stereo Receiver . . .  
 Just Add Speakers And Enjoy**

- 46 transistor, 17 diode circuitry for cool, instant, economical operation and the crisp, natural beauty of "transistor sound" • Compact, yet houses two 33-watt power amplifiers . . . two preamplifiers . . . and wide-band AM/FM/FM Stereo tuner • Automatic FM stereo switching • Built-in stereo indicator light • Filtered outputs for direct, "beat-free" stereo recording • Provides 66 watts IHF music power, 40 watts rms from 15 to 30,000 Hz • Luxurious walnut cabinet styled in Heathkit low-silhouette motif • Preassembled, prealigned "front-end" and AM-FM I.F. strip aid construction

**CRITICS ACCLAIM.** Electronics World Magazine, after testing the AR-13A, concluded: "Despite its low price, it is one of the best stereo receivers we have tested, and is comparable to many manufactured units costing twice as much." Julian Hirsch, Hi-Fi Stereo Review reported: "Unlike many transistor amplifiers, the AR-13A has low IM distortion at low power levels . . . The AR-13A has a remarkably flat power response . . . Hum and noise were inaudible . . . The FM tuner proved to be quite sensitive . . . drift is negligible . . . The FM stereo channel separation is excellent . . . It is one of the finest integrated stereo receivers I have seen, comparable to many factory-wired tuners costing far more."

**Deluxe Features Add Convenience, Improved Performance.** When stereo is broadcast, you don't lift a finger. The built-in stereo adapter automatically switches in, and a stereo indicator lights. The tape recorder outputs are filtered, so there's no undesirable beats when you want to tape a broadcast. In addition, a local distance switch assures optimum performance at all signal levels . . . a squelch control hushes between station noise when tuning . . . a husky transformer power supply delivers full power at all frequencies . . . and the tuning meter, flywheel dials, and lighted AM & M slide-rule dials permit precision tuning. There are dual-tandem controls for simultaneous adjustment of volume, bass and treble in both channels. Three stereo inputs—mag. phono plus two auxiliary. The AM tuner boasts a high gain RF stage and High-Q rod antenna. And the FM tuner has built-in

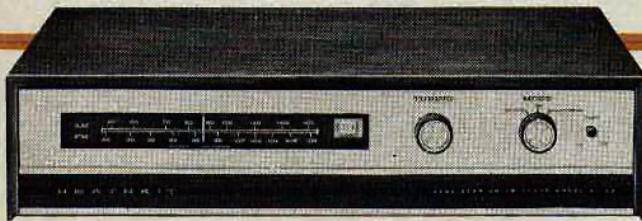
line cord antenna for local signal pickup, plus external antenna connectors for distant stations.

**Handsome Walnut Cabinet Included** with extruded gold anodized aluminum front panel. And the hinged lower front panel protects the secondary controls from accidental changes.

**Save An Extra 5%** . . . order with a pair of speakers plus any changer or turntable, and take the special Heathkit 5% system discount.

**Kit AR-13A, 35 lbs. . . no money dn., \$18 mo. . . . . \$189.95**

**AR-13A SPECIFICATIONS—Recommended system mates:** Speaker systems: AS-153, AS-163, AS-173, AS-183, pgs. 38; AS-16, AS-10, AS-37, AS-38, AS-48, pgs. 36-37. All changers pgs. 40-41. **AMPLIFIER:** Power output per channel (Heath Rating): 20 watts/8 ohm load, 13.5 watts/16 ohm load, 9 watts/4 ohm load. (IHF Music Power Output): 33 watts/8 ohm load, 18 watts/16 ohm load, 12 watts/4 ohm load @ 0.7% THD, 1 kHz. **Frequency response:** ±1 dB from 15 Hz to 30 kHz @ rated output; ±3 dB from 10 Hz to 60 kHz @ rated output. **Harmonic distortion (at rated output):** Less than 1% @ 20 Hz; less than 0.3% @ 1 kHz; less than 1% @ 20 kHz. **Intermodulation distortion (at rated output):** Less than 1%, 60 & 6,000 Hz signal mixed 4:1. **Hum & noise:** Mag. phono, 50 dB below rated output; Aux. inputs, 65 dB below rated output. **Channel separation:** 40 dB @ 20 kHz, 60 dB @ 1 kHz, 40 dB @ 20 Hz. **Input sensitivity: (for 20 watts output per channel, 8 ohm load):** Mag. phono, 6mV; Aux. 1, .25V; Aux. 2, .25V. **Input impedance:** Mag. phono, 35 K ohm; Aux. 1, 100 K ohm; Aux. 2, 100 K ohm. **Output:** 4, 8 & 16 ohm and low impedance tape recorder outputs. **Controls:** 5-position Selector; 3-position Mode; Dual Tandem Volume; Bass & Treble Controls; Balance Control; Phase Switch; Input Level Controls (all inputs except Aux. 2); Push-Pull ON/OFF Switch. **FM: Tuning range:** 88 MHz to 108 MHz. **IF frequency:** 10.7 MHz. **Frequency response:** ±3 dB, 20 to 15,000 Hz. **Capture ratio:** 3 dB. **Antenna:** 300 ohm balanced (internal for local reception). **Quieting sensitivity:** 1 1/2 uv for 20 dB of quieting, 2 uv for 30 dB of quieting. **Bandwidth:** 325 kHz @ 6 dB down with 1000 uv input. **Image rejection:** 35 dB. **IF rejection:** 70 dB. **AM suppression:** 35 dB. **Harmonic distortion:** Less than 1%. **STEREO MULTIPLEX:** Bandpass: ±1/4 dB, 50 to 53,000 Hz. **Channel separation:** (SCA Filter Off) 30 dB, 50 to 2,000 Hz, 25 dB at 10 kHz. **19 kHz Suppression:** 45 dB down from rated output at 1 kHz. **SCA Rejection:** 35 dB down from output. **AM: Tuning Range:** 535 to 1620 kHz. **IF frequency:** 455 kHz. **Sensitivity:** 30 uv @ 600 kHz; 9 uv @ 1000 kHz. **Bandwidth:** 8 kHz @ 6 dB down. **Image rejection:** 40 dB @ 600 kHz. **IF rejection:** 55 dB @ 1000 kHz. **Harmonic distortion:** Less than 2% with 1000 uv input, 400 Hz with 30% modulation. **Hum & noise:** 40 dB. **Overall dimensions:** 17" L x 5 1/2" H x 16" D. **Power requirements:** 105-125 or 210-250 volts, 50-60 Hz AC, 30 watts idling, 110 watts max.



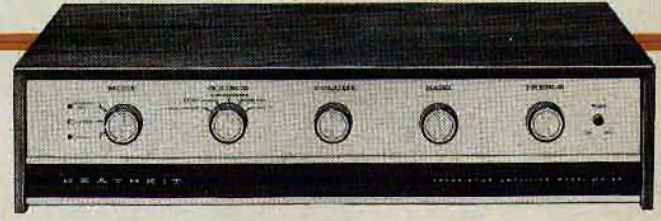
AJ-33A  
**\$99<sup>95</sup>**  
 \$10 mo.

## Deluxe AM/FM Stereo Tuner

- 23-transistor, 8 diode circuit • Automatic stereo switching • Stereo phase control for lowest distortion, maximum separation • Stereo indicator light • Filtered stereo outputs for beat-free taping • Pre-assembled, pre-aligned front end and IF circuits for maximum performance, easier assembly • Adjustable FM squelch quiets between-station noise • AFC for drift-free FM • AGC for steady volume • Flywheel tuning, lighted slide-rule dial & tuning meter for precision tuning • Walnut cabinet included

**Kit AJ-33A, 18 lbs. . . no money dn., \$10 mo. . . . . \$99.95**

**AJ-33A SPECIFICATIONS—FM SECTION:** Tuning range: 88 to 108 MHz. Intermediate frequency: 10.7 MHz. Antenna: 300 ohm balanced or built-in line type. Output impedance (emitter follower): Variable to 3000 ohms. Output voltage: 1.5 volts. Quieting sensitivity: 2 uv for 20 dB; 3 uv for 30 dB. Audio frequency response: 20-15,000 Hertz ±3 dB. Harmonic distortion: Less than 1%. Image rejection: 35 dB. Capture ratio: 3 dB. AM suppression: 35 dB. Hum & noise: 50 dB. **MULTIPLEX SECTION:** Converter bandpass: ±1/4 dB 50 to 53,000 Hz. Channel separation: 30 dB from 50 to 2 kHz and 25 dB at 10 kHz. **AM SECTION:** Tuning range: 535 to 1620 kHz. Intermediate frequency: 455 kHz. Usable sensitivity: 8 uv @ 1000 kHz. Antenna: Built-in rod with provision for external straight wire. Output voltage: 0.25 V. with 90% modulation. Image rejection: 40 dB @ 600 kHz. Harmonic distortion: Less than 2% (30% mod. @ 1 mv input). Hum & noise: 40 dB. **GENERAL SPECIFICATIONS:** Tuning indicator: Meter. Controls: Tuning; Right Channel level; Left Channel level; FM squelch; Stereo converter—balance, separation and phase. Switches: Mode, AFC, Noise filter, SCA filter, local-distance. Transistors & diodes: 23 transistors, 8 diodes. Power supply: Transformer operated, full wave rectifier. Power requirements: 105-125 volts, 50/60 Hertz, 7 watts. Dimensions: 15 1/2" W x 3 3/4" H x 11 1/2" D.



AA-22  
**\$99<sup>95</sup>**  
 \$10 mo.

## Matching Solid-State 66-Watt Stereo Amplifier

- 20-transistor, 10 diode circuit for cool, crisp sound • 33 watts per channel music power output • Wide-range response 15 Hz to 30 kHz ±1 dB • Less than 1% distortion • 5 stereo inputs for any program source • Concealed secondary controls behind hinged lower front panel • Styling and performance companion to the Heathkit AJ-33A AM/FM Stereo Tuner

**Kit AA-22, 22 lbs. . . no money dn., \$10 mo. . . . . \$99.95**

**AA-22 SPECIFICATIONS—Recommended system mates:** Speakers: AS-16, AS-10, AS-37, AS-38, AS-48, pgs. 36-37; AS-183, AS-173, AS-163, AS-153 & AS-133, p. 38; all changers and turntables, pgs. 40-41. **Simultaneous power output per channel:** (Heath Rating). 20 watts/8 ohm load, 13 watts/16 ohm load, 9 watts/4 ohm load. (IHF Music Power Output) 33 watts/8 ohm load, 18 watts/16 ohm load, 16 watts/4 ohm load @ 0.7% THD, 1 kHz. **Power response:** ±1 dB from 15 Hz to 30 kHz @ rated output; ±3 dB from 10 Hz to 60 kHz @ rated output. **Harmonic distortion (at rated output):** Less than 1% @ 20 Hz, 0.3% @ 1 kHz, 1% @ 20 kHz. **Intermodulation distortion (at rated output):** Less than 1%, 60 and 6,000 Hz signal mixed 4:1. **Hum and noise:** Mag phono, 50 dB below rated output. Aux. inputs, 65 dB below rated output. **Channel separation:** 40 dB @ 20 Hz, 60 dB @ 1 kHz, 40 dB @ 20 kHz. **Input sensitivity: (for 20 watts output per channel, 8-ohm load)** Mag. phono, 6 mV; Tuner 250 mV; Tape Recorder 250 mV; Aux. 1, 250 mV; Aux. 2, 250 mV. **Input impedance:** Mag. phono, 35 K ohm; Tuner, 100 K ohm; Tape Recorder, 100 K ohm; Aux. 1, 100 K ohm; Aux. 2, 100 K ohm. **Outputs:** 4, 8 and 16 ohm and tape recorder outputs. **Controls:** 5-position selector switch, 3-position mode switch, dual tandem volume, bass and treble controls, phase switch, input level controls, push-on push-off switch. **Semiconductor complement:** 20 transistors, 10 diodes. **Power requirements:** 105-125 or 210-250 volts, 50-60 Hz AC. 25 watts idling, no signal; 105 watts, full power output @ 120 volts with no load on AC receptacles. **Power outlets:** 2 AC receptacles, 1 switched, 1 unswitched. **Dimensions:** 15 1/2" W x 3 3/4" H x 11 1/2" D.



# Solid-State Receivers, Tuners And Amplifiers

## Save An Extra 5% By Ordering A System

It's easy and fun to design your own stereo system, and there are three ways to qualify for a Heath 5% System discount to make buying it even easier. Here's all you do: (1) pick a separate amplifier and tuner, match them with speakers and you have a system; (2) choose a receiver, add a turntable and speakers; or (3) choose a stereo compact and speakers and you also have a system. Then just add up the cost and subtract 5% from the total price (the complete system must be ordered at the same time). That's all there is to it!

### Heathkit AR-17 Solid-State FM-Stereo Receiver

Kit AR-17, 9 lbs. . . (less cabinet for custom mounting) . . .  
no money dn., \$7 mo. . . . . \$69.95  
Model AE-35, 4 lbs., beige metal cabinet . . . . . \$3.50  
Model AE-25, 4 lbs., genuine walnut veneer cabinet . . . . . \$9.95  
Kit AR-27, Mono FM Receiver, 8 lbs. . . no money dn., \$5 mo. . . . . \$41.95

**AR-17 SPECIFICATIONS—Recommended System Mates:** All speakers & speaker systems except AS-38 & AS-48, ppg. 36-38; all changers & turntables, ppg. 40-41. **FM SECTION: Tuning range:** 88-108 MHz. **Antenna input impedance:** 300 ohm, Balanced Input. **Sensitivity:** 5 microvolts\*. **Intermediate frequency (IF):** 10.7 MHz. **Hum & noise:** -50 dB 1 watt reference. **Audio frequency response:** Monophonic: 0 to -3 dB from 20 to 15,000 Hz. **Harmonic distortion:** 1% or less\*. **Image rejection:** -40 dB\*. **Capture ratio:** 3 dB\*. **AM suppression:** -35 dB\*. **IF rejection:** -80 dB\*. **Separation:** 30 dB @ 1000 Hz. **AMPLIFIER SECTION: Continuous power output:** 5 watts per channel. **Music power output:** 7 watts per channel\*. **Speaker output impedance:** 4 thru 16 ohm. **Damping factor:** 50 or higher. **Hum & noise:** Phono: 45 dB; Aux: 55 dB; Power Amplifier: 80 dB. **Frequency response:** (1 watt): 25 to 35,000 Hz  $\pm 1$  dB; 15 to 70,000 Hz  $\pm 3$  dB. **Power response** (5 watt): 25 to 35,000 Hz  $\pm 1$  dB; 15 to 70,000 Hz  $\pm 3$  dB. **Input sensitivity:** Phono: 5 millivolts. Aux: 300 millivolts. **Input impedance:** Phono: 45k; Aux: 150k. **Channel separation:** 40 dB or better @ 1,000 Hz. **Total harmonic distortion:** (at 5 Watts): Less than 1% from 20 to 20,000 Hz. **Intermodulation distortion** (at 5 watts): Less than 2% using 60 & 6000 Hz mixed 4:1. **Phono equalization:** RIAA (Recording Industry Assoc. of America). **GENERAL: Transistor & diode complement:** 28 transistors, 7 diodes. **Power requirements:** 105-125 volts or 210-250 volts, 50/60 Hz, 21 watts idling, 45 watts full output. **Dimensions:** Overall: 12" W x 3" H x 10 1/2" D. **Mounting position:** Horizontal or vertical. **Custom mounting requirements:** 11 3/4" x 2 3/8" cutout, 10" D. from front mounting surface. **Net weight:** 9 lbs. \*Rated IHF (Institute of High Fidelity) Standards.



AR-17  
**\$69.95**  
(less cabinet)  
no money dn.,  
\$7 mo.

- 28 transistor, 7 diode circuit for top reliability and performance • 14 watts music power, 10 watts RMS from 25-35,000 Hz @  $\pm 1$  dB • Automatic stereo indicator light • Adjustable phase control for maximum separation • Transformerless output for minimum phase shift, wide response & low distortion • All critical circuits pre-assembled & aligned • Front panel stereo headphone jack • Easy circuit board assembly

### Deluxe Solid-State AM/FM/FM Stereo Tuner With 4 IF Stages

Kit AJ-43D, 15 lbs. . . less cabinet for custom mounting . . .  
no money down, \$11 mo. . . . . \$114.95  
Model AE-11, 8 lbs. . . luxurious walnut wood cabinet . . . . . \$14.95

**AJ-43D SPECIFICATIONS—FM SECTION (Monaural Only): Tuning range:** 88 to 108 MHz. **Intermediate Frequency:** 10.7 MHz. **Antenna:** 300 ohms balanced, internal line antenna provided. **Quieting sensitivity:** (400 Hz, 100% mod.) 1.5 uv for 20 dB of quieting; 2 uv for 30 dB of quieting; 3 uv for full quieting, 40 dB. **Image rejection:** 35 dB. **IF rejection:** 75 dB. **Capture Ratio:** 3 dB. **AM suppression:** 35 dB. **Bandwidth (Complete Tuner):** 300 kHz at 6 dB down, 1000 uv input. **Detector bandwidth (Peak-to-Peak):** 600 kHz. **Harmonic distortion:** Less than 1% (IHF). **Hum & noise (Complete Tuner):** 50 dB. **Output impedance:** (Emitter Follower) Variable to 3000 ohms. **Output voltage:** 1 v. @ 1000 uv, 400 Hz 100% mod. **FM STEREO CONVERTER SECTION: Converter band-pass:** 50 Hz to 53,000 Hz  $\pm 1/2$  dB. **Channel separation:** 40 dB @ 50 Hz to 2,000 Hz; 30 dB @ 10,000 Hz; 20 dB @ 15,000 Hz. **19 kHz suppression:** 45 dB down. **38 kHz suppression:** 45 dB down. **SCA rejection:** 30 dB min. **Output voltage:** .5 V. @ 1000 uv input, 400 Hz, 100% stereo mod. **Output impedance:** (Emitter Follower) Variable to 3000 ohms each channel. **AM SECTION: Tuning range:** 535 to 1620 kHz. **Intermediate frequency (IF):** 455 kHz. **Sensitivity:** 600 kHz, 7 uv for 10 dB S/N; 1000 kHz, 4 uv for 10 dB S/N; 1400 kHz, 3 uv for 10 dB S/N. **Antenna:** Built-in rod with provisions for external straight wire. **Image rejection:** 50 dB at 600 kHz; 70 dB at 1400 kHz. **IF rejection:** 55 dB at 600 kHz; 65 dB at 1400 kHz. **10 kHz rejection:** 40 dB. **Harmonic distortion:** Less than 2%. **Hum & noise:** 30 dB below 30% mod. **Output impedance:** (Normal) Variable to 3000 ohms; (Aux.) Variable to 4000 ohms. **Output voltage:** 1 volt nominal. **Dimensions:** 15 1/2" W x 5 1/4" H x 14 1/4" D.



AJ-43D  
**\$114.95**  
(less cabinet)  
no money dn.,  
\$11 mo.

- 25 transistor, 9 diode circuit gives clear, natural sound, heat-free operation • Automatic stereo switching • Stereo indicator light • AGC • AFC • Stereo phase control for maximum separation, less distortion • 4-stage IF and front end are factory built and aligned • Fast, easy circuit board construction • Versatile installation in a wall, custom cabinet or Heath cabinet

### Deluxe 100-Watt Solid-State Stereo Amplifier . . . Matches AJ-43D Stereo Tuner

Kit AA-21D, 23 lbs. . . less cabinet for custom mounting . . .  
no money down, \$13 mo. . . . . \$139.95  
Model AE-11, 8 lbs. . . walnut wood cabinet . . . . . \$14.95

**AA-21D—SPECIFICATIONS—Recommended system mates:** Separate Speaker, AS-183 pg. 38. **Speaker Systems:** AS-16, AS-38, AS-48, AS-10, AS-37, ppg. 36 & 37. **All changers & turntables,** ppg. 40 & 41. **Power output per channel:** (Heath Rating) 35 watts/8 ohm load, 26 watts/16 ohm load, 18 watts/4 ohm load; (IHF music power output) 50 watts/8 ohm load, 34 watts/16 ohm load, 25 watts/4 ohm load @ 0.7% THD, 1 kHz. **Frequency response:**  $\pm 1$  dB from 13 Hz to 25 kHz @ rated output;  $\pm 3$  dB from 8 Hz to 40 kHz @ rated output. **Harmonic distortion (At rated output):** Less than 1% @ 20 Hz, 0.5% @ 1 kHz, 2.0% @ 20 kHz. **Intermodulation distortion (at rated output):** Less than 1% @ 20 Hz, 6,000 Hz signal mixed 4:1. **Hum & Noise:** Tapehead, 40 dB below rated output; Mag. phono, 45 dB below rated output; Aux. inputs, 60 dB below rated output; Tape monitor, 70 dB below rated output. **Channel separation:** 40 dB min. @ 20 kHz 55 dB min. @ 1 kHz 50 dB min. @ 20 Hz. **Input sensitivity:** (For 35 watts output per channel, 8 ohm load) Tapehead, 2 mv, Mag. phono, 3 mv; Tuner, 250 mv; FM Stereo, 250 mv; Aux., 250 mv; Tape Monitor, 0.6 V. **Input impedance:** Tapehead, 60 k ohm; Mag. phono, 30 k ohm; Tuner, 100 k ohm; FM Stereo, 100 k ohm; Aux, 100 k ohm; Tape monitor, 47 k ohm. **Outputs:** 4, 8 or 16 ohms and low impedance tape recorder outputs. **Controls:** 5-pos. Selector (dual concentric), 5-pos. Mode switch, dual-concentric Volume, Bass & Treble controls, Tape monitor sw., Loudness sw., Phase sw., Input level controls (all inputs except Tape Head & Tape Monitor inputs), Push-Push on/off switch. **Semi-conductor complement:** 26 Transistors, 10 diodes. **Power requirements:** 105-125 or 210-250 volts, 50-60 Hz AC, 35 watts idling, no signal; 200 watts, full power out @ 120 volts with no load on AC receptacles. **Power outlets:** 2 AC receptacles, 1 switched, 1 unswitched. **Dimensions:** 15 1/2" W x 5 1/4" H x 14" D.



AA-21D  
**\$139.95**  
(less cabinet)  
no money dn.,  
\$13 mo.

- All solid-state 26-transistor, 10-diode circuit delivers 50 watts music power per channel •  $\pm 1$  dB, 13 to 25,000 Hz frequency response • Less than 1% Harmonic and IM distortion at full output for clear, natural sound • Transformerless output circuit for lower distortion and phase shift, greater fidelity • Circuit board construction, encapsulated modules for fast, easy assembly



# How To Order...The Easy Heathkit® Way

## 1. BY MAIL

Complete the simple-to-follow Heath order form—including the reverse side if you wish to use the liberal Heath Time-Payment Plan.

Always Use The SAME Name Whenever You Order. Enclose your check or money order to cover the type of payment plan you've chosen, plus shipping charges only if item can be mailed Parcel Post (see Rate information, opposite page).



## 2. BY TELEPHONE ... ANYTIME DAY OR NIGHT

Weekdays (M-F) 8 a.m. to 4:30 p.m. Michigan Time. Call Area 616, 983-3961 for personal service. **Nights C.O.D. Orders Only** 4:30 p.m. to 8 a.m. Michigan Time, call Area 616, 983-3921 and our Electronic Secretary will record your order. After 8 p.m. (your time) you can call from anywhere in the Continental U. S. (except Hawaii and Alaska) for \$1 or less. Also use this number anytime Sat., Sun., and holidays.



## 3. VISIT OUR FACTORY SALES/SHOWROOM

Heath is located on Hilltop Rd., in St. Joseph, Michigan. And our Sales/Showroom is open Mon. thru Fri. from 8:30 a.m. to 5 p.m., and on Saturdays from 9 a.m. to 3 p.m. You can take your kit with you, or arrange for shipment to your home.



## ZIP ZONE CHART

Now Use Your Zip Code To Find Parcel Post Zone. To determine the cost of a parcel post shipment to your area, use the first three digits (prefix) of your zip code and find your zone in the Zone Chart. Then refer to the Parcel Post Rate Table below. For Example, If Your Zip Code is 10036, use the first 3 numbers ... 100 ... and Check The Chart below for your Parcel Postal Zone, which is 5.

Zip Code Prefixes	Zone	Zip Code Prefixes	Zone	Zip Code Prefixes	Zone	Zip Code Prefixes	Zone	Zip Code Prefixes	Zone	Zip Code Prefixes	Zone
006-009	8	260-261	3	370-385	4	478	3	600-609	2	823-826	6
010-069	5	262-278	4	387	5	479-489	2	610-619	3	827	5
070-089	4	279	5	388	4	490-491	1	620-623	4	828-832	6
090-099	5	280-283	4	389-397	5	492	2	624-628	3	833	7
		284-285	5			493-495	1	629-668	4	834	6
100-108	5	286-293	4	400-406	3	496-499	3	669-679	5	835-838	7
109	4	294-295	5	407-409	4			680-687	4	840-847	6
110-119	5	296-297	4	410-412	3	500-516	4	688-693	5	850-864	7
120-123	4	298-299	5	413-422	4	520-524	3	700-722	5	865-884	6
124-126	5			423	3	525	4	723-727	4	890-898	7
127-128	4	300-303	4	424-426	4	526-528	3	728-768	5		
129	5	304	5	427-432	3	530-534	2	769	6	930-921	8
130-152	4	305-307	4	433-436	2	535-539	3	770-778	5	922-928	7
153	3	308-329	5	437-457	3	540	4	779-789	6	930-934	8
154-160	4	330-334	6	458	2	541-546	3	790-792	5	935	7
161	3	335-338	5	460-462	3	547-548	4	793-799	6	936-960	8
163	4	339	6	463-464	2	549	3			961	7
165	3	350-352	4	465-466	1	550-566	4	800-803	5	962-976	8
199	4	354	5	467-469	2	567	5	804-805	6	977-979	7
		355-359	4	470-472	3	570-572	4	806-807	5	980-987	8
200-232	4	360-361	5	473	2	573-588	5	808-816	6	988-994	7
233-237	5	362	4	474-475	3	590-597	6	820-822	5	995-999	8
238-259	4	363-369	5	476-477	4	598-599	7				

### INSURED PARCEL POST (Add to Postage)

Liability:	Fee
\$0.01 to \$15	\$0.20
\$15.01 to \$50	.30
\$50.01 to \$100	.40
\$100.01 to \$150	.50
\$150.01 to \$200	.60

Liability for insured mail is limited to \$200.

### \*REA EXPRESS & MOTOR FREIGHT INSTRUCTIONS

For shipments exceeding parcel post limits. Non-mailable items will be sent to you by Motor Freight or REA Express. We suggest that you check with these local carriers to determine the service available for delivery in your area. Do not enclose money for Motor Freight or Express. Shipping charges will be collected by the carrier.

Please note that it may be necessary for us to change routings because of irregularities in service from our city, or at points of transfer en route.

### SPECIAL ACCOUNTS FOR GOVERNMENT, BUSINESS AND EDUCATIONAL INSTITUTIONS

offer 30 day terms to governmental, business and educational institutions. An acceptable Dun and Bradstreet rating or names and addresses of five firms with whom you are presently doing business are required.

Rates on this page were in effect when this catalog was published.

They are subject to change without notice.

### C.O.D. PARCEL POST

Up to \$10.00	60 cents
\$10.01 to \$25.00	70 cents
\$25.01 to \$50.00	80 cents
\$50.01 to \$100.00	90 cents
\$100.01 to \$200.00	\$1.00

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.

### PREMIUM ROUTINGS

We can ship via Air Parcel Post, Parcel Post Special Handling, or Special Delivery, Air Express, Bus or Air Freight, if you so request. Contact your local office for rates and delivery information.

### HEATHKIT OVERSEAS

Many Heathkits are available in special export versions for 115/230 v. AC, 50-60 Hz operation. Look for the "Export model available" note at the bottom of the price lines. For details on international orders and shipments, see the list of overseas units on page 2, or write to International Division, Heath Company, Benton Harbor, Michigan 49022.

## PARCEL POST RATE TABLE

Note: These parcel post rates effective October 19, 1968.

**Zones 1 & 2** We can ship up to 40 pounds per package to your address.

**Zones 3 thru 8** Up to 30 pounds per package can be shipped.

**RFD & APO** Shipments can be up to 70 pounds per package.

APO and FPO parcels not over 30 lbs. and not over 60" length and girth combined can be sent Airlift for an additional \$1 fee; just figure regular surface rates, add \$1 for each 30 lbs. and mark "Airlift" on your order.

**IMPORTANT:** Figure postage separately for each kit ordered and remit full amount. When we can combine packages to save you money, the difference will be refunded to you. (For shipments exceeding parcel post limits refer to REA & Motor Freight instructions)

Ship. Wt.	Zone 1 & 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
2 lbs.	\$0.60	\$0.60	\$0.65	\$0.70	\$0.80	\$0.85	\$0.90
3 lbs.	.65	.70	.75	.85	.95	1.05	1.15
4 lbs.	.70	.75	.85	.95	1.10	1.20	1.35
5 lbs.	.75	.80	.90	1.05	1.25	1.40	1.60
6 lbs.	.80	.90	1.00	1.15	1.40	1.55	1.75
7 lbs.	.90	.95	1.10	1.30	1.50	1.75	1.95
8 lbs.	.95	1.00	1.15	1.40	1.65	1.90	2.15
9 lbs.	1.00	1.05	1.25	1.50	1.80	2.05	2.35
10 lbs.	1.05	1.15	1.35	1.65	1.90	2.25	2.55
11 lbs.	1.10	1.20	1.40	1.75	2.00	2.40	2.75
12 lbs.	1.15	1.25	1.50	1.85	2.15	2.55	2.90
13 lbs.	1.20	1.35	1.55	1.95	2.25	2.70	3.10
14 lbs.	1.25	1.40	1.65	2.05	2.40	2.85	3.25
15 lbs.	1.30	1.45	1.75	2.15	2.50	3.00	3.45
16 lbs.	1.35	1.55	1.80	2.25	2.60	3.15	3.60
17 lbs.	1.40	1.60	1.90	2.35	2.75	3.30	3.80
18 lbs.	1.45	1.65	1.95	2.45	2.85	3.45	4.00
19 lbs.	1.50	1.75	2.05	2.55	2.95	3.60	4.15
20 lbs.	1.55	1.80	2.10	2.65	3.10	3.75	4.35
21 lbs.	1.60	1.85	2.15	2.75	3.20	3.90	4.50
22 lbs.	1.65	1.90	2.25	2.80	3.30	4.05	4.70
23 lbs.	1.70	1.95	2.30	2.90	3.40	4.20	4.85
24 lbs.	1.75	2.00	2.35	3.00	3.55	4.35	5.00
25 lbs.	1.75	2.05	2.45	3.05	3.65	4.50	5.20
26 lbs.	1.80	2.05	2.50	3.15	3.75	4.65	5.35
27 lbs.	1.85	2.10	2.55	3.25	3.90	4.80	5.55
28 lbs.	1.90	2.15	2.60	3.35	4.00	4.90	5.70
29 lbs.	1.90	2.20	2.70	3.40	4.10	5.05	5.90
30 lbs.	1.95	2.25	2.75	3.50	4.20	5.20	6.05
31 lbs.	2.00	2.30	2.80	3.60	4.35	5.35	6.25
32 lbs.	2.05	2.35	2.90	3.65	4.45	5.50	6.40
33 lbs.	2.10	2.40	2.95	3.75	4.55	5.65	6.55
34 lbs.	2.10	2.45	3.00	3.85	4.65	5.75	6.75
35 lbs.	2.15	2.50	3.05	3.95	4.80	5.90	6.90
36 lbs.	2.20	2.55	3.15	4.00	4.90	6.05	7.10
37 lbs.	2.25	2.60	3.20	4.10	5.00	6.20	7.25
38 lbs.	2.25	2.65	3.25	4.20	5.10	6.35	7.40
39 lbs.	2.30	2.70	3.35	4.25	5.25	6.45	7.60
40 lbs.	2.35	2.75	3.40	4.35	5.35	6.60	7.75
45 lbs.	2.55	2.95	3.70	4.80	5.90	7.30	8.55
50 lbs.	2.75	3.20	4.05	5.20	6.45	8.00	9.35
55 lbs.	2.90	3.45	4.35	5.65	7.00	8.65	10.15
60 lbs.	3.05	3.65	4.65	6.05	7.55	9.30	10.95
65 lbs.	3.20	3.90	5.00	6.45	8.10	9.95	11.75
70 lbs.	3.40	4.15	5.30	6.85	8.65	10.60	12.55

Note: These parcel post rates were in effect at the time of printing. They are based upon Oct. 19, 1968 postage rates.







# It's Easy To Open Your Heath Account

## HERE'S ALL YOU DO

- 1 Fill out order blank in the catalog.
- 2 Sign your name in the Time Payment Agreement below.
- 3 Fill in the Credit Statement and the monthly payment (see chart).
- 4 Send the above to the Heath Company, Benton Harbor, Michigan . . . we'll take care of the details.

## "ADD ON" PURCHASES

Once your credit is established and you have made at least three payments, you can "add on" purchases of \$25.00 or more with no down payment. List the items you want on the reverse side, check (8) the "add on" box and give your account number. Be sure to sign the Time Payment Agreement and send to us with your original Payment Book.

Time Payments are available to anyone in the U.S. or FPO and APO areas. Residents of Puerto Rico and other U.S. possessions, write for details!

## LIBERAL TERMS

No money down on orders up to \$300 (Down payments reduce monthly payments and carrying charges). 10% down and up to 18 months to pay on orders over \$300. Write for details on order over \$500.

## NOTICE TO BUYER

### Mail Order/Retail Installment Contract

Do not sign this contract before you read it. Under the law you have the following rights among others:

- A. To pay off in advance the full amount due.
- B. Under certain conditions to redeem the property, if repossessed for a default.

**If full amount is paid when first installment due (30 days after shipment) then you save entire carrying charges.**

## EASY PAYMENT CHART

Unpaid Balance	Carrying Charge	Up To 12 Monthly Payments*	Unpaid Balance	Carrying Charge	Up To 12 Monthly Payments*	*All monthly payments are for the amount shown; last payment is for the odd amount remaining due.
Up to \$20.00	\$ 2.00	\$ 5.00	\$250.01-260	\$26.00	\$24.00	
\$ 20.01-30	3.00	5.00	260.01-270	27.00	25.00	
30.01-40	4.00	5.00	270.01-280	28.00	26.00	
40.01-50	5.00	5.00	280.01-290	29.00	27.00	
50.01-60	6.00	6.00	290.01-300	30.00	28.00	
60.01-70	7.00	7.00	300.01-310	31.00	29.00	
70.01-80	8.00	8.00	310.01-320	32.00	30.00	
80.01-90	9.00	9.00	320.01-330	33.00	31.00	
90.01-100	10.00	10.00	330.01-340	34.00	32.00	
100.01-110	11.00	11.00	340.01-350	35.00	33.00	
110.01-120	12.00	11.00	350.01-360	36.00	34.00	
120.01-130	13.00	12.00	360.01-370	37.00	35.00	
130.01-140	14.00	13.00	370.01-380	38.00	36.00	
140.01-150	15.00	14.00	380.01-390	39.00	37.00	
150.01-160	16.00	15.00	390.01-400	40.00	38.00	
160.01-170	17.00	16.00	400.01-410	41.00	39.00	
170.01-180	18.00	17.00	410.01-420	42.00	40.00	
180.01-190	19.00	18.00	420.01-430	43.00	41.00	
190.01-200	20.00	19.00	430.01-440	44.00	42.00	
200.01-210	21.00	20.00	440.01-450	45.00	43.00	
210.01-220	22.00	21.00	450.01-460	46.00	44.00	
220.01-230	23.00	22.00	460.01-470	47.00	45.00	
230.01-240	24.00	22.00	470.01-480	48.00	46.00	
240.01-250	25.00	23.00	480.01-490	49.00	47.00	
			490.01-500	50.00	48.00	

Check if balance is over \$300 and 18 mos. desired

## TIME PAYMENT AGREEMENT

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

TO: HEATH COMPANY BENTON HARBOR, MICHIGAN

Enclosed is a deposit of \$\_\_\_\_\_ on the Easy Payment cost of the equipment on the reverse side. I will pay \$\_\_\_\_\_ each month to you at the above address starting 30 days after shipment, until the total time payment price is paid.  
 Title to and right of possession of said equipment shall remain with you until all payments have been made. Upon default on any payment due on this contract, the full amount unpaid hereon, at your option, shall become immediately due and payable and you may either hold me liable for said amount or repossess the equipment. If you shall repossess, all payments may be retained as rent for the use and depreciation of said equipment. The loss, injury or destruction of the equipment after I have received it shall not operate as payment or in any manner release me from any obligation hereunder.  
 If this order is not accepted, you shall refund the down payment with notice of non-acceptance. Acceptance shall be effected when the equipment designated on the reverse side hereof is shipped to me. I certify that all statements in the Credit Statement set forth below are true and complete and are made for the purpose of obtaining credit. This contract is to be governed by the laws of the State of Michigan.

Enter Date \_\_\_\_\_ Sign Here \_\_\_\_\_

## CREDIT STATEMENT

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

PRINT FULL NAME \_\_\_\_\_ Age \_\_\_\_\_ Military Serial No. \_\_\_\_\_ (if serviceman)

WIFE'S NAME \_\_\_\_\_ Names of Children and ages \_\_\_\_\_

Residence \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ How Long \_\_\_\_\_

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

Name Mtg. Held By \_\_\_\_\_ Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_

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

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

Employed by \_\_\_\_\_ Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_

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

Previous Employer \_\_\_\_\_ Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ How Long \_\_\_\_\_

Wife's Employer \_\_\_\_\_ Street \_\_\_\_\_ City & State \_\_\_\_\_

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

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 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)

NO MONEY DOWN FROM \$25 UP TO \$300... 12 MONTHS TO PAY





# Low Cost Hi-Fi Components

## A High Performance Tube-Type FM Stereo Tuner . . . Only \$47.00

• Built-in FM stereo circuitry • FM stereo indicator light • Automatic Frequency Control snaps-in stations . . . eliminates drift • Preassembled, prealigned "front-end" assures top performance, fast, easy construction • Mocha brown, beige & black color styling . . . matches AA-32 amplifier below • Wiring options for 115/230 VAC operation

Kit AJ-13, 14 lbs. . . no money dn., \$5 mo. . . . . \$47.00

**AJ-13 SPECIFICATIONS**—Tuning range: 88 to 108 MHz. Intermediate frequency: 10.7 MHz. Quieting sensitivity: 2½ uv for 20 db of quieting; 3½ uv for 30 db of quieting. Audio frequency response: Mono—±1 db from 20 to 20,000 Hz. Stereo—±2 db from 50 to 15,000 Hz. Antenna: Balanced input for external 300 ohm antenna. Channel separation: 25 db or more at 1000 Hz. Front panel controls: Tuning selector switch, power on/off-FM-stereo; AFC off/on switch. Dimensions: Overall: 13½" W x 4¼" H x 9½" D.



AJ-13  
\$47.00  
\$5 mo.

## B Low Cost Tube-Type Hi-Fi AM Tuner . . . Only \$26.50

• Extra sensitivity for real station-pulling power • Tuned RF stage • Fidelity switch to choose normal or maximum bandwidth • Matches AA-13 & AA-23 amplifiers

Kit AJ-53, 11 lbs. . . no money dn., \$5 mo. . . . . \$26.50

**AJ-53 SPECIFICATIONS**—Tuning range: 550 kHz to 1600 kHz. Intermediate frequency: 455 kHz. Sensitivity (for 20 db quieting IHF standards): 1000 kHz—25 uv. IF bandwidth (6 db down): NORMAL—7 kHz; MAXIMUM—16 kHz. Output impedance (cathode follower): 5000 ohms. Input signal for 1 volt output: 7 uv—30% mod. 1000 kHz. Image ratio: 1000 kHz—57 db. Harmonic distortion (750 uv 95% mod.): Less than 2%. Hum and noise (5000 uv—30% mod.): 36 db. IF rejection: 1000 kHz—69 db. Tube complement: 2—6BA6, RF amplifier—IF amplifier, 1—6BE6, Oscillator-Mixer, 1—12AU7, AF Amplifier-Cathode Follower, 2—Crystal Diodes. Audio Detector, 1—Silicon Diode, Rectifier (Power Supply), 2—No. 47 Pilot Lamps (Dial Illumination). Power supply: Transformer operated (fused). Power requirements: 117 V AC, 50/60 Hertz at 19 watts. Dimensions: Overall—including cabinet & feet, 4¼" H x 13½" W x 5½" D.



AJ-53  
\$26.50  
\$5 mo.

## C Last Call For This Tube-Type 16-Watt Mono Amplifier . . . Save \$5.00 . . . Now Only \$24.95

• 30-15,000 Hz ±1 db response • 16 watts music power output • Separate bass & treble controls • Operates on 115 or 230 VAC, 50-60 Hz

Kit AA-13, 17 lbs., no money dn., \$5 mo. . . was \$29.95 . . . now only . . . . . \$24.95

**AA-13 SPECIFICATIONS**—Recommended System Mates: Speakers: AS-10, AS-18 & AS-37, pg. 36. All turntables, pp. 40-41. Power output: 14 watts Heath Hi-Fi Rating; 16 watts IHF Music Power Output (2% THD, 1 kHz). Frequency response: ±1 db 30-15,000 Hz, 14 watts output. Harmonic distortion: Less than 2%. 30 Hz to 15 kHz, at 14 watts output. Intermodulation distortion: 2% or less at 14 watts output using 60 and 6000 Hz signals, 4:1. Hum & noise: Mag. phono input, 50 db below 14 watts; Tuner and crystal phono, 60 db below 14 watts. Input sensitivity: For 14 watts output; mag. phono, 0.004 v at 1 kHz crystal phono, 0.2 v; tuner 0.25 v. with tone controls flat. Output: 4, 8 and 16 ohms. Damping factor: 10:1. Controls: 3-position function selector switch, bass and treble tone controls, volume control. Power requirements: 110-125 or 220-250 VAC 50-60 Hertz, 55 watts. Dimensions: 5" H x 13½" W x 10½" D.



LAST CALL  
AA-13  
Now Only  
\$24.95  
\$5 mo.



AA-18  
\$19.95

## D New Heathkit Solid-State 4-Watt Monophonic Amplifier

• Wide frequency response • Low distortion • 4-watt output • Front panel headphone jack

• Accepts ceramic phono cartridge, AM or FM mono tuner or tape recorder input

Kit AA-18, 4 lbs. . . . . \$19.95

**AA-18 SPECIFICATIONS**—Dynamic Power Output: 4 watts.\* Continuous power output: 3.25 watts.\* Output impedance: 4 to 16 ohms. Input sensitivity: 250 millivolts. Input impedance: 125K ohms. Hum and noise: —65 db. Treble cut: —22 db at 15 kHz. Power bandwidth for constant 1.5% total harmonic distortion: 20 Hz to 100 kHz. 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. Damping factor: 10 or better. Power requirements: 105-125 or 210-250 volts, 50/60 Hz, 5 watts maximum. Cabinet size: 7-11/16" W x 5-9/16" D x 2½" H. Net weight: 2 lb. 10 oz. \*Rated IHF (Institute of High Fidelity) Standards.

## E Tube-Type 20-Watt Stereo Amplifier Matches AJ-13 Tuner

• 10 watts per channel music power output • Inputs for magnetic & ceramic cartridges, tuner & auxiliary • Full-range controls • Handsomely styled in mocha brown and beige with black trim • 115 or 230 VAC, 50-60 Hz operation

Kit AA-32, 16 lbs. . . no money dn., \$5 mo. . . . . \$39.95

**AA-32 SPECIFICATIONS**—Recommended System Mates: Speakers: AS-163, AS-133 & AS-123, p. 38. Speaker Systems: AS-37, AS-18, & AS-81, pg. 36. Changers & turntables, pp. 40-41. Simultaneous power output per channel: 8 watts (16 watts total); IHF Music Power Output per channel, 10 watts (20 watts total). 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% at 15,000 Hz. Intermodulation Distortion: (at rated output) Less than 3% using 60 and 6000 Hz mixed 4:1. Dimensions: 13½" W x 4¼" H x 9¼" D.



AA-32  
\$39.95  
\$5 mo.

## F Tube-Type FM Monophonic Tuner

• 5-tube circuit—9-tube function • Rich mocha brown & beige color styling with black trim • Automatic Frequency Control for drift-free reception • Easy to build with factory assembled "front-end" tuner, prealigned IF transformers & encapsulated circuit module • Matches AA-13 & AA-23 amplifiers in styling & performance

Kit AJ-63, 10 lbs. . . no money dn., \$5 mo. . . . . \$37.50

**AJ-63 SPECIFICATIONS**—Tuning range: 88 to 108 MHz. Quieting sensitivity: 2.5 uv for 20 db of quieting; 3.5 uv for 30 db of quieting; 25 uv for maximum quieting (38 db). IF frequency: 10.7 MHz. Image ratio: 40 db. AFC correction factor: 75 kHz per volt. AM suppression: 25 db. Frequency response: ±2 db, 20-20,000 Hz. Harmonic distortion: Less than 1.5%, 1100 uv, 400 Hz 100% modulation. Intermodulation distortion: Less than 1%, 60 Hz and 6 kHz; mixed 4:1 1100 uv, 30% modulation. Antenna: 300 ohms unbalanced. Output impedance: 600 ohms (cathode follower). Output voltage: Nominal .5 volt (with 30% modulation, 20 uv signal. Power requirements: 105-125 volts, 50/60 Hertz AC at 30 watts. Overall dimensions: 4¼" H x 13½" W x 7" D.



AJ-63  
\$37.50  
\$5 mo.

## G Tube-Type 30-Watt Monophonic Amplifier . . . Small Size, Big Performance

• Frequency response of 30 Hz—15 kHz ± 1 db at full rated output of 25 watts • Inputs for microphone, magnetic & crystal phono cartridge & auxiliary

Kit AA-23, 21 lbs. . . no money dn., \$5 mo. . . . . \$42.95

**AA-23 SPECIFICATIONS**—Recommended System Mates: Speakers: AS-10, AS-18 & AS-37, pg. 36; AS-183, AS-173 & AS-163, pg. 38. All changers and turntables, pp. 40-41. Power output: 25 watts Heath hi-fi rating; 30 watts IHF music power rating (0.7% THD @ 1 kHz). Frequency response: ±1 db, 30 Hz to 15 kHz at 25 watts output. Harmonic distortion: Less than 2%, 30 Hz to 15 kHz at 25 watts output, a less than 0.7% at 1 kHz at 25 watts output. Intermodulation distortion: Less than 2% at 25 watts output, 60 Hz and 6000 Hz signals 4:1. Hum & noise: Microphone, —60 db or better; Mag. Phono, —53 db or better; Xtal Phono, —55 db or better; Auxiliary, —60 db or better. Input sensitivity: For 25 watts output with tone controls flat; Microphone, 9 mv; Mag. phono, 5 mv (at 1 kHz); Xtal Phono, 120 mv; Auxiliary, 200 mv. Outputs: 4, 8, and 16 ohms. Damping factor: 9. Controls: 4-position selector switch, volume control, bass control and treble control with on/off switch. Power requirements: 105-125 volts 50-60 Hz, 120-135 watts. Power outlets: 1 AC receptacle, unswitched. Indicator: Neon pilot light. Dimensions: 13½" W x 5" H x 9½" D.



AA-23  
\$42.95  
\$5 mo.



# Low Cost Speaker Systems

## New! Heathkit Miniature Acoustic Suspension System . . . Perfect For The New Stereo Compacts

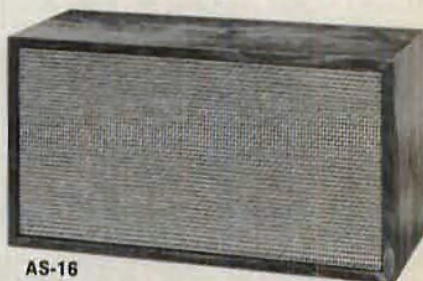
Famous high quality Electro-Voice® speakers—6" woofer and 2½" tweeter • Wide frequency response, 60 Hz to 20 kHz • Handles 25 watts program material, 50 watts peak • High frequency balance control • Assembled walnut cabinet protected by rugged clear vinyl covering • Ideal speaker for apartments, mobile homes, offices and reception rooms, etc. • Buy two of these surprising performers for stereo A Surprising Little System. Using top quality speakers and famous Heathkit design, Heath engineers came up with a truly remarkable miniature acoustic suspension system. The AS-18 features a 6" woofer and a 2½" tweeter to deliver clear, open sound from 60 Hz to 20 kHz. A high frequency balance control lets you adjust the sound to suit your taste too. The handsome, one-piece walnut cabinet with rugged clear vinyl covering simplifies assembly and makes the sound even better. The AS-18 makes a fine speaker system for either of the new Heathkit Component Compacts, or use it anywhere that you want high quality sound from a small space. Order two of these amazing systems for stereo.

Kit AS-18, 16 lbs. . . no money dn., \$5 mo. . . . . \$32.95

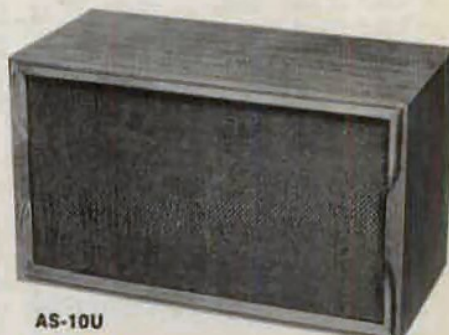
**AS-18 SPECIFICATIONS**—Recommended amplifiers: AD-27 & AD-17, p. 28; AR-13A, p. 30; AR-14, p. 29; AR-15, p. 26; AR-17 & AR-27, p. 31; AA-13, AA-18, AA-23 & AA-32, p. 35; AA-14, p. 29; AA-21D, p. 31; AA-22, p. 30; AA-15, p. 27. Frequency response: 60-20,000 Hz. Crossover frequency: 3000 Hz. Power rating: Program material—25 watts. Peak capacity—50 watts. Nominal impedance: 8 ohms. Speakers: Low frequency—6" Electro-Voice 6.8 oz. magnet; High frequency—2½" Electro-Voice 2.15 oz. magnet. Control: HF balance. Dimensions: 8¼" H x 15¼" W x 6¼" D. Cabinet: Walnut veneer, vinyl covered.



AS-18  
\$32.95 no money dn., \$5 mo.



AS-16  
\$49.95 no money dn., \$5 mo.



AS-10U  
\$59.95 no money dn., \$6 mo.



AS-37  
no money dn., \$5 mo. \$39.95

## Heathkit Compact 2-Way Acoustic Suspension System With Electro-Voice® Speakers

• Wide 45-20,000 Hz frequency response • 8" acoustic suspension woofer • 3½" tweeters with 4.8 oz. magnet • Handles 10 to 25 watts of program material • High frequency level control • Speakers already cabinet mounted—just wire crossover network • Handsome assembled walnut veneer cabinet with scratch-proof, spill-proof vinyl covering • Compact size—fits well on bookcases, etc. • Buy two for superb stereo

Kit AS-16, 22 lbs., no money dn., \$5 mo. . . . . \$49.95

**AS-16 SPECIFICATIONS**—Recommended amplifiers: AD-27 & AD-17, p. 28; AR-13A, p. 30; AR-14, p. 29; AR-15, p. 26; AA-15, p. 27; AA-21D, p. 31; AA-22, p. 30; AA-13 & AA-23, p. 35. Frequency response: 45 to 20,000 Hz. Crossover frequency: 1500 Hz. Power rating: Program material—25 watts. Peak capacity—50 watts. Nominal impedance: 8 ohms. Speakers: Low frequency—8" Electro-Voice 6.8 oz. Magnet; High frequency—3½" Electro-Voice 4.8 oz. magnet. Adjustable high frequency level control. Dimensions: 10" H x 19" W x 8¼" D.

## High Performance Heathkit Acoustic Suspension System

• 10" acoustic suspension woofer extends bass response down to 30 Hz • Two 3½" cone-type tweeters high frequency response up to 15,000 Hz • Takes only 10 watts to drive, yet handles up to 40 watts high frequency level control • Preassembled cabinet in two finishes • Easy to build—just wire crossover network, install speakers • Versatile—installs vertically or horizontally

Kit AS-10U, unfinished, 43 lbs. . . no money down, \$6 mo. . . . . \$59.95  
Kit AS-10W, walnut, 42 lbs. . . no money down, \$7 mo. . . . . \$64.95

**AS-10 SPECIFICATIONS**—Recommended amplifiers: AD-27 & AD-17, p. 28; AR-13A, p. 30; AR-15, p. 26; AA-15, p. 27; AA-21D, p. 31; AA-22, p. 30; AA-13 & AA-23, p. 35. Frequency response: 30 to 15,000 Hz. Impedance: 16 ohms. Recommended amplifier power: 10 to 40 watts. Enclosure: Infinite baffle, sealed. Speakers: Woofer, 10" Acoustic Suspension ceramic magnet; Tweeter, two 3½" cone units in dispersed array, 1.47 oz. magnets. Crossover: L-C network, 2250 Hz. Control: High frequency level. Dispersion: 90° horizontal. Cabinet: Factory assembled ¾" furniture grade plywood. Dimensions: 13½" H x 24" W x 11¼" D.

## The Famous Heathkit AS-37 . . . Still At The Original 1955 Price!

• New special design speaker . . . 8" woofer with heavier, ceramic magnet; compression-type, exponential horn tweeter • 50-12,000 Hz response • New ruggedized satin walnut finish of polyester plastic—stain, heat, and wear resistant—non-fading color • 1600 Hz crossover • High frequency balance control • 25 watt power rating • Preassembled cabinet • Easy to assemble—just wire crossover network and mount the speakers

Kit AS-37, 29 lbs., no money dn., \$5 mo. . . . . \$39.95

**AS-37 SPECIFICATIONS**—Recommended amplifiers: AD-27 & AD-17, p. 28; AR-13A, p. 30; AR-14, p. 26; AR-17 & AR-27, p. 31; AA-14, p. 29; AA-21D, p. 31; AA-22, p. 30; AA-13, AA-23 & AA-32, p. 35. Speakers: 8" woofer, 10 oz. ceramic magnet; horn tweeter, 4.65 oz. Alnico magnet. Frequency range: 50 to 12,000 Hz. Crossover frequency: 1600 Hz. Power rating: 25 watts. Impedance: 8 ohms. Control: HF Balance. Dimensions: 11¼" H x 23" W x 11¼" D. Finish: Walnut, satin.

## Lowest Cost Speaker System

• 70-12,000 Hz response • 6 x 9" extended range speaker • Handles up to 12 watts of program material • Ideal as an extension speaker or center fill-in for stereo system • Easy assembly • Unfinished or walnut

Kit AS-41U, unfinished, 8 lbs. . . . \$10.95  
Kit AS-41W, walnut, 8 lbs. . . . . \$12.95

**AS-41 SPECIFICATIONS**—Recommended amplifiers: AD-27 & AD-17, p. 28; AR-13A, p. 30; AR-14, p. 26; AR-17 & AR-27, p. 31; AA-14, p. 29; AA-21D, p. 31; AA-22, p. 30; AA-13 & AA-23, p. 35. Frequency response: 70 to 12,000 Hz. Impedance: 8 ohms. Capacity: 12 watts. Enclosure: Rear vented box. Speaker: 6" x 9" extended range dual cone, 6.8 oz. Alnico 3 magnet. Cabinet: Factory assembled, furniture-grade ½" plywood. Dimensions: 8" H x 11" W x 6½" D.



AS-41U  
\$10.95



AS-81U  
\$17.50

## The Space-Problem Solver

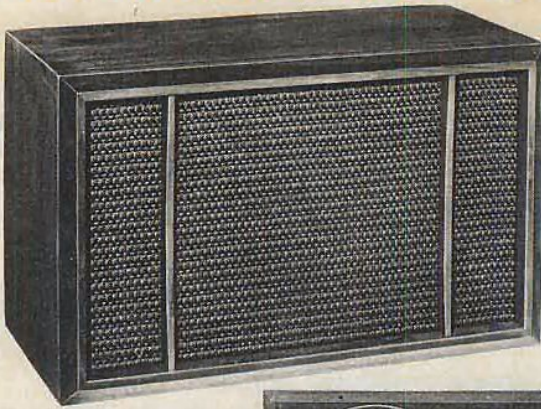
• 2-way system—6" woofer & 3" tweeter  
• Wide 70-12 kHz range • Fast assembly  
• Unfinished or walnut cabinets

Kit AS-81U, unfinished, 10 lbs. . . \$17.50  
Kit AS-81W, walnut, 10 lbs. . . . \$19.95

**AS-81 SPECIFICATIONS**—Recommended amplifiers: AR-14, p. 29; AA-14, p. 29; AA-13 & AA-32, p. 28. Frequency response: From 70 to 12,000 Hz. Crossover frequency: 4000 Hz. Recommended amplifier power: 6 watts. Nominal impedance: 8 ohms. Cabinet: Type: infinite. Speakers: Tweeter, 3" cone type, 8 ohms, .53 oz. Alnico 5 magnet; Woofer, 5½" cone type, 10 oz. Syntax No. 6 magnet. Crossover: Capacitor type. Dimensions: 10¼" W x 6¼" H x 6-3/16" D. Material: ½" veneer plywood.

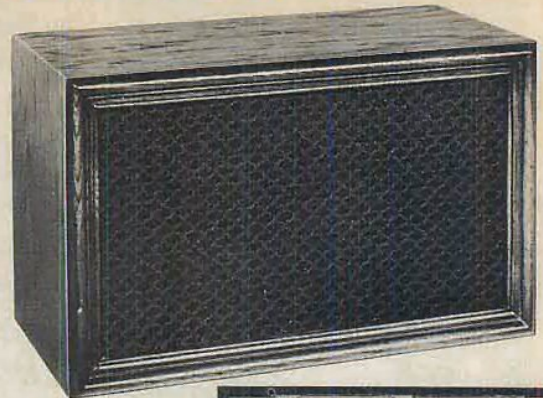
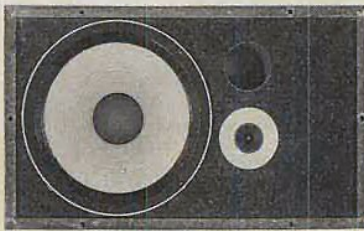


# NEW Heathkit® High Efficiency Bookshelf Systems



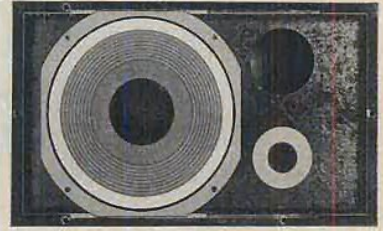
AS-38  
\$144<sup>95</sup>

no money dn., \$14 mo.  
Removal of the handsome snap-off speaker grille reveals the inside of the new AS-38. The tube-ported design tunes the enclosure and woofer, resulting in improved low frequency response.



AS-48  
\$169<sup>95</sup>

no money dn., \$16 mo.  
The massive 14" woofer dominates the inside of the AS-48 cabinet when the attractive snap-off grille is removed. A special cone suspension makes it impervious to changes in humidity and temperature.



## NEW! High Efficiency 12" Bookshelf System . . . With Custom-Designed JBL® Speakers

- Two custom-designed JBL speakers—12" woofer with 6 1/2 pound magnet assembly & 2" direct radiator tweeter with 1 1/4 pound magnet assembly
- 45-20,000 Hz response • High efficiency • Handles up to 40 watts program material • Variable high frequency level control • Handsome walnut cabinet with removable speaker grille • Compact size—ideal for bookshelves
- Installs vertically or horizontally • Easy, enjoyable one evening assembly

The New Heathkit AS-38 — small enough to be used in apartments, efficient enough to be matched with receivers and amplifiers having as little as 7 or 8 watts output, yet delivers a sound good enough to be used with the finest hi-fi and stereo components. Two custom-designed JBL speakers in a handsome walnut tube-ported cabinet deliver clean, realistic sound from 45 Hz to 20 kHz and the adjustable high frequency level control lets you balance the highs. Order two for excellent stereo.

Kit AS-38, 49 lbs., no money dn., \$14 mo. . . . . \$144.95

**AS-38 SPECIFICATIONS**—Recommended amplifiers: AA-14, p. 29; AA-15, p. 27; AA-21D, p. 31; AR-13A, p. 30; AR-14, p. 29; AR-15, p. 26; AA-22, p. 30. **Speakers:** 12" woofer, 6 1/2 lb. magnet assy.; 2" piston-type direct radiator tweeter, 1.25 lb. magnet assy. **Frequency range:** 45 Hz to 20 kHz. **Crossover:** LC type 2500 Hz. **Power rating:** 40 watts 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 23 1/2" W x 11 1/4" D. **Net weight:** 37 lbs.

## NEW! High Efficiency 14" Bookshelf System . . . The Finest Bookshelf System Ever Offered

- Two JBL® speakers custom-designed for Heath • 14" woofer with 11 1/2 pound magnet assembly for crisp, lifelike bass down to 40 Hz • 2" direct radiator tweeter uses 1 1/4 pound magnet assembly for clean, transparent highs up to 20 kHz • Three-position high frequency level control • Handles up to 50 watts program material • Rich, one-piece pecan finish cabinet with removable speaker grille • Compact bookshelf size—installs either horizontally or vertically • All components mount from the front for solid sound & easy assembly

An Astounding Bookshelf System . . . until now, if you wanted a speaker system that sounded like an expensive, space-consuming floor model, you bought the floor system . . . and paid the price. Not any more. The combination of famous JBL speakers and Heathkit engineering expertise in a bookshelf system that sounds like a floor system. Save a lot of money and floor space . . . put two of these remarkable new systems on your bookshelf now.

Kit AS-48, 57 lbs., no money dn., \$16 mo. . . . . \$169.95

**AS-48 SPECIFICATIONS**—Recommended amplifiers: AA-14, p. 29; AA-15, p. 27; AA-21D, p. 31; AR-13A, p. 30; AR-14, p. 29; AR-15, p. 26; AA-22, p. 30. **Speakers:** 14" woofer, 4" voice coil, 11 1/2 lb. magnet assy.; 2" piston-type direct radiator tweeter, 1.25 lb. magnet assy. **Frequency range:** 40-20,000 Hz. **Crossover:** LC-type, 2000 Hz. **Power rating:** 50 watts 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 23 1/2" W x 12" D. **Net weight:** 42 lbs.

## Workshop Accessories To Make Your Kit Building Even Easier

### NEW Heathkit GH-17A Soldering Iron

This new Heathkit soldering iron is the perfect choice for kit building . . . its light weight and good balance make it easy to handle and the handy stand with metal cage keeps the iron safe and secure when not in use. Three ways safe . . . new three-wire line cord . . . isolation transformer operated . . . and the 25-watt GE midjet iron runs on only 6 volts. Non-corroding 1/4" metal tip. Three heat ranges; low, medium and high, give versatile performance for all types of circuit work. Comes with a six foot cord and runs on 117 VAC.

Kit GH-17A, 5 lbs. . . . . \$14.95

**A Weller W-PS 25-Watt Pencil Soldering Iron**  
Develops 860° heat fast. 1/4" iron-clad screwdriver tip. 117 v. AC 60 Hz operation. Lightweight, UL and CSA approved.  
Model GDP-207, 1 lb. . . . . \$3.82

**B GENERAL Portable Vacu-Vise**  
No screws! No clamps! Push the lever to attach instantly and hold securely to metal, glass, porcelain, any smooth non-porous surface, by vacuum. Lift the lever to release. Take it to the job; stores easily in tool chest, locker, closet. Handiest tool ever for all hobbyists, do-it-yourselfers, service men and mechanics. Sturdy casting with 2 1/2" V-groove steel jaws which open to 2". Base size 5" W. x 4" D. x 4" H.  
Model GDP-307, 3 lbs. . . . . \$6.95

**C Heathkit Motor Speed Control**  
Saves power, blades, bits, saws, etc. Use with tools; appliances with universal AC-DC motor rating up to 15 amps only. Not for AC induction motors.  
Kit GD-973A, 3 lbs. . . . . \$17.50

**D American Beauty Soldering Iron**  
Balanced, lightweight, easy-to-handle, 30-watt element, iron-clad tip won't corrode, doesn't need frequent "tinning."  
Model GDP-105, 1 lb. . . . . \$5.40

**E SOCK-O-MATIC . . . Four Wrenches In One**  
Ideal for hidden recesses. Automatically fits 1/4", 1/8", 1/16", 1/32" hexagonal nut, screw or bolt. 7/8" L. 1/2" barrel dia.  
Model GDP-257, 1 lb. . . . . \$3.99

**F Vaco Hollow Shaft Nut Driver Set**  
7 drivers—1/4", 3/8", 1/2", 5/8", 3/4", 7/8", 1". Self-supporting rack. Color-coded plastic handles.  
Model GDP-204, 3 lbs. . . . . \$6.42

**G Speedex Wire & Cable Stripper**  
Graduated jaws accept No. 10, 12, 14, 16, 22 wire.  
Model GDP-663, 2 lbs. . . . mfrs. list \$9.95 . . . Only \$5.89

**H Z-Lyte Extension Lamp Kit**  
• Assembled extension arm—just attach socket, shade & cord • 45° reach, 360° sweep • Vented shade • Movable • U.L. approved • Less incandescent bulb  
Kit GDP-202, 5 lbs. . . . Mfrs. list \$14.50 . . . Only \$9.95

**I Kit-Builders Tool Set**  
• Combination wire stripper & diagonal sidecutter • Midjet long-nose pliers • 3 screwdrivers (1/4", 3/8", 1/2") • "Little Dandy" soldering iron • 5 nut drivers (1/4", 3/8", 1/2", 5/8", 3/4") • Nut starter, soldering aid, radio solder, and "Kit-Builder's Guide."  
Model GH-25, 4 lbs. . . . . \$16.95

**J Solid-State Electric Light Dimmer**  
600 watt UL approved. Dial desired light in any room. Save on light bills and bulbs. Variable from "off" to 600 watts. Separate on/off switch for any light level. Replaces any 117 v. AC 2-way light switch. 3-year warranty.  
Model GDP-166, 1 lb. . . . . \$7.95



Open A Heath Account — No Money Down, Easy Terms



# Hi-Fi Speaker "Separates"

**A** AS-27  
\$69<sup>50</sup>

(pair \$132.00)



## **A** Deluxe 3-Way High Compliance, Edge-Damped Speaker

12" Unitary Speaker with woofer, compression mid-range and a horn-loaded compression super tweeter; 80 watts peak power capability; heavy die-cast frame; 600 and 4000 Hz crossovers; special mid and high frequency level control; 1-year guarantee. Pick a pair for stereo.

Model AS-27, 14 lbs. . . . no money dn., \$7 mo. . . . . \$69.50

Model AS-27-2, 28 lbs. . . . no money dn., \$13 mo. . . . . Pair \$132.00

AS-27 SPECIFICATIONS—Size: 12". Impedance: 8 ohms. Power rating: 40 watts. Frequency response: 20-20,000 Hz. Cone resonance: 25 Hz. Magnet Weights: 1 lb., 6.4 oz., 4.6 oz. Voice coil sizes: 1 1/2" and 1".

**B** AS-183  
\$49<sup>95</sup>

(pair \$95.00)



## **B** 12" 2-Way High Compliance, Edge-Damped Speaker

12" Woofer with reflexed horn high frequency unit; low crossover frequency; 1 1/2" & 1" voice coils; die-cast frame; level control; 1-year guarantee. Buy two for superb stereo.

Model AS-183, 15 lbs. . . . no money dn., \$5 mo. . . . . \$49.95

Model AS-183-2, 29 lbs. . . . no money dn., \$10 mo. . . . . Pair \$95.00

AS-183 SPECIFICATIONS—Size: 12". Impedance: 8 ohms. Power rating: 30 watts. Frequency response: 20-15,000 Hz. Cone resonance: 25 Hz. Magnet weights: 1 1/4 lbs., 4.65 oz.

**C** AS-173  
\$39<sup>95</sup>

(pair \$76.00)



## **C** 12" 3-Way High Compliance, Edge-Damped Speaker

12" woofer; high compliance cone for mid-range; special tweeter; die-cast frame; crossover network; level control; 1-year guarantee. Choose two for stereo.

Model AS-173, 14 lbs. . . . no money dn., \$5 mo. . . . . \$39.95

Model AS-173-2, 28 lbs. . . . no money dn., \$8 mo. . . . . Pair \$76.00

AS-173 SPECIFICATIONS—Size: 12". Impedance: 8 ohms. Power rating: 25 watts. Frequency response: 35-15,000 Hz. Cone resonance: 40 Hz. Magnet weights: 1 1/4 lbs., 2 1/2 oz.

**D** AS-163  
\$29<sup>95</sup>

(pair \$57.00)



## **D** 12" 3-Way Coaxial Speaker

3 Separate Radiating Elements, woofer, tweeter, special horn tweeter. Crossover networks; level control; 1-year guarantee. You'll need two for stereo.

Model AS-163, 12 lbs. . . . no money down, \$5 mo. . . . . \$29.95

Model AS-163-2, 24 lbs. . . . no money dn., \$6 mo. . . . . Pair \$57.00

AS-163 SPECIFICATIONS—Size: 12". Impedance: 8 ohms. Power rating: 20 watts. Frequency response: 40-15,000 Hz. Cone resonance: 60 Hz. Magnet weights: 13 oz., 1 oz. Voice coil sizes: 1 1/2" and 1".

**E** AS-153  
\$19<sup>95</sup>

(pair \$38.00)



## **E** 12" 2-Way Coaxial Speaker

Separate woofer & tweeter with built-in capacitive crossover covers 50-15,000 Hz . . . handles up to 15 watts. Die cast frame; separate high frequency level control; 1 yr. guarantee. Order two for stereo.

Model AS-153, 10 lbs. . . . . \$19.95

Model AS-153-2, 20 lbs. . . . no money dn., \$5 mo. . . . . Pair \$38.00

AS-153 SPECIFICATIONS—Size: 12". Impedance: 8 ohms. Power rating: 15 watts. Frequency response: 50-15,000 Hz. Cone resonance: 60 Hz. Magnet weights: 10 oz., 1.47 oz. Voice coil sizes: 1" and 3/8".

**F** AS-133  
\$14<sup>95</sup>

(pair \$28.50)



**G** AS-123  
\$9<sup>95</sup>

(pair \$19.00)



## **F** 8" 2-Way Coaxial Speaker

True coax performance from the separate woofer and tweeter . . . 50-14,000 Hz response. Separate high frequency level control; 1 year guarantee. Buy two for stereo.

Model AS-133, 6 lbs. . . . . \$14.95

Model AS-133-2, 12 lbs. . . . no money dn., \$5 mo. . . . . Pair \$28.50

AS-133 SPECIFICATIONS—Size: 8". Impedance: 8 ohms. Power rating: 12 watts. Frequency response: 50-14,000 Hz. Cone resonance: 70 Hz. Magnet weights: 10 oz., 0.68 oz. Voice coil sizes: 1" and 3/8".

## **G** 8" Dual-Cone Speaker

Ideal for in-wall mounting . . . only 3 1/2" deep. 50-12 kHz response; handles up to 12 watts. Die cast frame; 1 yr. guarantee. Enjoy extra savings by ordering two for stereo.

Model AS-123, 5 lbs. . . . . \$9.95

Model AS-123-2, 10 lbs. . . . . Pair \$19.00

AS-123 SPECIFICATIONS—Size: 8". Impedance: 8 ohms. Power rating: 12 watts. Frequency response: 50-12,000 Hz. Cone resonance: 70 Hz. Magnet weight: 10 oz. Voice coil size: 1".

## **H** Telex "Adjustatone" Stereo Headset

3 1/2" speakers. "Forward Sound" acoustic effect or "in-head" stereo by reversing headphones. Foam cushion.

Model ADP-135, 2 lbs. . . . . \$15.95

ADP-135 SPECIFICATIONS — Driver element: Dynamic. Frequency response: 10-15,000 Hz. Impedance: 3-16 ohm sources. Distortion: At Normal Listening Levels, less than 1%. Cord length: 8 ft. 4-wire with 3-circuit phono plug.

## **I** Telex ST-11 Stereo Headset

Soft rubber muffs, excellent bass response, wide range. Stainless steel headband and yoke.

Model ADP-92, 2 lbs. . . . . \$23.92

ADP-92 SPECIFICATIONS — Driver element: Dynamic. Frequency response: 16 to 15,000 Hz. Impedance: 3 to 16 ohm sources. Distortion: At Normal Listening Level less than 1%. Cord: 4-wire 12 ft. long with 3-circuit phono plug. Color: Tan & Brown.

## **J** KOSS "Pro" Stereo Headset

Fluid-filled, contoured, washable cushions, ultra-sensitive; wide-range; steel headband.

Model ADP-137, 2 lbs. . . . . \$49.00

no money dn., \$5 mo. . . . . \$49.00

ADP-137 SPECIFICATIONS — Driver element: Dynamic. Frequency response: 30-20,000 Hz. Impedance: 4 to 16 ohm sources. Distortion: less than 1% at max. output. Cord: coiled, 10', 4-wire, 3-circuit plug. Color: gray-bronze cups, black cushions & band.

## **K** Heathkit Stereo Headphone Control Unit

Here's a convenient way to connect headphones to most listening sources. Control unit with 20' cable permits selection of speakers or headphones and control of volume and balance from your favorite chair. Works with recorders, phonos, radios, and TV as well as any monophonic amp. (tube or transistor) and the following Heathkit stereo amps. and receivers (AA-32, AA-14, AR-14, AR-15). Accepts 2 sets of stereo headphones (4-wire, 3-connector types) or 2 sets of mono headphones (2-connector types). Small beige metal case can be hand-held or set in any location. Connection information included. Assemble in one or two hours.

Kit AC-17, 3 lbs. . . . . \$7.95

AC-17 SPECIFICATIONS—Output: 2-three connector phone jacks. Controls: Dual concentric level control, speaker-headphone selector switch. Recommended headphone impedance: 4 ohm or more. Dimensions: 3" W x 4" D x 2 3/4" H including control knobs.





# Assembled Heath Deluxe Equipment Cabinets

## Exciting Mediterranean Cabinet Ensemble . . . \$299.00

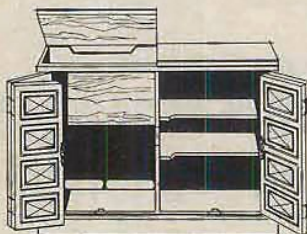
Deluxe Component Cabinet . . . beautifully constructed of fine furniture solids and veneers with Pecan finish. Features molded carving resin panels; beautifully natural looking yet won't chip, crack or warp. Statuary Bronze handles. Has adjustable shelves to house any make hi-fi component, plus record storage or tape recorder compartment, turntable compartment.

Model AE-57, equipment cabinet, 110 lbs. . . no money dn., \$14 mo. . . . . \$150.00

**AE-57 EQUIPMENT CABINET ACCOMMODATIONS AND SIZES:** Cabinet Overall: 40" W. x 19 7/8" D. x 28 3/4" H. **Changer Compartment:** 19" W. x 16" D., mounting board is uncut and can be adjusted in height to accept all record changers, turntables and tape recorders sold by Heath; lid has friction-loaded hinges. **Record-Tape Recorder Compartment:** 19" W. x 15" H. x 16" D. **Shelf Compartment:** Overall interior dimensions, 19" W. x 16" D. x 23 3/4" H. with two shelves adjustable 4, 5, 6, 10, 11, 12, 16, 17, or 18 inches from the top of the cabinet. Accepts any Heathkit receiver, tuner or amplifier.

**Matching Speaker Cabinet.** Same rich Mediterranean styling and superb craftsmanship as the AE-57 equipment cabinet. Tubular-duct reflex design so you can easily match it to any 8" or 12" speaker for perfect resonance with the instructions included. Ornate metal scroll grille adds to its Old World Spanish styling. Completely assembled and finished. Measures 17 3/8" W. x 19 3/16" D. x 28 3/4" H. Order a pair for stereo, and a beautifully matched ensemble.

Model AEA-57-1, speaker cabinet, 64 lbs. . . no money dn. \$8 mo. . . . . each \$74.50



**MEDITERRANEAN \$299<sup>00</sup>**  
Complete Ensemble  
Center Section \$150;  
Speaker Cabinets \$74.50 ea.

- Custom designed for Heathkit stereo/hi-fi components . . . adjustable shelves accommodate most other makes • Luxurious Mediterranean Pecan finish • Speaker cabinet can be tuned to any 8" or 12" speaker for best tone • Factory assembled

## Elegant Early American Cabinet Ensemble . . . \$264.00

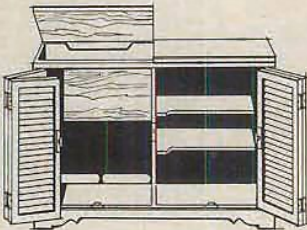
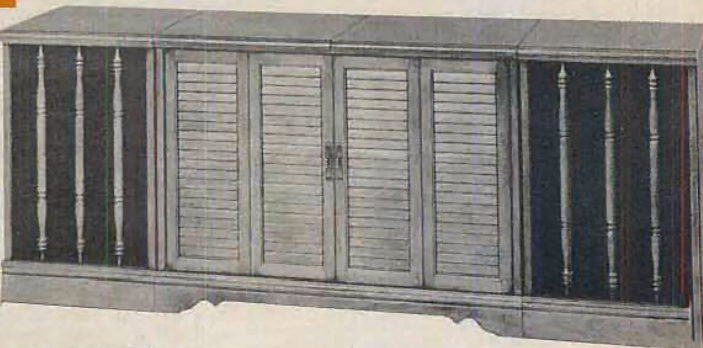
Versatile Equipment Cabinet . . . Early American charm with modern component layout. Constructed of specially-selected solids and veneers finished in popular Salem-Maple. Features wood-grained resin louvers; beautifully natural looking yet won't chip, crack or warp. Statuary Bronze handles. Its adjustable shelves accommodate any make hi-fi component, plus record storage or tape recorder compartment, turntable compartment.

Model AE-47, equipment cabinet, 98 lbs. . . no money dn., \$13 mo. . . . . \$135.00

**AE-47 EQUIPMENT CABINET ACCOMMODATIONS AND SIZES:** Cabinet Overall: 40" W. x 19" D. x 28 3/8" H. **Changer Compartment:** 19" W. x 16" D., mounting board is uncut and can be adjusted in height to accept all record changers, turntables, and tape recorders sold by Heath; lid has friction-loaded hinges. **Record-Tape Recorder Compartment:** 19" W. x 16" D. x 15 3/4" H. **Shelf Compartment:** Overall interior dimensions, 19" W. x 16" D. x 24 3/8" H. with two shelves adjustable 4, 5, 6, 10, 11, 12, 16, 17 or 18 inches from the top of the cabinet. Accepts any Heathkit receiver, tuner or amplifier.

**Matching Speaker Cabinet . . .** features tubular-duct reflex design so you can easily match it to any 8" or 12" speaker for perfect resonance with the instruction sheet included. Handsome wood spindle grille. Completely assembled and finished to match the AE-47 equipment cabinet. Measures 18" W. x 19" D. x 28 7/8" H. Order a pair for stereo.

AEA-47-1, speaker cabinet, 64 lbs. . . no money dn., \$7 mo. . . . . each \$64.50



**EARLY AMERICAN \$264<sup>00</sup>**  
Complete Ensemble  
Center Section \$135;  
Speaker Cabinets \$64.50 ea.

- Accommodates any Heathkit stereo/hi-fi arrangement and virtually all other makes • Adjustable shelves • Beautiful Salem-Maple finish • Speaker cabinet can be tuned to any 8" or 12" speaker for best tone • Factory assembled

## Rich Contemporary Walnut Cabinet Ensemble . . . \$244.00

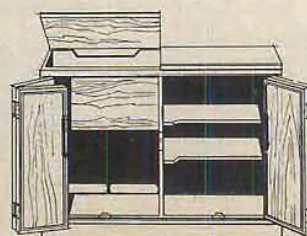
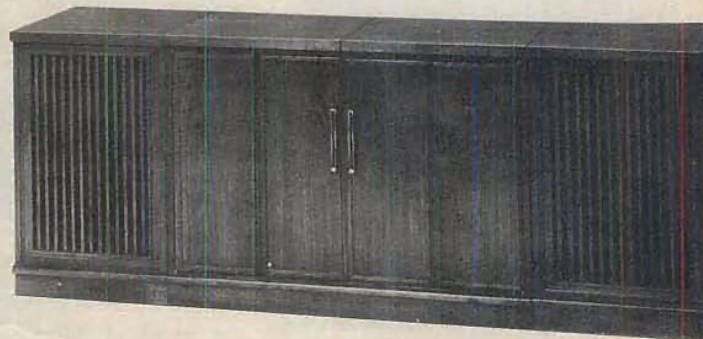
Equipment Center . . . Beauty Combined With Versatility. Masterfully crafted of fine veneers and solids with walnut finish. Slim sculptured Statuary Bronze handles accent the clean flowing lines. Perfect for your modern decor. And the two shelves are adjustable to accommodate any make hi-fi component, plus record storage or tape recorder compartment, turntable compartment. Choose the matching speaker cabinets for a beautiful ensemble.

Model AE-37, equipment cabinet, 103 lbs. . . no money dn., \$12 mo. . . . . \$125.00

**AE-37 EQUIPMENT CABINET ACCOMMODATIONS AND SIZES:** Cabinet Overall: 40" W. x 19" D. x 28 3/4" H. **Changer Compartment:** 19" W. x 16 1/2" D., mounting board is uncut and can be adjusted in height to accept all record changers, tape recorders and turntables sold by Heath; lid has friction-loaded hinges. **Record-Tape Recorder Compartment:** 19" W. x 16 1/2" D. x 15 1/2" H. **Shelf Compartment:** Overall interior dimensions, 19" W. x 16 1/2" D. x 24 3/8" H. with two shelves adjustable 4, 5, 6, 10, 11, 12, 16, 17, or 18 inches from the top of cabinet. Accepts any Heathkit receiver, tuner or amplifier.

**Matching Speaker Cabinet . . .** Accommodates 8" or 12" Speakers. With the addition of the matching AE-37-1 speaker cabinets, you have a complete music system both in beautifully styled furniture and total stereo performance. Features louvered wood-grained molded carving resin grille that won't chip, warp, or crack from age, humidity or abuse. And you can easily match it to any 8" or 12" speaker for perfect resonance with the instruction sheet included, thanks to its special tubular-duct reflex design. Completely assembled and finished, measures 18" W. x 19" D. x 28 3/8" H. Order a pair for stereo.

Model AEA-37-1, speaker cabinet, 64 lbs. . . no money dn., \$6 mo. . . . . each \$59.50



**CONTEMPORARY \$244<sup>00</sup>**  
Complete Ensemble  
Center Section \$125;  
Speaker Cabinets \$59.50 ea.

- Designed for Heathkit stereo/hi-fi components . . . adjustable shelves accommodate virtually all other makes • Rich, modern walnut finish • Speaker cabinet can be tuned to any 8" or 12" speaker • Factory assembled





ADP-47  
**\$129<sup>50</sup>**  
 \$12 mo.  
 (less cartridge  
 & base)

NEW! Cartridge Options  
 Limit one per turntable order  
 Specify Heath Model No.—see p. 41

<b>1c</b>	<b>\$5</b>
Shure M51E Reg. \$39.95	Shure M31E Reg. \$49.95
Pickering VISATE-3 Reg. \$39.95	Pickering VISANE-3 Reg. \$49.95
Empire 88E Reg. \$39.95	Empire 88TE Reg. \$49.95



ADP-57  
**\$109<sup>50</sup>**  
 \$11 mo.  
 (less cartridge  
 & base)



ADP-67  
**\$79<sup>50</sup>**  
 \$8 mo.  
 (less cartridge  
 & base)

NEW! Cartridge Options  
 Limit one per turntable order  
 Specify Heath Model No.—see p. 41

<b>1c</b>	<b>\$5</b>
Shure M51E Reg. \$39.95	Shure M31E Reg. \$49.95
Pickering VISATE-3 Reg. \$39.95	Pickering VISANE-3 Reg. \$49.95
Empire 88E Reg. \$39.95	Empire 88TE Reg. \$49.95



ADP-77  
**\$59<sup>50</sup>**  
 \$6 mo.  
 (less cartridge & base)

### Garrard SL-55 4-Speed Automatic Stereo Turntable

- Same superb performance & features as Garrard's famous 50 Mk II, plus new Synchro-Lab motor • 4-speed play, manual or automatic • Manual cueing & pause control • Oversize turntable • Resiliency mounted counterbalance weight • Stylus pressure adjustment with gram markings • Two spindles—automatic intermix operation when desired • Lightweight tubular dynamically balanced tone arm

ADP-77, turntable only, 12 lbs. . . . no money dn., \$6 mo. . . . **\$59.50**  
 ADA-77-3, Power-Matic base, 3 lbs. . . . **\$14.95**  
 ADA-77-1, Coordinated Base, simulated leather & ebony, 3 lbs. . . . **\$4.95**  
 DA-77-4, dust cover, for use only with ADA-77-1, 1 lb. . . . **\$4.95**  
 ADA-66-2, Garrard LRS20 45 rpm spindle, 1 lb. . . . **\$3.80**

ADP-77 SPECIFICATIONS—Same as ADP-67 except for Dimensions: 14 1/4" W x 12 1/4" D x 4 1/4" above, 2 1/4" below motor board.

### Garrard SL-95 Automatic Transcription Turntable With Revolutionary Synchro-Lab Motor . . . Garrard's Finest

- Synchro-Lab motor for precision turntable speed • 3-speed (33 1/3, 45 & 78 rpm) automatic or mono play • Retractable record platform "pops-out" for multi-record play . . . disappears for single play • Single play spindle rotates with record . . . telescopes out of unit for multiplex operation • 12" aluminum turntable with anti-static mat and safety grooves • Adjustable counterweight isolated with rubber • Gyroscopic gimbal pivots for minimal friction • Adjustable anti-skating control, calibrated in 1/2 grams, infinitely variable • Stylus force adjustment dial, detent stops at 1/4 gram and visual markings in 1/2 gram increments, 0 to 5 grams • Ultra-low mass dynamically balanced tone arm • Automatic control lever functions play 6 records in sequence • Interchangeable cartridge clip eliminates need for plug-in shells • Combined manual and cueing controls • Combined record size and speed selector • Rubber encased springs for shock and vibration "damping"

ADP-47, turntable only, 14 lbs. . . . no money dn., \$12 mo. . . . **\$129.50**  
 ADA-47-3, Power-Matic base, 4 lbs. . . . **\$15.95**  
 ADA-47-1, Coordinated Base, simulated leather & ebony, 3 lbs. . . . **\$5.95**  
 ADA-47-4, dust cover, for use only with ADA-47-1, 1 lb. . . . **\$5.95**  
 ADA-57-2, Garrard LRS25 45 rpm spindle, 1 lb. . . . **\$3.80**

ADP-47 SPECIFICATIONS—Speeds: 78, 45 & 33 1/3 rpm. Motor: Synchro-Lab. Tracking: Tracks per cartridge specifications. Color: Iridescent charcoal gray. Wiring: Stereo, 4-pin/5-wire system with separate ground connection for hum elimination. Cables Furnished: Line cord, 2 audio cables. Power Requirements: 100-130 volts 60 Hz AC. Dimensions: 15 1/4" W x 14 1/4" D x 4 1/4" above, 3" below motor board.

### Garrard SL-75 3-Speed Automatic Stereo Transcription Turntable . . . With The Precision Speed Synchro-Lab Motor

- Revolutionary Synchro-Lab motor for precision turntable speed • 3 speed (33 1/3, 45 & 78 rpm) automatic or manual play • Retractable record platform "pops-out" for multi-record play, disappears for single play • Single play spindle rotates with record . . . telescopes out of unit for multi-play operation • 12" aluminum turntable with anti-static mat and safety grooves • Counterweight adjustable on knurled lead screw • Adjustable anti-skating control, calibrated in 1/2 grams, infinitely variable • Adjustable stylus force assembly, precision rotating "optical" knob marked 0 to 5 grams in 1/4 gram increments • Low mass dynamically balanced tone arm, twin-braced aluminum for extra rigidity, freedom from resonance • Interchangeable cartridge clip eliminates need for plug-in shells • Automatic control lever functions • Combined manual & cueing control • Rubber encased springs for shock and vibration damping • Record size and speed selector

ADP-57, turntable only, 14 lbs. . . . no money dn., \$11 mo. . . . **\$109.50**  
 ADA-47-3, Power-Matic Base, 4 lbs. . . . **\$15.95**  
 ADA-47-4, dust cover, for use only with ADA-47-1, 1 lb. . . . **\$5.95**  
 ADA-47-1, Coordinated Base, simulated leather & ebony, 3 lbs. . . . **\$5.95**  
 ADA-57-2, Garrard LRS25 45 rpm spindle, 1 lb. . . . **\$3.80**

ADP-57 SPECIFICATIONS—Same as ADP-47 above, except for Dimensions, which are 16 1/4" W x 14 1/4" D x 4 1/4" above, 3" below motor board.

### Garrard SL-65 Automatic Stereo Turntable . . . 4-Speed . . . Precision Speed Synchro-Lab Motor

- Has the same advanced performance and features as Garrard's famous 60 Mk II, plus the new precision speed Synchro-Lab motor • Plays all four speeds either automatically or manually • Cueing and pause control • Automatic anti-skating protects records • Adjustable counterbalance weight and variable stylus pressure adjustment for optimum tracking at all times • Tubular, dynamically balanced tone arm • Oversized, over-cast turntable • Interchangeable spindles • Lightweight, cutaway cartridge shell will accept virtually any cartridge

ADP-67, turntable, 14 lbs. . . . no money dn., \$8 mo. . . . **\$79.50**  
 ADA-77-3, Power-Matic Base, 3 lbs. . . . **\$14.95**  
 ADA-77-1, Coordinated Base, simulated leather & ebony, 3 lbs. . . . **\$4.95**  
 ADA-77-4, dust cover, for use only with ADA-77-1, 1 lb. . . . **\$4.95**  
 ADA-66-2, Garrard LRS20 45 rpm spindle, 1 lb. . . . **\$3.80**

ADP-67 SPECIFICATIONS—Same as ADP-47 except for Speeds: 78, 45, 33 1/3 & 16 2/3 rpm, and Dimensions: 15 1/4" W x 13 1/4" D x 4 1/4" above, 2 1/4" below motor board.



ADP-48  
**\$69<sup>50</sup>**  
 \$7 mo.  
 (complete with  
 cartridge & base)

### NEW! Garrard Module SLX II Automatic Turntable

- Nothing to assemble—comes complete with cartridge, dust cover and base installed—just unpack & connect • Synchro-Lab motor • Stylus pressure adjustable 0-5 grams • Manual or automatic play

ADP-48, turntable, base, cartridge & cover, 15 lbs., no money dn., \$7 mo. . . . **\$69.50**  
 ADA-66-2, Garrard LRS20 45 rpm spindle, 1 lb. . . . **\$3.80**

ADP-48 SPECIFICATIONS—Speeds: 78, 45 & 33 1/3 rpm. Motor: Synchro-Lab. Tracking: Tracks per cartridge specifications. Color: Iridescent charcoal gray. Wiring: Stereo, 4 pin/5 wire system with separate ground connection for hum elimination. Cables furnished: Line cord, 2 audio cables. Power requirements: 100-130 VAC, 60 Hz. Dimensions: 15" W x 13 1/4" D x 7 1/4" H.



ADP-46  
**\$44<sup>50</sup>**  
 \$5 mo.  
 (less cartridge  
 & base)

### Garrard 40 Mk II Turntable

- Plays all 4 speeds, manual or automatic • Counterweighted cast aluminum tone arm • Automatically mixes records of different size

ADP-46, turntable, 13 lbs. . . . no money dn., \$5 mo. . . . **\$44.50**  
 ADA-66-2, Garrard LRS20 45 rpm spindle, 1 lb. . . . **\$3.80**  
 ADA-77-1, Coordinated base, simulated leather & ebony, 3 lbs. . . . **\$4.95**  
 ADA-77-3, Power-Matic Base, 3 lbs. . . . **\$14.95**  
 ADA-77-4, dust cover, for use only with ADA-77-1, 1 lb. . . . **\$4.95**

ADP-46 SPECIFICATIONS—Speeds: 16 2/3, 33 1/3, 45 & 78 rpm. Motor: 4-pole, hum shielded. Tracking: Tracks per cartridge specifications. Color: Gray and silver. Wiring: Stereo, amplok plug. Cables furnished: Line cord and 2 audio. Power requirements: 110-130 volts, 60 hertz AC. Dimensions: 14 1/4" W x 12 1/4" D x 4 1/4" above and 2 1/4" below top of motor board.

NEW! Cartridge Options  
 Limit one per turntable order  
 Specify Heath Model No.—see p. 41

<b>1c</b>	<b>\$5</b>
Shure M35-E Reg. \$24.50	Shure M31E Reg. \$29.95
Pickering VISAC-3 Reg. \$24.95	Pickering VISANE-3 Reg. \$29.95
Empire 88E Reg. \$24.95	Empire 88TE Reg. \$29.95



# For Record Performance

## Dual's Finest . . . 1019 Auto/Professional Turntable

• Variable pitch control on all 4 speeds—6% range • Automatic tone-arm tracks below 1/2 gram, yet trips at zero • Direct dial, continuously variable anti-skating compensation • Feather-touch cue-control for manual & automatic play • 7 1/2 lb. die-cast dynamically-balanced platter • Single-play spindle that rotates with your records • Automatically shuts off amplifier after play • Can be started manually while record is rotating or at a standstill • Plays up to 10 records with less than 2/10 gram stylus force increase from first to last record • Continuously variable numerical gram scale in 1/2 gram steps for tracking pressure • Magnesium cartridge holder adjusts for optimum stylus overhang • Die-cast trim

Model ADP-55, turntable only, 19 lbs., no money dn., \$13 mo. . . . . \$139.50

ADA-24W, oiled walnut base, 3 lbs. . . . . \$12.95

ADA-24-1, 45 rpm spindle, 1 lb. . . . . \$5.95

ADA-37-4, polystyrene "playing" dust cover, 3 lbs. . . . . \$9.95

ADP-55 SPECIFICATIONS: Speeds: 16 2/3, 33 1/3, 45 and 78 rpm. Variable over 6% range. Meter: High torque continuous pole induction. Tracking: Less than 0.2 gram variation from 1st to 10th record. Turntable: 7 1/2 lb. dynamically balanced. Color: Black/Silver. Cables furnished: Line cord, 2 audio. Power requirements: 100-130 volts, 60 Hertz. Dimensions: Required mounting space; 11 3/4" x 12 3/4" x 6" above and 3" below motor board.

## New! Dual 1015F Auto/Professional Turntable

• Dynamically balanced low mass tone arm tracks as low as 1/2 gram, yet trips at zero • Direct dial, anti-skating compensation to balance stylus force right in the groove • Auto/manual feather-touch cueing system for stylus placement on any groove • New variable 6% pitch control • "Hi-Torque" motor holds speed constant within 0.1% even when voltage varies ±10% • 4 lb. die cast platter • "Elevator-Action" spindle for conversion to changer play • Automatic & manual play of all 3 speeds

Model ADP-28, turntable only, 15 lbs., no money dn., \$10 mo. . . . . \$99.50

ADA-24W, oiled walnut base, 3 lbs. . . . . \$12.95

ADA-24-1, 45 rpm spindle, 1 lb. . . . . \$5.95

ADA-37-4, polystyrene "playing" dust cover, 3 lbs. . . . . \$9.95

ADP-28 SPECIFICATIONS—Speeds: 33 1/3, 45 and 78 rpm. Turntable Speed: All 3 speeds accurate within 0.1% with one to ten records. Motor type: 4-pole induction, shock & vibration shielded. Type of drive: Friction. Tracking force variations: Less than 0.2 grams from 1st to 10th record. Record capacity: Up to 10 records. Record sizes: 7", 10", 12". Control Functions: Manual Speed Selector; Manual Record Size Selector; Variable Pitch Control; Stop/Start Manual/Automatic switch; Cue Control. Dimensions: 11 3/4" x 12 3/4" x 6" clearance above, 3" below. Power requirements: 117 VAC, 60 Hertz.

## New Low Cost Dual 1212 Auto/Standard Turntable

• Continuously variable stylus force adjustment • Plays all 3 speeds manual or automatic • Tone arm tracks flawlessly as low as 1.5 grams • 3 3/4 lb. platter • Speed accuracy 0.1% • Rigid low mass counterbalanced tone arm • Automatically applied anti-skating • Adjustable stylus overhang for minimum tracking error • Free floating tone arm during play • Optional walnut base

Model ADP-38, turntable only, 16 lbs., no money dn., \$8 mo. . . . . \$79.50

ADA-24W, oiled walnut base, 3 lbs. . . . . \$12.95

ADA-24-1, 45 rpm spindle, 1 lb. . . . . \$5.95

ADA-37-4, polystyrene "playing" dust cover, 3 lbs. . . . . \$9.95

ADP-38 SPECIFICATIONS—Speeds: 33 1/3, 45 and 78 rpm. Turntable Speed: all 3 speeds accurate within 0.1% with 1 to 6 records. Record capacity: one to six records. Record sizes: 7", 10", and 12". Control functions: Manual Speed Selector; Manual Record Size Selector; Start/Stop Manual/Automatic Switch; Variable Pitch Control; Cue Control. Dimensions: 10 1/4" x 13" x 5" clearance above, 2 3/4" below. Power Requirements: 117 VAC, 60 Hz.

## Maestro 4-Speed Automatic Stereo Changer

• Manual or automatic play of all four speeds • Includes ceramic cartridge with diamond stylus for LP's, sapphire stylus for 78's • Use with amplifiers having ceramic cartridge inputs • Instructions for conversion to magnetic cartridges • Includes two 1/2" audio cables and 45 RPM spindle adapter • Makes an ideal replacement turntable

GD-187, 12 lbs., no money dn., \$5 mo. . . . . \$29.95

GD-187 SPECIFICATIONS—Changer: Type, Maestro Model 52-93. Speeds: 16, 33 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: 105-125 V, 60 Hz AC, 10 watts. Dimensions: 2 1/4" H x 14 3/4" W x 12 1/2" D.

ADP-55  
with 1c cartridge  
**\$139<sup>51</sup>**



with \$5 cartridge  
**\$144<sup>50</sup>**

ADP-28  
with 1c cartridge  
**\$99<sup>51</sup>**



with \$5 cartridge  
**\$104<sup>50</sup>**

NEW! Cartridge Options Limit One Per Dual Turntable Order			
	ADP-55 Dual 1019	ADP-28 Dual 1015F	ADP-38 Dual 1212
1c offer		Shure M93E Pickering V15ATE-3 Empire 888E	M31E V15ACE-3 808E
\$5 offer		Shure M91E Pickering V15AME-3 Empire 888TE	M93E V15ATE-3 808E

Specify Heath Model No.—See below

ADP-38  
with 1c cartridge  
**\$79<sup>51</sup>**



with \$5 cartridge  
**\$84<sup>50</sup>**

GD-187  
**\$29<sup>95</sup>**



## For Top Performance, Choose From These Famous Name Stereo Cartridges

### Empire 888E Magnetic

AD-96H MANUFACTURER'S SPECIFICATIONS—Frequency response: 10 to 30,000 Hz. Output: 8 mV per channel. Separation: 30 dB. Load impedance: 47,000 ohms. Stylus: 4 x 9 mil elliptical diamond. Compliance: 15x10<sup>-4</sup> cm/dyne. Tracking force: 3/4 to 6 grams. Vertical tracking angle: 15°. Model AD-96H, 1 lb. . . . . \$39.95

### Shure M91E HiTrack Elliptical

AD-68F MANUFACTURER'S SPECIFICATIONS—Frequency response: 20 to 20,000 Hz. Output: 5.0 mV at 1 kHz. Separation: 25 dB @ 1 kHz. Load impedance: 47,000 ohms. Stylus: 2 x 7 mil elliptical diamond. Tracking force: 3/4 to 1 1/2 grams. Tracking angle: 15°. Model AD-68F, 1 lb. . . . . \$49.95

### Pickering V15ATE-3

"Magnetic" With Lint Brush  
AD-36N MANUFACTURER'S SPECIFICATIONS—Frequency response: 10 to 25,000 Hz. Output: 6.0 mV. Separation: 35 dB. Load impedance: 47,000 ohms. Stylus: elliptical diamond. Tracking force: 2 to 5 grams. Vertical tracking angle: 15°. Model AD-36N, 1 lb. . . . . \$39.95

### Shure M75-6 Magnetic

AD-98J MANUFACTURER'S SPECIFICATIONS—Frequency response: 20 to 20,000 Hz. Output: 6.0 mV at 1 kHz. Separation: 25 dB @ 1 kHz. Load impedance: 47,000 ohms. Stylus: 6 mil conical diamond. Tracking force: 1 1/2 to 3 grams. Tracking angle: 15°. Model AD-98J, 1 lb. . . . . \$24.50

### Empire 808E Elliptical

AD-127T MANUFACTURER'S SPECIFICATIONS—Frequency response: 10 to 25,000 Hz. Output: 8 mV per channel. Separation: More than 30 dB. Load impedance: 47,000 ohms. Stylus: 4 x 9 mil elliptical diamond. Compliance: 12 x 10<sup>-4</sup> cm/dyne. Tracking force: 1 to 4 grams. Tracking angle: 15°. Model AD-127T, 1 lb. . . . . \$29.95

### Pickering V-15/ACE-3

Dustomatic  
AD-78A MANUFACTURER'S SPECIFICATIONS—Frequency response: 20 to 25,000 Hz. Output: 5.0 mV. Separation: 35 dB. Load impedance: 47,000 ohms. Stylus: 2 x 9 mil elliptical diamond. Tracking force: 3/4 to 1 1/2 grams. Tracking angle: 15°. Model AD-78A, 1 lb. . . . . \$49.95

### Shure M31E-EP Magnetic

AD-107L MANUFACTURER'S SPECIFICATIONS—Frequency response: 20 to 18,500 Hz. Output: 10 mV at 1 kHz. Separation: 20 dB at 1,000 Hz. Load impedance: 47,000 ohms per channel. Stylus: 0.2 x 0.7 mil elliptical diamond. Compliance: 15 x 10<sup>-4</sup> cm/dyne. Tracking force: 1 to 2 grams. Tracking angle: 15°. Model AD-107L, 1 lb. . . . . \$29.95

### Pickering V-15/AC-3

Dustomatic  
AD-108D MANUFACTURER'S SPECIFICATIONS—Frequency response: 20 to 20,000 Hz. Output: 6.9 mV. Separation: 30 dB. Load impedance: 47,000 ohms. Stylus: 7 mil conical diamond. Tracking force: 3 to 7 grams. Tracking angle: 15°. Model AD-108D, 1 lb. . . . . \$24.95

### Pickering V-15/ACE-3

Dustomatic  
AD-117W MANUFACTURER'S SPECIFICATIONS—Frequency response: 20 to 20,000 Hz. Output: 6.9 mV. Separation: 30 dB. Load impedance: 47,000 ohms per channel. Stylus: 4 x 9 mil elliptical diamond. Compliance: 10 x 10<sup>-4</sup> cm/dyne. Tracking force: 3 to 5 grams. Model AD-117W, 1 lb. . . . . \$29.95

### Empire 888TE Elliptical

AD-88C MANUFACTURER'S SPECIFICATIONS—Frequency response: 8 to 32,000 Hz. Output: 6.0 mV per channel. Separation: 30 dB. Load impedance: 47,000 ohms. Stylus: 2 x 7 elliptical diamond. Tracking force: 3/4 to 3 grams. Tracking angle: 15°. Model AD-88C, 1 lb. . . . . \$49.95

### Shure M93E Elliptical

AD-58R MANUFACTURER'S SPECIFICATIONS—Frequency response: 20 to 20,000 Hz. Output: 6.0 mV at 1 kHz. Separation: 25 dB @ 1 kHz. Load impedance: 47,000 ohms. Stylus: 4 x 7 mil elliptical diamond. Tracking force: 1 1/2 to 3 grams. Tracking angle: 15°. Model AD-58R, 1 lb. . . . . \$39.95

### Empire 888 Magnetic

AD-118M MANUFACTURER'S SPECIFICATIONS—Frequency response: 20 to 20,000 Hz. Output: 8.0 mV per channel. Separation: 30 dB. Load impedance: 47,000 ohms. Stylus: 1 mil diamond. Tracking force: 3/4 to 5 grams. Tracking angle: 15°. Model AD-118M, 1 lb. . . . . \$24.95



# Scientific Instrumentation

**NOW! A Complete System to Make the Most Out of Digital Electronics**



**The Heath EU-800 Series Modular Digital System Including TTL IC Instruments, Modules, Circuit Cards, Breadboards, Parts and A New Text, "Digital Electronics For Scientists".**

## Now . . . A Complete Digital Instrumentation System for Teaching, Development, and Research Laboratories.

JOIN THE DIGITAL REVOLUTION. All laboratories will soon have digital instrumentation, all people who work in these laboratories will want to learn and use this new and exciting technique . . .

The Book "Digital Electronics for Scientists" provides text and experiments for a systematic introduction to the concepts and the systems that are basic to this new instrumentation/computation revolution. The reader is led from simple discrete switching devices, such as diodes and transistors, to the latest high-speed integrated circuits and digital instrumentation systems.

Table of contents by chapter includes: 1. Digital Measurements. 2. Switching Concepts and Diode Circuits. 3. Transistors, Relays, and Other Switches. 4. Switching Logic and Logic Gates. 5. Flip-Flops and Multivibrators. 6. Counters, Registers, and Readout. 7. Digital and Analog-Digital Instruments and Systems. This book is written for students and practicing scientists and engineers who want to gain a background in the new digital electronics. Over 100 experiments cover all the major topics in digital electronics and provide experience with hundreds of practical circuits.

**MODULAR DIGITAL SYSTEM.** Heath, with Drs. Malmstadt and Enke, has designed a NEW GENERATION of modular circuits and instruments to conveniently perform the experiments described in "Digital Electronics for Scientists." This unique system is based on plug-in logic circuit cards featuring "wire-patch" solderless connectors. Each card contains one or more basic circuits providing specific digital or analog functions which can be studied analytically before being combined in the chassis modules to build a more complex circuit, system, or instrument. Fast, high-noise-immunity TTL integrated circuits are used throughout for maximum versatility.

**TOMORROW'S INSTRUMENTS TODAY.** The simple, compact patch system provides circuits that are directly useful in the research laboratory. Learn, design, optimize, and use . . . all in the same flexible system. New ideas which formerly required weeks or months now can be tested in just hours. It is an ideal system for the development of computer interfacing, special purpose counters, sequencers, and so forth.

**COMPATIBLE EXPERIMENTAL DEVICES.** The EU-801A Analog-Digital Designer includes 3 chassis modules (power binary information, and digital timing) and 13 circuit cards. Appropriate circuit cards are simply plugged into the modules and patched together with ordinary hook-up wire or component leads. The EU-51A Experimental Parts Group is a compact,

realistic, highly adaptable and inexpensive breadboard system for electronic circuit design and teaching. The Group includes a desk chassis, a patch card accepting standard components, hundreds of components, and a power patch card. The 801A Modules and the 51A chassis accept the same cards and the 801A power module can be used as a power supply for the group. Most of the experiments in "Digital Electronics for Scientists" can be performed with the EU-51A and EU-801A alone. The EU-805A Universal Digital Instrument includes a DVM and six 12.5 MHz counting-timing functions. Most of the functional circuits in this instrument are built on the EU-800 series cards and thus can be used in the 801A and 51A for study and design. This is the only completely compatible system which includes wire-patch breadboard, circuit cards, and complete laboratory instruments.

**THE TEXTBOOK—Digital Electronics for Scientists.**

Authors:

H. V. Malmstadt, Professor, University of Illinois.

C. G. Enke, Associate Professor, Michigan State University.

Publisher: W. A. Benjamin, Inc., New York 1969

525 pages, 396 figures, 106 experiments.

**EUP-19** . . . . . \$9.50

### SELECTED INSTRUMENTS—

**EU-801A, Analog Digital Designer** . . . . . \$435.00

**EU-51A, Experimental Parts Group** . . . . . \$135.00

**EU-805A, Universal Digital Instrument** . . . . . \$1250.00

**EU-805D, Universal Digital Instrument, less DVM** . . . . . \$940.00

For specifications on these and other items in the EU-800 Series Modular Digital System, write for your free copy of the new Heath Scientific Instrumentation Catalog.



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- Heath/Malmstadt-Enke Modular Spectroscopy System
- Heath/Malmstadt-Enke Instrumentation Laboratory
- Heath Instruments and Components for the Berkeley Physics Laboratory
- Heath Test Equipment

**Now Available . . . Heath 701 UV-VIS Single-Beam Spectrophotometer**



# Versatile Voltmeters

## Heathkit Portable Solid-State VOM . . . Thousands Of Uses

- Solid-state circuit—FET input, 4 silicon transistor, 1 diode • 4 AC voltage ranges • 4 DC voltage ranges • 4 ohm ranges • 11 megohm input on DC • 1 megohm input on AC • 4½", 200 uA meter
- Battery powered • Rugged polypropylene case with self cover & handle includes storage space for test leads • Easy-to-build circuit board construction

Does Hundreds Of Everyday Measurements for homeowners, hobbyists, boaters, model builders, Cber's, hams, even TV servicemen. Features four ranges on AC and DC volts that measure from 1 to 1000 volts full scale . . . four resistance ranges (10 ohms center scale x1, x100, x10K, x1M) that measure from 0.1 ohm to 1000 megohms. All ranges are multicolored, and there's an extra jack to connect accessory probes to extend its capabilities.

Battery Powered To Work Anywhere . . . runs on a "C" cell and 8.4v. mercury cell, same as used in transistor radios (batteries not supplied). Housed in a rugged black textured polypropylene case with molded-in cover and handle with plenty of space for the three built-in test leads. Also features zero-adjust and ohms-adjust controls, a DC polarity reversing switch to eliminate switching leads, plus a continuous rotation 12-position function switch. Build in 3-4 hours.

Kit IM-17, 5 lbs. . . . . \$21.95

IM-17 SPECIFICATIONS—DC VOLTMEETER: Four Ranges: 0-1, 10, 100, 1000 volts full scale. Input resistance: 11 meg. on all ranges. Accuracy: ±3% of full scale. AC VOLTMEETER: Four Ranges: 0-1, 10, 100, 1000 volts full scale. Input resistance: 1 meg. on all ranges. Accuracy: ±5% of full scale. Frequency response: ±1 dB, 10 Hz to 1 MHz. OHM-METER: Four Ranges: Rx1, 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: 8½" W x 4¼" H x 7¼" D.

IM-17  
\$21.95



## The New Heathkit IM-18 . . . Proud Descendant Of The IM-11, World's Most Popular VTVM, Now In New Heath Instrument Colors And New Features

- One probe makes all measurements • 7 AC, 7 DC, 7 Ohms ranges—scales are easy to read • Sensitive, high-quality 4½" 200 uA meter • 1% precision resistors • Extended frequency response ±1 dB 25 Hz to 1 MHz • Measures RMS and Peak-to-Peak • Easy-to-build, electronically stable circuit board construction • New Heathkit beige and brown instrumentation colors • Wiring options for 120/240 VAC operation

For over 19 years, the Heathkit IM-11 was the world's most popular VTVM, thanks to its convenient size, practical meter ranges and single test probe. And now the IM-18 carries on this tradition, with all the features of the IM-11, plus a few of its own . . . new Heathkit styling in handsome beige & brown, dual primary transformer and three-wire line cord for added safety. Check out the IM-18 . . . it's the world's best buy in a VTVM.

Kit IM-18, 5 lbs., no money dn., \$5 mo. . . . . \$28.50  
Assembled IMW-18, 5 lbs., no money dn., \$5 mo. . . . . \$47.95

IM-18 SPECIFICATIONS—Meter scales: DC & AC (RMS): 0-1.5, 5, 15, 50, 150, 500, 1500 volts 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: 4½" 200 uA movement. Multipliers: 1% precision type. In resistance DC: 11 megohms (1 megohm in probe) on all ranges. Circuit: Balanced bridge (push-pull) using tv. 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 volt, size "C" flashlight cell (not supplied). Power requirements: 105-125 or 210-250 VAC, 50/60 Hz, 10 watts. Dimensions: 7¼" H x 4-11/16" W x 4¼" D.



Kit IM-18  
\$28.50  
\$5 mo.

Wired IMW-18  
\$47.95  
\$5 mo.

## Heathkit IM-28 "Service Bench" VTVM . . . Greater Accuracy At Lower Cost

- Measures AC volts (RMS), DC volts, resistance, and audio levels • 7 AC volts, 7 DC volts, and 7 resistance ranges • Separate 1.5 & 5 volt AC scales for high accuracy • Large, easy-to-read 6 inch meter face • Gimbal mounting bracket for added visibility from all locations around the test bench • Smooth ten-turn vernier controls for zero & ohms adjust • One test probe for all measurements—the ground lead has an alligator clip for added convenience • Easy calibration • Extra wide response • Quick, positive operation • Dual primary transformer for 120/240 VAC operation • New Heathkit beige and brown instrument colors • Fast, simple construction • Now kit or assembled

The IM-28 delivers the same remarkable performance as the IM-18 above, but has these extra convenience features: separate 1.5 and 5 VAC scales, large 6" meter for extra accuracy, calibration controls adjustable on the front panel and handy gimbal mounting bracket.

Kit IM-28, 7 lbs., no money dn., \$5 mo. . . . . \$36.50  
Assembled IMW-28, 7 lbs., no money dn., \$6 mo. . . . . \$56.95

IM-28 SPECIFICATIONS—Same as the IM-18 with additional features as noted above.

## Get High Accuracy & Portable Convenience With The Heathkit MM-1 VOM

- 20,000 Ohms/Volt meter movement • 2-color meter scale • Sensitive 50 microampere 4½" meter • 1% precision resistors for accuracy & stability • Polarity reversing switch

An Ideal Meter For All-Around Service Applications. Provides wide voltage, current, resistance, & dB ranges to cover most service requirements. Battery power and compact size make it well suited to field and test bench applications. Test leads included. Less batteries.

Kit MM-1, 5 lbs. . . . . \$29.95

MM-1 SPECIFICATIONS—Sensitivity: 20,000 ohms/volt DC, 5000 ohms/volt AC. Ranges: AC & DC volts: Full scale, 1.5, 5, 50, 150, 500, 1500, 5000. Direct current: 150 microamperes, 15, 150, 500 milliampers, 15 amperes. Ohmmeter: 0.2 ohms to 20 megohms in three ranges. Decibels: —10 to +65 dB. Resistors: 1% precision type. Accuracy: ±3% of full scale. Controls: Range switch; Output, AC, DC, Reverse DC switch, Ohms adjust control. Batteries: 1 type "C" cell, 4 penlight cells. Dimensions: 7½" x 5½" x 4".



MM-1  
\$29.95  
\$5 mo.



## "How To Understand & Use Your Vacuum Tube Voltmeter"

Covers theory, advantages & applications.

Kit EF-1, Text & special power supply (for VTVM owners), 3 lbs. . . . . \$9  
Kit EF-1-5 (EF-1 & IM-18 VTVM, above), 8 lbs., no money dn., \$5 mo. . . . . \$37.00  
Kit EF-1-6 (EF-1 & IM-28 VTVM, above), 10 lbs., no money dn., \$5 mo. . . . . \$44.50  
Manuals only for EF-1 (single copy) . . . . . \$5.00  
(10 or more) . . . . . ea. \$3.00





Kit IM-25  
**\$80<sup>00</sup>** \$8 mo.

Wired IMW-25  
**\$115<sup>00</sup>** \$11 mo.

### Heathkit IM-25 Solid-State V-O-M

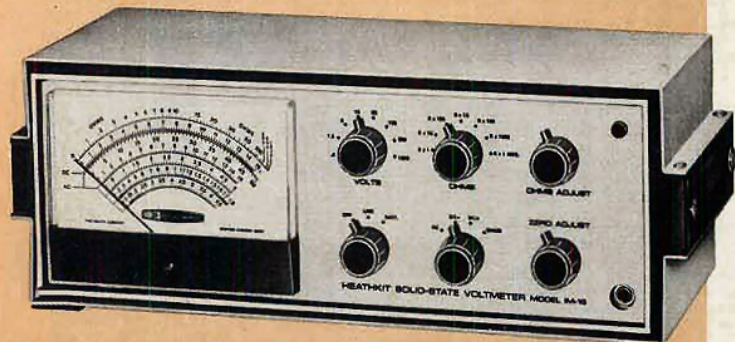
- 9 DC voltage ranges from 150 millivolts full scale to 1500 volts full scale
- 9 AC voltage ranges from 150 millivolts full scale to 1500 volts full scale
- 7 resistance ranges, 10 ohms center scale x1, x10, x100, x1k, x10k, x100k, x1 meg . . . measures from one ohm to 1000 megohms • 11 current ranges from 15  $\mu$ A full scale to 1.5 A full scale • 11 megohm input impedance on DC
- 10 megohm input impedance on AC • AC response to 100 kHz • Separate range switch for each test function • Built-in 120/240 VAC, 50-60 Hz power supply plus in-cabinet holders for batteries • Circuit board assembly • Not recommended for use in RF fields

Kit IM-25, 11 lbs., no money dn., \$8 mo. . . . . \$80.00  
Assembled IMW-25, 10 lbs., no money dn., \$11 mo. . . . . \$115.00

**IM-25 SPECIFICATIONS—DC VOLTMETER—9 Ranges:** 0-.15, .5, 1.5, 5, 15, 50, 150, 500, 1500 volts full scale. **Input resistance:** 11 megohms on all ranges. **Accuracy:**  $\pm 3\%$  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 10k ohm (.015 mA). **Accuracy:**  $\pm 4\%$  of full scale. **AC VOLTMETER—9 Ranges:** 0-.15, .5, 1.5, 5, 15, 50, 150, 500, 1500 volts full scale. **Input resistance:** 10 megohm shunted by 150 pF (measured at probe tip). **Accuracy:**  $\pm 5\%$  of full scale. **Frequency response:**  $\pm 2$  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 10k ohm (.015 mA). **Accuracy:**  $\pm 5\%$  of full scale. **OHMMETER—7 ranges:** 10 ohm center scale x1, x10, x100, x1k, x10k, x100k, x1 meg. **Probe:** Combined AC-OHMS-DC switching probe, single jack input for Probe and Ground connections. Circuit ground isolated from cabinet. **Dividers:** 1% Precision Type. **Meter:** 6", 200  $\mu$ A, 100° movement. **Transistors & Diodes:** (2) 2N4304 FET transistor, (13) 2N3393 silicon junction transistor, (1) 9.1 V zener diode, (1) 13 V zener diode, (4) 1N191 germanium diode, (1) silicon Power Supply diode. **POWER SUPPLIES—Ohms circuits:** 3 volts ("C" cells). **Ohms circuit bias:** 1.35 volt (EIN mercury cell). **Amplifier circuit:** 18 volts. Battery operation; "C" cells. Line operation; Transformer operated  $\frac{1}{2}$  wave circuit, operable on either 120 or 240 V AC, 50-60 Hz. **Dimensions:** 16 $\frac{1}{2}$ " W x 5 $\frac{1}{4}$ " H x 7 $\frac{1}{4}$ " D.



Unitized Construction. Circuit board mounts within the main frame. Cabinet shells are removable for convenient access to calibration controls and battery holders.



Kit IM-16  
**\$44<sup>95</sup>** \$5 mo.

Wired IMW-16  
**\$64<sup>95</sup>** \$7 mo.

### Heathkit IM-16 Solid-State Volt-Ohm-Meter

- 8 DC voltage ranges from 0.5 volts to 1500 volts full scale • 8 AC voltage ranges from 0.5 volts to 1500 volts full scale • 7 ohmmeter ranges x1 (with 10 ohms at center scale), x10, x100, x1k, x10k, x100k, and x1 megohm
- 11 megohm input resistance on DC ranges • 1 megohm on AC ranges
- Operates either from internal battery or from 120/240 V, 50/60 Hz AC line voltage • Separate switches for individual functions • Circuit board-wiring harness construction speeds assembly, means less chance for wiring error • Cabinet top & bottom shells remove easily to expose circuitry and components

Kit IM-16, 10 lbs., no money dn., \$5 mo. . . . . \$44.95  
Assembled IMW-16, 10 lbs., no money dn., \$7 mo. . . . . \$64.95

**IM-16 SPECIFICATIONS—DC VOLTMETER—8 Ranges:** 0.5, 1.5, 5, 15, 50, 150, 500, 1500 volts. **Input resistance:** 11 megohms on all ranges. **Accuracy:**  $\pm 3\%$  of full scale. **AC VOLTMETER—8 Ranges:** 0.5, 1.5, 5, 15, 50, 150, 500, 1500 volts. **Input resistance:** 1 megohm. **Accuracy:**  $\pm 5\%$  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.) Circuit ground isolated from cabinet. **POWER SUPPLIES—Amplifier circuit:** Power line, 120/240 V, 50/60 Hz, AC. Battery; 9 V. NEDA 1602 or equivalent. **Ohms circuit:** Battery; 1.5 V (one "C" cell). **GENERAL SPECIFICATIONS—Voltage dividers:** 1% precision resistors. **Meter:** 6", 100  $\mu$ A (100° movement). **Transistor & diode complement:** (1) Field effect transistor; (6) 2N3393 silicon transistors; (1) 6.8 V. zener diode; (4) silicon diodes. **Dimensions:** 16 $\frac{1}{2}$ " L x 7 $\frac{1}{4}$ " D x 5 $\frac{1}{4}$ " H. **Net weight:** 7 $\frac{1}{2}$  lbs. (with batteries).

## Now Professional Beige & Brown Styling For The Heathkit IM-38 Laboratory AC VTVM



Kit IM-38  
**\$39<sup>50</sup>**

no money dn., \$5 mo.

Wired IMW-38  
**\$54<sup>95</sup>**

no money dn., \$6 mo.

- Especially useful for low-level AC & audio measurements • 10 voltage ranges—from 0.01 to 300 volts RMS full scale • Extended frequency response,  $\pm 1$  dB from 10 Hz to 500 kHz • 10 megohm input impedance for high accuracy—minimal effect on circuitry under test • Calibrated scale for audio measurements • VU-type ballistic meter damping • New Heathkit instrumentation color styling • 120/240 volt wiring options—no special export order required

A Compact Instrument For Audio Design & Development, Laboratory Analysis, Or General Servicing . . . features the same practical size as the Heathkit IM-18 VTVM, plus precision components for extended accuracy in measuring low-level AC voltages. A precision voltage divider provides 10 ranges, 10 millivolts to 300 volts RMS full scale.

Optimum Circuit Design For Accurate, Dependable Measurements . . . utilizes the high input impedance characteristics of the cathode follower which reflects 10 megohms load to circuits under test. Total meter amplifier includes two stages and the amplifier filament voltage is supplied from a transformer winding balanced to ground to keep AC noise to a minimum. The DC power supply features a rugged silicon rectifier. New Heathkit "human engineered" instrumentation knobs and choice of 120/240 volt operation mean extra convenience and easier operation. Look no further for a top quality, low cost laboratory AC VTVM . . . kit or assembled, the IM-38 is your best buy.

Kit IM-38, 4 lbs., no money dn., \$5 mo. . . . . \$39.50  
Assembled IMW-38, 5 lbs., no money dn., \$6 mo. . . . . \$54.95

**IM-38 SPECIFICATIONS—Frequency response:**  $\pm 1$  dB 10 Hz to 500 kHz,  $\pm 2$  dB 10 Hz to 1 MHz, all ranges. **Ranges:** Ten ranges from 0.01 to 300 volts 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 volts, 10 megohms shunted by 22 pF on ranges .01 to 3 volts. **Tube complement:** (1) 6AW8, (1) 6EJ7/EF184. **Accuracy:** Within 5% of full scale. **Power requirements:** 105-125/210-250 VAC, 50-60 Hz, 10 watts. **Dimensions:** 7 $\frac{3}{8}$ " H x 4 $\frac{1}{16}$ " W x 4 $\frac{1}{8}$ " D.



Kit PK-3  
**\$4<sup>00</sup>**

### NEW! Etched Circuit RF Probe Kit

- May be used with any 11 megohm input voltmeter • Enables RF measurements over 100 MHz • 1000 VDC maximum at probe tip • 90 volts RMS RF maximum • A handy service & ham aid
- Kit PK-3, 1 lb. . . . . \$4.00  
Assembled PKW-3, 1 lb. . . . . \$6.00



### 30 KV DC Probe Kit

- Invaluable for work involving extremely high voltages • Multiplier factor of 100 on DC ranges of 11 megohm input meters • 1100 megohm input for measuring voltage in hi-Z circuits
- Kit 336, 1 lb. . . . . \$5.50  
Assembled 336W, 1 lb. . . . . \$6.50



# Engineered Test Equipment

## Now An In-Circuit Transistor Tester For Only \$24.95

- Compare to similar instruments selling for several times more
- Tests transistors for DC gain in or out of circuit
- Tests transistors out of circuit for I<sub>ceo</sub> and I<sub>cbo</sub> leakage
- Tests diodes in circuit or out of circuit for opens and shorts
- Identifies unknown diode leads
- Identifies NPN or PNP type transistors
- Matches NPN and PNP transistors
- Cannot damage device or circuit even if connected incorrectly
- Big 4 1/2" 200 uA meter reads directly in DC Beta and Leakage
- Two DC Beta ranges, 2-100 and 20-1000
- Expanded leakage current scale, 0-5000 uA, 1000 uA midscale
- 10-turn calibrate control
- Portable, battery powered
- Long battery life from single "D" cell
- Handy attached 3' test leads for in or out of circuit checks
- Front panel socket for lower power devices
- Rugged polypropylene case with attached cover, convenient handle, and lead storage compartment
- Build it in less than two hours

A Versatile, Easy-To-Use Performer . . . you don't even need device specs to locate defective devices or stages—just connect the IT-18, adjust the ten-turn calibrate control and press-to-test transistor gain. Can't damage circuits even if connected incorrectly either. Will accurately measure characteristics of any bi-polar device on the market. Completely portable—one "D" cell supplies all the power. Order your IT-18 now.

Kit IT-18, 3 lbs. . . no money dn., \$5 mo. . . . . \$24.95

IT-18 SPECIFICATIONS—D. C. Beta: x1 range—2 to 100, x10 range—20 to 1000. Out-of-circuit accuracy: ±5%. In-circuit accuracy: Indicates good or bad (accuracy depends upon circuit being tested); I<sub>ceo</sub> [out-of-circuit only]—0-5000 uA; I<sub>cbo</sub> [out of circuit only] 0-5000 uA; Diodes, forward or reverse current—0-5000 uA. Power: One standard "D" cell (not supplied). Dimensions: 8 1/2" wide, 4 1/4" high, 7 7/8" deep (including handle). Net weight: 2 1/4 lbs.

## Heathkit IM-36 Lab Transistor Tester

- Measures current gain (Beta) up to 400
- Provides complete DC analysis of PNP & NPN transistors
- DC gain (Beta) is read directly on calibrated scales
- 15 uA basic range for leakage (I<sub>cbo</sub>, I<sub>ceo</sub>) tests
- Four lever switches for fast, easy test selection
- Carrying handle for convenience

Kit IM-36, 9 lbs., no money dn., \$6 mo. . . . . \$60.00

Assembled IMW-36, 11 lbs., no money dn., \$9 mo. . . . . \$90.00

IM-36 SPECIFICATIONS—Checks: Transistors up to 15 amps and diodes up to 1.5 amps. Tests: Shorts, DC Gain (Beta 0-200 & 200-400), Leakage (I<sub>cbo</sub>, I<sub>ceo</sub>), Diode Forward and Reverse Current. Meter: Current Ranges: 15 uA, 150 uA, 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/volt). Power supply: Internal, seven 1.5 volt size D batteries (not supplied) provide 1.5, 3, 4.5, 6, 7.5, 9 volts collector supply for gain or leakage and 1.5 volts for bias; External, 0-50 volts for gain, 0-150 volts for leakage and 0-5 volts for bias. Bias control: Permits any collector current from 10 uA to 15 amps 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<sub>cbo</sub> and I<sub>ceo</sub> 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.

## Heathkit IT-27 Portable Transistor/Diode Checker

Kit IT-27, 2 lbs. . . . . \$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 1/4" H x 3 3/4" W x 3 3/4" D.

IT-18  
\$24.95  
\$5 mo.



Kit IM-36  
\$60.00  
\$6 mo.

Wired IMW-36  
\$90.00  
\$9 mo.



IT-27  
\$6.95



## Lab RF Generator Gives Precision-Attenuated RF Signals

IG-42  
\$59.00  
\$6 mo.

- Accurately metered output voltage and % modulation
- Operates on fundamentals — 100 kHz to 31 MHz in five bands
- Double shielding on all oscillator circuits
- Easy to build with point-to-point wiring



Kit IG-42, 15 lbs. . . no money down, \$6 mo. . . . . \$59.00

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

IG-42 SPECIFICATIONS—Frequency ranges: Band A, 100 to 290 kHz; Band B, 280 to 1000 kHz; Band C, 0.95 to 3.1 MHz; Band D, 2.9 to 9.5 MHz; Band E, 9 to 31 MHz. RF Output: Impedance, 50 ohms—voltage, 100,000 microvolts 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 to 50% variable, indicated on meter. Tube complement: 6AF4, 6AV5, 12AU7, 6B2. Power requirements: 105-125 V, 50/60 Hz. Dimensions: 13" W x 8 1/2" H x 7" D.

## Heathkit IG-102 . . . Your Best Buy In A General Purpose RF Generator

- 2% Tuning Accuracy
- 100 kHz to 220 MHz tuning range
- Unmodulated or 400 Hz modulated RF output
- 400 Hz audio signal for audio frequency checks
- Critical circuits pre-wired & tuned

Kit IG-102, 7 lbs. . . no money down, \$5 mo. . . . . \$29.95

Assembled IGW-19, wired Berkeley Physics version, 7 lbs. . . . . \$60.00

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

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. Accuracy: 2%. 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. Tube complement: (1) 12AT7, (1) 6AN8. Power requirements: 105-125 VAC, 50/60 Hz, 15 watts. Dimensions: 6 1/2" W x 9 1/2" H x 5" D.



IG-102  
\$29.95  
\$5 mo.

## Heathkit IG-72 Low Distortion, Switch-Selected Audio Generator

Kit IG-72  
\$44.50  
\$5 mo.  
Wired IGW-72  
\$64.95  
\$7 mo.

- Switch-selected output from 10 Hz to 100 kHz
- Less than 0.1% distortion from 20-20,000 Hz
- 6 output ranges—0-.003, .01, .03, .1, .3 & 1 volt RMS



Kit IG-72, 8 lbs. . . no money down, \$5 mo. . . . . \$44.50

Assembled IGW-72, 9 lbs. . . no money down, \$7 mo. . . . . \$64.95

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

IG-72 SPECIFICATIONS—Frequency: 10 Hz to 100 kHz, switch selected, 2 significant figures and multiplier. Output: 6 ranges; 0 to .003, .01, .03, .1, .3, 1 volts RMS into external 600 ohm load or with internal load into HI-Z; 2 ranges: 0 to 3, 10 volts RMS into a minimum of 10,000 ohms. —60 dB to +22 dB in 8 steps, —60 dBm to +2 dBm (1 mW = 1 mw into 600 ohms). Distortion: Less than 0.1%, 20 to 20,000 Hz. Tubes: (1) 6AU6, (1) 6CL6, (1) 6X4. Power requirements: 105-125 volts AC, 50/60 Hz, 40 watts. Dimensions: 9 1/2" W x 6 1/2" H x 5" D.

## "How To Understand & Use Your Signal Generator"

The EF-3-2 kit-course covers basic electronic principles, generator theory and applications . . . a wealth of information, whether you've just started in electronics or use the course for periodic refresher training.

Kit EF-3, Text, chassis & parts, 4 lbs. . . . . \$12.95

Kit EF-3-2 (EF-3 & IG-102 RF Signal Generator, pg. 45) 10 lbs., no money dn., \$5 mo. . . . . \$40.00

Manuals only for EF-3 (single copy) . . . . . \$5.00  
(10 or more) . . . . . ea. \$3.00





# Heathkit® "Performance-Plus"

## Introducing The New Heathkit IG-28 Color Bar-Dot Generator . . . Advanced Integrated Circuitry Produces 12 Patterns Plus Clear Raster and Eliminates Divider Chain Instability Forever



**IG-28**  
**\$79.95**  
\$8 mo.

**Wired IGW-28**  
**\$114.95**  
\$11 mo.

Clean, Open Layout . . . thanks to Heath's practical engineering and the use of space and weight saving IC's. The Video circuit board is upper left, Divider board mounts on the chassis.

- All solid-state construction using computer-type Integrated Circuitry • No divider chain adjustments • Stable pattern display—no flicker, bounce or jitter • Instant switch selection of all functions • Produces 12 patterns plus clear raster • Exclusive Heath 3x3 display plus standard 9x9 display of all patterns • Variable front panel tuning for channels 2 thru 6 • Horizontal lines only one raster thick for added accuracy • Variable front panel positive and negative video output • Front panel negative going sync output • Two handy AC outlets on front panel • Built-in gun shorting circuit with lead piercing connectors • Front panel switchable crystal controlled sound carrier • Copper-banded transformer to reduce stray fields • Safe three-wire line cord • Fast, easy construction with two circuit boards and two wiring harnesses

The new IG-28 is *the* signal source for all color and B&W TV servicing. No other instrument at any price will give as much stable, versatile TV servicing capability. Here are the details:

**Solid-State Circuitry** produces dots, cross-hatch, vertical and horizontal bars, color bars and shading bars in the familiar 9x9 display . . . plus exclusive Heath 3x3 display of all these patterns . . . plus a clear raster that lets you adjust purity without upsetting AGC adjustment. Fifteen J-K Flip-Flops and associated gates count down from a crystal controlled oscillator, eliminating divider chain instability and adjustments.

**Time-Saving Versatility.** The IG-28 has variable front panel tuning for channels 2 through 6 for real convenience. Plus & minus going video signals at the turn of a front panel control. And for sync, in-circuit video or chroma problems, use the front panel sync output. Two front panel AC outlets for test gear, TV set etc. Built-in gun shorting circuits and grid jacks too. Add any service-type scope with horizontal input and you have vectorscope display capability as well. Fast, enjoyable circuit board-wiring harness construction. Start enjoying the versatility and convenience you couldn't get before . . . put the remarkable new Heathkit IG-28 on your bench now.

**Kit IG-28, 8 lbs., no money dn., \$8 mo. . . . . \$79.95**  
**Assembled IGW-28, 8 lbs., no money dn., \$11 mo. . . . . \$114.95**

**IG-28 SPECIFICATIONS—Patterns:** Switch Selection of 3x3 or 9x9 Display; Dots, Cross-hatch, Horizontal Lines, Vertical Lines, Color Bars, Gray Scale, Clear Raster. **Output Signals:** Video—Greater than ±1 volt 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 volts 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:** Type—Transformer operated, full-wave zener diode regulated. Input—120 or 240 VAC, 50/60 Hz. Output—3.6 VDC, 500 mA, zener diode regulated. **General:** Cabinet Dimensions—Overall: 13 1/2" wide x 5 1/2" high x 8" deep. Net Weight—6 1/2 lbs.

### Fast Switch Selection Of Either

Standard 9 x 9  
Display

OR

Exclusive Heath  
"3 x 3" Display



Color Bars



Shading Bars



3x3 Color Bars



3x3 Shading



Dot Pattern



Cross Hatch



3x3 Dot



3x3 Cross Hatch



Horizontal Bars



Vertical Bars



3x3 Horizontal



3x3 Vertical

## TV Alignment Generator For FM & TV "Front End" And IF Alignment



**IG-52**  
**\$69.95**  
no money dn.,  
\$7 mo.

**Kit IG-52, 14 lbs. . . no money down, \$7 mo. . . . . \$69.95**  
Export model available for 115/230 VAC, 50-60 Hz; write for prices.

**IG-52 SPECIFICATIONS—Output impedance:** 50 ohms. **Sweep deviation:** Continuously variable from 0.4 MHz to 0.42 MHz (depending on base frequency). **Crystal marker:** 4.5 MHz and multiples thereof. **Variable marker:** 19 MHz to 60 MHz on fundamentals, 57 MHz to 180 MHz on harmonics. **External marker terminals:** Provided on panel. **Attenuators:** Step-switch controls sweep and marker oscillators together, plus variable controls for each output. **Blanking:** Converts return trace into zero reference line, phasing control also provided. **Cables:** 3 supplied, output, scope horizontal, scope vertical. **Power requirements:** 105-125 VAC, 50/60 Hz, 50 watts. **Dimensions:** 13" W x 8 1/2" H x 7 1/2" D.

## NEW! Sine-Square Wave Generator . . . High Accuracy . . . Low Cost

- Output available from 1 Hz to 100 kHz using repeatable switch-selection • Sine & Square Wave output available simultaneously • Metered sine wave output • Less than 0.1% sine wave distortion • Voltage & dB meter scales • Switch-selection of internal 600 ohm load or external load • Less than 50 ns square wave rise time • Floating outputs • 8-position output attenuator for sine waves • 3-position output attenuator for square waves • 120 V or 240 V wiring options • New Heathkit instrumentation styling and unitized construction for easier operation & servicing • Simple circuit board construction

**Kit IG-18, 10 lbs., no money dn., \$7 mo. . . . . \$67.50**  
**Assembled IGW-18, 9 lbs., no money dn., \$10 mo. . . . . \$99.50**

**IG-18 SPECIFICATIONS—GENERAL:** Frequency selection: Digital selection consisting of: 0-100 switch (steps of 10), 0-10 switch (steps of 1), 0-1 control (vernier) & multiplier switch (x1, 10, 100, 1000). Frequency accuracy: Within ±5%. **SINE WAVE OUTPUT:** Frequency range: 1 Hz to 100 kHz. Output voltage ranges: 8 ranges, 0.003 to 10 volts RMS (full scale) with 10 K ohm or higher external load. 6 ranges, 0.003 to 1 volt (full scale) with 600 ohm internal or external load. **dB Ranges:** —62 dB to +22 dB, —12 dB to +2 dB on the meter and —50 dB to +20 dB on the amplitude switch in 10 dB steps. +2 dB maximum 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 volt range: 0-1000 ohm; 3 volt range: 800-1000 ohm; 1 volt range and lower: 600 ohm. **Meter accuracy:** +5% of full scale with proper load termination. **Distortion:** Less than 0.1% from 10 Hz to 20 kHz. **Type of circuit:** Differential amplifier with complementary-pair output. Notch filter frequency determination. **SQUARE WAVE OUTPUT:** Frequency range: 5 Hz to 100 kHz. Output voltage ranges: (peak-to-peak): Three ranges: .1, 1, 10 volt into 2000 ohm load or higher. Output impedance: .1V and 1 V ranges: 52 ohm; 10 V range: up to 220 ohm. Rise time: Less than 50 ns. Dimensions: 5 1/4" H x 13 1/4" W x 7 1/2" D. Power requirements: 105-125 VAC or 210-250 VAC, 50/60 Hz, 6 watts. Net weight: 7 lbs.



**Kit IG-18**  
**\$67.50**  
\$7 mo.

**Wired IGW-18**  
**\$99.50**  
\$10 mo.

The extremely clean, uncluttered layout of the IG-18 makes building it a pleasure.



# Test Equipment

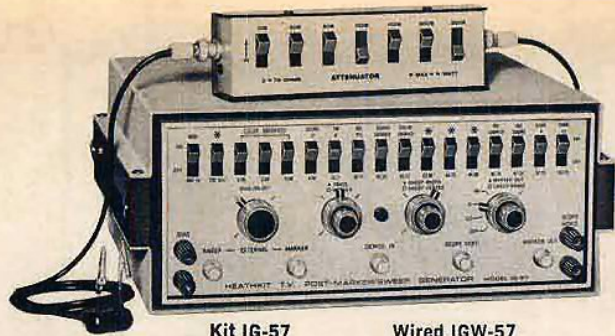
## The Heathkit IG-57 Solid-State Post Marker/Sweep Generator . . . Lets You Make Bandpass Alignment A Standard Part Of Check-out Procedure . . . Maximum Performance At A Very Modest Price

15 Crystal-Controlled Markers. Four marker frequencies are provided for setting color bandpass, one marker for TV sound, eight at the IF frequencies between 39.75 and 47.25 MHz plus markers for channel 4 and channel 10 picture and sound carriers for checking tuner RF response. On one trace display you can check picture and sound carriers, 6 dB points, corner marker and trap frequencies.

3 Sweep Oscillators . . . in stable Colpitts circuits produce 5 ranges using harmonics . . . for color bandpass, FM IF, color and B&W IF bandpass, VHF Channels 4 and 10. May also be used with external generators.

Kit IG-57, 14 lbs., no money dn., \$13 mo. . . . . \$135.00  
Assembled IGW-57, 11 lbs., no money dn., \$19 mo. . . . . \$199.00

**IG-57 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, 47.25, and 193.25 MHz  $\pm 0.005\%$ . Modulation frequency: 400 Hz. Input impedance: External Marker, External Sweep, and Attenuator—75 ohms. Demod in—220 k ohms. Output impedances: Marker Output, Sweep Output, and Attenuator—75 ohms. Scope Volt.—22 k ohms. Bias voltage: Positive or negative 15 volts DC at 10 milliamperes. Type of Marker: Birdie. Controls: Bias control with pull-on/push-off switch; Marker/Trace—dual concentric; Sweep Width/Sweep Center—dual concentric; Marker Out—concentric with Sweep Range; Phase—Rocker type—separate switch for each of the above listed frequencies; Blanking, On/Off; Trace Reverse; Modulation On/Off. Transistor—diode complement: (1) 2N3692 transistors; (7) 2N 3393 transistors; (1) 2N3416 transistor; (3) silicon diode rectifiers; (2) crystal diodes; (1) 13.6 volt zener diode; (1) 20 volt zener diode. Sweep frequency ranges and output voltage: LO Band—2.5 to 5.5 MHz  $\pm 1$  dB at 0.5 volts RMS (min.) fundamentals, and 10.7 MHz on harmonics. IF Band—38 to 49 MHz  $\pm 1$  dB, at 0.5 volts RMS (min.) fundamentals. RF Band—64 to 72 MHz  $\pm 1$  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 volts, 60 Hz AC at 20 watts.



Kit IG-57  
**\$135.00**  
\$13 mo.

Wired IGW-57  
**\$199.00**  
\$19 mo.

• This new generator plus a 'scope is all you need . . . no external sweep generator required • Comprehensive manual tells how to align Color TV, B&W TV, and FM sets • Produces all the most-used alignment frequencies for TV IF bandpass (color & b&w), TV color bandpass, FM IF, VHF channels 4 and 10 • Post-injection marker circuitry • 15 crystal-controlled markers • Variable DC Bias supply isolated from ground for use as positive or negative bias . . . a unique design • Three sweep oscillators cover five most-used frequency ranges • Saturable reactor for linear, stable sweep signal • Switchable retrace blanking for convenient base line for trace . . . eliminates guesswork in setting phase control • Adjustable phase control permits matching generator to any 'scope • Unique trace-reverse function for proper display of trace . . . low freqs. to the left, high freqs. to the right • Built-in 400 Hz generator modulates all markers for easiest trap alignment • Zener regulated power supply • External attenuator with 7 shielded switches provide 1, 3, 6, 10, and 20 dB steps up to 70 dB attenuation • BNC connectors • 27 silicon transistors, 5 diodes, 2 Zener diodes • 3 modern circuit boards • 5 shielded cables plus 2 sets of test leads, all in kit form, complete with cable, connectors, plugs • Includes demodulation probe at no extra cost • Save hundreds of dollars with this versatile new generator

## Now . . . Save \$24.95 On The IG-14 Marker Generator

Kit IG-14, 11 lbs., no money dn., \$8 mo. . . . . Was \$99.95, Now Only \$75.00

**IG-14 SPECIFICATIONS**—Crystal Marker frequencies: 3.08, 3.58, 4.08, 4.5 MHz @ .01%; 10.7, 39.75, 41.25, 42.17, 42.50, 42.75, 45.00, 45.75, 47.25, 47.25, and 193.25 MHz @ .005%. FM Bandwidth Marker: 100 kHz. Modulation: 400 Hz. Input Impedance: External Marker, 75 ohm; Demodulation input, 220k ohm. Output Impedance: RF output, 75 ohm; Scope output, 22K ohm. Bias Output Voltage: Variable from 0 to 15 VDC @ 10 MA. Isolated from chassis for either negative or positive bias. Type of Marker: "Birdie." Controls: Bias voltage with AC on/off; Trace size; Marker amplitude; RF output; Modulation on/off; Markers, individual switches for each frequency. Semiconductor: (22) Transistors. (3) Silicon diodes; (1) Zener diode. Power requirements: 105-125 volts, 50/60 Hz AC @ 7.5 watts. Net weight: 8 lbs.



Kit IG-14  
**\$75.00**  
\$8 mo.

## Heathkit IG-37 FM Stereo Generator

Kit IG-37, 12 lbs., no money dn., \$8 mo. . . . . \$79.95

**IG-37 SPECIFICATIONS**—RF Signal frequency: 100 MHz adjustable by approx.  $\pm 2$  MHz. Pilot modulating frequency: 19 kHz  $\pm 2$  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 ( $\pm 2$  Hz); 38 kHz & SCA (65 or 67 kHz). Distortion: (At 400, 1000 & 5000 Hz) Less than 5%. Front panel controls: Pilot level control, function level control, function switch, frequency switch, RF frequency adjust, & RF attenuator switches. Power requirements: 105-125, 210-230 volts AC, 50/60 Hz, 35 watts. Dimensions: 5 1/2" H x 9" D x 13 1/2" W.

Kit IG-37  
**\$79.95**  
\$8 mo.



## New Heathkit IM-48 Audio IM Analyzer



IM-48  
**\$69.00**  
\$7 mo.

• Combines AC VTVM, Wattmeter & IM analyzer functions • Built-in high & low frequency signal sources for IM tests • Built-in 4, 8, 16 & 600 ohm load resistors • AC VTVM reads to 300 volts RMS . . . dBm from -65 to +52 • Checks power to 25 W continuous, 50 W intermittent • IM reads to 1, 3, 10, 30 & 100% full scale • 120/240 VAC operation • New Heathkit styling • Complete instructions included

Kit IM-48, 13 lbs., no money dn., \$7 mo. . . . . \$69.00

**IM-48 SPECIFICATIONS**—Frequency response—AC VTVM: 10 Hz to 100 kHz  $\pm 1$  dB. Voltmeter: 10 Hz to 50 kHz  $\pm 1$  dB. I.M. Analyzer high pass filter: 2000 Hz to 12,000 Hz. I.M. Analyzer low pass filter: 10 Hz to 600 Hz. AC VTVM Range: .01, .03, .1, .3, 1, 3, 10, 30, 100, 300 volts RMS full scale. dBm: —40, —30, —20, —10, 0, +10, +20, +30, +40, +50. Reads from —65 to +52 dBm. Voltmeter: 0.15 mW, 1.5 mW, 15 mW, 150 mW, 1.5 W, 15 W, 150 W, full scale. Maximum continuous power 25 watts, intermittent power to 50 watts. I.M. Analyzer: 1%, 3%, 10%, 30%, 100% full scale. 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. Voltmeter: 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: 105-125 or 210-250 VAC, 50/60 Hz, 20 watts. Dimensions: 13" W x 8 1/2" H x 7" D.

## New Heathkit IM-58 Harmonic Distortion Meter



IM-58  
**\$65.00**  
\$7 mo.

• Reads harmonic distortion directly to 1, 3, 10, 30 & 100% full scale • Frequency range 20-20,000 Hz • Reads RMS volts to 1, 3, 10 & 30 volts full scale • Measures noise levels down to -60 dBm on a separate meter scale • 300 k ohm input impedance • 1% precision resistors used in the VTVM voltage divider for greater accuracy • new Heathkit styling • 120/240 VAC operation

Accurately Measures Harmonic Distortion At Any Frequency Between 20 Hz And 20,000 Hz. With a signal source such as the IG-72 Audio Generator, the IM-58 indicates the residual signal in an amplifier after the fundamental frequency has been suppressed. Gives an accurate, dependable reading of hum, noise and harmonic distortion.

Kit IM-58, 13 lbs., no money dn., \$7 mo. . . . . \$65.00

**IM-58 SPECIFICATIONS**—Frequency: 20 Hz to 20,000 Hz in three ranges. Distort 1, 3, 10, 30, 100% full scale. Voltmeter: 1, 3, 10, 30 volts full scale. Input resistor 300 k ohm. Minimum input voltage for distortion measurements: 0.3 volts. Output voltage for monitoring: 2.5 volts at full scale meter reading. Accuracy: Voltmeter,  $\pm 5\%$ ; Distortion,  $\pm 5\%$  of full scale,  $\pm 0.1\%$  distortion. Tube complement: OA2, 6X4, 58Y7, 12AT7, 12AX7, 12BY7. Power Requirements: 105-125 or 210-250 VAC, 50-60 Hz, 30 watts. Dimensions: 13" W x 8 1/2" H x 7" D.



# Heathkit® Test Equipment...

## NEW! Heathkit IP-28

1-30 VDC Regulated Power Supply...

Adjustable Current-Limiting... Advanced Solid-State Design

A Low Cost High Performance Power Supply For All Transistor Work... ideal for the serviceman, experimenter, or anyone working with solid-state circuitry. Its many features, unique versatility, good stability and low cost make the IP-28 the new standard for regulated current-limiting low voltage supplies.

A Versatile Low Voltage Source. The new Heathkit IP-28 will deliver up to 30 VDC at 1 amp maximum load with less than 50 mV variation without using the sensing terminals. For critical circuits where the voltage drop across the supply leads is an important consideration, the IP-28 is equipped with Remote Sensing that reduces the voltage variation at the load to less than 20 mV. Two continuously variable, switch-selected voltage ranges (1-10 VDC & 1-30 VDC) give the versatility you need for today's solid-state circuitry, and the two range (10-100 mA & 10 mA-1A) switch-selected adjustable current-limiting provides protection of the load at all times. A handy DC On/Standby switch on the front panel removes voltage from the load for making circuit changes without having to disconnect leads. The 3½", easy-to-read meter can be switched to show either voltage or current, and two pilot lamps indicate which function is being monitored. For special applications, External AC or DC Programming terminals are provided on the rear panel.

Fast, Easy Assembly. The new IP-28 goes together in about six or eight hours with a combination of circuit board and wiring harness construction. The simple, enjoyable assembly, remarkable versatility, famous Heath dependability and smart good looks of the IP-28 all add up to the most value ever offered in a low voltage supply. Put the new IP-28 on your bench now.

Kit IP-28, 9 lbs., no money dn., \$5 mo. .... \$47.50



New Kit IP-28 \$47.50 \$5 mo.



- Continuously variable output voltage in two ranges... 1-10 VDC and 1-30 VDC
- Continuously adjustable current-limiting in two ranges... 10-100 mA and 10 mA-1A
- Switch-selected metering function for both output voltage and current
- Pilot lamps indicate which function is being metered
- Good load and line regulation
- External voltage sensing
- External AC or DC Programming
- "Floating" output for either + or - ground
- Standby switch removes voltage from load without disturbing connections
- 120/240 VAC wiring options
- All solid-state construction for long life and top reliability
- Handsome Heathkit styling
- Easy to build with circuit board-wiring harness construction

**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. Current limiting: 2 ranges: 10-100 mA & 10 mA-1A, continuously adjustable. Transient response: 25 μs. Output impedance: 0.3 ohms or less to 100 kHz. Meter accuracy: 3% of full scale. Meter ranges: One switch determines voltage or current reading. 2 voltage ranges: 0-10 V, 0-30 V. 2 current ranges: 0-100 mA, 0-1A. External programming: AC or DC programming, 5000 ohm load on DC. Power requirements: 105-125 or 210-250 VAC, 50/60 Hz, 50 watts, at full load. Dimensions: 10 1/4" W x 4 1/4" D x 6 1/2" H overall. Net weight: 6 1/2 lbs.

## Low Cost Heathkit IP-18 Solid-State 1-15 VDC Power Supply

- Adjustable current limiting
- Output up to 500 mA continuous at 1-15 VDC
- AC and DC programming inputs
- "Floating" output for either positive or negative ground
- Darlingon pair voltage regulation circuit
- Simple circuit board construction
- Compact size—So low in cost you can afford one for positive supply, one for negative supply
- Requires VOM for adjustment

Kit IP-18, 5 lbs. .... \$19.95

**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: 105-125 or 210-250 VAC, 50/60 Hz, 15 watts at full load. Dimensions: 5 1/2" W x 4 1/4" H x 5 1/4" D. Net weight: 3 1/4 lbs. Programming: AC or DC, 5000 ohm input resistance.



IP-18 \$19.95

## Heathkit IP-17 Variable Regulated High Voltage Supply

- Furnishes B+ from 0-400 VDC, Bias from 0 to -100 VDC and filament voltages
- Separate panel meters for B+ voltage & current
- Isolated output terminals
- Circuit board-wiring harness construction

Kit IP-17, 21 lbs., no money dn., \$6 mo. .... \$59.95

Assembled IPW-17, 18 lbs., no money dn., \$9 mo. .... \$89.95

**IP-17 SPECIFICATIONS**—Output: 0-400 volts regulated DC at 0-100 mA cont., 125 mA intermittent, 0 to -100 volts DC at 1 mA variable bias voltage, 6.3 volts AC at 4 amps., 12.6 volts 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 V AC 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: 105-125 V or 210-250 V, 50/60 Hz, 150 watts max. Dimensions: 5 1/4" H x 13 1/4" W x 11" D.

## Heathkit IP-27 Solid-State Regulated Low Voltage Supply

- Provides 0.5 to 50 VDC with better than ±15 mV regulation
- Four current ranges
- Adjustable current limiter
- Virtually immune to overload from transients
- Can be calibrated from "outside" the case

Kit IP-27, 16 lbs., no money dn., \$8 mo. .... \$76.95

Assembled IPW-27, 14 lbs., no money dn., \$11 mo. .... \$119.95

**IP-27 SPECIFICATIONS**—Input: 105-125 volts or 210-250 volts, 50/60 Hz, 135 watts at full load (50 V, 1.5A). Output: 0.5-50 volts DC, 1.5 amps max. DC. Load regulation: ±15 millivolts, can be adjusted for no change. Line regulation: For a 10% change in line voltage, less than .05% change. Ripple & noise: Less than 150 microvolts. Transient response: Less than 25 microseconds. 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", 1mA, 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 1/4" H x 13 1/4" W x 9" D.

## Heathkit Battery Eliminator... A Versatile Low Voltage Supply

- Switch selection of 6 or 12 VDC
- Filtered & unfiltered DC outputs
- Less than 0.3% AC ripple
- Separate panel meters for output voltage & current
- Doubles as a battery charger
- Well-rated heavy duty components

IP-12, 18 lbs., no money down, \$5 mo. .... \$49.50

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

**IP-12 SPECIFICATIONS**—Continuously variable output: 6 volt range: unfiltered, 10 amp continuous, 15 amp maximum; filtered, 5 amp continuous, less than .3% ripple. 12 volt range, unfiltered, 5 amp continuous, 7.5 amp maximum; filtered, 5 amp continuous, less than .3% ripple. Power requirements: 105-125 volts 50/60 Hz AC at 200 watts. Dimensions: 13" W x 8 1/2" H x 7" D.

Kit IP-17

\$59.95

\$6 mo.



Wired IPW-17

\$89.95

\$9 mo.

Kit IP-27

\$76.95

\$8 mo.



Wired IPW-27

\$119.95

\$11 mo.



IP-12

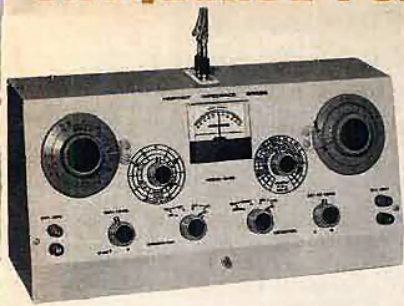
\$49.50

\$5 mo.



# Unequaled Performance At An Unbeatable Price

## Heathkit Impedance Bridge



IB-28  
\$85<sup>00</sup>  
\$9 mo.

• Features the "New Look" of Heath instrumentation • Four separate bridge circuits to measure resistance, capacitance, low Q and high Q inductance • Easy operation and reading with the slanted control panel • Built-in generator and amplifier • Battery-type vacuum tube circuitry for fast warmup • 1/2% precision resistors and silver-mica capacitors for higher accuracy • Operates on 120 v. or 240 v., 50/60 Hz. • Requires headphones or scope for alignment  
Kit IB-28, 11 lbs., no money dn., \$9 mo. . . . . \$85.00

**IB-28 SPECIFICATIONS**—Circuit: 4-arm impedance bridge. DC Measurements: Built-in power supply. Binding posts provided for external supply. Meter: 100-0-100 microampere meter. AC Measurements: Built-in 1000 Hz generator. Terminals on panel for external generator at other frequencies. Detector: Vacuum tube detector and amplifier, using built-in meter. Terminals provided for external detector. Resistance: 0.1 ohm to 10 megohm. Capacitance: 100 pF to 100 μF. 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: 105-125 V. or 210-250 V., 50/60 cycles, 10 watts. Dimensions: 8" H x 17" W x 6" D.



IN-17  
\$26<sup>95</sup>  
\$5 mo.

### Decade Resistance Box

1/2% resistors in 6 decades provide extremely accurate values from 1 ohm to 999,999 ohms in 1 ohm steps. Kit IN-17, 3 lbs., no money dn., \$5 mo. . . . . \$26.95  
**IN-17 SPECIFICATIONS**—Range: 1 ohm to 999,999 ohms in 1 ohm steps. Resistors: Precision, 1/2% accuracy, 1 watt. Minimum DC resistance: .25 ohms or less at terminals with all sw. set at zero. Dimensions: 7 1/2" W x 5" H x 6 1/2" D.



IN-27  
\$17<sup>95</sup>

### Decade Capacitance Box

1% silver-mica capacitors provide very accurate capacitance values from 100 pF to 0.111 uF in 100 pF steps. Kit IN-27, 3 lbs. . . . . \$17.95  
**IN-27 SPECIFICATIONS**—Range: 100 pF to 0.111 μF in increments of 100 pF. Voltage rating: 350 V. DC continuous; 500 V. DC intermittent; 1000 V. DC instantaneous test. Accuracy of incremental capacity: ± 1%. Stray capacitance: 10 to 15 pF at terminals. Dimensions: 7 1/2" W x 4" H x 5" D.



IN-37  
\$6<sup>95</sup>

### Resistor Substitution Box

Substitute Common Resistor Values Conveniently . . . a handy service tool, a valuable shop addition. Replace burned or unknown resistors easily, quickly. Provides switch selection of any one of 36 EIA standard 10% 1-watt resistors, ranged from 15 ohms to 10 megohms. Hi or Lo range slide switch. Case is 5 3/8" L x 3 3/8" W x 3" H.  
Kit IN-37, 2 lbs. . . . . \$6.95



IN-47  
\$6<sup>50</sup>

### Capacitor Substitution Box

Styled In "New Look" Beige & Black. Switch select any one of 18 EIA standard capacitors (high quality silver-mica & molded tubular) from 100 pF to .22 uF. All capacitors rated at 600 V except the three lowest & two highest values, which are 500 & 400 V respectively. 18" alligator clip test leads included. Case measures 5 3/8" L x 3 3/8" W x 3" H.  
Kit IN-47, 2 lbs. . . . . \$6.50



IT-17 \$49<sup>95</sup>  
\$5 mo.

### Low Cost Tube Checker

• Fills most daily service requirements • Tests most tube types including new compactrons, nuvistors, novars, and 10-pin miniatures • Multi-colored "Bad-?-Good" meter scale • Tube-data chart is built-in—can't be misplaced • Features constant-tension free-rolling roll chart mechanism • Compact styling with carrying handle • Color-coded wiring harness simplifies point-to-point wiring • Requires AC VTVM for alignment

Kit IT-17, 12 lbs., no money dn., \$5 mo. . . . . \$49.95

**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, local, 10-pin miniature, 9-pin novar, 9-pin miniature, 12-pin compactron, 5-pin nuvistor, 7-pin nuvistor. Meter: 1mA BAD-?-GOOD scale, illuminated. Line voltage adjustment: Step type. Roll chart mechanism: Constant tension, free-rolling, thumb-wheel 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: 105-125 V AC, 50/60 Hz. Dimensions: 13" W x 8 1/2" H x 5 1/2" D.

**NEW SUBSCRIPTION SERVICE FOR REPLACEMENT TUBE DATA ROLL CHARTS**  
Updated replacement roll charts for all Heathkit tube checkers can be purchased either singly or on a subscription basis which assures a new roll chart plus two supplements per year.

### Mutual-Conductance Tube Tester

• An outstanding array of features • Indicates Gm to 24,000 micromhos • Ultra-sensitive grid current test • Direct reading ohmmeter leakage test • Constant-current heater supplies • Built-in calibration circuit for high accuracy • Built-in roll-type tube data chart • Built-in adapter for testing compactron, nuvistor, novar, and 10-pin miniature tube types • Handsome leatherette covered carrying case



TT-1A  
\$160<sup>00</sup>  
\$15 mo.

Kit TT-1A, 33 lbs. . . . . \$160.00

**TT-1A SPECIFICATIONS**—Power requirements: Voltage: 105-125, 60 Hz AC. Watts: 10-60. Testing circuits: Gm; mutual conductance for amplifiers, 0-24,000 micromhos. Emission: rectifiers & diodes. Leakage: direct reading ohmmeter. Grid current: 1/4 microampere sensitivity. Voltage regulators: 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: Cabinet (outside): 17 1/4" W x 13 1/2" H x 8" D. Panel & chassis: 17" W x 12 1/4" H x 5 1/2" D.

Prices are \$3.00 per chart; \$4.50 for the new chart plus two supplements during the following year. Write to: Heath Tube Data Service, P.O. Box 377, Hewlett, Long Island, New York 11557.

## Heathkit Capacitor Checker

• Provides complete analysis of all capacitor types • Direct reading scales—no involved calculations • Features low bridge voltage for safe testing of miniature electrolytics • 16 leakage testing voltages • Measures capacitance from 10 pF to 1,000 uF • Measures resistance from 5 ohms to 50 megohms • Comparator circuit measures "L", "C" or "R" with external standard • Calibrated power factor control • "Eye" tube null & leakage indicator • Requires VTVM for alignment



IT-28  
\$31<sup>95</sup>  
\$5 mo.

Kit IT-28, 7 lbs., no money dn., \$5 mo. . . . . \$31.95

**IT-28 SPECIFICATIONS**—Test Circuit: AC bridge, powered through special bridge transformer by the 50/60 Hz supply or by an external audio generator with 10 volts output. Upper frequency limit: 10 kHz. Capacitance: 4 Ranges: 10 pF to .005 uF; .001 uF to .5 uF; .1 uF to 50 uF; 20 uF to 1000 uF. Capacitor leakage: DC test voltages from 3 to 600 volts in 16 steps. Resistance: 3 Ranges: 5 ohms to 5000 ohms; 500 ohms to 500 K ohms; 50 K ohms to 50 megohms. Comparator circuit: External standard R, L, or C; Max. Ratio 25-1. Power supply: Transformer-operated, half-wave rectifier. Power requirements: 105-125 V or 210-250 V AC, 50/60 Hz, 30 watts. Dimensions: 9 1/2" H x 6 1/2" W x 5" D.

## Visual-Aural Signal Tracer

• An ideal instrument for trouble-shooting solid-state and tube type AM receivers and audio equipment • Traces RF, IF and audio signals • Locates troublesome noisy or intermittent components • Convenient audio/RF probe with switch • High gain amplifier with adjustable level control • Safe . . . applies no voltage to circuit under test • Doubles as a test amplifier or speaker



IT-12  
\$22<sup>50</sup>

Kit IT-12, 6 lbs. . . . . \$22.50

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

**IT-12 SPECIFICATIONS**—Power supply: Transformer operated. Power requirements: 117 volts 50/60 Hz AC, 25 watts. Tube complement: 12AX7, 12CA5, 1629. Speaker: 3 1/2" PM. Probe and test leads: 4' input lead for RF and audio with switch on probe body, 2-3' panel test leads with alligator clips. Dimensions: 4 1/2" W x 7 1/2" H x 4" D.



# Heathkit® Oscilloscopes... The Value And Performance



Kit IO-14  
**\$259<sup>00</sup>**  
no money dn.,  
\$24 mo.

Wired IO-14  
**\$399<sup>00</sup>**  
\$40 dn., as low as  
\$26 mo.

## Professional DC Laboratory Oscilloscope . . . 8 MHz Response . . . Triggered Sweep . . . Delay Line Input . . . 120/240 VAC Wiring Options

- A high stability 5" DC oscilloscope with triggered sweep • DC to 8 MHz bandwidth and 40 nano-second rise time • Vertical signal delay through high linearity delay lines—capable of faithful reproduction of signal waveforms far beyond the bandwidth of the scope • Calibrated vertical attenuation • Calibrated time base • Forced air cooling • Input for Z axis modulation • Direct access to vertical deflection plates • Easy circuit board construction & wiring harness assembly • Components are packaged separately for each phase of construction • Easy to calibrate • Fulfills many production and laboratory requirements at far less cost than comparable equipment—particularly scopes capable of fast-rise waveform analysis • No special order for export version required—wiring options enable 115/230 volt, 50-60 Hz operation

Kit IO-14, 53 lbs., Express or Motor Freight, no money dn., \$24 mo. . . . . \$259.00  
Assembled IO-14, 47 lbs., Express or Motor Freight, \$40 dn., as low as \$26 mo. . . . \$399.00  
Assembled IO-14S (with p7 phosphor), 48 lbs., Express or Motor freight. . . . . \$410.00

**IO-14 SPECIFICATIONS—(Vertical) Sensitivity:** 0.05 V/cm AC or DC. **Frequency response:** DC to 5 MHz—1 dB or less; DC to 8 MHz—3 dB or less. **Rise time:** 40 nsec (0.04 microseconds) or less. **Input impedance:** 1 megohm shunted by 15 pF. **Signal delay:** 0.25 microsecond. **Attenuator:** 9-position, compensated, calibrated in 1, 2, 5 sequence from 0.05 V/cm to 20 V/cm. **Accuracy:** ±3% on each step with continuously variable control (uncalibrated) between each step. **Maximum input voltage:** 600 volts peak-to-peak; 120 volts provides full 6 cm pattern in least sensitive position. **(Horizontal) Time base:** Triggered with 18 calibrated rates in 1, 2, 5 sequence from 0.5 sec/cm to 1 microsecond/cm with ±3% accuracy or continuously variable control position (uncalibrated). **Sweep magnifier:** x5, so that fastest sweep rate becomes 0.2 microseconds/cm with magnifier on. (Overall time base accuracy ±5% when magnifier is on.) **Triggering capability:** Internal, external, or line signals may be switch selected. Switch selection of + or - slope. Variable control on slope level. Either AC or DC coupling. "Auto" position. **Triggering requirements:** Internal: 0.5 cm to 6 cm display. External: 0.5 volts to 120 volts peak-to-peak. **Triggering frequency response:** DC to 2.5 MHz approx. **Horizontal input:** 1.0 V/cm sensitivity (uncalibrated) continuous gain control. **Bandwidth:** DC to 200 kHz ±3 dB. **General:** 5ADP31 or 5ADP2 Flat Face C. R. T. interchangeable with any 5AD or 5AB series tube for different phosphor characteristics. 4250 V. accelerating potential. 6 x 10 cm edge lighted graticule with 1 cm major divisions & 2 mm minor divisions. **Power supply:** All voltages electronically regulated over range of 105-125 VAC or 210-250 VAC 50/60 Hz input. Input provided. DC coupled CRT unblanking for complete retrace suppression. **Power requirements:** 285 watts; 115 or 230 VAC 50/60 Hz. **Cabinet dimensions:** 15" H x 10 1/2" W x 22" D includes clearance for handle and knobs. **Net weight:** 40 lbs.

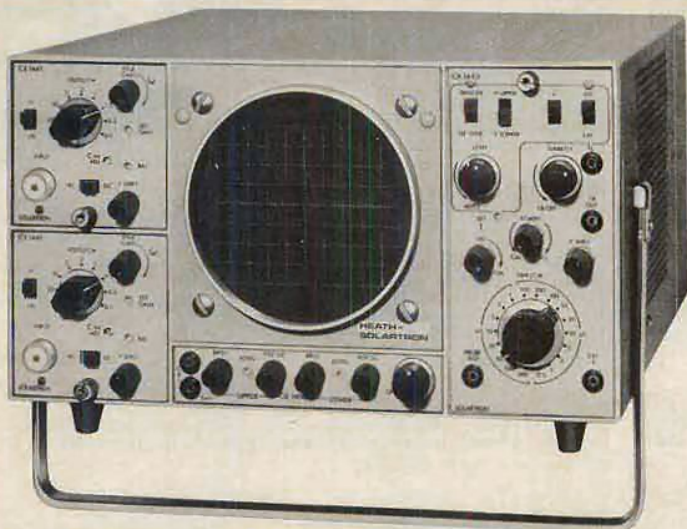
## Assembled Low-Capacitance Scope Probe

- A necessary tool for high frequency waveform analysis • Minimizes signal loss due to circuit loading • Flip switch for x1 or x10 attenuation • DC to 25 MHz response • 600 volts DC maximum • Spring-loaded notched tip for safe, hands-free operation • For use with 1 megohm input scopes, such as Heathkit IO-14

Assembled PKW-2, 1 lb. . . . . \$12.00



For complete specifications on the Heath/Solartron Modular Oscilloscope System, write on your school or company letterhead for a copy of the FREE 1969 Heath Scientific Instrumentation Catalog.



## NEW Heath/Solartron Double Beam 'Scope . . . A Precise And Highly Stable DC to 15 MHz System At Low Cost

- True double beam • Bright 5" CRT at 4 kV • 25 ns rise time • 100 uV/cm sensitivity • 0.5 to 1 s Time Base • Fully modular design • Choice of 6 plug-ins

The new CD-1400 System is a general purpose instrument with modular design that insures optimum price/performance ratio as well as protection against obsolescence. Interchangeable modules provide maximum performance at lowest cost.

The CD-1400 Main Frame includes the cathode-ray tube, all power supplies, tube controls, and housing for two Y units and one X unit. The Z modulation input is located on the rear panel.

The 5" double-gun tube gives a large display area of 8 x 10 cm (5 x 10 cm for each ace). All vertical amplifiers are 4-stage and each has a multi-position balanced attenuator. Provision for Auto, Normal and HF Sync, Trigger level, Stability, Slope Selection and Internal/External Sync Source.

Assembled CD-1400, 36 lbs., (less plug-ins) . . . . . \$450.00  
(Shipping wt. w./plug-ins, 44 lbs.)

## Assembled Time Base Plug-Ins

**CX-1443, General Purpose Time Base and X-Amplifier,** includes a trigger amplifier, time base & deflection amplifier. 18 ranges from 0.5 us to 200 ms/cm; X-Amplifier sensitivity is 0.5 V/cm. 5x magnifier; Trigger Int., Ext., +, -, Norm., Auto, HF Sync. Trigger sensitivity: Int. 5mm; Ext. 1V (P-P). Accuracy ±5%.

CX-1443, 6 lbs. . . . . \$142.00

**CX-1444 Sweep Delay Time Base,** is based on CX-1443 with the addition of a sweep delay generator & comparator. Delay range continuously variable from 0-100 ms. HF Jitter is 1 part in 10<sup>4</sup>. Same modes as CX-1443 except for Auto. A TV frame synchronization separator is added. Accuracy ±5%.

CX-1444, 6 lbs. . . . . \$300.00

**CX-1448, Wide Range Time Base** features DC external trigger, DC coupled X input and single shot facility. Transistorized trigger & switching circuits enable accurate triggering up to 15 MHz. 20 ranges from 0.5 us to 1 second/cm. DC triggering allows the time base to be locked to very slow waveforms. The single shot is useful for observing transient signals. ±5% accuracy.

CX-1448, 6 lbs. . . . . \$265.00

## Assembled Vertical Amplifiers

**CX-1441, Wide Band Single Channel Amplifier** consists of a frequency compensated attenuator and a 4-stage push-pull amplifier. DC to 15 MHz bandwidth, 10 mV/cm sensitivity with switched x10 gain. 1 Megohm/35 pF impedance. Accuracy ±5%.

CX-1441, 5 lbs. (less probes) . . . . . \$91.00

**CX-1449, Wide Band Differential Amplifier** enables the display of high frequency, low level signals in the presence of large in-phase signals. DC to 10 MHz bandwidth, 10 mV/cm sensitivity, CMRR 68 dB @ 50 Hz. Maximum in-phase signal ±5 VDC for each 10 mV/cm. Accuracy ±5%.

CX-1449, 5 lbs. (less probes) . . . . . \$246.00

**CX-1442, High Gain Differential Amplifier** is a 4-stage amplifier using a balanced input attenuator, ganged to the gain switch of the final stage for range setting. x10 available on all ranges giving a 100 us/cm sensitivity with approx. 2 diameter shift. CMRR is 60 dB, accuracy ±5%. Bandwidth DC to 75 kHz.

CX-1442, 5 lbs. (less probes) . . . . . \$155.00



# Standard Of The Industry

## Heathkit IO-18 Wide-Band 5" Scope For Extra Versatility

- 5 MHz bandwidth for TV signal analysis • Heath patented sweep circuit—five ranges cover 10 Hz to 500 kHz • Four position sync selector—positive & negative internal, line or external • Two extra sweep positions which may be preset to often used sweep rates—covers 10 Hz to 500 kHz • Frequency-compensated vertical attenuation • Built-in front panel 1 volt peak-to-peak calibration reference • Intensity-modulated Z-axis input • Retrace blanking • 0-135 degree phasing control • New Heathkit instrumentation look—easy to grasp knobs, quick-to-read pointers, handsome beige and brown styling • Combination circuit board/wiring harness assembly for fast, easy construction • 115/230 VAC, 50-60 Hz wiring options

Kit IO-18, 24 lbs. . . no money dn., \$9 mo. . . . . \$89.95  
 Assembled IO-18, 23 lbs. . . no money dn., \$14 mo. . . . . \$144.95  
 Assembled IO-18S, Wired Berkeley Physics Version, 24 lbs. . . . . \$147.00

**IO-18 SPECIFICATIONS:**—Vertical Sensitivity: 70 mV peak-to-peak per inch at 1 kHz. Frequency Response (Referred to 1 kHz level):  $\pm 1$  dB, 8 Hz to 2.5 MHz;  $\pm 1.5$  to  $-5$  dB, 3 Hz to 5 MHz; response at 3.58 MHz  $-2.2$  dB. Rise Time: 0.08 micro-seconds or less. Input Impedance: (at 1 kHz) 2.7 megohms at x1, 3.3 megohms at x10 and x100. Horizontal Sensitivity: 0.85 volts peak-to-peak per inch at 1 kHz. Frequency Response:  $\pm 1$  dB 1 Hz to 200 kHz;  $\pm 3$  dB 1 Hz to 400 kHz. Input Impedance: 4.9 megohms at 1 kHz. Sweep Generator: Range  $-10$  Hz to 500 kHz in five steps, variable, plus any 2 switch-selected preset sweep frequencies in this range. Synchronizing: Automatic lock-in circuit using self-limiting synchronizing cathode follower. Power Requirements: 105-125 volts or 210-250 volts AC, 50-60 Hz at 80 watts, fused. Dimensions: 14 $\frac{1}{2}$ " H x 8 $\frac{3}{4}$ " W x 16" D.

## Heathkit 3" Scope . . . Ideal For General Purpose Work

- 5 MHz bandwidth for TV signal analysis • 30 mV Peak-to-Peak sensitivity • Recurrent sweep generator, 20 Hz to 200 kHz in four ranges • Vertical gain control also has a pull-out x50 attenuator • Front panel 1 volt Peak-to-Peak reference voltage • Horizontal sweep from internal generator, 60 Hz line, or external source • Wide range automatic sync for easy operation • Shielded CRT • New modern Heath "Human Engineered" instrument styling means easier operation, conserves bench space and improves appearance • Circuit board construction speeds assembly • Solid-state power supply for rugged reliability • Wiring options permit operation on either 105-125 VAC or 210-250 VAC, 50-60 Hz

Kit IO-17, 16 lbs. . . no money dn., \$8 mo. . . . . \$79.95

**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 to 5 MHz  $\pm 3$  dB. **HORIZONTAL CHANNEL:** Input Impedance: 10 megohm shunted by 15 pF. Sensitivity: 300 mV P-P/div. Frequency response: 2 Hz to 300 kHz  $\pm 3$  dB. **HORIZONTAL SWEEP GENERATOR:** Sweep generator: Recurrent type. Frequency: 20 Hz to 200 kHz in four overlapping ranges. Retrace: Blanked by a pulse from blanking amplifier. Synchronization: Automatic type. **GENERAL: Tube complement:** (1) 3RP1 cathode ray tube, medium persistence, green trace; (3) 12AU7; (1) 12AX7; (1) 6GH8; (1) 6BH6; (1) 6BQ7. Power requirements: 105-125 or 210-250 volts 50/60 Hz. Power consumption: 60 watts. Overall dimensions: 9 $\frac{1}{2}$ " H x 5 $\frac{1}{2}$ " W x 14 $\frac{1}{2}$ " L. (Dimensions include handle, knobs, etc.). Net weight: 12 lbs.

## Heathkit IO-10 Ultra-Compact 3" Scope

- Identical vertical & horizontal amplifiers • Switch selection of AC or DC coupling • DC to 200 kHz bandwidth—less than 5° relative phase shift • Recurrent sweep generator, 5 Hz to 50 kHz in four ranges • External capacitor binding posts for slower sweep rates • Small, compact, easy to carry and store • Same panel size as IM-18 VTVM

Kit IO-10, 16 lbs. . . no money dn., \$10 mo. . . . . \$99.95

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

**IO-10 SPECIFICATIONS—(Vertical & horizontal channels identical):** Bandwidth: DC to 200 kHz (2 dB point). Sensitivity: 0.1 V (peak-to-peak) per 1/4" (uncalibrated). Attenuator: 3-position, compensated type; x1, x10, & x100. Gain control: Continuously variable. Input impedance: 3.6 megohms shunted by 35 pF. Coupling: Either AC or DC, switch-selected. Relative phase shift between channels: Less than 5°. Sweep generator (Recurrent type): Linear sawtooth produced by multivibrator type generator covering 5 Hz to 50 kHz in four overlapping ranges. External capacitance binding post for slower sweep rates. Sync provision: Either internal or external, switch-selected. Power requirements: 105-125 V, 50-60 Hz at 100 watts max. Dimensions: 8 $\frac{3}{4}$ " H x 4 $\frac{1}{2}$ " W x 13" D.

## Heathkit IO-21 3" Scope . . . Surprisingly Versatile

- Fulfills hundreds of general service shop and classroom requirements • Frees "expensive" equipment for more sophisticated circuit analysis • Features identical vertical and horizontal amplifiers—2 Hz to 200 kHz response • Wide-range sweep generator—20 to 100 kHz, Automatic Sync, retrace blanking • Focus and Astigmatism controls • Special alloy neck shield • Well rated transformer-operated power supply fused for protection • Professional-quality components throughout • Clean, open circuit layout for easy assembly • Features direct access to vertical deflection plates

Kit IO-21, 12 lbs. . . no money down, \$7 mo. . . . . \$61.95

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

**IO-21 SPECIFICATIONS—(Vertical and horizontal amplifiers identical):** Frequency response:  $\pm 2$  dB, 2 Hz, to 200 kHz. Sensitivity: .25 volts RMS/inch P-P deflection at 1 kHz. Input impedance: 10 megohms shunted by 20 pF. (Direct connection to vertical CRT plates on rear panel). Sweep generator: Range 20-100,000 Hz. Automatic sync, retrace blanking. Tube complement: (1) 3RP1 (CR tube), (4) 12AU7 (deflection amplifiers), (1) 12AX7 (sweep generator), (1) 6X4 (LV rectifier), (1) 1V2 (HV rectifier). Controls: Gain controls, Horizontal & Vertical; Centering controls, Horizontal & Vertical; Frequency Vernier; Horizontal Input Selector/Sweep Range Switch. (Focus and Astigmatism controls mounted on chassis). Power requirements: 105-125 volts AC, 50-60 Hz, 40 watts. Dimensions: 9 $\frac{1}{2}$ " H x 6 $\frac{1}{2}$ " W x 10" D.

## Dual-Trace Scope Display With The Heath Electronic Switch

- Provides dual-trace scope presentation—permitting display of two separate signals on screen, appearing simultaneously through persistence of CRT phosphor • Displays signal levels as low as 0.1 volt •  $\pm 1$  dB, 0-100 kHz response • Separate gain controls for each channel to prevent over-driving of the input circuits • All-electronic switching • Four switching rates—150, 500, 1500 and 5000 Hz • Position control allows superimposing or separating signals for comparison purposes • Sync output to control scope sweep

Kit ID-22, 7 lbs., no money dn., \$5 mo. . . . . \$25.95

## Scope Demodulator Probe Kit

Voltage limits are 30 volts RMS, 500 volts DC.

Kit 337-C, 1 lb. . . . . \$4.00

Assembled 337W-C, 1 lb. . . . . \$5.00

## "How To Understand & Use Your Oscilloscope"

A Stimulating Course For The Beginner Or Professional. Includes 169-page text-reference.

Kit EF-2, Text, Chassis & parts, 4 lbs. . . . . \$10.95

Kit EF-2-3 (EF-2 & IO-21 Oscilloscope, above), 16 lbs., no money dn., \$7 mo. . . . . \$70.95

Kit EF-2-5 (EF-2 & IO-18 Oscilloscope, above), 28 lbs., no money dn., \$10 mo. . . . . \$99.00

Manuals only for EF-2 (single copy) . . . . . \$5.00

(10 or more) . . . . . ea. \$3.00



Kit IO-18  
**\$89.95**  
 no money dn.,  
 \$9 mo.

Wired IO-18  
**\$144.95**  
 no money dn.,  
 \$13 mo.



Kit IO-17  
**\$79.95**  
 \$8 mo.



Kit IO-10  
**\$99.95**  
 \$10 mo.



IO-21  
**\$61.95**  
 \$7 mo.



Kit ID-22  
**\$25.95**  
 \$5 mo.



Kit 337-C  
**\$4.00**





# Heathkit® Citizens Band Gear

## Solid-State 5-Watt CB Transceiver . . . 23 Crystal Controlled Channels . . . At New Low Prices

14 transistor, 6 diode circuitry • Provision for 23 crystal-controlled transmit receive channels • Crystal pack available • Full 5 watt performance . . . a minimum of 3 watts RF output, plus 3 watts audio modulating power • Front panel "S" meter • Adjustable squelch control • Automatic noise limiter • Built-in PM speaker • 1/2 uv sensitivity • Easy to build circuit board construction • Gimbal mounting bracket • Attractive Turner Ceramic PTT mike • Die-cast, chrome-plated front panel with charcoal gray cabinet • Fits under dash of your car, boat, jeep, truck, etc.

Kit GW-14A, 8 lbs. . . no money dn., \$8 mo. . . (less crystals) . . . . . \$76.95  
Assembled GWW-14A, 8 lbs., no money dn., \$11 mo.  
(less crystals) . . . . . Now Only . . . \$109.95  
GWS-14A, System: kit (GW-14A) plus 23 channel crystal pack, 9 lbs. . \$152.95  
GWW-14AS, System: assembled model (GWW-14A) plus 23 channel  
crystal set installed, 9 lbs., no money dn., \$11 mo. . . . . \$184.95  
Kit GWA-14-1, AC Power Supply, 5 lbs. . . . . \$14.95  
Kit GWA-14-2, 23 Channel Crystal Pack, 1 lb., no money dn., \$8 mo. . \$79.95

**GW-14 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 watts minimum. **TRANSMITTER SECTION:** **Nominal power input to final RF amplifier:** 5 watts. **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 watts 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 volts system (13.5 volts); receiver current drain, standby—120 ma; transmitter current drain —750 ma. **Dimensions:** 2 1/4" H x 7" W x 11" D.



Kit GW-14A Was \$89.95 Now Only <b>\$76.95</b>	GWS-14A System (Includes kit GW-14A & 23 channel crystal pack) <b>\$152.95</b>
Wired GWW-14A Was \$124.95 Now Only <b>\$109.95</b>	GWW-14AS System (Includes assembled GWW-14A & 23 channel crystal pack) <b>\$184.95</b>

## Powerful 1-Watt Walkie-Talkie . . . Operates Up To 4 Miles

- Efficient 10-transistor, 2-diode circuit for dependable, trouble-free performance • Up to 3-mile inter-unit communications • Crystal-controlled transmit & receive • Adjustable squelch control & automatic noise limiter • \$20 rechargeable battery included • Built-in 117 v. AC battery charger • Sturdy, rust-proof all-metal case • Simple to build & operate

Now Save \$5 On This Versatile Hand-Held Walkie-Talkie that's ready to go anywhere for efficient 2-way communications up to 3 miles between units . . . 5 to 10 miles when used with an external antenna or 5-watt CB base stations. Features superhet receiver with RF stage to pull in weak stations with ease; adjustable squelch and automatic noise limiter; and all solid-state circuitry for cool, instant operation and long dependable life.

**Includes \$20 Rechargeable Battery . . .** lasts 1500 to 5000 hours. And you can recharge it from household 117 v. AC, or from your car's 12 v. battery with a special 6' cord that plugs into the cigarette lighter. Also has a built-in battery condition meter.

**Rugged Lifetime Cabinet . . . Simple To Build.** Includes attractive 2 tone green rustproof metal case, 35" telescopic whip antenna, shoulder and elastic hand straps, power cords, earphone, FCC license pack and crystals (specify channel no.). Use must comply with Part 95, FCC regulations. Fast circuit board construction speeds assembly. Order a pair for extra savings.

Kit GW-52A, 4 lbs. . . no money dn., \$7 mo. . . . . Now Only \$64.95  
Kit GW-52-2 (pair), 8 lbs. . . no money dn., \$11 mo. . . . . Now Only \$119.95

**GW-52A SPECIFICATIONS—Receiver:** Single channel crystal controlled superheterodyne. Sensitivity: 1/2 microvolt for 10 dB signal-to-noise ratio. Selectivity: 7 kHz at 6 dB. **Audio power output:** 250 milliwatts. **Transmitter:** Input power to final stage: 1 watt nominal. **Transmitter frequency:** Crystal controlled (any one channel, 1 through 23). **Modulation:** High level AM limited to less than 100%. **Controls:** Off-On-Volume and Squelch. Push-to-talk switch on side of cabinet. **Battery:** 12.5 V. (500 mah rechargeable nickel cadmium; 12 hrs. use per charge). **Battery life:** 1500 hrs. min. 5000 hrs. likely in normal usage. **Charging source:** 117 VAC or 12 VDC. **Total receiver current drain, standby:** Approx. 13 milliamps. **Total transmitter current drain:** Approx. 140 milliamps. **Antenna:** 35" whip type, completely collapsible into cabinet, or external. **Crystals:** Subminiature, plug-in type tolerance .005%. **Speaker-microphone:** 2 1/2" round, permanent magnet type. **Earphone jacks:** Miniature-type (earphone supplied). **Meter:** Indicates battery condition. **Cabinet dimensions:** 10 1/8" H x 3 3/4" W x 1 1/4" D.

## 5-Channel, 5-Watt CB Transceiver . . . Choice Of Fixed Or Mobile

- 5-crystal-controlled transmit & receive channels • Superhet receiver with RF stage • Built-in squelch & automatic noise limiter • Push-to-talk microphone • Easy to build

A Host of Operating Conveniences like 5 crystal-controlled transmit and receive channels . . . sensitive superhet receiver with RF stage . . . built-in squelch and automatic noise limiter . . . built-in speaker plus external connectors for adding an extra speaker if desired . . . relayless push-to-talk circuitry and rugged two-tone brown metal cabinet. Includes PTT microphone, power cable and crystals for one channel (specify frequency). Choose the AC model for "fixed," and the DC version for "mobile" operation. Choose them both and save an extra 5%. Use must comply with FCC regulations.

Kit GW-22A (117 v. AC), 13 lbs. . . no money dn., \$5 mo. . . . . \$47.95  
Kit GW-22D (6 or 12 v. DC), 13 lbs. . . no money dn., \$5 mo. . . . . \$49.95

**GENERAL DESCRIPTION—Receiver:** 5-tube superheterodyne with RF stage, crystal-controlled, on up to 5 of the 23 channels as determined by the particular crystal(s) installed. **Sensitivity:** 1/2 microvolt for a 10 dB signal-to-noise ratio. **Transmitter:** Power input to final RF amplifier, nominal 5 watts. **Nominal power requirements:** GW-22A—117 volts, 50/60 Hz AC, 50 watts. GW-22D—6 volts DC, 8.0 amperes; 12 volts DC, 4.5 amps. **Dimensions:** 9 1/4" D x 6 1/4" H x 9 1/2" W.

Budget-Saver — Charge It To Your Heath Account — No Money Down



GW-52A  
**\$64.95**  
\$7 mo.  
(pair \$119.95)

GW-22A  
**\$47.95**  
\$5 mo.

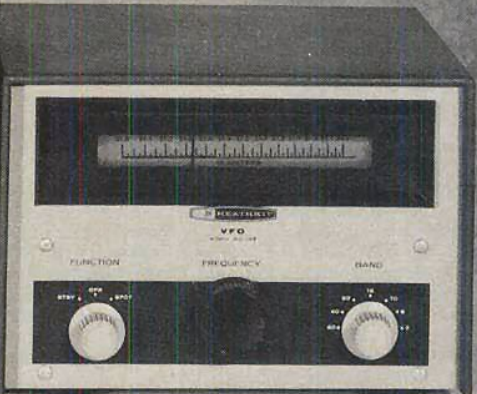


TE: CAP Crystals at 26.620 MHz available for all models.  
Extra Transmit & Receive Crystals. Only \$1.99 each. Specify  
Heath Transceiver model. 1 lb.





**A**  
DX-60B  
**\$79<sup>95</sup>**  
no money dn., \$8 mo.



**B** HR-10B  
**\$79<sup>95</sup>** no money dn.,  
\$8 mo.

**C** HG-10B  
**\$39<sup>95</sup>** no money dn.,  
\$5 mo.

## Value & Performance Packed . . . Complete Beginner's Station

### **A** Heathkit DX-60B Transmitter

- New color styling—deep forest-green cabinet & pale gray-green panel • 90 watts phone or CW on 80 through 10 meters • Neutralized 6146 final amplifier for stable, dependable operation on all bands • Built-in low-pass filter to eliminate TVI problems • Grid-block keying—keys beautifully with the HD-10 Electronic Keyer • Easy access to the four crystal sockets • Full provisions for operation with the matching Heathkit HG-10B VFO • Operates at reduced power for Novice Class • Performance and styling mate to the HR-10B • No other transmitter in this price range will offer you more

**The Transmitter You Never Outgrow.** Run it at 75 watts CW input novice operation—run at a full 90 watts input on phone or CW when you get your general class license.

Pi network output, Drive Level control, grid-plate current meter, and Drive Tune control permit peaking the DX-60B for best performance on any band, any power.

Kit DX-60B, 24 lbs. . . (less crystals) . . .

no money down, \$8 mo. . . . . **\$79.95**

GH-12A, PTT Mike, 2 lbs. . . . . **\$8.50**

**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 V., 50/60 Hz, 225 watts. Dimensions: 13 3/4" W x 11 1/2" D x 6 1/2" H.

### **B** Heathkit HR-10B Receiver

- New deep forest-green cabinet and pale gray-green panel matches DX-60B and HG-10B • "Amateur bands only" coverage for high stability and excellent tuning accuracy • Tunes SSB, AM, & CW on 80-10 meter bands • High quality crystal-filter for optimum communications selectivity • Optional plug-in 100 kHz crystal calibrator • 7-tube super-heterodyne circuit • RF amplifier for extra sensitivity—high image rejection • Pre-built, pre-aligned tuning unit for easy assembly

**A Quality Receiver Any Ham Will Enjoy . . .** tunes CW, AM, and SSB with the stability you need. Accurate calibration, separate AF and RF gain controls, BFO tuning, S-meter, AVC on-off, automatic noise limiter, provisions for optional 100 kHz crystal calibrator . . . every facility you need.

Kit HR-10B, 20 lbs. . . no money dn.,

\$8 mo. . . . . **\$79.95**

Kit HRA-10-1, Plug-in 100 kHz crystal

calibrator, 1 lb. . . . . **\$8.95**

**HR-10B SPECIFICATIONS** — Frequency coverage: 80 through 10 meters. IF frequency: 1681 kHz. Sensitivity: 1 uv for 10 dB signal-to-noise ratio. Image rejection: 40 dB or better. Selectivity: 3 kHz at 6 dB, 9 kHz at 40 dB. Input impedance: 50 to 75 ohm, coaxial. Audio output impedance: 8 or 500 ohm. Tube complement: 6BZ6, (2) 6EA8, 6BA6, 6BJ7, 6EB8, 6X4. Power requirements: 120/240 V. AC, 50/60 Hz, 50 watts. Dimensions: 13 3/4" W x 11 1/2" D x 6 1/2" H.

### **C** New Color Styling For HG-10B VFO . . . Matches DX-60B, HR-10B, & HW-16

**Work VFO On 80 Through 2 Meters!** Calibrated for "80 through 2," the Heathkit HG-10B provides 5 volts RMS output (enough to drive most transmitters) in the 3.5 to 4, 7 to 7.425 and 8 to 9 MHz ranges. Each of the seven bands has a separate dial scale.

The HG-10B uses a series-tuned Clapp oscillator with a cathode follower isolation stage. Temperature-compensated components and regulated B+ provide stable, drift-free operation. The HG-10B features a 28-to-1 dial drive, plus a "spot" switch for off-the-air tuning. It's the perfect addition to your amateur station when you go from novice to general class.

Kit HG-10B, 12 lbs. . . no money down,  
\$5 mo. . . . . **\$39.95**

**HG-10B SPECIFICATIONS**—Band coverage: 80 through 2 meters with output frequency in the 3.5 to 4 MHz, 7 to 7.425 MHz, and 8 to 9 MHz ranges. Load impedance: 50,000 ohms or more. Output voltage: 5 volts RMS, open circuit. Output connector: Phono-type socket. Power requirements: 108 volts DC at 25 ma & 6.3 VAC or DC at 0.75 ampere. Power available directly from the DX-60 series (thru "B" model) and HW-16. Dimensions: 9 3/4" W x 6 1/2" H x 9 1/4" D.



**Heathkit HD-16**  
**Code Practice**  
**Oscillator**

The perfect way to build up your fist. Utilizes a unijunction transistor with separate controls for tone and volume. Built-in speaker and front-panel headphone jack. Includes key with phone plug and cord. Fast, simple assembly.

Kit HD-16, 3 lbs. . . . . **\$9.95**



### **Get Your Ham Ticket** **The Fast, Efficient Way . . .** **With This Complete Course**

Course includes 4 handbooks from the American Radio Relay League, HD-16 kit and 3 records that teach code by the "word method".

HDP-22, complete ham starter group,  
6 lbs. . . . . **\$18.95**

HDP-32, code records only, 2 lbs. . . . . **\$9.50**

HDP-42, ARRL books (4) only, 2 lbs. . . . . **\$2.50**

HD-16, Oscillator plus key only, 3 lbs. . . . . **\$9.95**



**The Radio**  
**Amateur's**  
**Handbook**

Used by thousands of hams, engineers etc. as a reliable source of information on any phase electronics & communications. Covers theory, construction & operating principles. "Plain talk" sections on basic electronics, HF, VHF, UHF receivers, transmitters, antennas.

HDP-293, 3 lbs. . . . . **\$4.00**

Pay Your Heath Account In 30 Days — No Carrying Charges



# World's Most Popular Transceivers

## Old Brass Pounder Or Beginner Ham . . . He's Sure To Appreciate This Performance Packed Heathkit CW Transceiver

- Provides optimum CW operation on the first 250 kHz of the 80, 40, & 15 meter bands
- True "break-in" CW operation—solid-state TR switching & 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 "expensive" receivers
- RF amplifier stage in receiver for better than 1 microvolt sensitivity
- Built-in sidetone
- Grid-block keying—keys beautifully with the Heathkit HD-10 Electronic Keyer
- Easy to assemble and put on the air—requires only a VTVM, dummy load, and crystals for the bands in which you intend to operate

Regardless of his experience, every ham would like to put this HW-16 Transceiver on the air. And you can put it there for a lot less than you'd expect.

The HW-16 features high stability thanks to a dual conversion superheterodyne circuit with a crystal controlled "front end" and low frequency local oscillator. Through the added gain of the dual conversion circuits, plus an RF amplifier stage, the HW-16 has the high sensitivity you need for working DX. And that RF amplifier means excellent image rejection for "clean" reception and superior weak signal capability. Because Heath engineers chose a crystal lattice filter similar to those used in the Heath SB-Series, you'll enjoy the sharp (500 Hz) selectivity you need to peel through crowded nighttime amateur bands. You'll discover the pleasure of pulling those weak DX signals up out of the mud for solid copy QSO's.

All you need in addition to your HW-16 are crystals in the band of your choice, headphones or an 8 ohm speaker, an antenna, and a radiotelegraph key. The built-in sidetone lets you hear what you send, helps you build up speed, helps you develop a near-perfect fist. With built-in antenna change over and automatic receiver muting, you'll never outgrow your HW-16. You can work fast break-in rag chews and high speed traffic nets with ease. Your HW-16 will stand up well against even the "expensive" rigs.

HW-16  
\$109<sup>95</sup>  
\$11 mo.



Easy Assembly Gets You On-The-Air Fast! The HW-16 goes together with a combination of circuit board construction and rugged chassis mounting of components that makes simple, straight-forward assembly—assures electrical and mechanical stability.

Kit HW-16, 25 lbs., no money dn., \$11 mo. . . . . \$109.95  
 GD-396, Headphones (not a kit), 1 lb. . . . . \$3.50  
 Kit HS-24, Speaker, 4 lbs. . . . . \$7.00  
 Kit HD-10, Electronic Keyer, 6 lbs. . . . . no money dn., \$5 mo. . . . . \$39.95  
 Kit HG-10B, VFO, 12 lbs. . . . . no money dn., \$5 mo. . . . . \$39.95

**HW-16 SPECIFICATIONS—TRANSMITTER SECTION:** RF power input: 50 to 90 watts (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 microvolt 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. **Transmitter tube complement:** 6CL6 Crystal Oscillator; 6CL6 Driver; 6GE5 Final. **Receiver tube complement:** 6EW6 RF Amplifier; 6EA8 Heterodyne Mixer-Oscillator; 6EA8 VFO Mixer-Oscillator; 6EW6 IF Amplifier; 12AX7 Product Detector-Oscillator; 6HF8 1st Audio and Audio Output. **Transistor complement:** 2N1274 muting circuit. **Dimensions:** 13 1/4" W x 11 1/2" D x 6 1/2" H.

## The Famous "Benton Harbor Lunch Boxes" . . . For 6 and 2 Meters

- Ideal for CAP, MARS, local net, or emergency
- Crystal controlled AM transmitter—5 watt input
- Tunable super-regen. receiver with RF stage—1 uv sensitivity
- HW-30 2 meter model can operate on USCG Auxiliary freq. 143.28 MHz
- Transceivers include ceramic mike, meter jack, and power cables for mobile operation
- Crystals (not supplied) are in the 8 MHz range

These are the rigs that put many thousands of hams on VHF, and it's easy to see why . . . remarkably low cost, rugged construction, easy assembly and best of all . . . a hot receiver coupled with a transmitter section that puts out a solid, stable signal. Go VHF for less . . . the "Lunch Box" way.

Kit HW-29A (6 meter), 9 lbs., no money dn., \$5 mo. . . . . \$44.95  
 Kit HW-30 (2 meter), 9 lbs., no money dn., \$5 mo. . . . . \$44.95  
 Kit GP-11, Mobile Power Supply, 6 lbs. . . . . \$17.95

HW-29A  
\$44<sup>95</sup>  
\$5 mo.

HW-30  
\$44<sup>95</sup>  
\$5 mo.



### SSB Mike With Desk Stand

This high impedance mike by EV is recommended for use with SB-Series gear. Has ideal response for SSB work. Mike stand has grip-to-talk switch with lock position. Complete with wiring diagrams and cables.

HDP-21A, 4 lbs., no money dn., \$5 mo. . . . . \$29.40

### Heathkit SWR Meter

- Shows antenna/transmission line match—indicating forward & reflected power & SWR
- Covers 160-6 meters
- Handles peak power well over 1 kw
- Matches 50 or 75 ohm lines with wiring options

Kit HM-15, 2 lbs. . . . . \$14.95

### Heathkit Phone Patch

- Individual gain controls for receiver-to-line and line-to-transmitter audio level
- One-switch operation
- VU meter monitoring of audio levels and 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

Kit HD-15, 3 lbs., no money dn., \$5 mo. . . . . \$24.95

### Heathkit RF Relative Power Meter

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 operates from the radiated transmitter signal. The magnetic base makes it ideal for mobile rigs—just mount on the dash.

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### Heathkit "Cantenna" Dummy Load

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### Heathkit Solid-State "Tunnel Dipper"

- Tunnel diode oscillator—no tubes
- Covers frequency range of 3 to 260 MHz
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- Durable epoxy-coated plug-in coils
- Coils color-matched to dial scales
- Built-in coil storage

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### Heathkit Mobile Speaker

A rugged, reliable 8 ohm speaker suitable for any mobile work. Features a sturdy steel cabinet finished in durable forest green wrinkle finish to match all Heathkit HW—and SB-Series gear. Versatile gimbal mounting bracket included. Measures only 6 1/2" W x 4 3/4" H x 2 1/2" D.

Kit HS-24, 4 lbs. . . . . \$7.00



### Heathkit 100 kHz Crystal Calibrator

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.

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- Durable epoxy-coated plug-in coils
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Kit HD-20, 1 lb. . . . . \$14.95



## New Solid-State 2-Meter AM Transceiver and Solid-State Mobile Power Supply

• Frequency Range 143.2 to 148.2 MHz • Solid-state, dual-conversion superheterodyne receiver • Pre-built, pre-aligned FET tuner • Spot function for finding transmit frequency on receiver dial • Hybrid transistor-tube type transmitter design • 8 to 10 watts power output • 4 crystal sockets plus provision for external VFO such as Heathkit HG-10B (page 53) • Built-in 120-240 VAC power supply • Optional DC mobile supply (see below) • PTT operation, electronically switched • Front panel meter for signal strength and relative power output • Built-in automatic noise limiter and squelch • Lighted dial • Built-in speaker • Battery saver feature for low current drain during mobile monitoring • Low profile aluminum cabinet for easy mobile mounting • Gimbal mount included for mobile use • Ceramic PTT microphone included • 15 transistors, 20 diodes, 3 tubes, 2 circuit boards • Builds in about 20 hours

A Compact, Versatile Package . . . really a separate receiver & transmitter on one chassis (the only common circuitry are the power supply and the audio output/modulator). The solid-state dual conversion superhet receiver has 1  $\mu$ V sensitivity, 100 kHz dial calibration, ANL and squelch. Selectivity of 27 kHz at 6 dB down makes for easy tuning and the front panel meter indicates received signal strength & relative power output. The front panel, 3-position switch has a "Spot" position, Receive/Transmit position and a Battery-Saver position that's ideal for mobile monitoring (draws only 100 mA). A 3x5" speaker is built in. The transmitter has a 25-30 watt input and an AM output of 8-10 watts. Modulation is automatically limited to less than 100%. Choose any of 4 front panel selected crystal frequencies or use an external VFO (the HG-10B is perfect, see p. 53). Includes a PTT mike & mobile mount. When you go 2-meter phone, go HW-17A. And check out the HWA-17-1 Solid-State mobile power supply too.

Kit HW-17A, 2M Transceiver, 18 lbs., no money dn., \$12 mo. . . . \$129.95  
Kit HWA-17-1, Transistorized DC supply, 4 lbs.,  
no money dn., \$5 mo. . . . \$24.95

HW-17A  
**\$129<sup>95</sup>**  
no money dn.,  
\$12 mo.



**HW-17 SPECIFICATIONS—RECEIVER:** Frequency coverage: 143.2-148.2 MHz. Dial calibration: 100 kHz. IF Frequencies: Double conversion: 1st IF: 24.965 MHz; 2nd IF: 2 MHz. Sensitivity: 1  $\mu$ V input for 10 db S/N + N. Selectivity: 27 kHz @ 6 dB down. Input impedance: 50-72 ohm, unbalanced. Audio output: 1 watt @ less than 10% distortion. Headphone jack: Low impedance, accepts PL-55 type plug (standard 2-conductor 1/4" sleeve). Transistor complement: (2) 2N4416 RF Amplifier, 1st Mixer; SE5023 HF variable oscillator; (4) 2N3694 2nd Mixer; crystal oscillator, 1st IF amplifier, 2nd IF amplifier; (2) 2N3393 Audio Preamplifier, Squelch amplifier X29A829 Squelch Gate; 2N1274 Audio Driver; (2) 40050 Audio/Modulator output. Transmitter: Frequency coverage: 143.2-148.2 MHz. RF Power input: 25-30 watts. RF Power output: 8-10 watts. Mode: Type A3 (AM). Modulation: Automatically limited to 100% or less. Output impedance: 50-72 ohm, unbalanced. Crystal sockets: Accepts FT-243 type holders, pin diameter .093", pin spacing .466" & HC6/U type in diameter .050", pin spacing .466". Transistor/tube complement: 7050 Oscillator/Amplifier Tripler-Tripler; 12G7 Doubler/Driver; 8156 Power Amplifier; (2) 2N3393 Microphone Preamplifier, Microphone Driver. Temperature range: -20° to +50° C. Power requirements: 120 or 240 VAC input. Receiver Trans.—20 watts; Batt. Saver—8 watts; Spot—35 watts; Transmitter—100 watts. Cabinet dimensions: 14 1/2" W x 8 1/2" D x 6 1/4" H including microphone & mounting feet. Net weight: 13 lbs.

**HWA-17-1 SPECIFICATIONS—Input voltage:** 12 to 15 volts DC (Note: a 13.5 volt DC input was used in determining the electrical specifications). For negative ground systems only. Input current: 10 amperes maximum. Allowable ambient temperature: 10 degrees F. to 122 degrees F. High voltage output: 380 VDC no load, 340 VDC at 150 mA load. Ripple: 1% at 150 mA. Duty cycle: 50%. Conversion frequency: 2500 Hz (approx.). Dimensions: 3 1/4" W x 7-5/16" L x 2 1/4" H. Net weight: 3 lbs.

A unique series of low cost crystal-controlled SSB transceivers especially designed for use by CAP, MARS, and 160 meter hams



• 200 watts PEP SSB input • 25 watts input with carrier for compatibility with AM stations • CAP version employs upper sideband, MARS upper or lower sideband, 160 meter model lower sideband • CAP complies with new FCC rule effective June 21, 1968 which establishes a CAP SSB frequency tolerance of .005% until Jan. 1, 1973 and 50 Hz thereafter • Crystal filter sideband generation • 2 channels, switch selected, crystal controlled (tolerance .005%) • Fixed tuned for simple PTT operation • Transmit and receive frequencies locked together for true transceiver operation • Clarifier control adjusts transceiver frequency  $\pm$  100 Hz • Relayless transmit-receive switching • Local-Distance switch prevents receiver overload from strong local stations • Built-in speaker • PTT mic. included • Carrier & sideband suppression 45 dB • Sensitivity 1  $\mu$ V • Selectivity 2.1 kHz • 50 ohm coax output • Mobile or "fixed" use HP-13A & HP-23A power supplies • Mobile mount included • Requires only a voltmeter, ohmmeter & dummy load for alignment

Kit HW-18-1, CAP transceiver and crystals for any two channel frequencies from list below; specify choices; 16 lbs., no money dn., \$11 mo. . . . \$119.95

Assembled HWW-18-1, ready to operate CAP transceiver with crystals for any two channel frequencies from list below; specify choices; 16 lbs., no money dn., \$17 mo. . . . \$179.95

CAP CRYSTALS; channel frequency: 4467.5, 4507.5, 4585, 4602.5, 4630 kHz; 1 lb. . . . ea. \$4.95

Kit HW-18-2, MARS transceiver less channel crystals, 16 lbs., no money dn., \$10 mo. . . . \$99.95

MARS CRYSTALS; specify LSB or USB operation & channel frequencies (both channels must use same sideband); 4451.5, 4518.5, 4558.5, 4581.5, 4591.5, 4595 kHz; 1 lb. . . . ea. \$4.95

Kit HW-18-3, 160 M transceiver less crystals, 16 lbs., no money dn., \$10 mo. . . . \$99.95

160 METER MODEL HETERODYNE CRYSTALS for operation on: 1805, 1809, 1813, 1817, 1821 kHz; 1 lb. . . . ea. \$4.95

**HW-18 SERIES SPECIFICATIONS—RECEIVER SECTION:** Frequency coverage: HW-18-1 & 2, 4450 to 4650 kHz; HW-18-3, 1800 to 2000 kHz. Channels: 2. Sideband: HW-18-1, USB; HW-18-2, USB or LSB option; HW-18-3, LSB. Clarifier range: HW-18-1 & 2,  $\pm$  100 Hz; HW-18-3,  $\pm$  250 Hz. Sensitivity: All models, 1  $\mu$ V input signal will provide at least a 15 dB signal-plus-noise-to-noise ratio. Selectivity: 2.1 kHz nominal @ 6 dB down, 6 kHz @ 50 dB down (3395 kHz filter). Intermediate frequency: All models, 3395 kHz. Image rejection: 100 dB. IF Rejection: 50 dB. Antenna input impedance: 50 ohm, unbalanced. Receiver audio response: 400 to 3000 Hz. Receiver audio power output: 1 watt. Internal speaker: 8 ohm impedance 4" x 6". TRANSMITTER SECTION: Frequency coverage: HW-18-1 & 2, 4450 to 4650 kHz; HW-18-3, 1800 to 2000 kHz. Channels: 2. Transmitting mode: HW-18-1, upper sideband carrier suppressed, and low level carrier with sideband. HW-18-2, upper or lower (optional) sideband carrier suppressed, and low-level carrier with sideband. HW-18-3, lower sideband. Frequency accuracy: HW-18-1 & 2, .005% overall (after adjusting to channel frequency). HW-18-3, .005%. Clarifier range: HW-18-1 & 2,  $\pm$  100 Hz; HW-18-3,  $\pm$  250 Hz. RF Power input: 200 watts PEP. Output impedance: 50 ohm, unbalanced. Transmitter audio response: 400 to 3100 Hz. Microphone: High impedance ceramic. Unwanted sideband suppression: 45 dB min. below peak output with 1000 Hz modulation. Carrier suppression: 45 dB min. below peak output. Ambient temperature range: +10° to +110°F. Controls: Front panel: Volume with on/off switch, Reception, Mode, Meter, Channel, Clarifier, Meter Zero, Bias Adjust. Circuit board: Carrier null. Chassis rear: Mic. gain. GENERAL SPECIFICATIONS: Power requirements: 800 VDC @ 250 mA peak, 250 VDC @ 100 mA, -130 VDC @ 5 mA, 12.6 VAC or VDC @ 3.75 amperes. Tube complement: (3) 6EA8 microphone amp & AF cathode follower, transmitter IF amp & relay amp, RF amp & receiver mixer; (4) 6AU6 heterodyne osc., IF carrier osc.; (1) 6E8 AF amp & AF output; (2) 6E5 transmitter RF output. Cabinet dimensions: 6 1/4" H x 12 1/4" W x 10" D. Add 1" to height, width, & depth for gimbal bracket, knobs & connecting plugs. Net weight: 12 lbs.



**SB-620 Spectrum Analyzer**  
• 10 & 50 kHz sweep widths for single signal analysis • Variable width to 500 kHz for signals above 455 kHz; up to 100 Hz for 455 kHz IF's • Log & near displays • Operates with common receiver IF's up to 6 MHz • SB-Series styling  
Kit SB-620, 15 lbs., no money dn., \$11 mo. . . . \$119.95



**SB-610 Signal Monitor**  
• Accurate display of transmitted & received AM, CW, SSB & RTTY signals • Operates 160-6 meters, 15 watts to 1kw • Displays signal envelope, AF & RF trapezoid patterns • Manual includes complete instruction for interpreting waveforms  
Kit SB-610, 14 lbs., no money dn., \$8 mo. . . . \$74.95



**SB-630 Station Console**  
• Four control-monitor units in one • 24-hour clock with digital readout • SWR meter for proper matching • Hybrid phone patch • Automatic, resettable electronic 10 minute timer — red "Identify" sign lights up & buzzer sounds  
Kit SB-630, 10 lbs., no money dn., \$8 mo. . . . \$74.95



**SB-640 External LMO**  
• Same exact calibration and smooth dial mechanism as SB-101 • Four different modes of operation • Panel light indicates when "640" is in control • Provision for 2 crystal frequencies  
Kit SB-640, 9 lbs., no money dn., \$10 mo. . . . \$99.00



**SB-600 Station Speaker**  
• 8 ohm impedance matches SB & HW-Series gear • Audio response shaped from 300 to 3000 Hz for optimum voice reproduction • Provides mounting enclosure for HP-23 & HP-23A power supplies  
Kit SB-600, 6 lbs., \$18.95  
Assembled SBW-600, 6 lbs. . . . \$24.95





## A Heathkit SB-301 Amateur Band Receiver

• Increased sensitivity • RTTY position on mode switch • 80-10 meter coverage with 15 to 15.3 MHz for WWV • Panel switch position for 6 & 2 meter converters • Built-in, switch-selected ANL • Truly linear tuning by Heath LMO • Less than 100 Hz per hour drift after 20 min. warm-up • 1 kHz dial calibrations • Built-in 100 kHz crystal calibrator • Operates transceive with SB-401 • Built-in power supply

Features Full RTTY Reception, 80 thru 2 meter coverage with optional converters, ANL, WWV reception and more. Write for complete specifications. Kit SB-301, less speaker, 25 lbs., no money dn., \$24 mo. . . . . \$260.00  
SBA-301-1 Optional AM crystal filter (3.75 kHz), 1 lb. . . . . \$20.95  
SBA-301-2 Optional CW crystal filter (400 Hz), 1 lb. . . . . \$20.95  
SBA-300-3 (6 meter converter), 2 lbs. . . . . \$19.95  
SBA-300-4 (2 meter converter), 2 lbs. . . . . \$19.95

**SB-301 PARTIAL SPECIFICATIONS**—Frequency range (megahertz): 3.5 to 4.0, 7.0 to 7.5, 14.0 to 14.5, 15.0 to 15.5, 21.0 to 21.5, 28.0 to 28.5, 28.5 to 29.0, 29.0 to 29.5, 29.5 to 30. Intermediate frequency: 3.395 megahertz. Frequency stability: Less than 100 Hz per hour after 20 min. warmup under normal ambient conditions. Less than 100 Hz for  $\pm 10\%$  line voltage variation. Visual dial accuracy: Within 200 Hz on all bands. Electrical dial accuracy: Within 400 Hz on all bands after calibration at nearest 100 kHz point. Backlash: No more than 50 Hz. Sensitivity: Less than 0.3 microvolt for 10 dB signal-plus-noise to noise ratio for SSB operation. Modes of operation: Switch selected; LSB, USB, CW, AM, RTTY. Selectivity: RTTY; 2.1 kHz at 6 dB down, 5.0 kHz at 60 dB down (crystal filter supplied). SSB; 2.1 kHz at 6 dB down, 5.0 kHz at 60 dB down (crystal filter supplied). AM; 3.75 kHz at 6 dB down, 10 kHz at 60 dB down (crystal filter available as accessory). CW; 400 Hz at 6 dB down, 2.0 kHz at 60 dB down (crystal filter available as accessory). Spurious response: Image and IF rejection better than 50 dB. Internal spurious signals below equivalent antenna input of 1 microvolt. Audio response: SSB; 350 to 2450 Hz nominal at 6 dB. AM; 200 to 3500 Hz nominal at 6 dB. CW; 800 to 1200 Hz nominal at 6 dB. Audio output impedance: Unbalanced nominal 8 ohm speaker and high impedance headphone. Audio output power:  $\frac{1}{2}$  watt with less than 8% distortion. Antenna input impedance: 50 ohms nominal. Muting: Open external ground of Mute socket. Crystal calibrator: 100 kHz crystal. Power supply: Transformer operated with silicon diode rectifiers. Power requirements: 120/240 V AC, 50/60 Hz, 50 watts. Dimensions: 14 $\frac{1}{2}$ " W x 6 $\frac{1}{2}$ " H x 13 $\frac{1}{2}$ " D.

## B Matching Heathkit SB-401 SSB Amateur Transmitter

• 5-band 80-10 meter coverage • Single panel switch selects transceive or independent operation of SB-401 and SB-301 (or SB-300) combination—no cable changing required • Can be operated as an independent transmitter with any other make of receiver when SBA-401-1 crystal group (not required with SB-300 or SB-301) is installed • Built-in power supply • LMO (Heath Linear Master Oscillator) frequency control  
Operates USB/LSB & CW and features 1 kHz dial calibration with true

linear tuning on all bands. 500 kHz coverage per band switch position. Write for complete specifications.

Kit SB-401, 36 lbs. . . . . no money down, \$27 mo. . . . . \$285.00  
SBA-401-1 Crystal Pack, 1 lb. . . . . no money down, \$5 mo. . . . . \$29.95

(Required for SB-401 operation without the SB-301 or SB-300 Receiver)  
HDP-21A SSB "Ham" Microphone, 4 lbs., no money dn., \$5 mo. . . . . \$29.40

**SB-401 SPECIFICATIONS**—Emission: SSB (upper or lower sideband) and CW. Power input: 170 watts CW, 180 watts P.E.P. SSB. Power output: 100 watts (80-15 meters), 80 watts (10 meters). Output impedance: 50 to 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 per 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). Electrical dial accuracy: Within 400 Hz after calibration at nearest 100 kHz point (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 watts STBY, 260 watts key down @ 120/240 V AC, 50/60 Hz. Dimensions: 14 $\frac{1}{2}$ " W x 6 $\frac{1}{2}$ " H x 13 $\frac{1}{2}$ " D.

## C Matching Heathkit SB-200

### Kilowatt Desk-Top Linear Amplifier

• 1200 watts P.E.P. input SSB—1000 watts CW • 80 through 10 meter band coverage • Built-in SWR meter—Antenna relay—Solid-state power supply • Automatic Level Control (ALC) • Shielded, fan-cooled amplifier compartment • Pre-tuned cathode input circuit for maximum efficiency & low distortion • Circuit-breaker power supply protection—no fuses • Designed for 120/240 volt operation

Provides up to 1200 watts P.E.P. Input SSB and 1000 watts CW. Requires only 100 watts driving power. Built-in solid-state power supply.

Kit SB-200 . . . 41 lbs. . . . . no money dn., \$21 mo. . . . . \$220.00

**SB-200 SPECIFICATIONS**—Band coverage: 80, 40, 20, 15 & 10 meters. Maximum power input: 1200 watts P.E.P. SSB, 1000 watts CW. Driving power required: 100 watts. 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 watts P.E.P. Output impedance: 50 to 75 ohm unbalanced; variable pi-output circuit. SWR not to exceed 2:1. Input impedance: 52 ohm unbalanced; broad-band pre-tuned input circuit requires no tuning. Meter functions: 0-100 ma grid current, 0-1000 ma plate current, 0-1000 relative power, 1:1 to 3:1 SWR, 1500 to 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 volts AC @ 16 amperes (max.), 240 volts AC @ 8 amperes (max.). Cabinet size: 14 $\frac{1}{2}$ " W x 6 $\frac{1}{2}$ " H x 13 $\frac{1}{2}$ " D. Net weight: 35 lbs.

## Heathkit SB-110A 6-Meter Transceiver

Kit SB-110A, 23 lbs. . . . . no money dn., \$28 mo. . . . . \$299.00

Kit HP-13A, DC Power Supply, 7 lbs. . . . . no money dn., \$7 mo. . . . . \$64.95

Kit HP-23A, AC Power Supply, 19 lbs. . . . . no money dn., \$5 mo. . . . . \$49.95

Kit SBA-100-1, Mobile Mounting Kit, 6 lbs. . . . . \$14.95

**PARTIAL SB-110A SPECIFICATIONS**—RECEIVER SECTION: Sensitivity: 0.1 uv for 10 dB signal-plus-noise to noise ratio. Selectivity: 2.1 kHz @ 6 dB down, 5 kHz max. @ 60 dB down. Image rejection: 50 dB or better. IF rejection: 50 dB or better. Audio output power: 1 watt. AGC characteristics: Audio output level varies less than 12 dB for 50 dB change of input signal level (10.5 uv to 150 uv). TRANSMITTER SECTION: DC power input: SSB, 180 watts PEP; CW, 150 watts. RF power output: SSB, 100 watts PEP; CW, 90 watts (50 ohm non-reactive load). Output impedance: 50 ohm nominal with not more than 2:1 SWR. Carrier suppression: 55 dB down from rated output. Unwanted sideband suppression: 55 dB down from rated output @ 1000 Hz & higher. Distortion products: 30 dB down from rated PEP output. Hum & noise: 40 dB or better below rated carrier. Keying characteristics: VOX operated from keyed tone using grid-block keying. GENERAL: Frequency coverage: 49.5 to 54.0 MHz in 500 kHz segments (50.0 to 52.0 MHz with crystals supplied). Frequency selection: Built-in LMO or crystal control. Frequency stability: Less than 100 Hz drift per hour after 20 minute warmup under normal ambient conditions. Less than 100 Hz drift for  $\pm 10\%$  sup voltage variations. Dial Accuracy: Electrical, within 400 Hz on all band segments after calibration at nearest 100 kHz point. Visual, within 200 Hz. Dial backlash: more than 50 Hz. Calibration: Every 100 kHz. Power requirements: High voltage, +700 v. DC @ 250 ma. with 1% max. ripple. Low voltage, +250 v. DC @ 100 ma with .05% max. ripple. Bias voltage, -115v. DC @ 10 ma with .5% max. ripple. Filament voltage, 12.6 v. AC/DC @ 4.355 amps. Dimensions: 14 $\frac{1}{2}$ " W x 6 $\frac{1}{2}$ " H x 13 $\frac{1}{2}$ " D.



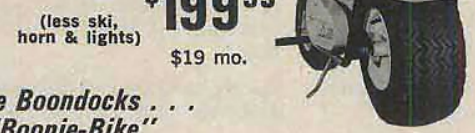
• Features the Heath SB-Series LMO (Linear Master Oscillator) for high stability, linear tuning, and 1 kHz dial calibration • Full SSB-CW transceive operation on six meters • 180 watts input PEP SSB—150 watts CW • Switch select for Upper Sideband/Lower Sideband/CW operation • Separate offset CW carrier crystal for clear, pure, CW note • ALC & ANL • Built-in 100 kHz calibrator & antenna switching • Covers 50-52 MHz with crystals supplied—total coverage 49.5-54 MHz • Crystal filter SSB generator • Fixed station or mobile operation with the Heathkit HP-23A or HP-13A power supplies







# Go Places... On The New Heathkit® "Boonie-Bike"... The All-Season Trail And Snow Bike



Kit GT-18  
**\$199<sup>95</sup>**  
(less ski,  
horn & lights)  
\$19 mo.

**DUE TO UNPRECEDENTED DEMAND,  
THE GT-18 IS ON RESERVATION  
BASIS ONLY.**

To reserve your GT-18 for future delivery, use order blank (center of flyer), mark "GT-18 Reservation Only", and return to us. We will promptly acknowledge your reservation and assign a priority number. We will contact you in advance of shipping date to confirm your reservation.

## Discover The Exciting World Of The Boondocks... With The Amazing New Heathkit "Boonie-Bike"

- More versatile than other trail bikes at twice the price • Rugged, reliable transportation over virtually any kind of terrain • Famous Briggs & Stratton 5 Hp, 4 cycle engine • 2 speed, chain drive transmission • Automatic centrifugal clutch • Hand operated Bendix rear brake for greater stopping ability • Welded tubular steel frame • Front and rear steel fenders for safe, dry riding • Twist grip throttle • Spring loaded front suspension • Tubeless tires—giant 18x8.50x8 rear tire for amazing traction • Extra large cushioned seat • Optional Ski Accessory quickly converts the bike for use on snow • Add the optional horn & lights kit for even greater versatility • Semi-kit for easy one-evening assembly with the famous Heathkit manual

Welcome To The World Of The Boondocks... remote backwoods areas... rough country roads... isolated lakes and streams... and a world more. It's all waiting for you when you have the unique Heathkit GT-18. It's larger & huskier than a mini-bike... smaller, lighter & substantially more powerful than a motorcycle-type trail bike... and it has the agility, stability, traction and sheer guts of a mountain goat. It's the new "Boonie-Bike" and it's the only way to go when the going gets rough.

**Solid, Heavy-Duty Construction.** Mounted on the rigid tubular steel frame is a 5 HP, 4-cycle Briggs & Stratton engine that gives extraordinary power to the 116 lb. "Boonie-Bike". The 3-quart tank lets you run up to 60 miles before refueling, and 6 3/4" of ground clearance and a welded steel skid pan give worry-free running over territory that would ruin many other bikes. **The Widest Wheel In Trail Bikes.** Both tires come premounted & inflated and are top quality name brand tubeless types. The giant rear tire is the big secret behind the GT-18's fantastic performance... it's a whopping 18 x 8.50 x 8"... and it delivers real traction in mud, sand, gravel, snow, tall weeds and rough underbrush. For even greater versatility, add the ski that snaps on in seconds without tools and lets you go in snow... and the new horn & lights and recharging kits that permit night use.

**Go!** A flip of the shift lever mounted in front of the large, comfortable seat and you're on the way. Select low gear for hills and rough country, high for relatively flat terrain and speeds up to 30 mph. The big 5" Bendix drum-type rear brake is there when you need it for safe, sure stops. **Family Fun.** Take the GT-18 camping, hunting... to the summer cottage or mountain retreat. It fits easily in car trunks. So easy to ride anyone can master it with a few minutes instruction. So much fun you'll be looking for reasons to ride it. Order yours now... and go places.

- Kit GT-18, Trail Bike, 140 lbs., no money dn., \$19 mo..... **\$199.95**
- Model GTA-18-1, Ski Accessory, 12 lbs..... **\$16.95**
- Kit GTA-18-2, Horn & Lights Accessory, 10 lbs., no money dn., \$5 mo. (less battery)... **\$29.95**
- Model GTA-18-3, Battery Charger Accessory, 3 lbs..... **\$6.95**

**GT-18 SPECIFICATIONS—Engine:** Briggs & Stratton 5 h.p. 4 cycle. **Clutch:** Centrifugal. **Crankcase oil capacity:** 1 1/4 pt. **Transmission:** 2 speed. **Weight:** Net 116 lbs. **Speed range:** Hi 0-30 mph; Lo 0-15 mph. **Gear Ratio:** Lo Speed 15 to 1; Hi Speed 7.5 to 1. **Load capacity:** 400 lbs. **Gas tank capacity:** 3 Qt. (U.S.) **Gas consumption:** Approx. 2 hrs. per tank (approx. 60 miles). Approx. 80 mpg. **Brake:** Bendix 5" internal expanding. **Front suspension:** Spring loaded front suspension. **Rear tire:** Size 18x8.50-8; Tubeless 18" diam., 8.5 width, 8" rim. **Front tire size:** 5.30x4.50-6. **Color:** Blue & White. **Dimensions:** Length (overall): 59", with ski, 70". Width (at handlebars): 24 1/2". Hgt.: (at handlebars): 35 1/2", (at seat): 25 1/2". **Wheel base:** 42". **Ground clearance:** 6 3/4".



### New Horn & Lights Accessory Kit Makes The "Boonie-Bike" Even More Versatile

This new Horn & Lights Accessory kit is the fast, low cost way to add the extra convenience and safety to your "Boonie-Bike" that night travel demands.

A powerful, 5 3/4" sealed-beam headlamp in an attractive chrome plated housing provides safe lighting for travel over private roads or rugged terrain at night, and its High-Low beams give greater convenience. Both High-Low and On-Off switches are mounted on the top of the lamp for easy accessibility. The taillight/stoptight is mounted in a chrome plated housing and measures a big 3 3/4" diameter for maximum visibility under all conditions. The lamp used is a standard automotive bulb and is readily available in most service stations. A loud, piercing high frequency tone comes from the 4" chrome plated horn, which is conveniently triggered from a button on the handlebars. All interconnecting cables are held neatly in place next to the frame by a spiral wrap. Included in the Horn & Lights kit is a battery holder, painted to match the GT-18. A type 12AH lead acid motorcycle battery (12VDC) is recommended to provide extended periods of normal operation between charges and for best long term economy. Details are included in the assembly manual to assist you in procuring a battery locally in most areas.

An inexpensive Charger Kit is also available to keep the battery for your Horn & Lights kit in peak operating condition at all times. Just plug it in and attach the two clip leads to the battery; charges fully overnight.

Kit GTA-18-2, Horn & Lights Accessory, 10 lbs. (less battery)... no money dn., \$5 mo... **\$29.95**  
Assembled GTA-18-3, Battery Charger, 3 lbs. .... **\$6.95**





Kit PM-18      Wired PMW-18  
**\$62<sup>00</sup>**      **\$92<sup>00</sup>**  
 \$7 mo.      \$10 mo.

- Produces beautiful black and white prints every time • Saves darkroom time, cuts paper costs, speeds enlarging • Automatically determines paper grade and exposure time • Line voltage electronically regulated for greater accuracy • So simple to use and calibrate that a beginner can experience exceptional results the first time • Manual includes comprehensive instructions for producing special effects prints and prints from thin or very contrasty negatives • Supplied with special 35mm test negative for in-depth testing of paper grades • Fast, inexpensive conversion to complete color capability with the accessory Color Probe Kit (available soon) • Simple, enjoyable construction with the famous Heathkit manual

## the NEW FOTOVAL® II Darkroom Computer . . . A New, Simplified Way To Produce Excellent B&W Prints . . . Converts To Color Work Too

The New Heath/Mitchell Fotoval II Darkroom Computer is a fast, low cost way to make ideal black and white enlargements . . . simply, efficiently . . . each and every time you use it. Guesswork about paper grade and exposure time is eliminated and time, money and paper wasting test strips are a thing of the past.

Monitors Darkroom Variables . . . Leaves You Free For Creative Work. Following the simple step by step instructions in the comprehensive manual, each of your paper contrast grades is accurately tested and its particular printing characteristics are "memorized" by the computer. When you print a negative, just use the built-in Exposure Probe to monitor the negative contrast range . . . then read the correct paper grade (or filter) and exposure time directly from the illuminated scale. The Fotoval II Computer will handle most of the density extremes encountered in amateur work. When the Exposure Probe is replaced on the front of the cabinet, the panel light automatically goes out—and you're ready to make an excellent black and white print . . . without guessing about exposure or paper grade . . . without wasting a lot of valuable time in the darkroom. And you can even print now, develop later, by using the computer to determine the best paper grade and optimum exposure time.

Ideal For The Amateur Darkroom. The Fotoval II Computer is so simple to use that even a novice will produce excellent prints the first time. And a 35mm test negative is supplied which allows in-depth testing of all paper grades. A section of the manual is devoted to other uses for the Fotoval II Computer . . . variable contrast papers and filters, special effects, small prints, extreme enlargements and more.

Kit Or Assembled. The Fotoval II Computer is as easy to build as it is to use, or choose the factory assembled version. Either way, you'll be making great prints. Put the Fotoval II Computer in your darkroom now.

Kit PM-18, 7 lbs., no money dn., \$7 mo. . . . . \$62.00  
 Assembled PMW-18; 7 lbs., no money dn., \$10 mo. . . . . \$92.00

## The Original Fotoval® Darkroom Computer . . . Now A Better Buy Than Ever

- Accurately & scientifically indicates correct exposure times & photographic paper grades • Cuts darkroom time, reduces paper costs, speeds your enlarging • Quickly produces correctly exposed prints everytime • Gimbal mounting bracket allows installation in any position • Completely safe lighted to permit easy darkroom reading of meter indications • Simple to assemble and operate

The Modern Way To Salon-Quality B&W Prints. Using the 35mm Test Negative supplied, you determine correct exposure for each type of paper or variable contrast filter to be used. This method of calibration is very accurate and coupled with the 5-range front panel switch gives the Fotoval Computer the wide sensitivity range needed to work with the extremes found in any B&W printing problem. Once calibrated, the Fotoval Computer "remembers" these variables through interchangeable scales on the front panel. The built-in Exposure Probe is used to meter the detailed black and highlights of any negative, regardless of its density extremes. The exact exposure time and paper grade (or filter) is read directly from the computer, and the print is exposed and developed . . . that's all there is to it. Produce professional prints and save money too . . . with the Professional Fotoval Darkroom Computer. Order yours now.

Kit PM-14, Fotoval Computer & 35mm Calibration Negative,  
 8 lbs., no money dn., \$8 mo. . . . . \$75.00  
 Optional test negative for 4" x 5" enlargers available. Order PMA-14-1, \$15.00 ppd.

## Now . . . Convert Your Fotoval To Color Capability

This new Color Probe kit will convert your PM-14 to complete color capability. Its identical to the one used with the Colorval Darkroom Computer and delivers the same remarkable results. Comes with Color Wheel, Scan Filter Pack, Power Supply & Color Probe. Order yours now. (not usable with Fotoval II Computer).

Kit PMA-14-2, 4 lbs., no money dn., \$5 mo. . . . . \$49.00

## Heathkit Photo Timer Matches Fotoval® and Colorval® Darkroom Computers

- Controls exposure time of all printing operations—contact or enlarging • Two switch-selected ranges . . . up to 99 seconds in 1 second steps or 9.9 seconds in 0.1 second steps . . . permits accurate resetting of any interval • Repeatability accurate to within 2% on all settings • Two C outlets . . . enlarger & safe-light • All-electronic circuitry . . . no gear drive mechanism to wear out as with "clock-motor" devices • Enlarger may be turned on or off manually with Time-Focus rocker switch • Install on wall, place upright or face up on working surface • Styled to match Heath/Mitchell Fotoval® Computer • Easy to assemble and use

Kit PT-15, 4 lbs. . . no money dn., \$5 mo. . . . . \$27.95



Kit PM-14  
**\$75<sup>00</sup>**  
 \$8 mo.

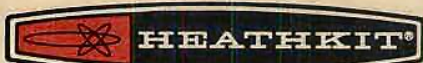
Kit PMA-14-2  
**\$49<sup>00</sup>**  
 \$5 mo.



Kit PT-15  
**\$27<sup>95</sup>**  
 \$5 mo.



# Aids For The Photographer



Kit PM-17    Wired PMW-17  
**\$89.00**    **\$125.00**  
 \$9 mo.        \$12 mo.

- Accurately indicates ideal filter combination and correct exposure time for printing color negatives • Also functions like the Fotoval Computer in printing black & white negatives • Unique Color probe helps you to visually determine exact color correction • Separate light-sensitive exposure probe
- Same 35mm test negative as used with Fotoval Computer for in-depth testing of paper grades • Built-in line voltage regulator • Sturdy all-metal cabinet
- Mitchell Color Wheel also included

## Cut Paper Costs & Darkroom Time, Speed Enlarging & Make Fine Color Prints...With The Colorval® Computer

Reduce The Cost Of Color Printing with the Colorval Darkroom Computer. It eliminates color cast, wasted paper and guesswork, and it's so simple to use even a novice will get amazing results the first time.

**Unique Color Probe.** The Colorval Computer features a separate color probe which allows you to visually determine the ideal filter combination. A small area of the projected picture is studied in the color probe, and color balance is achieved when this selected area has been rendered neutral. The handy ball socket base allows it to be used with either hand anywhere on the easel.

**Scan Filter Pack.** Enlarger light passes through the filter pack on top of the probe, which neutralizes the orange mask of the negative. The probe is adjusted so that the Reflected Spot—a reflection of the small area under study—is seen in the small mirror on the probe. This spot, which appears nearly white, is compared to the adjustable Neutral Reference Light which surrounds it. Adjust the enlarger printing filter pack until the spot and reference are identical. The projected negative is now balanced and needs only brightness adjustment before being printed.

**Exposure Probe . . .** measures very small light areas when scanning negatives for the desired shadows and highlights. The enlarger lens aperture is adjusted for the correct Colorval Computer scale readings . . . read & set exposure time and print.

**Unique Mitchell Color Wheel Included . . .** an orderly arrangement of color "errors" on a true neutral background. A corresponding table quickly indicates the needed filter correction.

**35mm Fotoval Test Negative Supplied . . .** for in-depth black & white testing to accurately measure each package of paper, and apply the results to the final printing. An optional test negative for 4 x 5" enlargers is also available; order PMA-14-1, \$15.00 ppd.

**Kit PM-17, 6 lbs. . . no money dn., \$9 mo. . . . . \$89.00**  
**Assembled PMW-17, 6 lbs. . . no money dn., \$12 mo. . . . . \$125.00**

**PM-17 SPECIFICATIONS—**Front panel controls: Channel selector switch; On-Off switch. Color probe controls: Lamp On-Off switch; Brightness control. Exposure probe control: Shutter. Power requirements: 105-125 or 210-250 volts AC, 50/60 Hz, 15 watts max. Cabinet dimensions: 7 1/4" W x 4 1/2" H x 8 1/2" D. Net weight: 4 1/2 lbs.

## NEW! A Color Print Analyzer AND A Professional Color Standard For Only \$4.95!



The new Mitchell Color Wheel System is both a versatile color print analyzer for the amateur and a professional color standard of great accuracy. **For The Beginner.** Following the simple step-by-step manual, you make an excellent color print. The filter pack which made this print stays in your enlarger . . . just print all negatives on this batch of paper using it. You have matched your type of color negative film to the paper, and all of your prints will be great . . . without a large investment or a lot of filter changes. Exposure is calculated with a simple scale in the manual based on the inverse law. That's the system . . . and it works.

Professionals can use the Color Wheel to make that initial fine print required to calibrate their own color analyzers. Prints then produced can be checked by comparison for color accuracy and any color cast can be pinpointed quickly and accurately.

Amateur Or Professional, you'll want this remarkable new system in your darkroom. Order yours now.

**Model PD-48, 1 lb. . . . . \$4.95**

## Put Color Processing in Your Darkroom For Under \$20.00 . . . With The New Heath/Mitchell Color Canoe



- Produces the same high quality color prints as processors costing hundreds of dollars • Simple, 1 piece stainless steel functional design • Very small—easy to move, clean and store • Chemicals never touch the operator's hands • Self-leveling • Uses no more chemicals than other processors • No electrical power • Develops print face up—you can see what's happening • Can be used for B&W, Type R color and film (color, B&W, litho, etc.) • Produces completely even development consistently • Comes in 8x10", 11x14" and 16x20" sizes

At Last, A Color Processor That You Can Afford. The Heath/Mitchell Color Canoe produces the same high quality color prints that you get from any other processor . . . but it does it in a way that can only be called unique . . . and at low cost.

**Here's How It Works.** The print is presoaked in a tray filled with water of the correct developing temperature. Then the print is put face up in the bottom of the Color Canoe, which is floated in the water filled tray. The first solution is poured into the Canoe and forms a long, narrow "puddle"; the temperature is correct due to the heat transfer of the stainless steel construction of the Canoe. First one side of the Canoe is lifted, then the other—the print passes through the "puddle", which is kept level by simple gravity. This rolling action evenly distributes the chemicals over the face of the print. The result is a color print comparable to any processed by other means, and in the same amount of time too. Other benefits . . . the Canoe is small and space saving . . . requires no electrical connections . . . has no parts to wear out . . . is easy to clean . . . and is foolproof.

The Heath/Mitchell Color Canoe . . . a simple, space saving, time saving way to put complete color capability into your darkroom . . . at a cost that makes sending out your color work expensive by comparison.

**PD-18, 8 x 10", 4 lbs. . . . . \$19.95**  
**PD-28, 11 x 14", 6 lbs. . . no money dn., \$5 mo. . . . . \$26.95**  
**PD-38, 16 x 20", 9 lbs. . . no money dn., \$5 mo. . . . . \$39.95**



# New Hobby Kits From The Leader



## NEW Heathkit GD-69 "Thumb Tach" . . . An Accurate, Low

### Cost Tachometer To Measure RPM's On Any Model Engine



Kit GD-69  
**\$19.95**

At Last An Accurate, Inexpensive And Easy Way To Make Sure Your Model Engine Is Giving Maximum Performance . . . the new Heathkit GD-69 "Thumb Tach" Tachometer. The new "Thumb Tach" features all solid-state design and battery operation for long life reliability. Here are all the details on the newest and most functional R/C accessory available.

**Accurate . . . Doesn't Load Engine.** There's no mechanical or electrical connection between your engine and the GD-69 . . . it measures RPM directly using reflected ambient light from the propeller or flywheel of your model. And it will operate with very high accuracy even from several feet away. Use it on model planes, cars, boats; if there's light enough to read the meter, the GD-69 will give you instant, accurate readout in RPM's.

**Dozens Of Uses . . . needle valve adjustments . . . differences in performance from one fuel to another . . . difference in glow plug performance . . . adjust engines to manufacturer's specified RPM for longer life and maximum efficiency . . . select gear trains and props . . . indicates power loss due to aging or worn engine parts . . . shows changes in peak RPM that you can't hear. Especially useful for free-flyers, where a few more RPM can be the difference between winning and losing.**

**Simple To Use.** Just set the handy slide switch to the meter scale you want to use . . . Low (0-5000 RPM) for idle adjustments or High (0-25,000 RPM) for top end RPM readings . . . and aim the lens at the propeller or flywheel. The meter reads directly in RPM. Easily calibrated for single pulse inputs (marked flywheels) and two and three pulse inputs (two & three bladed propellers). A handy pull-out stand lets you use both hands for making engine adjustments too.

**Quality Components And Easy Assembly.** A Zener diode regulated meter circuit and precision switching resistors keep the "Thumb Tach" accurate even with an aging battery. All components mount on a single circuit board for easy 2-3 hour assembly. Raise your engine performance now . . . with the new Heathkit GD-69.

Kit GD-69, 1 lb. . . . . **\$19.95**

**GD-69 SPECIFICATIONS**—Range: 0-5000 RPM & 0-25,000 RPM. Light Intensity: Dark to bright sunlight. Pulse ratio: 1, 2, or 3 input pulses per RPM. Battery requirements: 9 V. NEDA #1604 (not supplied). Finish: Blue wrinkle. Accuracy: 3%. Dimensions: 1-17/32" h x 2 1/2" w x 5 1/2" l. Temperature range: 0° to 160° F. Net weight: 10 oz. less battery.

## NEW Heathkit GD-48 Solid-State Metal Locator . . .

### Dozens Of Uses For Treasure Hunters, Beachcombers, Hobbyists

- All solid-state circuitry with 8 transistors and 1 diode for long trouble-free life and rugged reliability • Convenient battery operation • Completely portable . . . weighs just 3 lbs. • Highly sensitive • Adjustable sensitivity control • Built-in speaker signals presence of metal • Front-panel meter gives visual indication • Built-in headphone jack • Telescoping shaft for height adjustment • Rugged construction • Easy assembly

**A Versatile, Professional Metal Detector At Low Cost.** The new Heathkit GD-48 is designed to perform accurate metal detecting functions comparable with other detectors selling for three times the cost. Whether you're an amateur weekend hobbyist or a professional treasure hunter, the new GD-48 is the metal locator for you. Here's why . . .

**Advanced Solid-State Design.** The new GD-48 employs the induction balance method of detecting buried metal objects. Many locators use a beat frequency system, and the user must depend on noticing a frequency change in the constant tone he hears. With the GD-48, there is no tone until a metal object enters the field of the search coils and upsets the balance between them. Then the built-in speaker produces a loud, piercing sound, which increases in volume as you get closer. For a more accurate indication, use the built-in meter. A front-panel headphone jack lets you eliminate background noise through the use of earphones too. The handy off/on-sensitivity control lets you adjust the GD-48 to detect very small objects or large ones at varying depths. The Metal Locator is so sensitive that it will detect a metal object as small as a dime buried up to half a foot underground, and has a maximum range of around six feet for larger pieces. The all solid-state circuitry means light weight, reliable operation and minimum battery drain. Typical battery life is about 80 hours.

**Easy And Fun To Use.** The new Heathkit GD-48 Metal Locator is very simple to use . . . just turn it on, adjust the height of the search head and walk slowly over the ground you wish to check. It's designed to have virtually perfect balance in your hand. Dozens of uses . . . hunting through ghost towns or abandoned farms . . . searching old battlefields for souvenirs . . . finding buried treasure or Indian relics . . . looking for lost jewelry and coins on beaches . . . locating old property markers . . . buried pipes and conduits.

**Simple To Build.** The circuit goes together on just two small circuit boards, and point to point wiring is kept to a minimum. The search head comes with both coils already accurately aligned and cemented in place. After construction there are only two quick adjustments to make . . . and you're ready. Construction time is around 6-8 hours. Been trying to find a good locator? Look no further . . . the new Heathkit GD-48 is here. Order yours now.

Kit GD-48, Metal Locator only, 4 lbs., no money dn., \$6 mo. . . . . **\$59.95**

GDA-48-1, 9 volt battery, 1 lb. . . . . **\$1.30**

GD-396, Headphones, 2000 ohm (Suporex), 1 lb. . . . . **\$3.50**

**GD-48 SPECIFICATIONS**—Sensitivity: Detects dime-size metal at a depth of 6". Detects quarter-size piece at a depth of 7 1/2". Detects 5" square of aluminum at a depth of 20". Maximum metal depth for detection: 6 feet. Frequency: Search oscillator, 100 kHz; modulation, 650 Hz. Dimensions: Coil housing, 10 1/2" height (extended), 36"; height (collapsed), 26". Power source: 9 volt battery (NEDA #1602 or equivalent). Battery life: 80 hours approx. Net weight: 3 lbs.



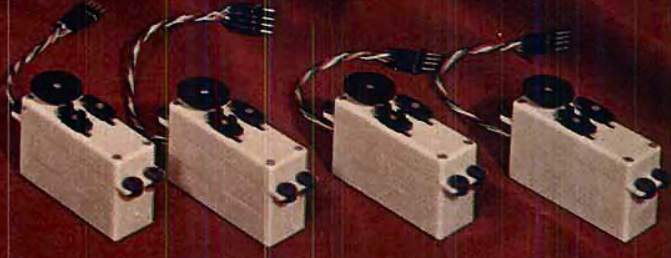
Kit GD-48  
**\$59.95**  
\$6 mo.



Pay Your Heath Account In 30 Days — No Carrying Charges



# Introducing The New Heathkit® GD-19 5-Channel Proportional R/C System



**New—Smaller, Lighter Receiver**    **New—Kraft Control Sticks**    **New—3 Choices of Bands . . .**  
**27, 53, or 72 MHz**    **Only \$219.95 with four servos**

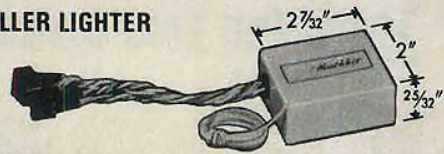
• Powerful transmitter has preassembled, prealigned RF circuitry • New Kraft control sticks with thumb lever coarse adjustment plus Trim Controls that do not change stick centering • Easily reversed servo travel • Switch-locked transmitter prevents accidental turn-on • Collapsible antenna • New flat-pack rechargeable nickel-cadmium transmitter & receiver batteries • New 2.3 oz. miniature receiver features space-age ceramic filters in the IF for high selectivity, extra reliability and no IF alignment ever • Unaffected by noise or temperature variation • Exclusive Heath space and weight-saving military-type terminal blocks • High reliability variable-capacitor servos for extended life • Two linear outputs (one with vertical tabs) plus rotary • Choice of five operating frequencies in each of three bands—27, 53 or 72 MHz • Buy the complete system kit (supplied with a soldering iron) or buy components separately—new receiver is fully compatible with previous Heathkit GD-47 R/C System

**Control You Can Count On . . .** that's the new Heathkit GD-19 5-channel proportional rig. Inside the new slim line transmitter case is a high output, preassembled & prealigned RF circuit for a strong, sure signal. New Kraft sticks deliver smooth, precise control, and servo travel and operational mode are easily changed. Built-in charging circuit charges both receiver & transmitter flat-pack nickel-cadmium batteries with one cord. A double-contact, safety-locked on/off switch insures reliability and prevents accidental turn-on. The new miniaturized receiver in a virtually indestructible nylon case fits almost anywhere, and three ceramic IF filters increase selectivity and eliminate IF alignment forever. A double-tuned front end, RF amplifier and dual AGC combine to give interference free reception too. Four versatile, high reliability variable capacitor servos, exclusive Heath terminal blocks, 16 oz. flying weight, choice of bands and fast, enjoyable assembly round out the picture of the most reliable and advanced R/C system ever produced. Experience a new high in R/C modeling . . . order your GD-19 system now.

**System Kit GD-19**, all system parts; specify freq. desired;  
 11 lbs., no money dn., \$21 mo. . . . . **\$219.95**  
**Kit GDA-19-1**, transmitter, battery, charging cord; specify freq.,  
 5 lbs., no money dn., \$9 mo. . . . . **\$86.50**  
**Kit GDA-19-2**, receiver only; specify freq.,  
 1 lb., no money dn., \$5 mo. . . . . **\$49.95**  
**Kit GDA-19-3**, receiver battery pack only, 1 lb. . . . . **\$9.95**  
**Kit GDA-19-4**, one servo only, 1 lb. . . . . **\$21.50**  
**Kit GDA-47-6**, plug conversion kit for using new GDA-19-2  
 receiver with previous GD-47 R/C System, 1 lb. Available July . . . **\$2.95**

**GD-19 SPECIFICATIONS—TRANSMITTER—RF Carrier frequency:** 1 channel, crystal controlled on 27, 53 or 72 MHz bands (see list below). **Frequency stability:** Within  $\pm .005\%$  on 27 MHz,  $\pm .002\%$  on 53 and 72 MHz bands. **Temperature:**  $0^\circ$  to  $+160^\circ$  F. **RF Output circuit:** Pi-network. **Modulation:** On-off carrier keying. **Approximate current drain:** 100mA on all bands. **Controls:** 5 channels; 4 with trim, on-off switch. **Power supply:** Internal 9.6 volt nickel-cadmium battery. Rechargeable simultaneously with receiver battery at 35 to 40 mA from 120 V. power line. **Dimensions:**  $6\frac{1}{2}''$  H x  $6\frac{1}{4}''$  W x  $2\text{--}7\frac{1}{16}''$  D. **Net weight:** 2 $\frac{3}{4}$  lbs. with battery. **RECEIVER—Received frequency:** 1 channel, crystal controlled on 27, 53 or 72 MHz bands (see list below). **Frequency stability:**  $\pm .003\%$  on 27 MHz,  $\pm .002\%$  on 53 and 72 MHz bands. **Temperature range:**  $0^\circ$  to  $+160^\circ$  F. **Sensitivity:** 5  $\mu$ V or better. **Selectivity:** 6 dB down at  $\pm 4.0$  kHz, 30 dB down at  $\pm 9.0$  kHz. **Approximate current drain:** 6 mA. **Intermediate frequency:** 453 kHz. **Power supply:** Nickel-cadmium battery (Heath GDA-19-3 battery pack);  $+2.4$  V and  $+4.8$  V outputs. Rechargeable simultaneously with the transmitter batteries at 35 to 40 mA from 120 V. power line. **Controls:** On-Off switch. **Dimensions:**  $25\frac{3}{32}''$  H x  $2''$  W x  $2\text{--}7\frac{3}{32}''$  D. **Net receiver weight:** 2.3 oz. **RECEIVER BATTERY—Type:** Rechargeable nickel-cadmium.

## NEW SMALLER LIGHTER RECEIVER



The new Heathkit GDA-19-2 receiver combines famous Heath engineering with extremely small size & weight to deliver unmatched performance & reliability. First, there's ceramic filters for increased selectivity, extra reliability and elimination of alignment forever. Then there's the very small size—the measurements speak for themselves . . . you can put this receiver places others won't fit. No extra weight to carry either—flying weight of receiver and new flat pack battery is only 6.2 oz. Highly sensitive, immune to noise, and unaffected by temperature changes too. Housed in a virtually indestructible, impact resistant nylon case. And the new GDA-19-2 is available on five frequencies in any one of three different bands.

### New Kraft Control Sticks



The use of new Kraft control sticks adds even more performance & reliability to this hot new R/C System. Internal thumb levers on the stick potentiometers make coarse adjustment easy and fast, and the trim controls do not change stick centering. It's easy to change control operation from left to right stick, too. And servo travel can be easily reversed by interchanging two wires on the stick potentiometer.

### Four Variable Capacitor Servos



The new Heathkit GD-19 System comes complete with four high resolution variable capacitor servos that provide superior performance & reliability over wire-wound types. Each servo has two linear outputs (one with vertical tabs) and a rotary output . . . installation schemes are almost unlimited. Housed in a compact nylon case that's built to take tough, rugged service without failure.

### New Flat-Pack Battery



In the air, power is supplied to the receiver by this new, space and weight saving flat-pack nickel-cadmium battery . . . measures only  $\frac{5}{8}''$  H x  $2\frac{1}{8}''$  W x  $2\frac{3}{8}''$  D . . . weighs only 3.9 oz. Keeps your receiver powered for a minimum of four hours when fully charged. On the ground, just recharge by connecting the receiver & battery to the transmitter and plug into 117 VAC source—all with a single cord.

**Voltage:**  $+2.4$  V and  $+4.8$  V outputs. **Current rating:** 500 mA hours. **Dimensions:**  $\frac{5}{8}''$  H x  $2\frac{1}{8}''$  W x  $2\frac{3}{8}''$  D. **Net weight:** 3.9 oz. **SERVO—Input signal:** Pulse: 1-2 milli-seconds wide; 4 volts peak-to-peak. **Thrust:** 3.25 lbs. minimum. **Transit time for  $\frac{3}{8}''$  travel:** 0.7 seconds. **Linear output travel:**  $\frac{3}{8}''$  end-to-end. **Rotary output travel:** Over  $100^\circ$  rotation (end-to-end). **Temperature range:**  $0^\circ$  to  $+160^\circ$  F. **Power (Battery) requirements:** Idling current, 2 mA; stall current, 350 mA; no-load running current, 80 mA typical. **Total gear train backlash:** Less than .002". **Mechanical output:** (1) rotary arm, (1) rotary wheel, (2) linear arms. **Position accuracy:**  $\pm 0.5\%$ . **Dimensions:**  $1\frac{3}{4}''$  H x  $15\frac{1}{16}''$  W x  $3\text{--}1\frac{1}{16}''$  L. (Length includes mounting ears, height includes linear arms). **Net weight:** 2.5 oz. **GENERAL SPECIFICATIONS—Complete Airborne System Weight:** 16.6 oz. (1 receiver, 1 receiver battery, 1 switch, & 4 servos). **Total Flying Time** 4 hours minimum (with batteries fully charged). **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)—72,080, 72,240, 72,400, 72,960 & 75,640. (NOTE: An amateur radio operator's license is required for 6 meter operation. Class C Citizen's band license required for 27 and 72 MHz.)



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## For More Fun This Summer, Build Your Favorite Heathkit Model



The Heathkit "Boonie-Bike" makes the going easy anywhere in the boondocks. Ideal transportation for campers, boaters, vacationers—see page 59.

The living is even easier, even more fun when you add the recreation of building and using one of these Heathkit units. There's a kit for every interest, every age. And they make ideal gifts for Dad and Grad. Open your Heath account and order now.



The Heathkit AR-15—world's most advanced, most praised stereo receiver—see page 26.



The Heathkit GR-43A Ten-Band Portable adds the deluxe listening pleasure of AM sports, FM fine music, and exciting short-wave to your summer leisure—see page 19.



The Heathkit GR-17 AM-FM Portable—ready when you are—to go anywhere—to give you good listening—see page 23.



The Heathkit/Thomas Theater Organ—build it during your vacation—enjoy it forever—see page 11.



The Heathkit 12" Portable TV—goes anywhere—plays on AC, 12 V, boat or car battery, or its optional rechargeable battery pack—perfect for camp, boat, beach, poolside—see page 23.

### CHECK THESE SPECIAL SUMMER SALE PRICES

SAVE \$5—Last call on the AA-13 Mono Amplifier, p. 35.

SAVE \$10—Summer sale on the AD-17 Stereo Compact, p. 28.

SAVE UP TO \$25—Summer sale on Guitar Amps & Speakers, pp. 12-13.