

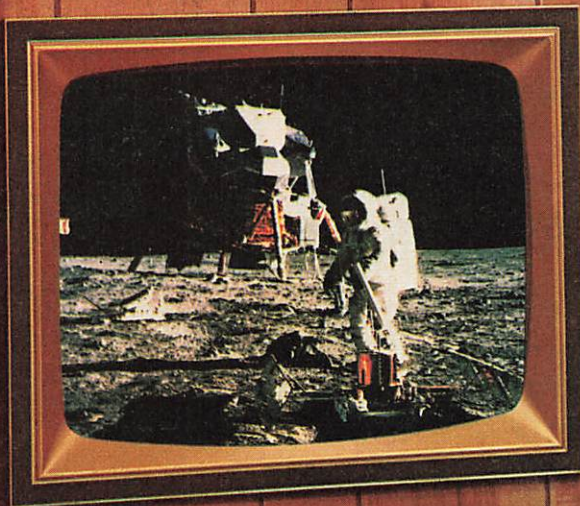
Make it a
HEATHKIT®
SUMMER



Heath Company — a Schlumberger company • Benton Harbor, Michigan 49022

Catalog supplement 800/03.
Factory mail order prices
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New Improved Heathkit® AFT "681" ... New Lower Prices



NEW LOWER PRICES
 Save \$30 on GR-681
Now Only \$469⁹⁵
 Save \$55 on GR-681MX
Now Only \$479⁹⁵



**Deluxe Big Screen Color TV . . . With Automatic Fine Tuning . . .
 Cable Type Remote Control . . . The Nationally Advertised "Brighter" Picture Tube . . .
 Plus Heath Exclusives That Keep It Working "Like New" For Years**

- 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 color tube with 295 sq. inch viewing area, and anti-glare safety glass
- New improved phosphors for brighter, livelier colors
- Automatic degaussing
- Exclusive built-in self-servicing aids
- 3-stage video IF strip reduces interference, improves reception
- New improved retrace 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.

New Improved Circuitry. Recent circuit improvements in the "681" provide increased video frequency bandwidth for clearer, sharper, more detailed pictures.

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 82 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 on next page.

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 every-time you turn the set on from a cold start, eliminates manual degaussing when you move the set too.

Dynamic Pin-cushioning 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.

New Brighter Picture Tube With Anti-Glare Face. Improved phosphors in the tube provide more luminance and greater contrast. And its etched face reduces reflections from lamps and windows . . . a feature not available on most other brands, but with Heath, it's standard.

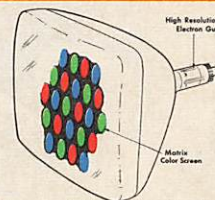
Choice Of Installation . . . mount your new "681" in a wall, your own custom cabinet or one of the beautiful Heath factory assembled cabinets shown on the next page. And the universal main control panel can be mounted at the top, bottom or right side of the chassis for custom mounting.

Easy To Build . . . all critical circuits (AFT, VHF & UHF tuners, 3-stage IF strip and high voltage supply) are pre-assembled & pre-aligned.

Kit GR-681, all parts including chassis, tubes, mask, UHF & VHF tuners, AFT, cable-type remote control and 6" x 9" speaker, 135 lbs. **only \$469.95**
Kit GR-681MX, all parts with Matrix picture tube, 135 lbs. . . **only \$479.95**

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. Chassis & Tube Dimensions Only: 20 1/2" H x 25 1/8" W x 19 3/8" D. Control panel assembly: 6 1/2" H x 7 7/8" H x 9" D. Required installation clearances are given in spec sheet & manual.

Optional New RCA Hi-Lite Matrix Tube For Your New "681" Or "295" Delivers Increased Resolution and Brightness . . . and Now The Manufacturer Has Reduced Prices Substantially



The Industry's Sharpest, Brightest, Color Picture. The new electron gun in this premium-quality RCA tube focuses the electron beam on the phosphor dots more precisely . . . gives a 25% increase in resolution for a sharper picture. The black matrix around the phosphor dots in this new tube eliminates reflected light and permits the use of a higher transmission glass for greater light output. Order your new "681" or "295" with the new top-of-the-line RCA Matrix tube.

Kit GR-681 MX, all parts with new "Hi-Lite" Matrix picture tube, 135 lbs (REA or Mtr. Frt.) . . . **now only \$479.95**
Kit GR-295 MX, all parts with new "Hi-Lite" Matrix picture tube, 131 lbs (REA or Mtr. Frt.) . . . **now only \$429.95**

These Handsome Factory-Assembled Cabinets Fit Either "681" or "295" (New AC Interlock Provided)



Mediterranean Oak Cabinet.....\$124.95
 Factory assembled of selected furniture hardwoods, finished in luxurious oak; styled in newest Mediterranean motif. Statuary bronze trim handle. Overall dimensions 45½" W x 20"D x 31" H. Assembled GRA-295-4, 85 lbs... Express or motor freight.....\$124.95

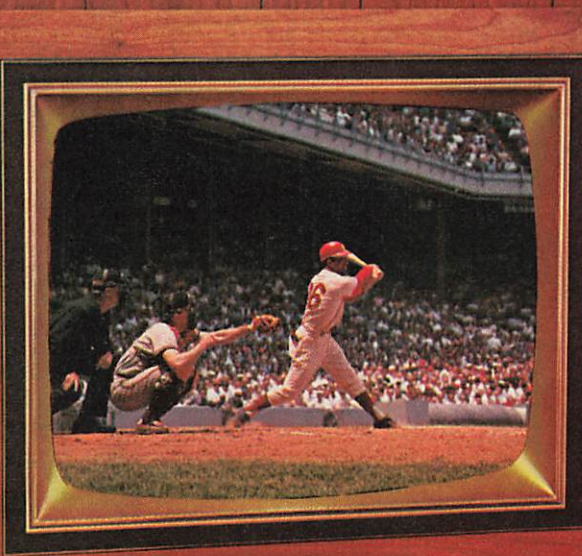


Deluxe Early American TV Cabinet. \$109.95
 Made of a special combination of veneers and solids... all beautifully finished in popular Salem-Maple. GR-295 speaker and convergence panel mount behind grille cloth on right side. Measures 19¼" D x 31" H x 36" W. Assembled GRA-295-3, 67 lbs... Express or motor freight.....\$109.95



Contemporary Styled Walnut Cabinet \$64.95
 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.....\$64.95

Now Heathkit® "295" Color TV Costs Less



NEW LOWER PRICES
 Save \$30 on GR-295
 Now Only **\$419.95**
 Save \$55 on GR-295MX
 Now Only **\$429.95**

All-Channel, Big Screen Color TV . . . With Recently Improved Circuitry For Sharper, More Detailed Pictures . . . And The Sensational New Bright Tube . . . All At Lower Than 1969 Prices

- 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

Exclusive Features That Can't Be Bought 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 \$200 savings in service calls. **New Brighter Color Picture Tube.** For brighter pictures, better color . . . and it has etched-face safety glass . . . to cut glare and reflections. Heath supplies it . . . at no extra cost.

Exclusive Heath Magna-Shield . . . surrounds the entire picture tube to protect against stray magnetic fields and improve color purity. Automatic Degaussing "cleans" the picture everytime you turn the set on from a cold start.

Convergence Control Board . . . for fast, easy dynamic convergence secondary adjustment anytime you decide they are needed. Mounts behind "tilt-out" speaker.

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.). **\$419.95**
Kit GR-295MX, as above except with new "Hi-Li" Matrix picture tube, 131 lbs. . . . **\$429.95**

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. **Chassis & Tube Dimensions Only:** 20½" H x 25½" W x 19½" D. Control panel assembly: 6½" W x 7½" H x 7" D. Required installation clearances are given in spec sheet & manual.

New Improved Circuitry. Recent circuit improvements in the "295" provide increased video frequency bandwidth . . . give you clearer, sharper, more detailed pictures.

Reception Is Simulated On All Sets Shown On These Pages

Control Your Heathkit Color TV The Easy Electronic Way With This Wireless Remote Control

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.

- Kit GRA-681-6, use with Heathkit GR-681 Color TV, 9 lbs. **\$64.95**
- Kit GRA-295-6, use with Heathkit GR-295 & GR-25 Color TV's 9 lbs. **\$69.95**
- Kit GRA-227-6, use with Heathkit GR-581, GR-481, GR-227 & GR-180 Color TV's, 8 lbs. **\$69.95**



All Kits On These 2 Pages Shipped REA Or Motor Freight Except GRA-681-6, -295-6, -227-6 Are Mailable

Improved

**Factory Assembled Cabinets
For Your "581" Or "227"
(New AC Interlock Provided)**



**New
Lower Price
Save \$20
on "581" or "227"**



Contemporary Walnut Cabinet
Factory assembled of fine furniture grade hardwoods and finished in rich walnut. Measures 31 1/4" W x 29 1/2" H x 19 1/2" D. Assembled GRA-227-1, 54 lbs. \$64.95

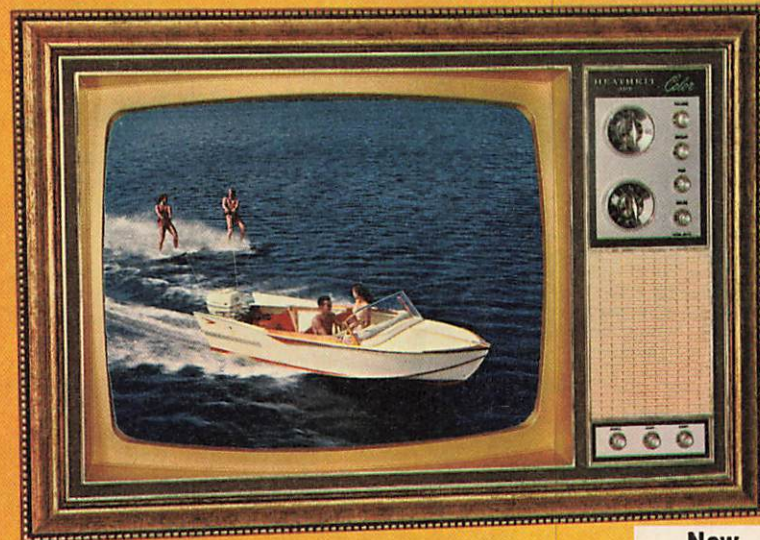


**Table Model TV Cabinet & Cart
Buy Both & Save \$4.95**

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 18-9/16" D x 29-11/16" W x 20-13/16" H. Or order the walnut-trimmed roll-around cart and enjoy portable convenience too.
GRA-227-3, stain-resistant cabinet, 45 lbs. \$39.95
GRA-227-4, roll-around cart, 18 lbs. \$19.95
GRS-227-5, cart & cabinet combo, 63 lbs. \$54.95



Exciting Mediterranean Oak
Beautiful Mediterranean motif factory assembled and finished in luxurious oak. 40" W x 19 1/2" D x 29" H.
Assembled GRA-227-2, 70 lbs. \$109.95



**Now
As Low As
\$299⁹⁵**



**Factory-Assembled Cabinets
For Your New "481" or "180"
(New AC Interlock Provided)**



**Table Model TV Cabinet & Cart
Buy Together & Save \$4.95!**
Handsome walnut-grained vinyl-clad wood cabinet . . . measures only 18 1/4" H x 27 3/4" W x 19 1/2" D with rubber feet.
GRA-180-3, cabinet only, 36 lbs. \$27.50
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. \$42.50



**Reception Is Simulated
On All Sets Shown**

Contemporary Walnut Cabinet
Has a beautiful oil-rubbed walnut finish. Measures a compact 18 1/4" D x 28 1/4" W x 29" H.
Assembled GRA-180-1, 41 lbs. \$54.95
(REA or motor freight)



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 1/4" D x 28 1/4" W x 31 1/4" H.
Assembled GRA-180-2, 48 lbs. (REA or motor frt.) \$94.95



Heathkit® Color TV's At Lower Cost...

Now—The New, Improved GR-581 & GR-227 Have Sharper, Clearer Pictures . . .

Plus The New Brighter Picture Tube . . . All This And Lower Prices Too!

Features Common To Both "581" & "227" Models

- 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 • 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 pincushioning 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

The Best Is Now Better Than Ever . . . And Lower Cost Too! Both the Heathkit "581" and "227" have recently improved circuitry which provides increased video frequency bandwidth . . . gives you clearer, sharper, more detailed pictures. And lower prices from the picture tube manufacturers let us reduce prices on your Heathkit Color TV.

Better Than Ever Picture Tube. It's the big news in color TV . . . improved phosphors for more light and contrast. And Heath buys the premium etched-face tube that cuts glare. It's on all 581 & 227 sets.

Heathkit Exclusive—Add Wireless Remote Control Anytime! Like all Heath Color TV's, the "581" and "227" models are designed so that you can add the pleasure and convenience of wireless remote control at any time . . . even after you've been enjoying your set for some time.

Heathkit Exclusive—Choice Of Installation. Your new "581" or "227" will install three different ways . . . put it in a wall or build it into a bookcase for a really "custom" looking installation . . . in a favorite old B&W cabinet . . . or in any of the three handsome, factory assembled Heath cabinets.

Heathkit Exclusive—Built-In Self-Servicing Capability. Only Heath Color TV is designed to be serviced by its owner . . . a feature that can add up to sizable savings. The readily accessible convergence control panel & built-in

dot generator give you fast, easy dynamic convergence anytime you decide it's necessary . . . lets you do this periodic adjustment required of all color TV's. The famous Heath manual gives detailed information so you can keep your set in peak operating condition always.

The "581" & "227" Have These Advanced Performance Features . . . an improved low voltage power supply providing more B+ for better operation . . . automatic degaussing that demagnetizes your set every time it's turned on from a cold start . . . the exclusive Heath Magna-Shield that surrounds the entire set and eliminates stray magnetic fields that ruin color purity . . . Gated Automatic Gain Control and an automatic color control circuit that reduce color fading and insure steady, jitter-free pictures . . . 300 ohm & 75 ohm VHF antenna inputs . . . two hi-fi sound outputs for listening thru the built-in 4x6" speaker or thru your hi-fi system . . . plus preassembled, prealigned VHF & UHF tuners, 3-stage IF assembly and high voltage power supply for fast, easy assembly.

New "581" Includes Automatic Fine Tuning

In addition to all the standard Heathkit Color TV features mentioned above, the new "581" also includes Integrated Circuit AFT that eliminates manual fine tuning on all VHF/UHF channels. And it comes factory assembled & tested for even easier assembly.

Kit GR-581, all parts including chassis, tubes, mask, UHF & VHF tuners, AFT & special 4x6" speaker, 114 lbs. (REA or Motor Frt.) . . . only \$399.95

Kit GR-227, all parts including chassis, tubes, mask, UHF & VHF tuners and special 4x6" speaker, 114 lbs. (REA or Motor Frt.) . . . only \$359.95

Kit GRA-227-6, wireless remote control, 8 lbs. \$69.95

GR-581 SPECIFICATIONS—Same as GR-227 below except with Automatic Fine Tuning on all VHF/UHF channels.

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 ± 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— ± 2 dB, 50-10,000 Hz; harmonic distortion—less than 3%. Power requirements: 110-130 V., 60 Hz AC 330 watts. Chassis & Tube Dimensions Only: 19 1/4" H x 27 5/8" W x 18" D. Required installation clearances are given in spec sheet & manual.

Now—New, Improved Heathkit GR-481 & GR-180 . . . Have Sharper,

More Detailed Pictures . . . Plus New Brighter Picture Tube . . . And Cost \$30 Less

Features Common To Both "481" & "180" Models

- 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 • 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 at any time—a Heathkit exclusive • 2-year warranty on picture tube, 90 days on all other parts • Tubes alone list over \$245

Your Best Buy In Color TV Now Costs Even Less. Both the "481" & "180" have the same high performance features as the "295" (see page 3) except for the 180 sq. in. rectangular picture tube. New lower prices from picture tube manufacturers let us offer even greater savings on your Heathkit Color TV.

New Improved Circuitry. The "481" & "180" have recent circuit improvements that provide increased video frequency bandwidth . . . deliver clearer, sharper, more detailed pictures.

High Performance Color Picture Tube At No Extra Cost. The same quality, etched-face tube—only smaller—as on the larger Heath sets. You'll like the improved color, higher contrast and low glare.

Exclusive Heathkit Self-Servicing Features . . . the built-in dot generator plus full color pictures & instructions in the manual let you do the set-up, convergence and periodic touch-up when required.

Add Wireless Remote Control Anytime . . . only the unique Heathkit design lets you add wireless remote control at any time after purchase.

Three-Way Installation . . . install your new "481" or "180" in a wall or bookcase . . . in a favorite old B&W cabinet . . . or choose any of the smartly styled, factory assembled Heath cabinets on this page.

Advanced Features Insure Peak Performance. Like all Heath Color TV's, the "481" & "180" include the exclusive Heath Magna-Shield that surrounds the picture tube to keep out stray magnetic fields that ruin color purity . . . automatic degaussing everytime you turn your set on from a cold start . . . hi-fi sound output . . . two VHF antenna inputs . . . and much more.

Easy Assembly. All critical circuits come factory assembled & aligned.

Additional features of the Heathkit "481"

The new Heathkit "481" includes all of the standard features mentioned above plus Automatic Fine Tuning on all 82 UHF and VHF channels for perfect pictures always without having to manually fine tune each time you change channels . . . the state-of-the-art AFT module, using advanced Integrated Circuits, does it all. And the AFT module is factory assembled and aligned for even easier assembly.

Whichever model you choose . . . the "180" or "481", you can congratulate yourself on knowing a truly remarkable value. Order yours today.

Kit GR-481, all parts including chassis, tubes, mask, UHF & VHF tuners, AFT & special 4x6" speaker, 102 lbs. (REA or Motor Frt.) . . . only \$329.95

Kit GR-180, all parts including chassis, tubes, mask, UHF & VHF tuners and special 4x6" speaker, 102 lbs. (REA or Motor Frt.) . . . only \$299.95

Kit GRA-227-6, Wireless remote control, 8 lbs. \$69.95

GR-481 SPECIFICATIONS—Same as GR-180 below except with Automatic Fine Tuning on all VHF/UHF channels and full wave bridge power supply.

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. Chassis & Tube Dimensions Only: 17 1/4" H x 25 5/8" W x 17 1/2" D. Required installation clearances are given in spec sheet & manual.

Solid State Portables



GR-104A
\$124⁹⁵
 (less battery pack)



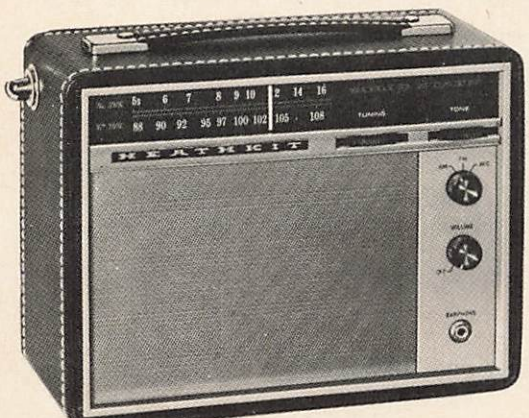
Deluxe 12" Diagonal B & W Transistor Portable TV

- 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, 2 through 83 • UHF dual speed tuning • VHF "memory" fine tuning—no need to fine 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. . . \$124.95
 Kit GRA-104-1, rechargeable battery pack and outdoor sun shield, 9 lbs. . . \$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.



GR-17
\$43⁹⁵

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

- 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, easy 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, 5 lbs. . . \$43.95
 Model GRA-43-1, Converter/Charger for 117 v. 60 Hz AC, 1 lb. . . \$6.95

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: Less than 5 microvolts per meter 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 of 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).

No Need To Hold This AM Portable To Your Ear . . . It's Got Big Sound Miniatures Can't Deliver

- 6 silicon transistor, 2 diode circuit gives 8 transistor performance • 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 • Hand-some black simulated leather case • Fast, simple circuit board construction

Kit GR-24, 5 lbs. . . \$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).

Yes You Can! Build This AM Portable. See How Easy It Is. Includes Batteries & Tools

- 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. . . \$21.95



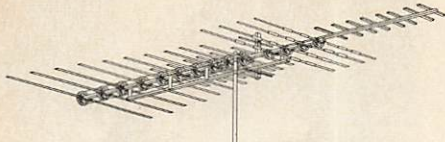
GR-24
\$28²⁵



GR-151A
\$21⁹⁵

Open Your Heath Account—See Order Blank For Details

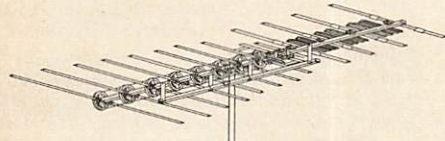
For Best TV Reception...Get A New Heathkit® Antenna



New Heath 3-Way Coaxial Antenna For Deep Fringe Reception

- 55 elements for exceptional reception on all TV & FM channels • Very high front to back ratio for rejection of unwanted signals • High efficiency • Weather-resistant • Extra high gain • Easy assembly • 75 ohm coaxial cable recommended

GD-239, 18 lbs. (less mast & coaxial cable). \$49.95
GD-239 SPECIFICATIONS—Elements: Active—12; Passive—43. Front-To-Back Ratio: 19. Usable Distance: (Mileage over flat terrain with best reception conditions) VHF—180 mi.; UHF—100 mi. Matching Transformer: Included. Length: 176". Width: 102". Tuning Radius: 107".



Heath VHF/UHF/FM Coaxial Antenna For Fringe & Near-Fringe Areas

- 33 elements for peak performance • Flat response across the entire TV/FM band • High gain • Excellent front-to-back ratio • Superior efficiency • Rugged construction • 75 ohm coaxial cable gives best performance

GD-128, 15 lbs. (less mast & coaxial cable). \$34.95
GD-128 SPECIFICATIONS—Elements: Active—10; Passive—23. Front-To-Back Ratio: 18. Usable Distance: (Mileage over flat terrain with best reception conditions) VHF—150 mi.; UHF—80 mi. Matching Transformer: Included. Length: 120". Width: 102". Tuning Radius: 80".



Heath City-Suburban Antenna Receives UHF/VHF/FM

- 17 elements give reception up to 100 miles away under ideal conditions • High directivity eliminates reception-destroying reflected signals • Flat response for sharp color fidelity & excellent stereo FM • 75 ohm coaxial cable recommended

GD-138, 10 lbs. (less mast & coaxial cable). \$24.95
GD-138 SPECIFICATIONS—Elements: Active—10; Passive—7. Front-To-Back Ratio: 17. Usable Distance: (Mileage over flat terrain with best reception conditions) VHF—100 mi.; UHF—60 mi. Matching Transformer and frequency-splitter: Included. Length: 111". Width: 102". Turning Radius: 79".

Save \$8

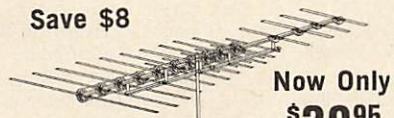


New Heath VHF/FM Coaxial Antenna For Deep Fringe Areas

- Outstanding VHF/FM reception from 31 elements • Excellent rejection of unwanted signals • High gain and directivity • Rugged construction • Fast, simple assembly • Use 75 ohm coaxial cable for best results

GD-229, 18 lbs. (less mast & coaxial cable). \$39.95
GD-229 SPECIFICATIONS—Elements: Active—10; Passive—21. Front-To-Back Ratio: 20. Usable Distance: (over flat terrain with best reception conditions) 200 mi. Length: 202". Width: 102". Turning Radius: 107".

Save \$8



New Heath Coaxial High Gain VHF/FM Fringe Antenna

- High gain for excellent fringe area VHF/FM Reception • 23 elements • Very directional • High front-to-back ratio for rejection of unwanted signals • Weather resistant • Use 75 ohm coaxial cable for best installation

GD-219, 15 lbs. (less mast & coaxial cable). \$29.95
GD-219 SPECIFICATIONS—Elements: Active—10; Passive—13. Front-To-Back Ratio: 20. Usable Distance: 180 mi. (over flat terrain with best reception conditions). Length: 142". Width: 102". Turning Radius: 88".

Heath VHF/FM Coaxial Antenna For City-Suburban Areas

- Excellent VHF/FM antenna for areas where signal level is low • Receives up to 150 miles away depending on conditions • High gain & good directivity • Flat response • Rugged, weather resistant construction • 75 ohm coaxial cable installation recommended

GD-158, 14 lbs. (less mast & coaxial cable). \$24.95
GD-158 SPECIFICATIONS—Elements: Active—8; Passive—9. Front-To-Back Ratio: 19. Usable Distance: (over flat terrain with best reception conditions) 150 mi. Length: 120". Width: 102". Turning Radius: 79".

CLOSE OUT SAVE \$5	Discontinued Suburban-Fringe Antenna— Limited Quantity Has 10 snap-in-place elements for good VHF TV and FM radio reception to 60 miles. Was \$19.95 . . . Now Save \$5. GD-168, 9 lbs. (less mast & coaxial cable) \$14.95
Only \$14.95	

NEW! Spaulding "Strato-Towers" To Mount Your Heath TV Antenna

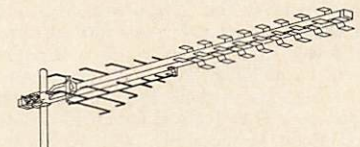
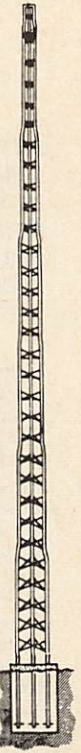
24 ft.* Model GDP-249 \$44.65	32 ft.* Model GDP-259 \$58.00
40 ft.* Model GDP-269 \$75.95	48 ft.* Model GDP-279 \$95.70

*Height does not include 8 ft. mast.

- Complete tower package with 4' concrete base stubs, mast kit assembly, rotor plate, 8 ft. mast and all hardware
- Self-supporting—no guy wires needed
- All galvanized steel riveted construction • Accepts any standard rotor • "X" brace design gives greater strength—braces riveted in center as well as ends • Beaded channel leg design reduces danger of twisting • All towers shipped freight collect from Frankfort, Indiana in nested 8 foot sections

Now you can mount your new Heath TV antenna at a height that will assure improved reception . . . on a new "Strato-Tower" from Spaulding, the world's largest manufacturer of quality TV towers. Four different heights are offered . . . from 24 to 48 feet . . . and each is a complete package including tower, 4' concrete base stubs, mast kit assembly, 8 ft. mast and hardware. For maximum performance, put your antenna on a new Spaulding tower.

GDP-249, 73 lbs., 24' tower pkg. \$44.65
 GDP-259, 101 lbs., 32' tower pkg. \$58.00
 GDP-269, 139 lbs., 40' tower pkg. \$75.95
 GDP-279, 181 lbs., 48' tower pkg. \$95.70



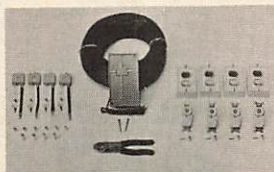
Heath UHF Antenna For City-Suburban Locations

- High gain, 19 element antenna for reception out to 60 miles under ideal conditions • Broad-band periodic design by Jerrold • May be easily combined with any VHF antenna • 75 ohm coaxial cable recommended for installation

GD-188, 4 lbs. (less mast & coaxial cable). \$9.95
GD-188 SPECIFICATIONS—Elements: Active—11; Passive—8. Front-To-Back Ratio: 19. Usable Distance: 60 mi. (over flat terrain with best reception conditions). Length: 46". Width: 8". Turning Radius: 44".

Distribution Systems, Rotors, Accessories

4-Way Coaxial Distribution Kit ... Gives You TV or FM In 4 Rooms At Once



Now enjoy color and B&W TV or FM stereo anywhere in your house, with this Heathkit Distribution System. The heart of the system is the Jerrold TAC-4 distribution amplifier which takes a single coaxial input from any all-channel antenna (such as the GD-239, -128 or -138), amplifies all signals & feeds four coaxial outlets anywhere in the house. Each line terminates at a surface mounted outlet box or mount them flush in standard electrical boxes if desired. The kit has everything you need for a complete installation—200 ft. of color coaxial cable, connectors & crimping tool and four matching transformers/frequency splitters.

GD-248, 14 lbs. \$89.95

Reception Proven Coaxial Cable For Color TV

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/Splitter

Matches one all-channel 75-ohm coaxial downlead to 300 ohm VHF and UHF inputs on TV set. Comes with extra coax connector, cable clamp, mounting hardware and instructions.

GD-298, 1 lb. \$3.95

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.)

GDP-214, 11 lbs. \$23.45

Cornell-Dubilier AR-33 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.)

GDP-258, 16 lbs. \$49.95

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. Shipped REA or Mtr. Frt. . . . \$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

Antenna Chimney Mount

Nothing extra to buy. 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. Shipped REA or Mtr. Frt. . . \$6.95

Premium 82-Channel Jerrold-Designed Antenna

Ideal where 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 and are tarnish resistant.

GD-198, 3 lbs. \$9.95

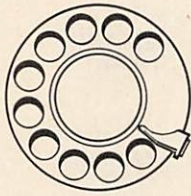
All Channel Coupler With FM Tap

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

HEATHBITS

NOTICE:
616-983-7381
IS YOUR NEW
DIRECT NUMBER
FOR FASTER
ORDER SERVICE



From 8:00 a.m. to 4:30 p.m. EST, this new number will put your call for kits or parts on time payment, COD, or commercial accounts directly through to the order desk . . . without the delay of going through a switchboard.

After 4:30 p.m. EST and on weekends or holidays, call 616-983-3921 to place your order with our recording Electronic Secretary.

Sorry, but telephone calls to the new direct order desk number cannot be transferred. So if you need product information, kit building assistance, or servicing information—and would also like to place an order—please call our regular number (616-983-3961). Our switchboard operator will connect you with the right party and arrange transfers.

VACATIONING IN MICHIGAN? VISIT US

Our scheduled plant tours begin June 1st, daily at 10:00 a.m. and 2:00 p.m. EST, Monday through Friday and continue through the summer until August 31st. If you wish, you can purchase kits before or after your tour at low mail-order prices in our sales room located in the front of the building. Sales room hours are 8:30 to 5:00 Monday through Friday; and Saturday, 9:00 to 3:00. The Heath Company is located on Hilltop Road at the south edge of St. Joseph, just 3.6 miles north of exit 23 of I-94 from Chicago . . . or 2 miles from exit 27 if you are coming from Detroit on I-94.

HEATH TO DISPLAY AT THESE SHOWS

June 13 & 14. Spokane Internats R/C Show. Air Nat. Guard Base, Spokane, Washington. Heath to show Spectre R/C car and GD-57 R/C system.

June 13 & 14. Atlanta Hamfest. North Dekalb Shopping Center, Atlanta, Georgia. See all Heath ham gear including SB-220 Linear and SB-102.

June 20-25. Nat. Expo. of American Society of Radiologic Tech., Fontainebleau Hotel, Miami, Florida. The Heath IDW-39 X-Ray Machine Simulator will be on display on the lobby level.

August 25-28. West. Elec. Show & Convention. Hollywood Park and Sports Arena, Los Angeles, California. A chance to see all Heath products.

Sept. 15-18. 14th Nat. Chem. Expo. Conrad Hilton Hotel, Chicago, Illinois. See Heath's spectrophotometers, pH meters, digital electronics.

Sept. 25-27. 1970 National ARRL Convention. Statler Hilton Hotel, Boston, Massachusetts. All Heath amateur radio gear on display.

Nov. 18-20. Eastern Analytical Symposium. Statler Hilton Hotel, New York City, N.Y. Heath Spectrophotometers, pH meters, polarography lab, Analog-Digital Designer, etc.

JOB OPPORTUNITIES AT HEATH

Electrical Engineers for design and development in all product lines. Background should include B.S. in electrical engineering and solid-state circuitry experience or education. We prefer experience.

Electronics Technicians with two years electronic, vocational or military service school training . . . or equivalent experience to do service testing, trouble-shooting, repair and laboratory design.

You will receive a good salary and generous fringe benefits while working in a vacation area on the eastern shore of Lake Michigan. If interested, write in confidence to: Personnel Department, Heath Company, Benton Harbor, Michigan 49022.



PRESIDENT'S LETTER

Dear Friends:

The arrival of summer is a welcome event for every family. And with vacation time just around the corner, don't forget that we'd be happy to have you and your family stop and visit us if you happen to be in our area.

Incidentally, the state of Michigan remains on Eastern Standard Time the year 'round. So if you happen to be coming from the west this summer, the time in Benton Harbor is the same as in Chicago. If you're coming from the east, we're an hour earlier than New York time.

Speaking of summer, not too many years ago our Heathkit products were more oriented toward indoor hobbies and activities . . . test instruments, hi-fi, ham gear and the like. Today, our product line has been expanded to satisfy a whole new horizon of outdoor sport, hobby, and recreational activities.

Take the Heathkit GT-18 Boonie-Bike on page 49 . . . it's not only a peck of fun to drive as an all-season trail and snow bike . . . it represents an outstanding dollar value as well.

One of the most popular outdoor activity kits we've ever offered is the Heathkit GD-48 Metal Locator, located on page 57.

You may be familiar with the outstanding line of Heathkit marine electronic equipment. You'll be interested to know that the line now includes a portable fish spotter which locates fish down to 200 feet . . . and takes just a few hours to assemble. It's the Heathkit MI-29 on page 11.

This summer, we also make it possible for you to join the newest and fastest-growing R/C hobby at a truly modest cost. You'll find a complete description of the new Heathkit "Spectre" radio controlled model car on page 63.

It all adds up to a great Heathkit summer '70! We hope you'll come our way. In any case, have a safe and happy vacation.

Sincerely,

D. W. NURSE, President

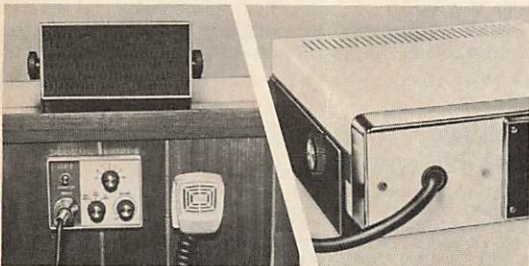
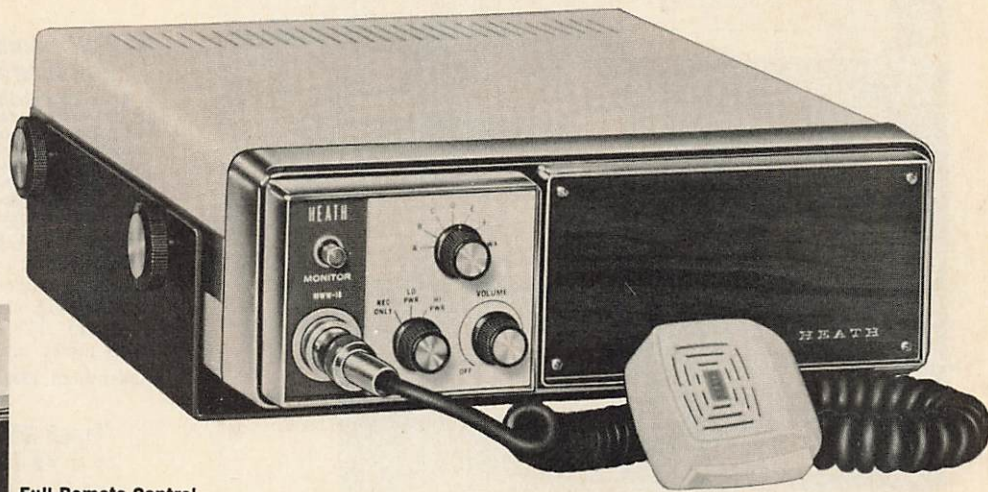
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Shortwave Receivers	GR, SB
Accessories	SBA, GD, GDP
Portable SW Receiver	GR
Monitor Receivers	GR
SCIENTIFIC INSTRUMENTS	
Spectroscopy Systems	EU
Modular Digital Systems	EU
Digital pH Meter	EU
STEREO/HI-FIDELITY	
Receivers	AR
Credenza	AD
Amplifiers	AA
Tuners	AJ
Stereo Compact Systems	AD
Turntables, Cartridges	ADP, GD
Speakers, Systems	AS
Cabinets	AE
Tape Player	GD
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TEACHING SYSTEMS	
Digital Electronics	EU
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TELEVISION SETS	
Deluxe Color TV	GR
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Tube Testers	IT, TT
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Power Supplies	IP
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Vectorscope	IO
Impedance Bridge	IB
Substitution & Decade Boxes	IN
Probes	39, 44
TRAIL & SNOW BIKE	
	GT

HEATHKIT ELECTRONIC CENTERS (Sales & Service)

Anaheim, Calif. 92805 530 E. Ball Road Phone: 714-776-9420	Minneapolis area Hopkins, Minn. 55343 101 Shady Oak Road Phone: 612-936-6371
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Cleveland, Ohio 44129 5444 Pearl Road Phone: 216-886-2590	Denver, Colorado 80212 5940 W. 38th Ave. Phone: 303-422-3408
Detroit, Michigan 48219 18845 W. 8 Mile Road Phone: 313-535-6480	San Diego area La Mesa, Calif. 92041 8363 Center Drive Phone: 714-461-0110
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Houston, Texas 77027 3705 Westheimer Phone: 713-823-0990	Seattle, Wash. 98121 2221 Third Avenue Phone: 206-682-2172
Los Angeles, Calif. 90007 2309 S. Flower St. Phone: 213-749-0261	Washington, D.C. area Rockville, Md. 20852 5542 Nicholson Lane Phone: 301-881-5420
Milwaukee, Wis. 53216 5215 W. Fond du Lac Phone: 414-873-8250	All Heathkit Electronic Centers are units of Schlumberger Products Corporation and prices are slightly higher.
Long Island, N.Y. area Westbury, L. I.—August	Heathkit Electronic Centers opening in 1970: Dallas, Texas Early July
Authorized Service Centers (Service & Parts) United Sound & Television Co. (three locations) 5063 Venice Blvd. Los Angeles, Calif. Phone: 213-933-8141	2010 W. Lincoln Ave. Anaheim, Calif. Phone: 714-535-2151 2218 E. Colorado Ave. Pasadena, Calif. Phone: 213-793-8141

Heath 25-Watt VHF/FM Radiotelephone... Only \$499.95



Full Remote Control Capability At Lowest Cost

FCC Type-Accepted . . . Dual RF Receiver Circuitry . . . Six Channels . . . Crystal Filter & Discriminator . . . Owner Can Install When Ordered With Crystals

- New MWW-18 completely meets all FCC requirements for VHF/FM radiotelephones
- State of the art design using all solid-state devices with tubes in transmitter output stage
- Small size, light weight for versatile installation
- Unique plug-in control head allows fast, low cost remote control
- True 6-Channel capability lets you place any or all channels in either low or high band . . . eliminates wasting channels on high band Public Correspondence capability you may not need
- A seventh Receive-only channel for monitoring ESSA weather broadcasts
- Maximum legal 25 watt power output plus low power (1 watt) output for in-harbor use
- Extremely low standby current drain
- Modular circuit board construction, ingenious design and detailed service manual for fast, low cost maintenance
- Quick-disconnect cables & mounting hardware permits easy removal
- Designed to withstand rugged salt atmosphere . . . stainless steel hardware, heavy cadmium plated chassis, meets all EIA Standards for temperature and vibration
- Factory assembled and tested
- Complete with crystals for channels 6 & 16 (ship-to-ship safety & national calling channels)
- Microphone, speaker & gimbal mount included
- FCC type-accepted for private & commercial (party boat) use
- Optional Remote Control, Handset & antennas available
- Fast, easy owner installation when ordered with crystals installed for channels of your choice
- The finest VHF/FM Radiotelephone available

Discover The Uncongested, Interference-Free Communications of the new VHF Marine Band . . . with the new Heath MWW-18 VHF/FM Radiotelephone. It's one of the few available that is type-accepted under the new FCC Narrow Band rules. Compare it to similar units . . . you'll see that the Heath Radiotelephone has more value built in.

True 6-Channel Capability. The VHF Marine Band is split into two sections—the Low Band & the High Band. Of 10 available channels on the High Band, 9 are for "Public Correspondence" use . . . marine radiotelephone to land telephone lines. Few boaters need more than one or two channels in this service . . . yet most other VHF/FM radiotelephones obligate half of their channels to the High Band . . . and thus cuts the real channel capacity in half. The Heath MWW-18 lets you decide in what band you want your channels. Put them all in Low Band . . . all in High Band . . . or split them between the two bands in the combination you wish. Heath gives you the choice. And the MWW-18 also includes a seventh receive-only channel for monitoring the VHF weather station broadcasts.

Full Remote Control Capability For Only \$19.95! The unique plug-in control head allows full remote control at a fraction of the cost of other radiotelephones. The Remote Accessory includes 15' of cable to connect the control head to the radiophone and all mounting hardware for either flush or universal gimbal mounting. Another Heath exclusive.

Owner Installation! Order your MWW-18 with up to four extra transmit and five extra receive channels (channels 6 & 16 are furnished) by specifying channel numbers. We install the crystals and do the tune-up required . . . all you have to do is install it with a recommended antenna (see price lines)—and save the cost of technician installation.

Maintenance—An Important Consideration. Although maintenance & performance checks are required by the FCC on all radiotelephones, a good design can cut owner costs considerably . . . and the MWW-18 is designed with this in mind. Nine of the eleven circuit boards can be removed without a soldering iron . . . and built-in test points on the circuit boards make checks fast and simple. A complete service manual is supplied to save you technician time and money.

Extremely Low Power Drain. For sailboaters and small boat owners, power drain can be critical. The new MWW-18 uses only *sixty-thousandths of an ampere* on squelched receive only! Most other radiophones draw several times this amount.

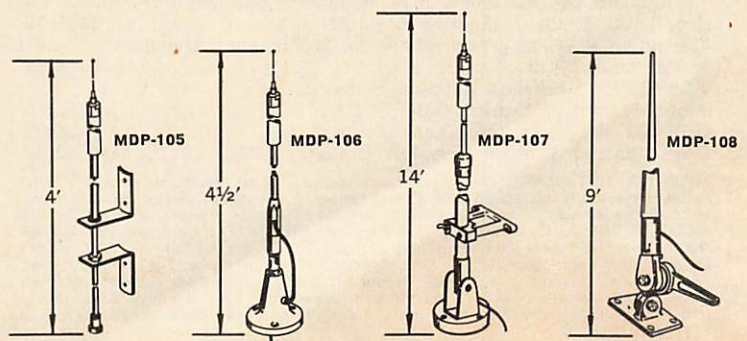
Maximum Legal Power Output. The MWW-18 delivers a solid 25 watts output . . . the FCC-allowed maximum. You don't have to add expensive power-increasing devices to this radiophone. And a 1-watt output position on the function switch lets you conform to the latest rules for in-harbor power output.

Go VHF/FM . . . and discover, interference-free communication. Order your MWW-18 now . . . it's the best value in boating communications.

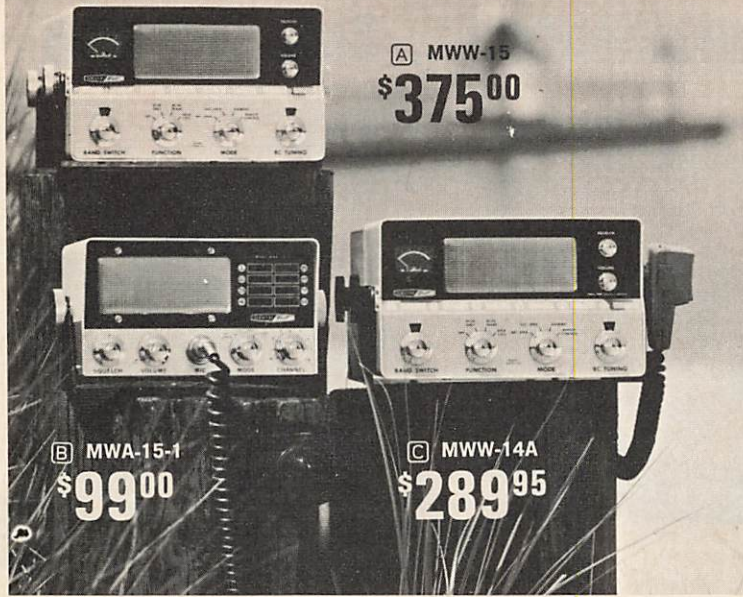
- Assembled MWW-18 (with channels 6 & 16), 25 lbs. \$499.95
 - MWA-18-1, Remote Control Accessory Package, 6 lbs. \$19.95
 - MDP-106, 4½' deck mt. tilt-over antenna w/20' coax. cable & BNC Connector, (3 dB gain), 4 lbs. \$29.95
 - MDP-105, 4' mast mt. antenna for sailboats w/75' coax. cable & BNC Connector, (3 dB gain), 3 lbs. \$24.95
 - MDP-107, 14' deck mt., fiberglass tilt-over mast antenna w/20' coax. cable & BNC Connector, (3 dB gain), 8 lbs. (REA or Mtr. Frt.) \$59.95
 - MDP-108, 9' fiberglass whip 6 dB gain antenna, Lever-Action tilt-over type w/20' coax. cable, 4 lbs. (REA or Mtr. Frt.) \$49.95
 - Weather (WX) Channel Receive only, 1 lb. \$8.50
 - Environmental Channel 15 receive only, 1 lb. \$8.50
 - Extra Transmit & Receive Crystals, pair, specify channel, 1 lb. . . \$17.00
- Add \$17.00 per additional channel for factory installed crystals (this permits owner installation of the radiophone).

MWW-18 SPECIFICATIONS—TRANSMITTER: Type: Hybrid, transistor and tube. Emission: 16F3 (±5 kHz deviation FM). Number of channels: 6. Frequency range: 156.275-157.425 MHz. Power output: High Power: 25 watts max; Low Power: 1 watt max. Modulation: Phase modulation ±5 kHz deviation. Modulation limiting: Automatic limiting meets all requirements of part 83 of FCC rules. Frequency accuracy: ±0.001% across temperature range, without ovens. **RECEIVER:** Type: Single conversion, superheterodyne all solid state. Frequency range: Two bands with two front ends, 156.275-157.425 MHz and 161.600-162.550 MHz. IF Amplifier frequency: 10.7 MHz. Number of channels: 7. Method of frequency control: Third overtone crystals. Sensitivity: 0.35 uV or better for EIA usable sensitivity. Squelch: 0.2 uV or better for max. sensitivity. Selectivity: 15 kHz @ 6 dB 28.8 kHz @ 60 dB. Audio output: 2 watts for less than 10% distortion. **GENERAL—Size:** 4¼" H x 13" W x 15" D. (Installed in mtg. bracket.) Weight: 22½ lbs. Primary power: Voltage: 13.6 V DC nominal. Current: Receive only, squelched 60 mA; Transmit, high power, 10 amps. Antenna impedance: 50 ohms resistive. Temperature range: -30° C to +60° C (-22° F to +140° F). Methods of control: Removable plug-in control head for local or remote use. Transistor, diode and tube complement: 39 transistors; 45 diodes; 3 tubes.

VHF/FM Works With Smaller, Less Costly Antenna



Heath Radiophones



A MWW-15
\$375⁰⁰

B MWA-15-1
\$99⁰⁰

C MWW-14A
\$289⁹⁵

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 Transistors 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. \$375.00
Assembled MWW-15R, 41 lbs. 150 watt 'phone plus remote control. \$474.00
Assembled MWA-15-1, Radiophone remote control unit, 10 lbs. . . . \$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: 6 1/2" H x 11 1/4" 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.) \$189.95
Assembled MWW-13A, Radiophone for technician installation on any boat, 17 lbs. \$164.95
MDP-93, 13' Fiberglass Antenna, 5 lbs. \$34.95
(Motor Freight or Express Only) \$9.95
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: 4 1/2" H x 8 1/2" W x 10 1/4" 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. \$99.00

C Heath MWW-14A . . . Unequalled 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. \$289.95
Assembled MWW-14AR, 41 lbs. . . 75-watt Radiophone plus remote control. \$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: 6 1/2" H x 11 1/4" 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. \$59.95

24' Marine Antenna

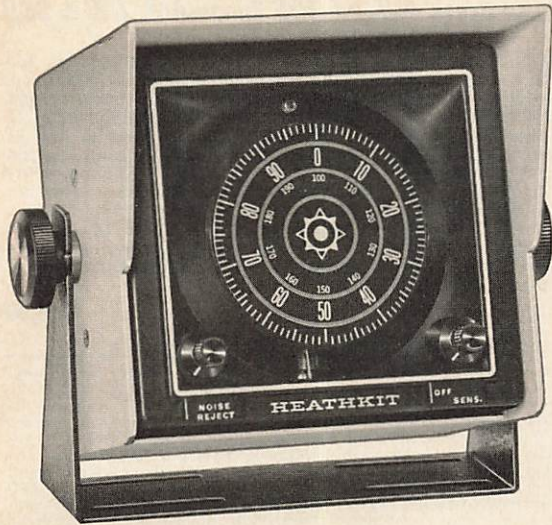
Ideal for use with MWW-15. 2-section fiberglass. Bottom section 13' long, top an 11' whip. Complete with lay-down swivel base & high-impact side-mount. MDP-74, 14 lbs., Express or Motor Freight Only. \$69.95



MWW-13A
\$164⁹⁵

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

Get Ready For Summer Boating & Fishing Fun



NEW! Heathkit MI-19 Solid-State Depth Sounder With Exclusive Noise Rejection Circuitry

- All solid-state circuitry for maximum dependability and low current drain • Measures depth down to 200 feet with 5% accuracy • Exclusive Heath Noise Rejection Control allows user to operate MI-19 at full sensitivity without interference from engines • Adjustable Sensitivity Control for maximum signal strength without echoes • Calibrated dial is shielded from sunlight for easy reading • Completely waterproof transducer fitted with marine brass mounting hardware • MI-19-1 supplied with thru-hull mounting transducer • MI-19-2 comes with high-speed transom mount transducer • Can be used for spotting schools of fish and charting bottom • Operates from 12 VDC ship's power or external 12 VDC lantern battery • Simple, enjoyable 8-10 hour assembly time

Add Safety & Convenience To Your Boat . . . with the new Heathkit MI-19 solid-state Depth Sounder. Probes down to 200 feet to determine safe depth, locate underwater obstacles, chart the bottom for terrain and vegetation, even spot fish. Check the features and specs . . . and be convinced that the new MI-19 is your best buy.

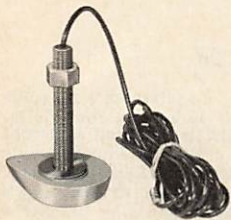
Advanced Solid-State Design With Exclusive Heath Noise Rejection Circuitry. The all solid-state circuit comes on instantly, and battery drain is minimum. Simple to operate—turn the unit on with the combination On-Off/Sensitivity Control, adjust Sensitivity for maximum signal return from bottom without echoes and read the flashing light on the sun-shielded dial. The exclusive Heath Noise Rejection control eliminates a once troublesome cause of erroneous readings—ignition noise . . . just turn the control to cancel it out. Other features include completely weatherproof design, 5% accuracy, choice of transducer mounts, waterproof Operation Manual giving many dial indications & their meaning, and fast, easy assembly. Put this remarkable new accessory on your boat today.

Kit MI-19-1, complete with thru-hull transducer, 7 lbs. \$79.95
 Kit MI-19-2, complete with high speed transom mount transducer, 7 lbs. \$79.95

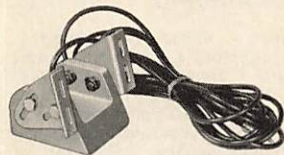
MI-19-1 & 2 SPECIFICATIONS—Range: 0 to 200 feet on hard bottom. Sounding: Rate: 1440 per minute or 24 per second. Frequency: Approximately 200 kHz. Accuracy: Within 5% of actual depth. Depth indication: Neon lamp flashes at zero and again at the indicated depth from the object. Transducer: Barium titanate ceramic element encased in a watertight housing. Controls: Sensitivity, with on-off switch. Noise Rejection level. Transistor and diode complement: 9 transistors, 5 diodes. Power requirements: 80 to 100 milliamperes at 12 VDC. Dimensions: 7 1/4" W x 5 1/2" H x 5 3/4" D. Net weight: 4 1/2 lbs.

Kit MI-19-1 & 2

\$79.95
ea.



MI-19-1 kit includes this Thru-Hull Mounting Transducer for permanent installation on larger displacement type craft.



MI-19-2 kit comes with this High Speed Transom Mount Transducer for temporary or permanent mounting on smaller boats & outboards.



NEW! Heathkit MI-29 Fish Spotter . . . Solid-State . . . Self-Contained . . . Completely Portable . . . Extra Wide Transducer Sending Pattern For Better Coverage of Fishing Area

- Completely portable operation from two 6 VDC lantern type batteries • All solid-state design for light weight & low battery drain • Transducer sending pattern covers wider area . . . greatly increases area of water surveyed • Exclusive Heath Adjustable Noise Rejection Circuitry eliminates troublesome ignition noise • Adjustable Sensitivity Control for more accurate readings without echoes from bottom or vegetation • Completely waterproof and buoyant when case is closed to eliminate possibility of loss overboard • Non-Glare dial shielded from sun for easier reading • Small, portable transducer is fitted with suction cups for easy attachment to side or transom of boat • Can also be used for depth sounding down to 200 feet • Fast, easy assembly in 8 to 10 hours

An Invaluable Aid To Fisherman. The new Heathkit MI-29 solid-state Fish Spotter is a most versatile accessory for the ardent fisherman . . . spots schools and even individual fish . . . helps you determine the type of underwater terrain . . . aids you in finding layers of vegetation . . . even reads depth to 200 feet. Compare the MI-29 against similar units selling for up to three times its price! We think you'll find the Heathkit Fish Spotter a remarkable value.

Unique Features For Excellent Performance. Fishermen need a rugged, reliable, completely portable unit that's ready to go when they are . . . and the MI-29 fills the bill. The Fish Spotter is housed in a tough case designed to take rough conditions . . . it even floats! Runs on two readily available 6 VDC lantern batteries, and the solid-state circuit makes them last a long time . . . typical battery life is 80 hours. The exclusive Heath Noise Rejection Circuitry lets you attach the portable suction cup mounted transducer close to your engine, without having to worry about ignition noise showing up on the glare-free dial. And the adjustable Sensitivity Control lets you adjust for maximum signal return without multiple echoes for clear readings. The waterproof Operation Manual gives many dial indications & what they mean. With the Heathkit Fish Spotter, the fish don't have an advantage over you anymore—order yours now.

Kit MI-29, 9 lbs., with portable transducer. \$89.95

MI-29 SPECIFICATIONS—Range: 0 to 200 feet on hard bottom. Sounding: Rate 1440 per minute or 24 per second. Frequency: Approximately 200 kHz. Accuracy: Within 5% of actual depth. Depth indication: Neon lamp flashes at zero and again at the indicated depth from the object. Transducer: Barium titanate ceramic element encased in a watertight housing. Controls: Sensitivity, with on-off switch. Noise Rejection level. Transistor and diode complement: 9 transistors, 5 diodes. Power requirements: 80 to 100 milliamperes at 12 VDC. Batteries: (2 required) (not supplied). 6V Lantern type NEDA #908 or 916, Burgess F4M, Eveready #409 or 509, Ray-O-Vac #941. Battery life: (nominal) 80 hours. Dimensions: 6 1/2" W x 7" H x 10 1/8" D. Net weight: 6 1/2 lbs.

Portable Transducer Included. The MI-29 comes with this waterproof wide-angle transducer that attaches to the side or transom of your boat in seconds with large suction cups. 15' of transducer cable included.

Heathkit® Marine... Best Values Afloat

Heathkit MR-18 Mariner Solid-State 4-Band RDF Tunes AM, CW & SSB



MR-18
\$124⁹⁵

- 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

Kit MR-18, 12 lbs. \$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:** 6 1/2" diameter compass rose calibrated in 2 degree divisions. **Null & tuning indicator:** Sealed meter, 80 uA full scale. **Antennas:** Direction Finder: low impedance, balanced loop; rotates 365 degrees. Sense: whip antenna, extendable to 35". **Image rejection:** Longwave band, 6 dB; broadcast band, 50 dB; marine band, 40 dB; shortwave band, 25 dB. **BFO (Beat Frequency Oscillator):** 455 kHz. **Power capabilities:** 9.6 volts, 500 milliamper-hour rechargeable nickel-cadmium battery. **Battery drain:** 50 mA @ 50 mW audio output level; 25 mA at no audio output. **Dimensions:** 11 3/8" W x 6 3/4" H x 9" D (add 1/2" to height when the mounting plate is to be included). **Net weight:** 10 lbs.

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 speaker 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

Kit MD-19, (complete with horn speaker), 8 lbs. \$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; Foghorn rate and duration. **Power requirements:** 12 VDC nominal, 5 A maximum. **Idle 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.

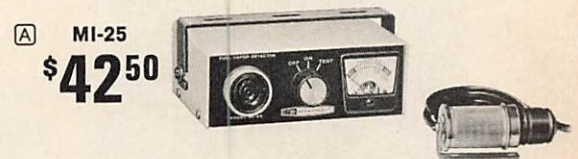


MD-19
\$84⁹⁵
(less remote)

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. \$42.50

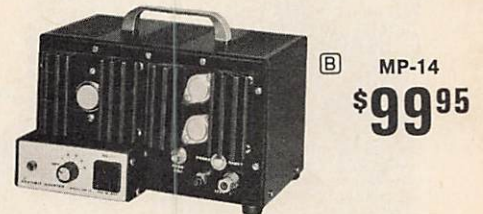


A MI-25
\$42⁵⁰

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. \$99.95



B MP-14
\$99⁹⁵

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. \$32.50



C MP-10
\$32⁵⁰

To add even more to your boating pleasure next season, check out the new GR-88 VHF-FM Monitor Receiver on p. 57.

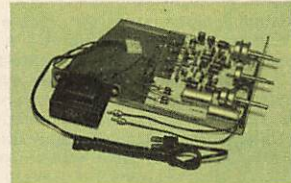
New Stereo Phono Outperforms All Others



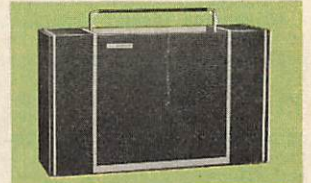
Kit GD-109
\$74.95



Two swing-out, detachable, full-range speakers.



Compact 18-watt amplifier—easy to build.



Changer tilts down for play, up for carry.

New Heathkit Portable Stereo Phono . . . 18 Watts . . . Deluxe Changer . . . Full-Range Speakers

- Automatic 4-speed changer • 16-transistor, 8-diode circuit • 18 watts music power, 9 watts per channel • Ceramic stereo cartridge with 30 dB separation • Dual diamond/sapphire styli for LP & 78 RPM • Low 3½ gram stylus pressure for longer record life • Swing-out or detachable, high compliance 4½" speaker systems on 5' cords • 45 RPM adapter • Volume, tone & balance controls • Tilt-down changer • Factory built speaker enclosures and changer cabinet • Yellow-gold & brown durable plastic coated covering over wood

Here's Proof That Portable Phonographs Can Sound Great . . . the Heathkit GD-109 plainly shows this. The sound that comes charging out of this portable stereo is amazing . . . sound that's much like that from quality stereo components, yet it costs no more than ordinary phonos.

The GD-109 Was Built For Top-Performance. It has 16 transistors and 8 diodes in its all solid-state circuitry, and you can depend on them for long life and cool operation. The GD-109 amplifier puts out 9 watts per channel . . . enough to assure adequate volume and reserve power. Both the amplifier and the pick-up cartridge have frequency responses that let you hear more of the audible spectrum than you would expect from such a low-priced stereo. Two 4½" high compliance speakers reproduce a wider frequency range, for their size, than any other singles or 2-ways we examined when choosing the parts.

A Versatile Unit With Handsome Styling. Although it's in a portable case, the GD-109 can be set up like the expensive component systems. The changer tilts down for play or up for dust-free storage. The speaker enclosures snap away from the cabinet and swing out. Then each can be lifted off and placed up to 5' away from the changer for better stereo separation. The GD-109 cabinet covering has a texture like leather. High wear areas are covered with durable, plastic coated cloth.

So Simple A Youngster Can Build It. It will take you only one or two pleasant evening sessions (about 5-7 hours) to build your GD-109. The speaker enclosures and the changer cabinet come assembled. You simply mount the speakers behind the grilles and wire them. All amplifier components mount on one easy to build circuit board.

Years Of Pleasant Listening . . . Order your GD-109 today, and begin a lasting listening experience.

Kit GD-109, 38 lbs. (REA or Mtr. Frt.) \$74.95

GD-109 SPECIFICATIONS—CHANGER: Type: Maestro Model 55. Speeds: 16, 33½, 45, & 78 RPM. Record sizes: 7", 10" & 12". Cartridge: Stereo ceramic. Stylus: 0.7 mil diamond for LP's, 3 mil sapphire for 78's. **AMPLIFIER:** Power output: 18 watts, 9 watts per channel, EIA music power. Frequency response: ±3 dB, 30 Hz to 15 kHz. Equalization: RIAA. Transistors: (10) 2N3393, (4) X29A829, (4) TA2911. Diodes: (4) MZ2360, (2) MZ2362, (4) Silicon diodes. Controls: Volume, tone and balance. Speakers: Two 4½" full range, high compliance with 8 ohm voice coils. **GENERAL:** Dimensions: Overall, 14½" H x 7½" D x 24-5/16" W. Speaker only, 14½" H x 4½" D x 7½" W. Power requirements: 120 V, 60 Hz AC 25 watts.

Build This Stereo In One Evening . . . Enjoy It For Years

- Automatic or manual stereo and mono play of any size 16, 33½, 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 1½ 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) \$54.95

GD-107 SPECIFICATIONS—CHANGER: Type: Maestro Model 52-93. Speeds: 16, 33½, 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. **AMPLIFIER:** Power output: 3 watts, 1½ 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 8½" D x 25¼" W. Power requirements: 120 V, 60 Hz AC, 15 watts.

Scout Project Idea . . . 4-Speed Mono Phono, Plays 6, Shuts Off

- Automatic monophonic play of 16, 33½, 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. \$39.95

GD-16 SPECIFICATIONS—CHANGER: Type: Maestro Model 52-79. Speeds: 16, 33½, 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 7¼" D x 20½" W. Power requirements: 120 v. 60 Hz AC, 15 watts.



Kit GD-107

\$54.95



GD-16

\$39.95

Year-Round Enjoyment For The Entire Family... The Heathkit/Thomas Solid-State Theatre Organ

This Thomas 40 Lesson Self-Teacher 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

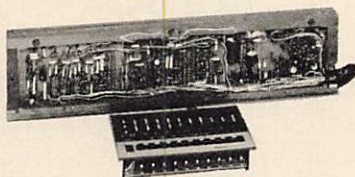
- All genuine Thomas factory-fabricated components • 19 organ voices . . . 15 keyboard, 4 pedal • Exclusive Thomas instant-play Color-Glo • 200 watts peak power produced by two separate transistor amplifiers • "Stereo" sound • Two separate speaker systems . . . 2-speed Leslie, plus main system with two 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. . . . \$1095.00
(Express or motor frt.) \$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. \$160.00

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. \$40.00

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 C₁ through C₂ • 2 overhanging 37-note keyboards, range C₂ through C₅ 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. . . . \$449.95
(REA or motor freight only) \$449.95
Export model available for 115-230v. AC, 50-60 Hz; write for prices.
GDA-325-1 (7", 33 1/3 rpm demonstration record) ppd. 50c

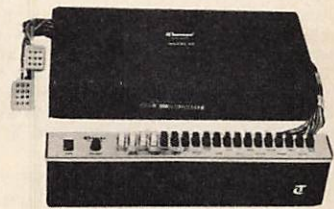
Add The Full Orchestra Sound Of Percussion With The Band Box Kit
Kit TOA-67-1, 9 lbs. \$160.00
Kit TOA-67-2, 4 lbs., Band Box Drawer and Slides. \$40.00

Add 15 Different Rhythms With The Playmate Kit
Kit TOA-67-5, 6 lbs. \$195.00



TO-67 (Without Band Box or Playmate)
\$1095⁰⁰

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, to the Band Box only . . . or for maximum musical effect to the lower manual, foot pedals and Band Box together. Also features adjustable Tempo Control, flashing 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. \$195.00

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
\$449⁹⁵
(including bench and FREE 40 lesson Self-Teacher-Record Course)

The New Heathkit® Stereo "Component Credenza" ... A Masterpiece Of Sight And Sound



Component Stereo In Elegant Oak Cabinetry . . . \$299.95

- A complete component stereo system in a magnificent oak cabinet • AR-14 FM-Stereo Receiver circuitry delivers 30 watts music power output • 50-60,000 Hz frequency response • 45 dB channel separation • FM Stereo section features excellent sensitivity, selectivity, separation and low hum & noise for superb stereo FM reproduction • Auxiliary input for tape, TV, etc. • BSR McDonald 500A Automatic Turntable plays all four speeds manually or automatically • Cueing/Pause Control • Anti-Skating • Stylus Pressure Adjustment • Comes complete with famous Shure diamond stylus magnetic cartridge • Two totally independent speaker systems each have a 10" high compliance woofer for bass down to 60 Hz • Plus 3 1/2" ring-damped tweeter for crisp highs up to 16,000 Hz • Rich, fully finished oak cabinet styled in Mediterranean motif • Fast, enjoyable assembly with the famous Heathkit manual

Component Performance And Console Beauty. Heath engineers combined the startlingly realistic sound of fine stereo components with a luxurious handcrafted Mediterranean oak cabinet to bring you the finest in sight and sound . . . the new Heathkit AD-19 "Component Credenza."

the components

Heathkit AR-14 Solid-State FM Stereo Receiver Circuitry . . . delivers an honest 15 watts music power per channel from 50-60,000 Hz . . . Harmonic & IM distortion are both less than 1% at full output—assurance of clean, lifelike reproduction. The tuner section of this remarkable receiver features a factory assembled & aligned tuning unit that simplifies assembly and pulls in stations you didn't know existed. An adjustable Phase Control assures maximum stereo separation at all times, and AFC puts an end to drift. A Stereo Indicator Light tells you when the program is in stereo, and flywheel tuning gives smooth, precise station selection.

BSR McDonald 500A Automatic Turntable . . . with features normally associated with much higher priced equipment . . . Cueing/Pause control that lets you stop and then return to the exact groove you left . . . adjustable Anti-Skating

control compensates for unequal side-wall pressure that can ruin records and styli . . . and to assure long record life and excellent fidelity, the AD-19 comes with a Shure diamond stylus magnetic cartridge.

Two Full Range Speaker Systems, housed in tuned-port enclosures on either end of the oak cabinet. Each system has a 10" high-compliance woofer for deep, rich bass and a ring-damped 3 1/2" tweeter that delivers clean, natural highs.

The Cabinet . . . would be worthy of a place in your home even if it didn't house such a remarkable sound system. It is a fine example of cabinetmaking art, styled in a Mediterranean motif and flawlessly executed in rich, dark oak veneer with all solid oak trim and decorative work. The top glides easily on spring-loaded hinges, and a handy compartment in the front stores records.

The New "Component Credenza" . . . a remarkable integration of quality stereo components in a cabinet of singular elegance. Easy, enjoyable 18-20 hour assembly with the famous Heathkit manual. Order yours now . . . it will make a fine addition to your home.

Kit AD-19, 158 lbs. (REA or Mtr. Frt.) \$299.95
Not Eligible For 5% System Discount.

AD-19 PARTIAL SPECIFICATIONS—FM SECTION: Tuning Range: 88-108 MHz. Sensitivity: 5 μ V. Hum & Noise: -45 dB, 1 watt reference. Capture Ratio: 4 dB. Audio Frequency Response: Monophonic, 0 to -3 dB; 35-15,000 Hz. Harmonic Distortion: 1% or less. Separation: 27 dB @ 1 kHz. **AMPLIFIER SECTION:** IHF Music Power Output: 15 watts per channel. Continuous Power Output: 10 watts per channel. Frequency Response: (1 watt) 50-60,000 Hz \pm 1 dB. Power Bandwidth: 12-90,000 Hz. Auxiliary Input Sensitivity: 300 mV. Auxiliary Input Impedance: 180 k ohms. Channel Separation: 45 dB or better @ 1 kHz. Total Harmonic Distortion: (at full output) Less than 1% from 12-60,000 Hz. Intermodulation Distortion: (at full output) Less than 1%. **SPEAKERS:** Frequency Response: 60-16,000 Hz. Crossover Frequency: 2 kHz. **AUTOMATIC TURNTABLE:** Type: BSR McDonald 500A. Speeds: 16 2/3, 33 1/3, 45 and 78 RPM. Record Size: 7, 10 or 12". Phono Cartridge: Type: Shure M71 Magnetic. Stylus: 6 mil spherical diamond. Tracking Pressure: 1 1/2-3 grams. **General: Power Requirements:** 105-125 or 210-250 VAC, 50-60 Hz, 32 watts idling, 65 watts full output, plus 7.5 watts for automatic turntable motor. Dimensions: 49 1/2" W x 27" H x 20 1/2" D.



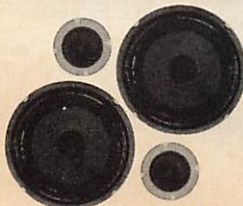
Lifting the spring-loaded hinged top reveals the neat control layout . . . with everything easily in reach from a standing position. A handy compartment in front holds a number of records.



The heart of the new "Component Credenza" is the Heathkit AR-14 FM-Stereo Receiver circuitry . . . judged first in value and performance by leading testing groups, hi-fi magazines and thousands of owners.



The BSR McDonald 500A Automatic Turntable, with many performance features usually found on more expensive units. Comes complete with a famous Shure diamond stylus magnetic cartridge.



The AD-19 houses two completely separate, ported speaker systems for reproduction comparable to that of systems using individual components.

150 WATTS

Heathkit®...



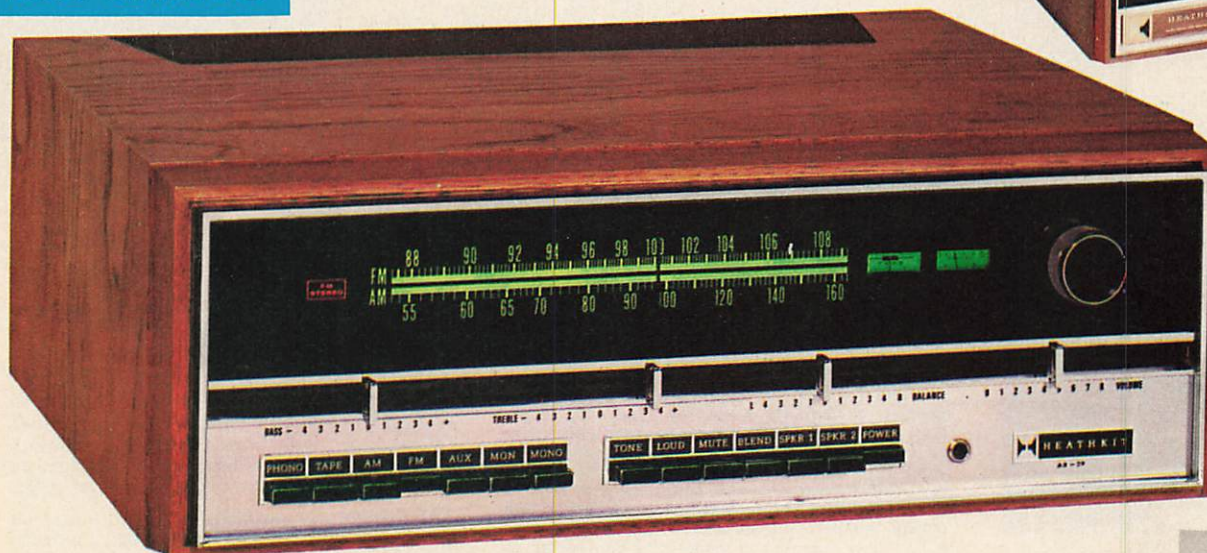
Kit AR-15
\$349⁹⁵
(less cabinet)

Wired ARW-15
\$540⁰⁰
(less cabinet)

Black Magic Panel Lighting. Scale readings on these 3 receivers appear only when power is on.

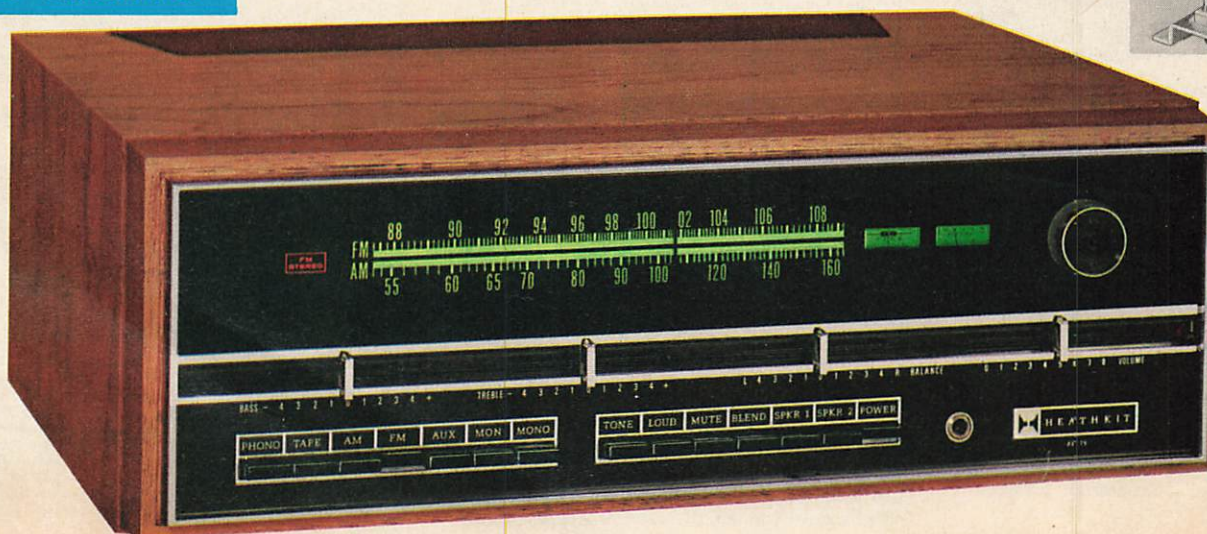


100 WATTS



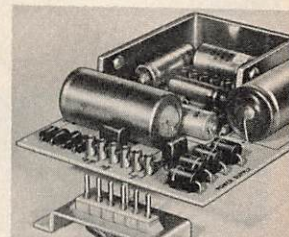
Kit AR-29
\$285⁰⁰
(less cabinet)

60 WATTS



Kit AR-19
\$225⁰⁰
(less cabinet)

Plug-In Fiberglass Circuit Boards... mean quicker, more enjoyable assembly with less chance for error, easier servicing, and strong long life.



World's Most Advanced Stereo Receivers

**The Trend Setting AR-15 . . . First With IC's . . . Crystal Filters . . .
Field Effect Transistors . . . And Built-in Test Circuitry**

This is the receiver that pioneered new audio design techniques, set new standards for performance, and evoked an avalanche of acclaim from electronic experts and owners alike.

Here are some of the many reasons why. The AR-15 delivers 150 watts music power from its 69 transistor, 43 diode, 2 IC's circuit—75 watts per channel. Harmonic and IM distortion are both less than 0.5% at full output. The FM tuner has a cascode 2-stage FET RF amplifier and an FET mixer to provide high overload capability, excellent cross modulation and image rejection. The use of two crystal filters in the IF section is a Heath first in the industry and provides an ideally shaped bandpass and adjacent channel selectivity impossible with conventional methods. Two Integrated Circuits in the IF amplifier provide hard limiting, excellent temperature stability and increased reliability. The FM tuner boasts sensitivity of 1.8 uV, selectivity of 70 dB and harmonic & IM distortion both less than 0.5% . . . you'll hear stations you didn't even know existed, and the elaborate noise-operated squelch, adjustable phase control, stereo threshold control and FM stereo noise filter will let you hear them in the clearest, most natural way possible. Other features include two front panel stereo headphone jacks, positive circuit protection, transformerless outputs, loudness switch, stereo only switch, front panel input level controls, recessed outputs, Tone Flat control, a massive electronically filtered power supply and "Black Magic" panel lighting. Whether you choose the kit model or the factory assembled and tested version, you have chosen the world's finest stereo receiver . . . the Heathkit AR-15.

**Another Step Forward . . . The AR-29 With A 9-Pole L-C Filter . . . Plug-in Circuit Boards . . .
Built-in Test Circuitry And Linear Motion Controls**

The Heathkit AR-29 is the world's finest medium power receiver . . . designed in the tradition of the AR-15 . . . but with an individuality that makes it a distinguished receiver in its own right.

It's all solid-state . . . 65 transistors, 42 diodes plus 4 integrated circuits containing another 56 transistors and 24 diodes. Music power output at 8 ohms is 100 watts. Frequency response is 7 to 60,000 Hz. Harmonic Distortion is less than 0.25% and IM Distortion is 0.2%—both ratings at full power. Direct coupled outputs are protected by dissipation-limiting circuitry. It boasts a massive, electronically regulated power supply. Circuitry includes four individually heat sinked output transistors. The AR-29 uses linear motion bass, treble, balance and volume controls and pushbutton selected inputs. There are outputs for two separate stereo speaker systems, it has center channel capability and a front panel stereo headphone jack. The FET FM tuner is assembled and aligned at the factory and has 1.8 uV sensitivity. Two front panel tuning meters make precise tuning easy. A computer designed 9-pole L-C filter plus 3 IC's in the IF give ideally shaped bandpass with greater than 70 dB selectivity and eliminates alignment. IC multiplex section. The AM tuner has three FET's. An AM rod antenna swivels for best pickup. Modular Plug-in Circuit Boards make the kit easy to build and service. Built-in test circuitry lets you assemble, test and service your AR-29 without external test equipment. "Black Magic" panel lighting, chrome trim, aluminum lower panel. The AR-29 will please even the most discriminating stereo listener in performance and value.

**A New Value Leader . . . The AR-19 With 5 IC's . . . Plug-in Circuit Boards . . .
Built-in Test Circuitry And Linear Motion Controls**

The Heathkit AR-19 receiver reflects many of the advanced concepts of the AR-29 and toes the mark in such critical areas as IM and Harmonic Distortion. It has more than enough power to drive medium and high efficiency speaker systems to their limits. A receiver that belongs in company with the AR-29 and AR-15, and yet costs only \$225, is truly a value leader.

It uses 108 transistors and 45 diodes including those in 5 integrated circuits. It delivers 60 watts music power at 8 ohms. At any power level, Harmonic and IM Distortion is less than 0.25%. Frequency response ranges from 6 to 35,000 Hz. Direct coupled outputs are protected by dissipation-limiting circuitry. A massive power supply includes a section of electronically regulated power. The assembled, aligned FET FM tuner has 2.0 uV sensitivity. A pre-assembled and factory aligned FM IF circuit board gives 35 dB selectivity. The multiplex IC circuit provides inherent SCA rejection. It features two switched noise muting circuits; linear motion controls for bass, treble, volume and balance; input level controls; outputs for 2 separate stereo speaker systems; center speaker capability; two tuning meters; stereo indicator light; front panel stereo headphone jack. The Modular Plug-in Circuit Board design speeds assembly. Built-in Test Circuitry aids assembly, simplifies servicing. "Black Magic" panel lighting, black lower panel, chrome accents. Compare it with any model in its price range . . . the AR-19 will prove itself the better buy.

Kit AR-19, (less cabinet), 29 lbs. \$225.00
Assembled AE-19, cabinet, 10 lbs. \$19.95

Kit AR-15, (less cabinet), 34 lbs. \$349.95
Assembled AR-15, (less cabinet), 34 lbs. \$540.00
Assembled AE-16, optional walnut cabinet, 10 lbs. \$24.95

AR-15 SPECIFICATIONS—Recommended System Mates: All speakers & speaker systems, pp. 18, 23 & 27; all changers & turntables, pp. 24-25. **AMPLIFIER—Music Power (Each Channel):** 8 ohms, 75 watts*; 4 ohms, 50 watts; 16 ohms, 45 watts. **Continuous Power:** 8 ohms, 50 watts*; 4 ohms, 45 watts; 16 ohms, 35 watts. **Power Bandwidth For 0.5% T.H.D.:** 6 Hz to 30 kHz*. **Frequency Response (1 watt):** ±1 dB, 8 to 40 kHz. **Harmonic Distortion:** 0.5% from 20 Hz to 20 kHz at 50 watts rms. 0.2% at 1000 Hz at 1 watt. **Intermodulation Distortion:** 0.5% at 50 watts, 60 & 6,000 Hz mixed 4:1, 0.2% at 1 watt. **Damping Factor:** 45. **Input Sensitivity:** Phono: 2.2 mv (Overload 155 mv). Tape, Aux., and Tape Mon., 200 mv (Overload 4.5 V). **Hum & Noise:** Phono (10 mv ref.), —60 dB. Tape & Aux. (200 mv ref.), —65 dB. **Channel Separation:** Phono, 45 dB. Tape & Aux., 55 dB. **Output Impedance (each channel):** 4 to 16 ohms. **Tape Output Impedance:** 120 ohms. **Input Impedance:** Phono, 51 k ohms (RIAA Equalized). Aux., Tape & Tape Mon, 100 k ohm. **Tape Output:** 0.17 volt output with 0.2 volt input. **FM SECTION—(Monophonic)—Tuning Range:** 88 to 108 MHz. **Antenna:** Balanced for external 300 ohm antenna. Unbalanced 75 ohm. **Frequency Response:** ±1 dB 20 to 15,000 Hz. **Sensitivity:** 1.8 Microvolts*. **Selectivity:** 70 dB*. **Image Rejection:** 90 dB*. **Capture Ratio:** 1.5 dB*. **AM Suppression:** 50 dB*. **Harmonic Distortion:** 0.5%. **Intermodulation Distortion:** 0.5%. **Hum & Noise:** —65 dB*. **Spurious Rejection:** —100 dB*. **FM SECTION—(Stereo)—Channel Separation:** 40 dB at mid-frequencies. **Frequency Response:** ±1 dB from 20 to 15,000 Hz. **Harmonic Distortion:** 1% at 1000 Hz with 100% modulation. **19 kHz And 38 kHz Suppression:** 55 dB. **SCA Suppression:** 50 dB. **AM SECTION—Tuning Range:** 535 to 1620 kHz. **AM Antenna:** Built-in rod. Connections for external ant. and grd. **Sensitivity:** External antenna, 12 uV at 1000 kHz for 10 dB S+N/N. **Selectivity:** 20 dB at 10 kHz. **Image Rejection:** 60 dB at 600 kHz*. 40 dB at 1400 kHz*. **IF Rejection:** 70 dB*. **Harmonic Distortion:** 1.5%. **Hum & Noise:** —45 dB*. **GENERAL—AC Outlet Sockets:** One switched (350 watts max.), two unswitched (350 watts max.). **Power Requirements:** 105-125 or 210-250 volts 50/60 Hz AC 240 watts at full output. **Dimensions:** Overall—16 1/4" W x 4 3/4" H x 14 1/2" D.

*Rated IHF (Institute Of High Fidelity) Standards

Kit AR-29, (less cabinet), 33 lbs. \$285.00
Assembled AE-19, oiled pecan cabinet, 10 lbs. \$19.95

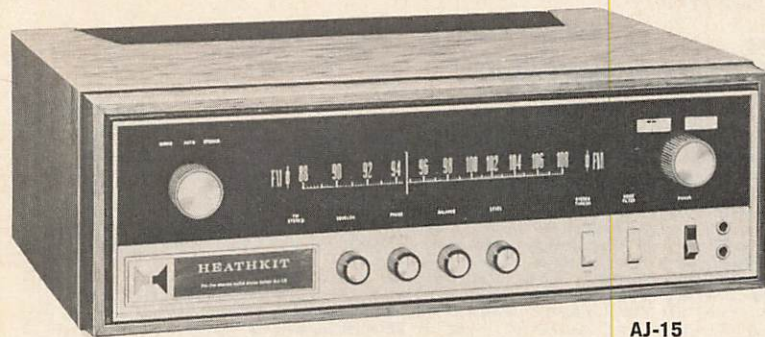
AR-29 SPECIFICATIONS—Recommended System Mates: All speakers & speaker systems, pp. 18, 23 & 27; all changers & turntables, pp. 24-25. **AMPLIFIER—Music Power (Each Channel):** 8 ohms, 50 watts*; 4 ohms, 35 watts; 16 ohms, 30 watts. **Continuous Power:** 8 ohms, 35 watts*; 4 ohms, 35 watts; 16 ohms, 25 watts. **Power Bandwidth For 0.25% T.H.D.:** 5 Hz to 30 kHz*. **Frequency Response (1 watt):** —1 dB, 7 Hz to 60 kHz. **Harmonic Distortion:** 0.25% from 20 Hz to 20 kHz at 35 watts rms. 0.1% at 1000 Hz at 1 watt. **Intermodulation Distortion:** 0.2% at 35 watts, 60 & 6,000 Hz mixed 4:1, 0.1% at 1 watt. **Damping Factor:** 50. **Input Sensitivity:** Phono: 2.2 mv (Overload 155 mv). Tape, Aux., and Tape Mon., 180 mv (Overload 10 volts). **Hum & Noise:** Phono (10 mv ref.), —65 dB. Tape & Aux. (0.25 volt ref.), —75 dB. **Channel Separation:** Phono, 50 dB. Tape & Aux., 60 dB. **Output Impedance (each channel):** 4 to 16 ohms. **Tape Output Impedance:** 50 ohms. **Input Impedance:** Phono, 49 k ohm (RIAA Equalized). Aux., Tape & Tape Mon, 100 k ohm. **Tape Output:** 1 volt with 0.2 volt input. **FM SECTION—(Monophonic)—Tuning Range:** 88 to 108 MHz. **Antenna:** Balanced for external 300 ohm antenna. Unbalanced 75 ohm. **Frequency Response:** ±1 dB 20 to 15,000 Hz. **Sensitivity:** 1.8 Microvolts*. **Selectivity:** 70 dB*. **Image Rejection:** 90 dB*. **Capture Ratio:** 1.5 dB*. **AM Suppression:** 50 dB*. **Harmonic Distortion:** 0.5%. **Intermodulation Distortion:** 0.4%. **Hum & Noise:** —60 dB*. **Spurious Rejection:** —90 dB*. **FM SECTION—(Stereo)—Channel Separation:** 45 dB at mid-frequencies. **Frequency Response:** ±1 dB from 20 to 15,000 Hz. **Harmonic Distortion:** 0.5% at 1000 Hz with 100% modulation. **19 kHz and 38 kHz Suppression:** 55 dB. **SCA Suppression:** 55 dB. **AM SECTION—Tuning Range:** 535 to 1620 kHz. **AM Antenna:** Adjustable rod. Connections for external ant. and grd. **Sensitivity:** External antenna, 20 uV at 1000 kHz for 20 dB S+N/N. **Selectivity:** 40 dB at 20 kHz. **Image Rejection:** 60 dB at 600 kHz*. 45 dB at 1400 kHz*. **IF Rejection:** 50 dB*. **Harmonic Distortion:** 2%. **Hum & Noise:** —35 dB*. **GENERAL—AC Outlet Sockets:** One switched (350 watts max.), one unswitched (350 watts max.). **Power Requirements:** 105-125 or 210-250 volts 50/60 Hz AC 240 watts at full output. **Dimensions:** Overall—16 1/4" W x 5 1/4" H x 14 1/2" D.

*Rated IHF (Institute Of High Fidelity) Standards

AR-19 SPECIFICATIONS—Recommended System Mates: All speakers & speaker systems, pp. 18, 23 & 27; all changers & turntables, pp. 24-25. **AMPLIFIER—Music Power (Each Channel):** 8 ohms, 30 watts*; 4 ohms, 20 watts; 16 ohms, 17 watts. **Continuous Power:** 8 ohms, 20 watts*; 4 ohms, 20 watts; 16 ohms, 15 watts. **Power Bandwidth For 0.25% T.H.D.:** 5 Hz to 30 kHz*. **Frequency Response (1 watt):** —1 dB, 6 Hz to 35 kHz. **Harmonic Distortion:** 0.25% from 5 Hz to 20 kHz at 20 watts rms. 0.1% at 1000 Hz at 1 watt. **Intermodulation Distortion:** 0.25% at 20 watts, 60 & 6,000 Hz mixed 4:1, 0.1% at 1 watt. **Damping Factor:** 50. **Input Sensitivity:** Phono, 2.4 mv (Overload: 155 mv). Tape, Aux., and Tape Mon., 180 mv (Overload 10 volts). **Hum & Noise:** Phono (10 mv ref.), —65 dB. Tape & Aux. (200 mv ref.), —75 dB. **Channel Separation:** Phono, 50 dB. Tape & Aux., 55 dB. **Output Impedance (each channel):** 4 to 16 ohms. **Tape Output Impedance:** 50 ohms. **Input Impedance:** Phono, 49 k ohm (RIAA Equalized). Aux., Tape and Tape Mon: 100 k ohm. **Tape Output:** 1 volt with 0.2 volt input. **FM SECTION—(Monophonic)—Tuning Range:** 88 to 108 MHz. **Antenna:** Balanced for external 300 ohm antenna. Unbalanced 75 ohm. **Frequency Response:** ±1 dB, 20 to 15,000 Hz. **Sensitivity:** 2.0 microvolts*. **Selectivity:** 35 dB*. **Image Rejection:** 90 dB*. **Capture Ratio:** 2.5 dB*. **AM Suppression:** 50 dB*. **Harmonic Distortion:** 0.1%. **Hum & Noise:** —65 dB*. **Spurious Rejection:** —90 dB*. **FM SECTION—(Stereo)—Channel Separation:** 35 dB at mid-frequencies. **Frequency Response:** ±1 dB from 20 to 15,000 Hz. **Harmonic Distortion:** 1.5% at 1000 Hz with 100% modulation. **19 kHz and 38 kHz Suppression:** 50 dB. **SCA Suppression:** 50 dB. **AM SECTION—Tuning Range:** 535 to 1620 kHz. **Antenna:** Adjustable rod. **Sensitivity:** Rod Antenna, 130 uV/m at 1000 kHz for 10 dB S+N/N. **Selectivity:** 25 dB at 10 kHz. **Image Rejection:** 60 dB at 600 kHz*. 60 dB at 1400 kHz*. **IF Rejection:** 60 dB*. **Harmonic Distortion:** 2%. **Hum & Noise:** —40 dB*. **GENERAL—AC Outlet Sockets:** One Switched (350 watts max.) one Unswitched (350 watts max.). **Power Requirements:** 105-125 or 210-250 volts 50/60 Hz AC 130 watts at full output. **Dimensions:** Overall—16 1/4" W x 5 1/4" H x 14 1/2" D.

*Rated IHF (Institute Of High Fidelity) Standards

World's Finest Stereo "Separates"



AJ-15
\$189⁹⁵
 (less cabinet)



AA-15
\$179⁹⁵
 (less cabinet)

Here's The Superb FM Stereo Tuner Section of The Famous Heath AR-15 As A Separate Component

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. \$189.95
 Assembled AE-18, 8 lbs., optional walnut cabinet. \$19.95

AJ-15 SPECIFICATIONS—FM monophonic and stereo specifications same as AR-15 (p. 17.) **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 7/8" W x 4 3/4" H x 12 1/2" D.

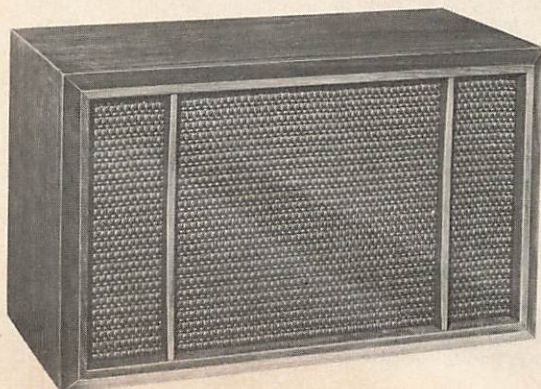
The Powerful Stereo Amplifier Of The AR-15 . . . Exceptional Performance And Value

If you already own a great stereo tuner, here's the amplifier to match it—the amazing AA-15, featuring the same deluxe circuitry used in the famous Heathkit AR-15 receiver. It has 150 watts dynamic music power for the most realistic sound you're likely ever to hear. Music power per channel is 75 watts with 50 watts continuous. The AA-15 has enormous power reserves to handle sudden peaks without clipping or distortion. The ultra-wide-range preamplifier (98 dB) assures faithful reproduction and 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. Faithful reproduction of the original source is further assured by a 6 Hz to 30 kHz Power Bandwidth. Advanced transformerless output circuitry with capacitor coupling means lowest phase shift and distortion plus protection for your speakers. The massive power supply is electro-statically 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. A feature with great potential is the individual input level controls. With these you can adjust the input level for each channel of Phono, Tape, Tuner, Tape Monitor and Auxiliary inputs. One use of these controls is to equalize all incoming signals. But another exciting application is proportioning signals that are being mixed and recorded. In this way, you can arrive at just the right level of background music for "voice over" recordings, dramatic readings, music and commentary, picture projector sound tracks, etc. The input level controls are tucked away behind a little door on the front panel; in the picture it bears the Heathkit trademark. Three other controls—phase, squelch and stereo threshold—are also behind the door. Complete controls and inputs, two front-panel stereo headphone jacks, remote speaker facilities and unique Black Magic panel lighting round out the features 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, (less cabinet), 28 lbs. \$179.95
 Assembled AE-18, 8 lbs., optional walnut cabinet. \$19.95

AA-15 SPECIFICATIONS—Recommended System Mates and amplifier specifications, except size, are same as AR-15, p. 17. **Dimensions:** 16 7/8" W x 4 3/4" H x 12 1/2" D.

A Speaker System To Match The AR-15, -29 & -19 . . . Custom Designed JBL® Speakers . . . Walnut Cabinet . . . A Great Buy At \$129.95



AS-38
\$129⁹⁵

Other Speakers
 On Pages 23 & 27

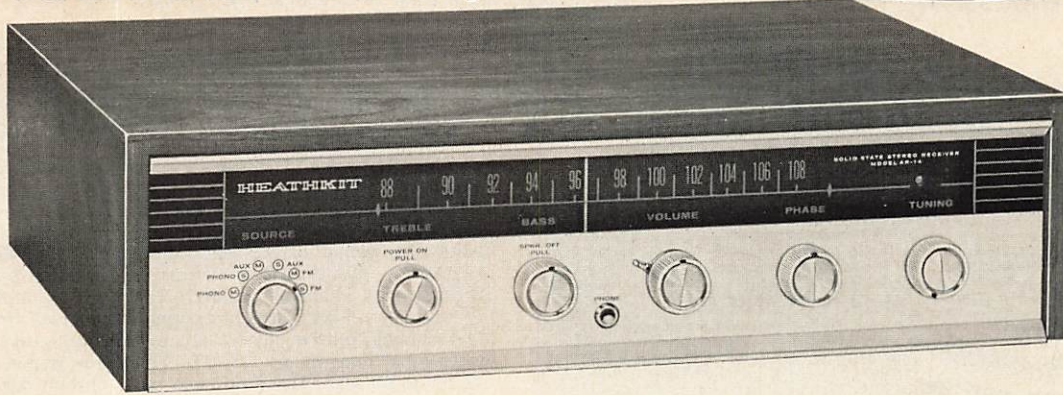
• 12" woofer, 2" tweeter • 45 Hz to 20 kHz response

The Heathkit AS-38 is a high efficiency bookshelf system suitable for use with the finest stereo components. The damped reflex, tube-ported cabinet augments the fine reproduction of the custom-designed JBL® speakers. The 12" woofer has a 6 3/4 lb. magnet assembly; the rich, full-bodied bass it produces is a joy to hear. No less spectacular is the performance of the 2" piston-type, direct radiator tweeter with a heavier magnet than some woofers—1.25 lb. The tweeter circuit includes a high frequency level control so you can compensate for room acoustics and personal preference. Take a speaker system with such uncompromising specifications, put a price tag of only \$129.95 on it—it was not always priced so low—and you have an extraordinary value.

Kit AS-38, 49 lbs. (REA or Mtr. Frt.) \$129.95

AS-38 SPECIFICATIONS—Power Rating: 40 watts program material. Crossover: LC type 2500 Hz. Impedance: 8 ohms. Dimensions: 14" H x 23 1/2" W x 11 3/4" D. Net Weight: 37 lbs.

Best Value Stereo Components



Kit AR-14
\$119⁹⁵
(less cabinet)

The Famous Heathkit AR-14 30-Watt FM Stereo Receiver

• All solid-state 31 transistor, 10 diode circuit for heat-free, trouble-free performance and longer life • Remarkable 15 to 50,000 Hz response ± 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 $\frac{1}{8}$ " H x 15 $\frac{1}{4}$ " W x 12" D—ideal for bookshelf installation

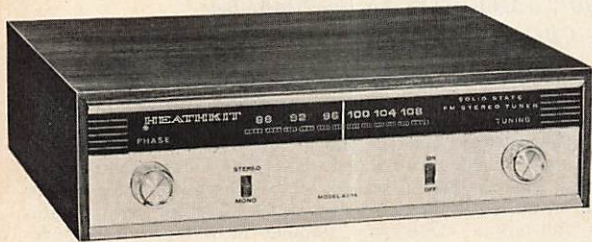
America's Best Transistor Stereo Value now becomes an even better buy with the special 5% Heath stereo system discount. Just order the AR-14 with two speakers (see pgs. 18, 23 & 27), and subtract 5% from the total price! And what performance! Delivers 30 of the coolest watts you've ever heard. And the 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 \$119.95
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, pp. 18, 23 & 27; all changers & turntables, pp. 24-25. **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 ± 1 dB; 6 to 100,000 Hz ± 3 dB. **Power response:** 15 to 50,000 Hz ± 1 dB; 7 to 90,000 Hz ± 3 dB. **Input sensitivity:** Phono: 4.5 mv; Auxiliary: 300 mv. **Input impedance:** Phono: 47 K ohm; Auxiliary: 180 K ohm. **Channel separation:** 45 dB or better. **Total harmonic distortion (at rated output):** 0.5% or less @ 1000 Hz; 1% or less @ 20 & 20,000 Hz. **Intermodulation distortion (at rated output):** Less than 1% (60 & 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 Phone 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 $\frac{1}{4}$ " W x 3 $\frac{1}{8}$ " H x 12" D. **Mounting position:** Horizontal or Vertical; Cutout required 15" x 3 $\frac{1}{2}$ "; Depth required from front of mounting surface 11 $\frac{1}{2}$ ". **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.

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



AJ-14
\$57⁹⁵
(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 \$57.95
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 $\frac{1}{2}$ " W x 3 $\frac{1}{2}$ " H x 9 $\frac{1}{4}$ " D. **Custom mounting dimensions:** Horizontal or vertical, cutout required 11 $\frac{3}{4}$ " x 2 $\frac{1}{8}$ ", depth required from front of mounting surface 9 $\frac{3}{4}$ ".



AA-14
\$67⁹⁵
(less cabinet)

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

• 17 transistors, 6 diodes • 15 to 50,000 Hz ± 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 \$67.95
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, pp. 18, 23, & 27; all changers & turntables, pp. 24, 25. **AMPLIFIER:** 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 ± 1 dB; 6 to 100,000 Hz ± 3 dB. **Power response:** 15 to 50,000 Hz ± 1 dB; 7 to 90,000 Hz ± 3 dB. **Input sensitivity:** Phono: 4.5 mv; 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: 1. Triple Phone 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 $\frac{1}{2}$ " W x 3 $\frac{1}{2}$ " H x 9 $\frac{1}{4}$ " D. **Custom mounting dimensions:** Horizontal or vertical, cutout required 11 $\frac{3}{4}$ " x 2 $\frac{1}{8}$ ", depth required from front of mounting surface 10 $\frac{3}{4}$ ".

Heathkit® "Component-Compacts"

SAVE \$10
New Low Price
AD-27
Now Only
\$169⁹⁵

**NOW SAVE \$10 . . . New Low Price On
Heathkit "27" Solid-State Component-Compact
With The Famous Heathkit AR-14 Stereo Receiver**

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. 18, 23). 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.

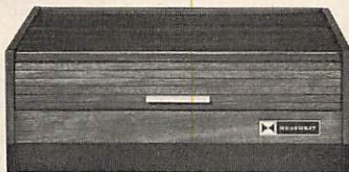
Kit AD-27, 41 lbs. (REA or Mtr. Frt.). Was \$179.95 . . . Now Only \$169.95

AD-27 SPECIFICATIONS—Recommended System Mates: All speakers & speaker systems, pp. 18, 23 & 27. **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% 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 speeds:** 16 $\frac{2}{3}$, 33 $\frac{1}{3}$, 45 & 78 rpm. **Record size:** 7", 10", or 12". **Wow:** Less than 0.2%. **Flutter:** Less than 0.6%. **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 $\frac{1}{4}$ " W x 7 $\frac{1}{2}$ " H x 14-11/16" D. **Net weight:** 29 lbs.

*Rated IHF (Institute of High Fidelity) Standards.

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.

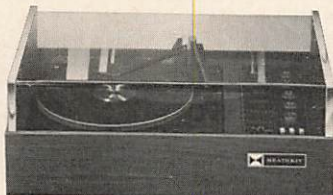
- All solid-state circuitry • 15-watts per channel music power output • Virtually flat response • Full range tone controls • Low Harmonic & IM distortion • 45 dB channel separation • Tandem Volume, Balance, Bass & Treble Controls • Transformerless output circuit • Electronically filtered power supply • 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



AD-17
\$109⁹⁵

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 tuner 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

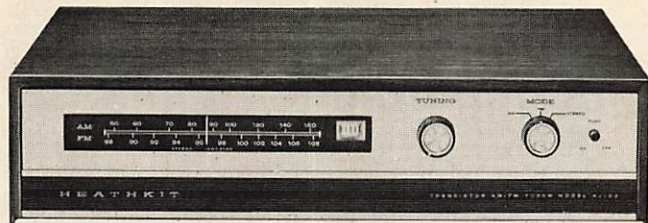
Quality Stereo Sound At A Budget-Saving Price. Heath engineers took the top rated AA-14 solid-state stereo amplifier, matched it with the precision BSR McDonald 400 Automatic Turntable, and put both these able performers in a handsome walnut cabinet. The 17 transistor, 6 diode amplifier delivers 15 watts music power per channel—more than ample to drive any reasonably efficient speaker system (see pp. 18, 23). 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. \$109.95
Model ADA-17-1, protective cover, 5 lbs. \$12.95

AD-17 SPECIFICATIONS—Recommended System Mates: All speakers & speaker systems, pp. 18, 23 & 27. **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 $\frac{2}{3}$, 33 $\frac{1}{3}$, 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 $\frac{1}{4}$ " W x 8 $\frac{1}{4}$ " H x 14-1/16" D. **Net Weight:** 21 lbs.

*Rated IHF (Institute of High Fidelity) Standards.

Low Cost Solid-State Tuners & Amplifiers



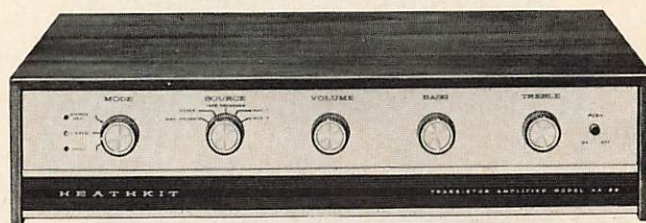
AJ-33A \$99⁹⁵

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. \$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 \pm 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: \pm 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 1/4" W x 3 3/4" H x 11 1/2" D.



AA-22 \$99⁹⁵

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 \pm 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. \$99.95

AA-22 SPECIFICATIONS—Recommended System Mates: Speakers: AS-16, AS-10, AS-37A, pg. 23; AS-38 pg. 18, AS-183, AS-173, AS-163, AS-153 & AS-133, pg. 27, all changers and turntables, ppg. 24-25. **Simultaneous power output per channel:** (Heath Rating). 20 watts/8 ohm load, 13 watts/16 ohm load, 9 watts/4 ohm load. (IHFM 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:** \pm 1 dB from 15 Hz to 30 kHz @ rated output, \pm 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% at 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 1/4" W x 3 3/4" H x 11 1/2" D.



AA-18 \$19⁹⁵

Low Cost Solid-State 4-Watt Mono Amplifier Kit

- 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 watts maximum. **Cabinet size:** 7-11/16" W x 5-9/16" D x 2 3/4" H. **Net weight:** 2 lb. 10 oz. *Rated IHF (Institute of High Fidelity) Standards.



AA-32 \$39⁹⁵

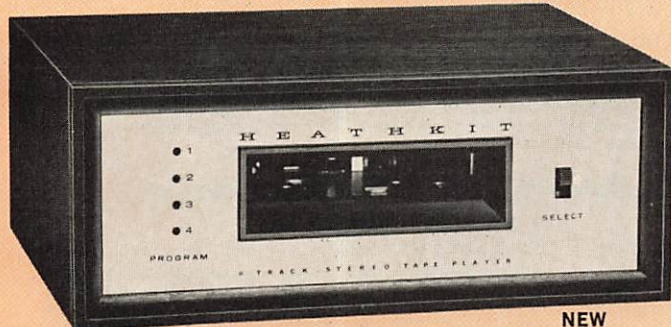
Modestly Priced 20-Watt Stereo Amplifier

- 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. \$39.95

AA-32 SPECIFICATIONS—Recommended System Mates: Speakers, AS-163, AS-133 & AS-123, p. 27. Speaker Systems: AS-37, AS-18 & AS-81, p. 23. Changers & turntables, p. 24-25. **Simultaneous power output per channel:** 8 watts (16 watts total); IHF Music Power Output per channel, 10 watts (20 watts total). **Frequency response:** \pm 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:** 13 1/2" W x 4 3/4" H x 9 1/4" D.

Solid-State 8-Track Stereo Tape Player With Famous Motorola Mechanism



NEW Kit GD-28 \$59⁹⁵



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!

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 playhead from one track to the next automatically. Or you can select the track you want to hear by just pushing the convenient slide switch... a pilot lamp indicates at a glance which track is playing.

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 vinyl clad wood cabinet and gold front panel included with the kit blends with any decor. Add the sound of 8-track stereo tape cartridges to your home music system soon... with the new Heathkit GD-28.

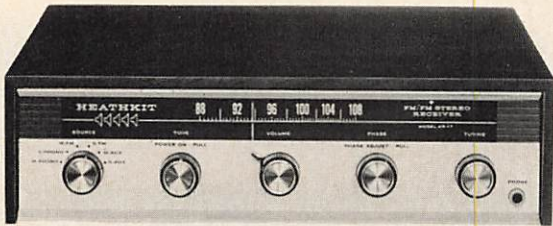
Kit GD-28, 10 lbs. \$59.95

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:** \pm 6 dB, 50 Hz to 10 kHz. **Wow & flutter:** Less than 0.3%. **Hum & noise:** Better than —40 dB. **Motor:** 117 VAC synchronous. **Power requirements:** 105-125 VAC, 60 Hz, 45 watts (momentary). **Cabinet:** Simulated walnut grained vinyl clad wood. **Dimensions:** 10 3/4" W x 4 1/2" H x 8 1/4" D. **Net weight:** 6 3/4 lbs.

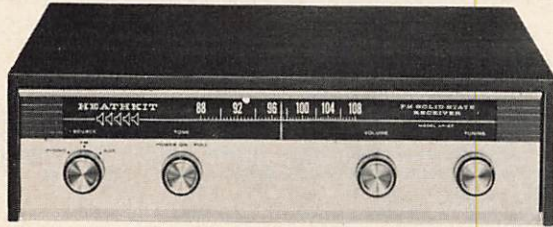
Kit AD-27 Shipped REA or Mtr. Frt.; All Others Mailable

Heath Best-Buy Solid-State Stereo

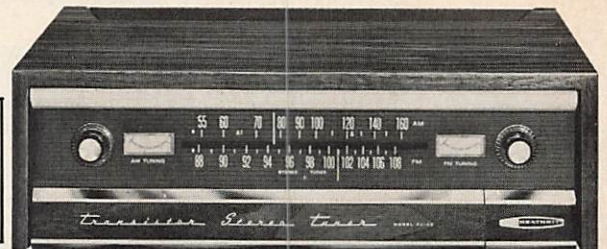
A AR-17
\$72⁹⁵



B AR-27
\$41⁹⁵



C
CLOSING OUT
AJ-43D
\$114⁹⁵



D
CLOSING OUT
AA-21D
\$139⁹⁵



A **Heathkit AR-17 Solid-State FM-Stereo Receiver**

Kit AR-17, 9 lbs. (less cabinet for custom mounting).....\$72.95
 Model AE-35, 4 lbs., beige metal cabinet.....\$3.50
 Model AE-25, 4 lbs., genuine walnut veneer cabinet.....\$9.95
AR-17 SPECIFICATIONS—Recommended System Mates: All speakers & speaker systems, pgs. 18, 23 & 27; all changers & turntables, pp. 24-25. **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: 1 1/4" x 2 1/2" cutout, 10" D. from front mounting surface. Net weight: 9 lbs. *Rated IHF (Institute of High Fidelity) Standards.

B **Heathkit AR-27 Monophonic FM Receiver**

Kit AR-27, 9 lbs. (less cabinet for custom mounting).....\$41.95
 Model AE-35, 4 lbs., beige metal cabinet.....\$3.50
 Model AE-25, 4 lbs., genuine walnut veneer cabinet.....\$9.95
AR-27 SPECIFICATIONS—Recommended System Mates: Speaker Systems, AS-16, AS-37A, AS-41, AS-18, p. 23; Separate speakers, AS-27, AS-183, AS-173, AS-163, AS-153, AS-133, & AS-123, p. 27. All Changers & Turntables, pp. 24-25. **FM SECTION:** Tuning range: 88-108 MHz. Antenna Input Impedance: 300 ohms, balanced input. Sensitivity: 5 microvolts*. Intermediate frequency (IF): 10.7 MHz. Hum & noise: -50 dB, 1 watt reference. Audio frequency response: 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*. **AMPLIFIER SECTION:** Continuous power output: 5 watts. Music power output: 7 watts. Speaker output impedance: 4 thru 16 ohms. Damping factor: 50 or higher. Hum & Noise: Phono: 45 dB; Aux: 55 dB. Power Amplifier: 80 dB. Frequency response: (1 watt): 25 to 70,000 Hz \pm 1 dB; 15 to 120,000 Hz \pm 3 dB. Power response: (5 watt) 25 to 60,000 Hz \pm 1 dB. 15 to 100,000 Hz \pm 3 dB. Input sensitivity: Phono: 5 millivolts; Aux, 300 millivolts. Input impedance: Phono 45K ohms, Aux. 150 K. Total harmonic distortion: (5 watts): less than 1% from 20 to 20,000 Hz. Intermodulation distortion: (5 watts): less than 2% using 60 and 6000 Hz mixed 4:1. Phono equalization: RIAA (Recording Industry Assoc. of America). **GENERAL:** Transistor complement: 13 transistors, Diode complement: 6 diodes. Power requirements: 105-125 V. or 210-240 V., 50/60 Hz, 23 watts full output, 11 watts idling. Dimensions: Overall: 12" W x 3" H x 10 1/2" D. Mounting positions: Horizontal or Vertical. Custom mounting requirements: 1 1/4" x 2 1/2" cutout, 10" deep from front mounting surface. *Rated IHF (Institute of High Fidelity) Standards.

C **CLOSE OUT OF SOLID-STATE AM/FM Stereo Tuner—Limited Supply**

Kit AJ-43D, 15 lbs. (less cabinet for custom mounting).....\$114.95
 Model AE-11, 8 lbs., walnut wood cabinet CLOSE OUT.....\$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: 40 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 bandwidth: 50 Hz to 53,000 Hz \pm 1/4 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.

D **CLOSE OUT OF 100-Watt Solid-State Amp MATCHES AJ-43D ABOVE . . . LIMITED SUPPLY**

Kit AA-21D, 23 lbs. (less cabinet for custom mounting).....\$139.95
 Model AE-11, 8 lbs., walnut wood cabinet, CLOSE OUT.....\$14.95
AA-21D SPECIFICATIONS—Recommended System Mates: Separate Speakers, AS-183, p. 27; Speaker Systems, AS-16, AS-10, AS-37A, p. 23. All Changers & Turntables, pp. 24 & 25. 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%, 60 & 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.

SAVE AN EXTRA 5% BY ORDERING A SYSTEM

Here's How... (1) order a stereo amplifier and stereo program source (such as a tuner, turntable, GD-28 tape player) plus a pair of speaker systems; (2) a stereo receiver and a pair of speaker systems; (3) a stereo compact plus a pair of speaker systems. Order the complete system at the same time, and subtract 5% from the total price. (This system discount

does not apply to the Heathkit AD-19 "Component Credenza".) Other catalog audio items related to the basic system and ordered at the same time (such as turntables, GD-28 tape player, cabinets, additional speakers or speaker systems, headphones, AC-17 headphone control, antenna) will also qualify for the 5% system discount.

Handy Stereo Accessories To Make Private Listening More Enjoyable

A **Telex "Adjustatone" Stereo Headset**

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.

B **Telex ST-11 Stereo Headset**

Model ADP-92, 2 lbs.....\$23.92
ADP-92 SPECIFICATIONS—Driver elements: 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.

C **KOSS "Pro" Stereo Headset**

Model ADP-137, 2 lbs.....\$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.

D **Heathkit Stereo Headphone Control Unit**

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 1/2" H including control knobs. Cable length: 20 ft.



Heath Performance Rated Speaker Systems

Low Cost Two-Way Acoustic Suspension Speaker System

- 10" acoustic suspension woofer, two 3½" cone-type tweeters • Takes only 10 watts to drive, yet handles up to 40 watts • Preassembled cabinets in two finishes • Simple to assemble, use vertically or horizontally

Good listening at a conservative price, that's what you get when you buy the Heathkit AS-10 speaker system. It's got a substantial woofer, midway between 6" and 14"—the proverbial "happy medium" that gives extended bass response with low distortion. The woofer has a 1 lb. Syntox 6 ceramic magnet. A convex housing aims the two 3½" cone-type tweeters in a "crossfire" pattern for wide horizontal dispersion of the high frequency. You can adjust the high frequency level by a variable control on the back panel. The AS-10 is compatible with many power ratings . . . from 10 watts to 40 watts program material per channel. Assembly is easy; the illustrated manual gives step-by-step direction for mounting the speakers and crossover components and doing the wiring. What do you get for your money? Good sound in a compact size with an attractive walnut-finished cabinet. Or spend even less and get the same fine system in an unfinished hardwood cabinet.

Kit AS-10U, unfinished, 43 lbs. \$59.95
 Kit AS-10W, walnut, 42 lbs. \$64.95

AS-10 SPECIFICATIONS—Recommended Amplifiers: AR-15, AR-29 & AR-19, pp. 16 & 17; AA-15, p. 18; AD-27 & AD-17, p. 20; AA-22, p. 21; AA-21D, p. 22. 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 11½" D.

Heathkit Compact 2-Way 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. \$49.95

AS-16 SPECIFICATIONS—Recommended amplifiers: AR-15, AR-29 & AR-19, pp. 16 & 17; AA-15, p. 18; AD-27 & AD-17, p. 20; AR-14 & AA-14, p. 19; AA-21D, p. 22; AA-22, p. 21. 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.

Famous Heathkit AS-37A . . . Choice of Thousands . . . Now Improved

- New special design speakers . . . 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-37A, 29 lbs. \$41.95

AS-37A SPECIFICATIONS—Recommended amplifiers: AR-15, AR-29 & AR-19, pp. 16 & 17; AA-15, p. 18; AR-14 & AA-14, p. 19; AD-27 & AD-17, p. 20; AR-17, AR-27 & AA-21D, p. 22; AA-22 & AA-32, p. 21. 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 ohm. Control: HF Balance. Dimensions: 11½" H x 23" W x 11½" D. Finish: Walnut, satin finish, polyester plastic.

Heathkit Miniature Acoustic Suspension System

- Low cost Heathkit Miniature Acoustic Suspension System • Great for budget-minded stereo enthusiasts • Good performance & small size match 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 watt peak • High frequency balance control • Assembled walnut cabinet protected by rugged clear vinyl covering • Ideal speakers for apartments, mobile homes, offices, reception rooms, etc.

Kit AS-18, 16 lbs. \$34.95

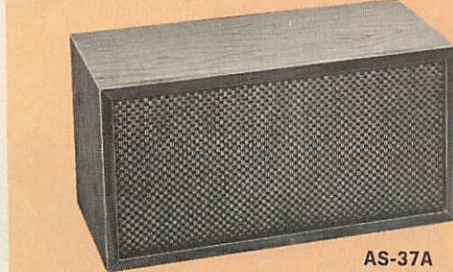
AS-18 SPECIFICATIONS—Recommended amplifiers: AR-15, AR-29 & AR-19, pp. 16 & 17; AA-15, p. 18; AR-14 & AA-14, p. 19; AD-27 & AD-17, p. 20; AR-17, AR-27 & AA-21D, p. 22; AA-22, AA-32 & AA-18, p. 21. Frequency response: 60-20,000 Hz. Crossover frequency: 3000 Hz. Power rating: Program material—25 watts. Peak capacity—50 watts. Nominal impedance: 8 ohms. Speakers: Low frequency—6" Electro-Voice 8.4 oz. magnet; High frequency—2½" Electro-Voice 2.15 oz. magnet. Control: HF balance. Dimensions: 8¼" H x 15¼" W x 6½" D. Cabinet: Walnut veneer, vinyl covered.



\$59⁹⁵ AS-10U



AS-16 \$49⁹⁵



AS-37A \$41⁹⁵



AS-18 \$34⁹⁵

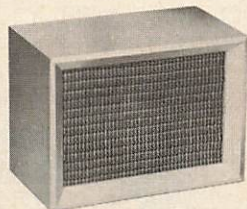
See Our Best Speaker System On Pg. 18 And Component Speakers On Pg. 27

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: AR-14, p. 19; AA-14, p. 19; AA-32, p. 21. 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 5 magnet. Cabinet: Factory assembled, furniture-grade ½" plywood. Dimensions: 8" H x 11" W x 6½" D.



AS-41U \$10⁹⁵



AS-81U \$17⁵⁰

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. 19, AA-14, p. 19, AA-32, p. 21. 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. Syntox No. 6 magnet. Crossover: Capacitor type. Dimensions: 10¾" W x 6½" H x 6-3/16" D; Material ½" veneer plywood.

Famous Garrard® And Dual® Turntables

New Garrard SL95B 3-Speed Automatic Transcription Turntable With Synchro-Lab Motor . . . Garrard's Finest



ADP-89
\$129⁵⁰
(less cartridge & base)

- Synchro-Lab motor for precise turntable speed • Automatic or manual play of 78, 45 & 33 1/3 RPM speeds with interchangeable center spindles • Manual spindle rotates with record . . . reduces center hole wear • 12" aluminum turntable with anti-static mat and safety grooves • Low mass dynamically balanced wood/aluminum tone arm with gyroscopically gimbed pivots for minimal friction • Stylus pressure adjustment calibrated in exact 1/4 gram increments . . . viewed through window in top of arm • Adjustable anti-skating control utilizing Garrard's patented sliding weight design • Counterweight adjustment screw permits ultra-fine arm balance • Garrard's exclusive two-point record support system for automatic play • Viscous damped cueing/pause control • Damped set-down of arm in automatic play • Slide-in cartridge clip • Combined record size and speed selector • Tracks and trips as low as 1/4 gram • Choose either Heath 1c or \$5 cartridge option for extra value

Garrard's Finest . . . the new SL95B 3-speed automatic turntable. Designed for the serious audiophile, the new SL95B incorporates many improved performance features . . . viscous damped cueing/pause activated by a single control . . . new damped set-down of tonearm in automatic play . . . the easiest to use and most visible stylus pressure gauge of any automatic turntable . . . Garrard's patented sliding weight anti-skate control . . . new counterweight adjustment for exact balance. Put this fine example of British craftsmanship in your stereo system now. And take advantage of the special Heath cartridge options.

- ADP-89, turntable only (Garrard SL95B) 13 lbs. \$129.50
- ADA-47-3, Power-Matic base, (Garrard B2P), 3 lbs. \$15.95
- ADA-47-1, Coordinated base, simulated leather Ebony (Garrard B2), 3 lbs. \$6.50
- ADA-47-4, dust cover, for use only with ADA-47-1, (Garrard D2), 4 lbs. \$6.50
- ADA-57-2, 45 RPM spindle (Garrard LRS25), 1 lb. \$3.80

ADP-89 SPECIFICATIONS: Speeds: 33 1/3, 45, & 78 RPM. Motor: Synchro-Lab. Tracking: Tracks per cartridge specifications. Color: Ebony with aluminum trim. 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: 15-13-16" W. x 14 1/4" D. x 4 3/4" above, 3" below motor board.

Garrard's Newest 3-Speed Automatic Transcription Turntable . . . the SL 72B . . . High Performance Features At A Moderate Price

- Automatic or manual play of all three speeds with interchangeable center spindles
- Famous Synchro-Lab motor for perfectly constant speed • Low mass tubular aluminum tone arm floats within a cast gimbal mounting • Adjustable counterweight • Adjustable stylus pressure gauge • Permanently accurate sliding weight anti-skate control • Viscous damped cueing/pause control • Damped tonearm set-down in automatic play • Special cartridge options

- ADP-79, turntable only, (Garrard SL72B) 13 lbs. \$89.50
- ADA-47-3, Power-Matic base, (Garrard B2P), 3 lbs. \$15.95
- ADA-47-1, Coordinated base, simulated leather Ebony (Garrard B2), 3 lbs. \$6.50
- ADA-47-4, dust cover, for use only with ADA-47-1, (Garrard D2), 4 lbs. \$6.50
- ADA-57-2, 45 RPM spindle (Garrard LRS25), 1 lb. \$3.80

ADP-79 SPECIFICATIONS: Same as ADP-89 above.

New Dual 1219 Professional Automatic Turntable With Variable Pitch Control

- Manual or automatic play of 78, 45 & 33 1/3 RPM records with interchangeable center spindles • Manual spindle rotates with record to reduce wear • Four point gyroscopic gimbal tonearm suspension • Separate anti-skating adjustment for both spherical and elliptical cartridges • Perfect 15° stylus tracking in single play • Cue-control system silicone-damped in both directions to prevent bounce • Damped tonearm descent in both automatic and manual start • Precision elastically damped counterbalance adjustable in 0.01 gram click stops for exact tonearm balancing • Adjustable stylus overhang for minimum tracking error with any cartridge • Full 12" diameter dynamically balanced 7 lb. platter • Synchronous/continuous pole motor for exact speed • 6% speed adjustment on all three speeds for precise pitch

- ADP-49, turntable only (Dual 1219), 18 lbs. \$175.00
- ADA-49-1, walnut base (Dual WB-19), 3 lbs. \$14.95
- ADA-49-4, dust cover (Dual DC-9), 4 lbs. \$12.95
- ADA-39-2, 45 RPM spindle (Dual AS-12), 1 lb. \$5.95

ADP-49 SPECIFICATIONS—Speeds: 78, 45 & 33 1/3 RPM. Variable over 6% range. Motor: High torque synchronous/continuous pole. Tracking: Tracks per cartridge specifications. Record capacity: Up to 6. Record sizes: 7, 10 & 12". Color: Black/Silver. Cables furnished: Line cord & 2 audio. Power requirements: 100-130 VAC, 60 Hz. Dimensions: 18 1/2" W. x 16" D. x 8" H.

New Dual 1209 3-Speed Auto/Professional Turntable

- Manual or automatic play of all three speeds with 6% pitch control • Separately calibrated anti-skating scales for spherical & elliptical styli • Adjustable counterbalancing • Stylus pressure adjustment • Flawless 1/2 gram tracking

- ADP-39, turntable only (Dual 1209), 14 lbs. \$129.50
- ADA-39-1, walnut base (Dual WB-12), 3 lbs. \$10.95
- ADA-39-4, dust cover (Dual DC-2), 4 lbs. \$10.95
- ADA-39-2, 45 RPM spindle (Dual AS-12), 1 lb. \$5.95

ADP-39 SPECIFICATIONS—Speeds: 78, 45 & 33 1/3 RPM. Variable over 6% range. Motor: Synchronous/hi-torque. Tracking: Tracks per cartridge specifications. Color: Black/silver. Record capacity: Up to 6. Record sizes: 7, 10 & 12". Cables furnished: Line cord and 2 audio. Power requirements: 100-130 VAC, 60 Hz. Dimensions: 15 1/2" W. x 13 1/2" D. x 8" H.



ADP-79
\$89⁵⁰
(less cartridge & base)

Cartridge options for ADP-89, -79, -49, -39 (this page). Limit one per turntable order. Specify Heath model number.

1c	\$5
Heath AD-58R Shure M93E Reg. \$39.95	Heath AD-68F Shure M91E Reg. \$49.95
Heath AD-96H Empire 888E Reg. \$39.95	Heath AD-88C Empire 888TE Reg. \$49.95



ADP-49
\$175⁰⁰ (less cartridge & base)

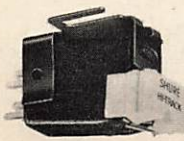


ADP-39
\$129⁵⁰ (less cartridge & base)

SHURE WITH HIGH TRACKABILITY

Shure M91E
MANUFACTURER'S SPECIFICATIONS—Frequency response: 20-20,000 Hz. Output: 5.0 mV. Separation: 25 dB. Load Impedance: 47k ohms. Stylus: 0.2x0.7 elliptical. Tracking force: 3/4 to 1 1/2 grams. Model AD-68F, 1 lb. \$49.95

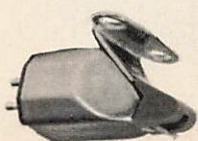
Shure M93E
MANUFACTURER'S SPECIFICATIONS—Frequency response: 20-20,000 Hz. Output: 6.2 mV. Separation: 25 dB. Load Impedance: 47k ohms. Stylus: 0.4x0.7 elliptical. Tracking force: 1 1/2 to 3 grams. Model AD-58R, 1 lb. \$39.95



EMPIRE WITH LOW TRACKING FORCE

Empire 888TE
MANUFACTURER'S SPECIFICATIONS—Frequency response: 8-32,000 Hz. Output: 6.0 mV. Separation: 32 dB. Load Impedance: 47k ohms. Stylus: 0.2x0.7 elliptical. Tracking force: 1/2 to 1 1/2 grams. Model AD-88C, 1 lb. \$49.95

Empire 888E
MANUFACTURER'S SPECIFICATIONS—Frequency response: 10-30,000 Hz. Output: 8.0 mV. Separation: 30 dB. Load Impedance: 47K ohms. Stylus: 0.4x0.9 elliptical. Tracking force: 3/4 to 3 grams. Model AD-96H, 1 lb. \$39.95



NEW Heath/BSR McDonald Automatic Turntables

Deluxe Heath/BSR McDonald Turntable Engineered To Match Fine Components

- Factory assembled and tested—no assembly necessary . . . just connect to your stereo system
- Plays all four speeds automatically, semi-automatically or manually with interchangeable center spindles
- Cueing and Pause Control—ideal for tape recording
- Adjustable Anti-Skate Control eliminates distortion caused by unequal side wall stylus pressure
- Micrometer Stylus Pressure Adjustment for best tracking
- Adjustable Vernier Counterweight for sensitive, accurate tracking
- Low mass tubular aluminum tone arm balanced horizontally and vertically
- Heavy cast, non-magnetic platter for maximum record support
- 4-pole induction motor for constant speed and for very low rumble, wow & hum
- Spring suspension minimizes external shock
- 45 RPM adapter included
- Automatic system shut-off with the Power Base
- Stereo Muting Switch gives complete silence during change cycle
- Handsomely styled in satin black with aluminum trim
- Comes complete with automatic turntable, power base, dust cover, special model Shure M75 cartridge with elliptical stylus and all connecting cables

Model AD-139, 11 lbs. \$79.95

AD-139 SPECIFICATIONS: Speeds: 78, 45, 33 $\frac{1}{3}$ and 16 $\frac{2}{3}$ RPM. Motor: 4-pole hum-shielded induction type. Tracking: Tracks per cartridge specifications. Cartridge: Special Model Shure M75, elliptical stylus; 1 $\frac{1}{2}$ -3 grams stylus pressure. Color: Satin black with aluminum trim. Cables Furnished: 6-foot UL approved line cord; 2 4-foot twin shielded audio cables. Power Requirements: 105-130 VAC, 60 Hz. Dimensions: (includes dust cover and base) 15 $\frac{1}{4}$ " W x 13-3/16" D x 7 $\frac{1}{4}$ " H.



AD-139
\$79⁹⁵

All Heath/BSR McDonald turntables come with dust cover

Model AD-129 Heath/BSR McDonald Turntable With Cartridge, Base & Cover

- Plays all four speeds manually, semi-automatically or automatically with interchangeable spindles supplied
- 45 RPM adapter also included
- Low mass tubular aluminum tone arm with vertical and horizontal counterbalancing
- Adjustable Vernier Counterbalance
- Micrometer Stylus Pressure Adjustment—0-6 grams in $\frac{1}{3}$ gram steps
- Continuously variable Anti-Skate Control
- Dynamically balanced 4-pole induction motor for exact speed control and minimum wow and rumble
- Full size deep drawn turntable with brushed aluminum trim ring
- Cueing and Pause Control
- Spring suspension minimizes shocks
- Smartly styled in satin black with aluminum trim
- Comes complete with automatic turntable, special Model Shure M75 cartridge with spherical stylus, base, dust cover and all connecting cables

Model AD-129, 10 lbs. \$59.95

AD-129 SPECIFICATIONS: Speeds: 78, 45, 33 $\frac{1}{3}$ and 16 $\frac{2}{3}$ RPM. Motor: 4-pole hum-shielded induction type. Tracking: Tracks per cartridge specifications. Cartridge: Special Model Shure M75, spherical stylus; 3-5 grams stylus pressure. Color: Satin black with aluminum trim. Cables Furnished: 6-foot UL approved line cord; 2 4-foot twin shielded audio cables. Power Requirements: 105-130 VAC, 60 Hz. Dimensions: (including dust cover and base) 15 $\frac{1}{4}$ " W x 13-3/16" D x 7 $\frac{1}{4}$ " H.



AD-129
\$59⁹⁵

Heath/BSR McDonald Turntable Model AD-119, A Complete Ready-To-Play Package At Low Cost

- Manual automatic or semi-automatic play of all 78, 45, 33 $\frac{1}{3}$ and 16 $\frac{2}{3}$ RPM records
- Accepts 7, 10 or 12" sizes
- Low mass tubular aluminum counterweighted tone arm
- Stylus pressure adjustment
- Built-in cueing and pause control
- Full size deep drawn platter for ideal record support
- Spring suspension minimizes shocks
- Hum-shielded 4-pole induction motor for accurate speed and low wow, rumble and hum
- Adjustable dynamic anti-skate control
- Pop filter eliminates annoying "pop" when unit is shut off
- Comes ready to play with famous special model Shure M75 cartridge with spherical stylus, dust cover, base, 45 RPM spindle and all cables

Model AD-119, 10 lbs. \$49.95

AD-119 Specifications: Speeds: 78, 45, 33 $\frac{1}{3}$ and 16 $\frac{2}{3}$ RPM. Motor: 4-pole hum-shielded induction type. Tracking: Tracks per cartridge specifications. Cartridge: Special Model Shure M75 spherical stylus; 3-5 grams stylus pressure. Color: Satin black with aluminum trim. Cables Furnished: 6-foot UL approved line cord; 2 4-foot twin shielded audio cables. Power Requirements: 105-130 VAC, 60 Hz. Dimensions: (including dust cover and base) 15 $\frac{1}{4}$ " W x 13-3/16" D x 7 $\frac{1}{4}$ " H.



AD-119
\$49⁹⁵

MAESTRO 4-Speed Automatic Stereo Changer . . . High Performance At Low Cost

- Same high-quality changer as used in the Heathkit GD-107 phonograph
- Ideal for low-cost music systems and for replacement uses
- Use with amplifiers having ceramic cartridge inputs
- Complete instructions for conversion to magnetic cartridge inputs
- Manual or automatic play of any size 78, 45, 33 $\frac{1}{3}$ and 16 rpm records
- Ceramic cartridge has diamond stylus for LP's, sapphire for 78's
- Cartridge comes wired for stereo, can be rewired for mono
- Beautifully styled walnut-grained vinyl-covered wood base
- Measures 2 $\frac{3}{4}$ " H x 14 $\frac{3}{8}$ " W x 12 $\frac{1}{2}$ " D overall
- Includes two 3' audio cables
- 45 rpm spindle adapter included
- Completely assembled

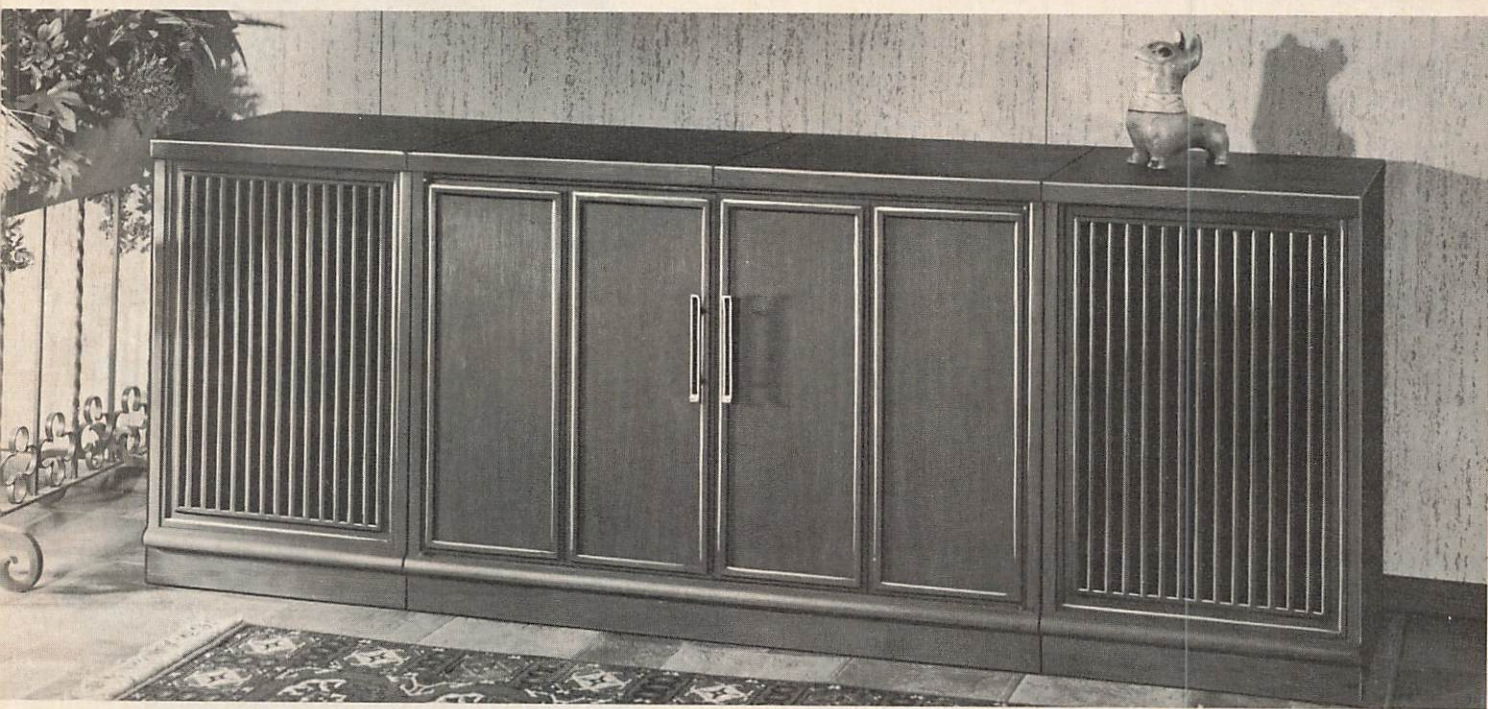
GD-187, 12 lbs. \$29.95

GD-187 SPECIFICATIONS—Changer: Type, Maestro Model 52-93. Speeds: 16, 33 $\frac{1}{3}$, 45 and 78 rpm. Record sizes: 7", 10" and 12". Cartridge: Stereo ceramic. Stylus: 0.7 mil diamond for LP's, 3 mil sapphire for 78's. Power requirements: 105-125 V., 60 Hz AC. 10 watts.



GD-187
\$29⁹⁵

All Kits On These 2 Pages Are Mailable



Deluxe Stereo Hi-Fi Cabinets

Exciting Mediterranean Cabinet Ensemble . . . Only \$324 Complete

• 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

Deluxe Component Cabinet . . . elegantly and exclusively styled for Heath in the latest Mediterranean motif. Truly a masterpiece of superb furniture you'll be proud to have in your home. Features molded carving resin panels that won't chip, warp, shrink, expand or crack from age, humidity or abuse. Has bi-fold doors highlighted by beautifully sculptured Statuary Bronze handles. It's magnificently crafted of specially selected solids and veneers dramatically finished in excitingly new Pecan. And its modern component layout is designed to accommodate all Heathkit receivers, tuners and amplifiers, plus virtually every other make. The two shelves are adjustable and can be placed 4, 5, 6, 10, 11, 12, 16, 17 or 18 inches from the top of the cabinet. And the turntable features an uncut mounting board that's also adjustable in height to house any turntable, changer or tape recorder of your choice. There's also room to store records or to front mount a tape recorder. Add a pair of matching speaker cabinets for a truly luxurious home entertainment ensemble.

Model AE-57, equipment cabinet, 110 lbs. (REA or Mtr. Frt.) \$160.00

AE-57 EQUIPMENT CABINET ACCOMMODATIONS AND SIZES: Cabinet Overall: 40" W. x 19-3/16" 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. (REA or Mtr. Frt.) each \$82.00**

Rich Contemporary Walnut Cabinet Ensemble . . . Only \$265 Complete

• 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

Equipment Center . . . Beauty Combined With Versatility. Exclusively styled for Heath, this new contemporary cabinet will be the center of attraction in any surroundings. It's masterfully crafted of fine furniture solids and veneers finished in a deep, rich walnut. And the slim, sculptured Statuary Bronze handles accent the clean, flowing lines. Perfect for your modern decor. But don't let its luxurious looks fool you. It's as practical as it is beautiful. The two adjustable shelves can be placed 4, 5, 6, 10, 11, 12, 16, 17 or 18 inches from the top of the cabinet to easily house all Heathkit receivers, tuners and amplifiers, plus most other makes. And the turntable compartment features an uncut mounting board that's also adjustable in height to accommodate any turntable, changer or tape recorder of your choice. There's also room to store records or to front mount a tape recorder. Features bi-fold doors for easy accessibility. Mate it with a pair of matching speaker cabinets for a truly deluxe furniture ensemble. **Model AE-37, equipment cabinet, 103 lbs. (REA or Mtr. Frt.) \$135.00**

AE-37 EQUIPMENT CABINET ACCOMMODATIONS AND SIZES: Cabinet Overall: 40" W. x 19" D. x 28 3/4" H. Changer Compartment: 19" W. x 16-3/32" 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 16-3/32" D. x 15 3/4" H. **Shelf Compartment:** Overall interior dimensions, 19" W. x 16-3/32" D. x 24-3/16" 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. (REA or Mtr. Frt.) each \$65.00**

Elegant Early American Cabinet Ensemble . . . Only \$285 Complete

• 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

Versatile Equipment Cabinet . . . exclusively styled and crafted of fine furniture solids and veneers, stunningly finished in popular Salem-Maple. Has louvered doors accented with elegantly sculptured Statuary Bronze handles. Provides added luxury and good taste to any room. And with this new cabinet ensemble, you have all the beauty and charm of Early America combined with the right touch of the modern with its low, compact size and practical component layout. Designed to house all Heathkit receivers, tuners and amplifiers, plus virtually all other makes. The two shelves are adjustable and can be installed 4, 5, 6, 10, 11, 12, 16, 17 or 18 inches from the top of the cabinet. And the turntable features an uncut mounting board that's also adjustable in height to handle the turntable, changer, or tape recorder of your choice. There's also room to store records or to front mount a tape recorder. Pair it with two of its matching speaker cabinets for a rich hi-fi cabinet ensemble.

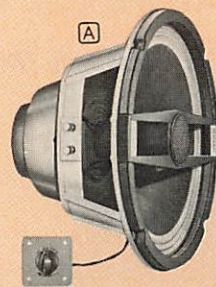
Model AE-47, equipment cabinet, 98 lbs. (REA or Mtr. Frt.) \$145.00

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 24-3/16" 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 3/8" H. Order a pair for stereo.

Model AEA-47-2, speaker cabinet, 64 lbs. (REA or Mtr. Frt.) each \$70.00

Hi-Fi Speakers



A 3-Way Hi-Fi Speaker . . . Covers 20-20,000 Hz

Model AS-27, 14 lbs. . . \$71.50
Model AS-27-2, 28 lbs. Pair \$136.00

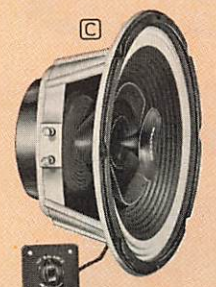
AS-27 SPECIFICATIONS—Size: 12". **Impedance:** 8 ohms. **Power rating:** 40 watts. **Frequency response:** 20-20,000 Hz. **Cone resonance:** 25 Hz. **Magnet Weights:** 1 lb., 6.4 oz., 4.6 oz. **Voice coil sizes:** 1 1/2" and 1".



B 12" 2-Way High Compliance Speaker . . . 20-15,000 Hz Response

Model AS-183, 15 lbs. \$51.95
Model AS-183-2, 29 lbs. Pair \$99.00

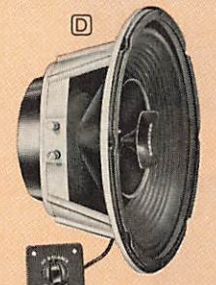
AS-183 SPECIFICATIONS—Size: 12". **Impedance:** 8 ohms. **Power rating:** 30 watts. **Frequency response:** 20-15,000 Hz. **Cone resonance:** 25 Hz. **Magnet weights:** 1 1/4 lbs., 4.65 oz.



C 12" 3-Way Edge-Damped Speaker . . . 35-15,000 Hz Response

Model AS-173, 14 lbs. . \$41.95
Model AS-173-2, 28 lbs. Pair \$79.00

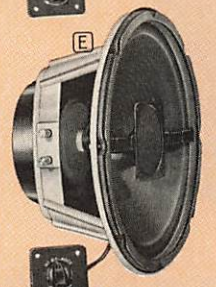
AS-173 SPECIFICATIONS—Size: 12". **Impedance:** 8 ohms. **Power rating:** 25 watts. **Frequency response:** 35-15,000 Hz. **Cone resonance:** 40 Hz. **Magnet weights:** 1 1/4 lbs., 2 1/2 oz.



D 12" 3-Way Coaxial . . . 40-15,000 Hz Range . . . High Frequency Level Control

Model AS-163, 12 lbs. . \$31.95
Model AS-163-2, 24 lbs. Pair \$60.00

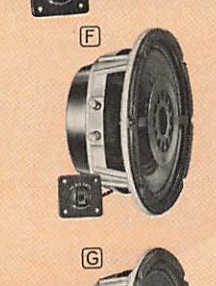
AS-163 SPECIFICATIONS—Size: 12". **Impedance:** 8 ohms. **Power rating:** 20 watts. **Frequency response:** 40-15,000 Hz. **Cone resonance:** 60 Hz. **Magnet weights:** 13 oz., 1 oz. **Voice coil sizes:** 1 1/2" and 1".



E 12" 2-Way Coaxial Speaker . . . Wide 50-15,000 Hz Response

Model AS-153, 10 lbs. \$21.95
Model AS-153-2, 20 lbs. Pair \$40.00

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 9/16".



F 8" 2-Way Coaxial

Model AS-133, 6 lbs. . \$15.95
Model AS-133-2, 12 lbs. Pair \$29.95

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 9/16".



G 8" Dual Cone

Model AS-123, 5 lbs. . \$10.95
Model AS-123-2, 10 lbs. Pair \$20.00

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".

Heathkit® Guitar & Combo Accessories

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

- 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.

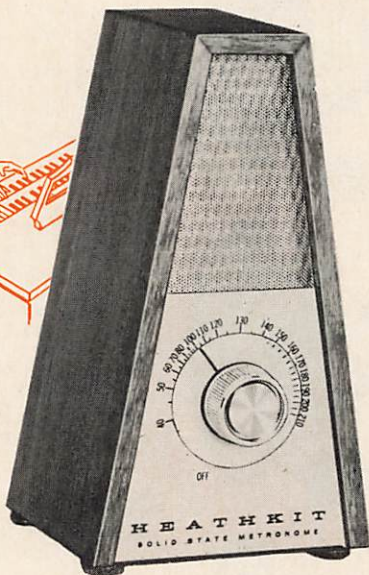
The Ideal Choice For Student Use. The Heathkit Electronic Metronome is very easy to use . . . just set the tempo you desire on the large, easy-to-read dial and adjust the volume with the handy control on the back panel. For reference purposes, there's a chart on the bottom panel that converts tempos 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.



Kit TD-17
\$12.95



TA-16
\$119.95



TA-27
\$79.95

Heathkit 60-Watt Dual-Channel Guitar Amplifier

- 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

All The Features Guitarists Want Most In An Amplifier, at less than half the usual cost. Delivers the coolest 25 watts of EIA music power or 60 watts of peak power you've ever heard . . . with a pure, robust sound that brings out the natural tone of your instrument. And since it's all solid-state, there are no tubes to deteriorate or wear out—you get peak performance at all times. Two channel versatility too . . . the normal channel for accompaniment, accordion or singer's mike . . . the other channel for lead & solo guitars has variable reverb & tremolo. Build the kit in 8-10 hours and save \$80. Order yours now.

Kit TA-16, 52 lbs. (REA or Motor Freight) \$119.95

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. (REA or Motor Freight) \$79.95

Choose These Accessories For Extra Performance And Value

Heathkit Distortion Booster

Add The "Mod" Sound To Your Guitar . . . with the Heathkit Distortion Booster. Just plug it in between your guitar & amplifier and you've got that unique sound. Housed in a convenient footswitch . . . just push the switch to add the distortion, push again to play it straight. Controls allow variation of tone & degree of distortion. Runs on 1.5 V AA penlight cell (not supplied).

Kit TA-28, 4 lbs. \$17.95

Shure Model 515SAC Unidirectional

Particularly suited for small combos and singers and ideal for use in clubs, theatres, auditoriums. Features high impedance input, wide 80 to 13,000 Hz response, on-off switch with lock. Comes with 15' non-detachable cable, swivel adapter and phono plug adapter. Satin chrome finish.

GDP-278, 5 lbs. \$25.87

Atlas Model MS-10C Floor Stand

Full features at a low price. 2-section chrome tube adjusts from 35" to 63" . . . interlined with bakelite to prevent jamming or sudden dropping. Long clutch can be gripped by entire hand, not just fingers. 10" gray base. Self-leveling shock-absorbing pads. 5/8"-27 thread.

GDP-106, 11 lbs. \$8.16



NO MONEY DOWN UP TO \$300
Build your Heathkit now . . . pay later with the convenient Heath Time Payment Plan. No money down and up to 12 months to pay on orders from \$35 to \$300 . . . 10% down and up to 18 months on orders from \$300 to \$500. See Order Blank for details.

Open Your Heath Account—No Money Down Up To \$300—Up To 18 Months To Pay—See Order Blank For Details

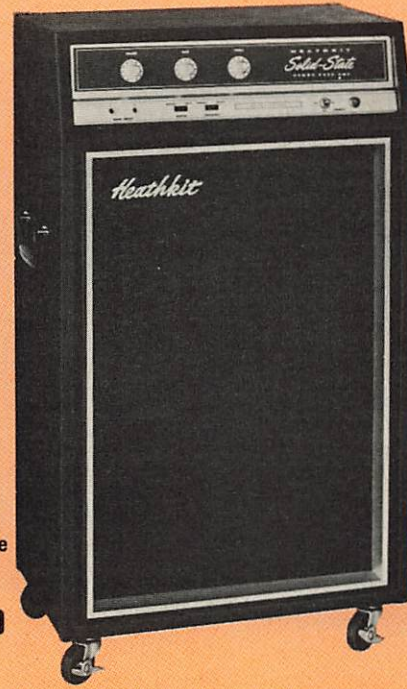
Heathkit® Guitar Amplifiers



TA-17
\$175⁰⁰

TA-17-1
\$120⁰⁰

Save \$40
New Low Price
TA-38
Now Only
\$185⁰⁰



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

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

120 Watt Solid-State Combo Amplifier . . . Professional Features At A Modest Price

- 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 • Brightness switch for that brassy sound • Separate bass and treble boost • Tremolo variable in rate and depth • Dual spring-type variable verb • Dual foot-switch for on-off control of tremolo and verb • 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, Amplifier Only, 44 lbs. (REA or Mtr. Frt.) \$175.00
Model TAA-17, 2 lbs. . . Optional protective cover for TA-17 \$9.95

Heathkit TA-17-1 Speaker Systems . . .

Make A Perfect Combo With The TA-17 Amplifier

- Two specially-designed 12" woofers with 27 ounce magnets and fiberglass voice coils • Special horn driver for greater brilliance • 8 ohm system impedance • Rugged black vinyl-covered compressed wood cabinet with metal corners, extruded aluminum front frame & dark blue grille cloth • Carrying handles and casters for easier portability and fast set-up • Optional heavy-duty vinyl cover provides added protection during transit • Fast, easy assembly

Boasts A Unique Horn Driver Unit to handle the highs with a superb brilliance that can't be matched by systems using woofers only. And the specially-designed 12" woofers, produce a solid low end. Each woofer features a 27 oz. magnet with a fiberglass voice coil, treated cloth suspension system and epoxy cements . . . will safely handle 90 watts of EIA rated music power. System impedance is 8 ohms. The specially engineered sealed cabinet is solidly constructed of a black vinyl-covered ¾" compressed wood with metal corner protectors. Front is styled with an extruded aluminum frame and midnight blue grille cloth. Has handles and casters so it makes it easily to any scene. Measures 25½" W x 14½" D x 38" H, not including casters & handles. Includes 20' cable.

Easy Assembly . . . takes only an hour or two—cabinet is preassembled . . . all you do is mount the speakers, and enjoy big savings. For best performance and even greater value, mate a pair with the Heathkit TA-17 Combo Amplifier.

Kit TA-17-1, one speaker system, 116 lbs. (REA or Mtr. Frt.) . . . \$120.00
Model TAA-17-1, Optional protective cover for TA-17-1, 5 lbs. . . \$13.95

Now The Best Buy Ever In A Bass Amp . . . Price Cut \$40 On This 120-Watt Solid-State Kit

- 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

Solid-State Reliability. The 11 transistor, 11 diode circuit runs cool, so you don't lose yours. No tubes to fail or give feedback while you're on the stand. And it puts out plenty of hard, crisp rock and roll bass sound no matter where the gig, indoors or out. The TA-38 runs a husky 120 watts EIA music power and you can run 100 watts continuous, hour after hour. Walk your bass, ride it hard, play it flat out—this one can handle everything you can give it, everything you need to back your action.

Full Range Control Of All The Action. The Bass, Treble, Volume, Depth, Presence, Power On/Off and Line Reverse controls are all mounted right on the front panel . . . when you need them in a hurry, they're right there. The extremely wide range of the Bass & Treble controls, coupled with the Depth & Presence switches enable you to create a great variety of tonal effects. Extremely low distortion, hum, and noise mean clearer, crisper sound at high volume levels.

An Unequaled Sound System. The sound is what counts, and the TA-38 speakers really put out. Two high efficiency, special design 12" speakers in a completely sealed and isolated ¾" pressed wood cabinet boast an incredible 6¾ pounds of magnet between them—54 ounces each. The cabinet has been designed to heavily damp extreme instantaneous cone movement and the speakers have been especially tailored to cover the fundamental and harmonic frequencies delivered by bass guitars. The result is a bass sound that you couldn't find in another system anywhere near this price.

A Versatile Performer. The two front panel inputs allow virtually any bass instrument to be plugged in . . . electric and amplified string basses, the bass outputs of electronic and combo organs, even amplified brass & reed instruments like bassoons, bass trombones, etc. Single unit construction means one less package to move around and the built-in handles and locking ball-bearing casters give you easy moving and fast set up. The black vinyl covering and handsome anodized aluminum trim makes the compact 41½" H x 24½" W x 14½" D cabinet stand out.

Easy To Build. Just wire one simple circuit board power supply, controls and mount the speakers . . . goes together in just 12-15 hours. Plug in, turn on and have everyone stand back! You've just built the wildest bass amp available anywhere. Order yours now and make the other groups wonder why you have all the sound, and they spent all the money.

Was \$225 Now Only \$185.00
TAA-38, 5 lbs. Optional protective vinyl cover \$11.95

Kits On These 2 Pages Mailable Except Guitar Amplifiers Shipped REA or Mtr. Frt.



New Low Cost Heathkit® Siren P/A System



GD-18 System Price

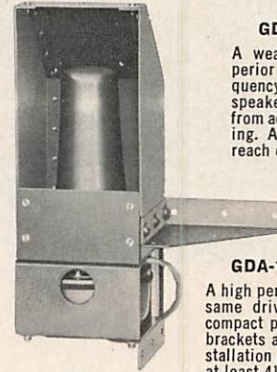
\$99⁹⁵

(with either horn)



GDA-18-1 Exterior Horn

A weatherproof speaker having superior efficiency, dispersion and frequency response. Transformer isolated speaker terminals protect circuitry from accidental open circuits or grounding. All wires are concealed, out of reach of vandals.



GDA-18-2 Concealed Horn

A high performance speaker using the same driver as the GDA-18-1 in a compact package. Versatile mounting brackets and unique design make installation possible in any vehicle with at least 4½" x 4½" x 13" behind the grille.



POLICE

A "Wail" And "Yelp" Siren, Public Address System And Radio Call Alert . . . For Authorized Emergency Vehicles

- 55 watt siren output, 20 watt PA/Radio output • Works on any 12-volt auto system, pos. or neg. ground • Control panel selector for "wail" or "yelp" • Adjustable siren pitch • Radio Call Alert function with adjustable radio input level control • Interrupt siren with PA without changing function knob • Circuitry accommodates remote manual siren switch • Lift-out circuit board • Edge lighted control panel • Output transistor circuitry is temperature and voltage compensated • Operates over -20° F to +150° F range

Heath Introduces The First Really Low Cost Siren/PA. Save over 50% of the cost of outfitting your new emergency vehicles or modernizing cruisers, ambulances etc. having old-fashioned motor driven sirens. Build the new Heathkit GD-18 Siren/PA. It performs all the functions of the others yet costs less than half as much.

It's An Electronic Siren . . . that gives all the warning you'll ever need to clear traffic or "pull them over"—both "wail" and "yelp"—and does it automatically. The siren has 55 watts of power, and its pitch is adjustable. You select either "wail" or "yelp" with the control panel function switch. If the PA is in use, and you suddenly need the siren, release the mike key and press the manual "Wail" button on the panel for an instantaneous burst of siren . . . without resetting the function knob. No relays are needed to connect the siren to a remote switch, and it can be used with either positive or negative grounds.

It's A Public Address System . . . that will amplify your voice with a full 20 watts of power. And Heath's unique design makes the GD-18 practically immune to acoustical feedback—the downfall of many police and fire PA systems. When the siren is in use, keying the mike interrupts the "wail" or "yelp" so the PA may be used. For normal PA use, the function switch is set at "PA".

It's A Radio Call Alert . . . that lets you hear important calls even when you're some distance from your vehicle. And a master volume control makes setting the volume of the radio alert a cinch. This eliminates "guess settings".

Take Your Choice of Speakers . . . concealed or exposed horn. Each provides superior efficiency, dispersion and frequency response. And they're ruggedly built to resist

weather and discourage vandals. The concealed speaker requires a space of 4½" x 4½" x 13" behind the vehicle grille. The GD-18 circuitry cannot be damaged by short circuiting, open circuits or grounding of the speaker terminals.

An Extra Measure of Value . . . The Heathkit GD-18 has been designed and tested to operate in -20° to +150°F conditions. It can be used with any 12 volt auto electrical system with either a positive or negative ground. The solid-state circuit includes 13 silicon transistors and 5 silicon diodes. A lift-out circuit board makes assembly and service checks easy. The GD-18 comes with an edge-lighted glare-free control panel and gimbal mounting bracket.

You Can't Beat Getting More For Less . . . that's the logic of building your own Heathkit GD-18 Siren/PA system.

- Kit GD-18 Siren/PA Amplifier, 7 lbs. \$54.95
- Assembled GDA-18-1 Exterior horn, 9 lbs. \$49.95
- Kit GDA-18-2 Concealed horn, 10 lbs. \$49.95
- System GD-18A (includes GD-18 & exterior horn), 16 lbs. \$99.95
- System GD-18B (includes GD-18 & concealed horn), 16 lbs. \$99.95

GD-18 SPECIFICATIONS—Siren Output Power: 55 watts, normal intermittent duty. PA Or Radio Output Power: 20 watts continuous. Wail Frequency Range: Approx. 550 Hz to 1300 Hz (pitch control at center). Wail Sweep Rate: Approx. 6 sec. per cycle. Yelp Sweep Rate: Approx. ½ sec. per cycle. Radio Input Sensitivity: 0.3 volts RMS min. for rated output. Speaker Requirement: 16 ohm, 75 watt (nominal) weatherproof, horn loaded driver. Controls: Gain (PA and Radio); Manual siren button (in PA only); Function selector switch; provision for external remote manual siren switches; Siren pitch adjust; Radio input level adjust. Power Requirements: 12 to 15 VDC, pos. or neg. ground; 5.5 amp. max. Idle Current: 1.25 amp. or less. Dimensions: 7½" D x 8¾" W x 2¼" H (less gimbal bracket). Finish: Gunmetal gray, wrinkle finish.

GDA-18-1 SPECIFICATIONS—Impedance: 16 ohms. Frequency Range: 275 to 8000 Hz. Dispersion: 100 degrees. Power Rating: 75 watts. Dimensions: 8¼" Dia. x 8¾" H x 8¼" L. Material: Bell & base, aluminum. Finish: Corrosion resistant baked gray enamel. Mounting Base: Sand cast aluminum. Net Weight: 7 lbs.

GDA-18-2 SPECIFICATIONS—Impedance: 16 ohms. Frequency Range: 300 to 3000 Hz. Power Rating: 75 watts. Material: Sheet metal enclosure. Finish: Corrosion resistant baked gray enamel. Dimensions: 4½" H x 4½" D x 13" W. Net Weight: 8 lbs.



FIRE



AMBULANCE



CIVIL DEFENSE



VOLUNTEERS

Open Your Heath Account—No Money Down Up To \$300—Up To 18 Months To Pay—See Order Blank For Details

Springtime Is Tune-Up Time

ID-29
\$33⁹⁵

NEW! Heathkit ID-29 Tune-Up Meter . . . Measures Dwell, RPM & DC Volts On 3, 4, 6 & 8 Cylinder 4-Cycle Engines

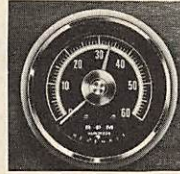
- Three automotive test instruments in one • Measures Dwell on all 4-cycle, 3, 4, 6 or 8 cylinder engines • Two RPM scales—0-1500 and 0-4500 revolutions
- Measures DC voltage from 0 to 15 volts • Dwell and VDC scales are direct reading • Uses only two leads • Running engine provides both signal and power . . . 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 • Can be used with either positive or negative ground systems

Kit ID-29, 4 lbs. **\$33.95**

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 approximately average current. **Meter:** 4 1/2" x 1 mA (100 degree movement). **Accuracy:** ±3% of full scale. **Dimensions:** 8 1/2" W x 4 1/4" H x 7 1/4" D (including handle). **Net weight:** 2 1/2 lbs. Recommended for use with standard ignition systems only.



MI-18-1
Panel Mount
\$29⁹⁵



Dash-mounted, the MI-18 looks sharp . . . requires only a 3/4" hole, 2 1/4" deep.

MI-18-2
Case Mount
\$32⁹⁵



Heathkit Solid-State Tachometer . . . Case Or Panel Mount

- Unique inductive pickup allows use with virtually any spark-type engine—any ignition system • Two RPM ranges—0-6000 & 0-9000 • Temperature-compensated for ±5% accuracy from 0°-120° F. • Wide-angle 250° edge-lighted dial • Stainless steel hardware • Adjustable red line • Non-scratch glass face • Splash-proof case • Can be panel mounted or installed in its own handsome black & chrome case • Fast assembly—all components mount on unique circular circuit board that fits inside case—only one unit to install

Kit MI-18-1, (For panel mounting), 3 lbs. **\$29.95**

Kit MI-18-2, (includes mounting case & hardware), 3 lbs. **\$32.95**

MI-18 SPECIFICATIONS—Trigger Sensitivity (Minimum Requirements). Pickup Coil: 25 mA peak, 5 uS rise time. Tach 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, 3 3/4" overall face diameter. Mounts in 3/4" hole. 2 1/4" overall case depth. Model MI-18-2, 3 3/4" overall face diameter. 4 1/4" high. 3" overall case depth. **Weight:** MI-18-1: 14 oz. MI-18-2: 17 oz.

See Your Car's Ignition Pattern With This Heathkit Ignition Analyzer

- 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 simple assembly and operation • Use on any internal combustion engine with conventional, non-transistor ignition system*

Kit IO-20, 18 lbs. **\$109.95**
Export model available for 115/230 VAC, 50-60 Hz; write for prices.

IO-20 SPECIFICATIONS—Rpm Range: 400-5000 rpm. **Displays:** Secondary, Primary, Parade, Super-imposed. **Screen size:** 4 1/2" diameter. **Dwell measurement:** 4, 6 & 8 cylinder calibration on face plate. **Pattern height:** Secondary circuit, approx. 1"; Primary circuit, 6 volt system 3/4", 12 volt system 1". **Vertical expand ratio:** 2 to 1. **Horizontal expand ratio:** 10 to 1. **Cable length:** 12' pick-up clamp, ground and secondary clip leads extend 2' beyond pick-up clamp. **Power requirements:** 105-125 V, 50/60 Hz AC, 30 watts.

*It is impractical to portray the patterns produced by the many different ignition systems (transistor, SCR, Capacitor Discharge, Induction pick-up, etc.) currently used experimentally. In most cases the IO-20 will function satisfactorily and with a little experience the display will prove equally meaningful to the user as conventional systems. Heath Company can NOT supply advice on interpretation of such displays.

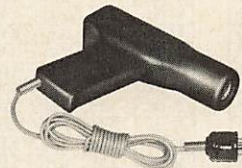
Hanson Basic Tester Set For Car Tune-Up And Repair

Ideal For Do-It-Yourself & Professionals. Includes Model 1604 Remote Starter Switch with push button & long leads . . . Model 1605 Compression Tester that reads 0-300 lbs.; 15° offset to reach back cylinders . . . Model 1606 Vacuum/Fuel Pump Tester with 2 1/2" 3-color dial, calibrated 0-30 inches for vacuum and 0-7 lbs. for pressure . . . Model 1603 Engine Timing Light with molded plastic case, long leads & rubber covered connectors.

GFP-83, 4 lbs. **\$12.95**



GFP-83
\$12⁹⁵



IO-11
\$19⁹⁵

Timing Light Kit . . . Adds More Versatility To The IO-20 Ignition Analyzer

Especially Designed For Use With The IO-20. Produces an intense white light that shows timing marks even in bright sunlight. Features a speed range of 0-1250 flashes per minute (0-2500 rpm for current conventional 4-cycle engines). The long-life, hard-rubber pistol grip case comes complete with 10' of cable. Measures 6" H x 7 1/2" L x 2" W.

Kit IO-11, 3 lbs. **\$19.95**

All Kits On These 2 Pages Are Mailable

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. Include shipping charges only if item can be mailed Parcel Post (see Rate information, below). If your order is to be shipped REA or Motor Freight, do not include shipping charges. If you wish us to send your order to another address, be sure to fill out section 2 of the order blank.

2. BY TELEPHONE...ANYTIME DAY OR NIGHT

Weekdays (M-F) 8 a.m. to 4:30 p.m. Michigan Time. Call Area 616, 983-7381 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. You'll see and hear Heathkit equipment in action, giving you an opportunity to make just the right selection for your needs.

HOW TO FIGURE SHIPPING COSTS

First, check the footnote at the bottom of each right hand page to determine if your kit is mailable or must be shipped another way, then use the appropriate information below.

MAILABLE ITEMS

How To 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.

ZONE CHART

Zip Code Prefixes	Zone	Zip Code Prefixes	Zone	Zip Code Prefixes	Zone	Zip Code Prefixes	Zone	Zip Code Prefixes	Zone
006-009	8	260-261	3	370-386	4	478	3	600-609	2
010-069	5	262-278	4	387	5	479-489	2	610-619	3
070-089	4	279	5	388	4	490-491	1	620-623	4
090-099	5	280-283	4	389-397	5	492	2	624-628	3
		284-285	5			493-495	1	629-668	4
100-108	5	286-293	4	400-406	3	496-499	3	669-679	5
109	4	294-295	5	407-409	4			680-687	4
110-119	5	296-297	4	410-412	3	500-516	4	688-693	5
120-123	4	298-299	5	413-422	4	520-524	3	700-722	5
124-126	5			423	3	525	3	723-727	4
127-128	4	300-303	4	424-426	4	526-528	3	728-768	5
129	5	304	5	427-432	3	530-534	3	769	6
130-152	4	305-307	4	433-436	2	535-539	3	770-778	5
153	3	308-329	5	437-457	3	540	4	779-789	6
154-160	4	330-334	6	458	2	541-546	3	790-792	5
161	3	335-338	5	460-462	3	547-548	4	793-799	6
162-163	4	339	6	463-464	2	549	3		
164-165	3	350-352	4	465-466	1	550-566	4	800-803	5
166-199	4	353	5	467-469	2	557	5	804-805	6
		355-359	4	470-472	3	570-572	4	806-807	5
200-232	4	360-361	5	473	2	573-588	5	808-816	6
233-237	5	362	4	474-475	3	590-597	3	820-822	5
238-259	4	363-369	5	476-477	4	598-599	7		

PARCEL POST RATES for MAILABLE ITEMS

Postal Regulations . . . limit parcel post shipments to 40 pounds, all zones. EXCEPTION: Shipments up to 70 pounds will still be accepted to RFD addresses, and to APO numbers.

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

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

C.O.D. Fees in Addition To Postage

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

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

INSURED PARCEL POST (Add to Postage)

(Figure charges on each kit individually)

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

Liability for insured mail is limited to \$200.

Non-Mailable Items

*REA EXPRESS & MOTOR FREIGHT INSTRUCTIONS FOR NON-MAILABLE ITEMS

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.

We stamp all waybills "HOLD AT TERMINAL NOTIFY OFFICE." The carrier will contact you by phone or mail for your instructions as soon as your shipment reaches a terminal that would normally make the delivery. We have made this notation so that you can avoid a residence delivery charge by picking up the merchandise yourself if you so desire, or, by notifying you in this way, a suitable time can be arranged for home delivery thus avoiding re-delivery charges.

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.

IF YOU MOVE . . .

please send us your old address, and your new address including Zip Code. This will keep catalogs, correspondence, and your shipments coming without interruption.

If You Are Receiving Duplicate Copies

of Heathkit catalogs, return the mailing labels of those copies you wish discontinued.

METHODS OF PAYMENT

1. IN CASH
Do Not Send Currency Or Postage Stamps . . . send personal check or money order.

2. C.O.D.
A 20% deposit is required on any C.O.D. order. The balance will be collected by the carrier. Payment must be made in cash, money order, or certified check (they will not accept personal checks). C.O.D. Shipments cannot be made if balance is over \$200.

2. CONVENIENT HEATH TIME-PAY PLAN
No money down and up to 12 months to pay on orders from \$35 to \$300. 10% down and up to 18 months to pay on orders from \$300.01 to \$500. See order blank.

To Make "Add-On" Purchases. See order blank.

Rates on this page were in effect when this catalog was published. They are subject to change without notice.

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

HEATH EASY PAYMENT PLAN

ABOUT EASY PAYMENT PLAN

The "Cash Price" of merchandise on Heath's Easy Payment Plan includes the Cash Price as listed on the page describing the merchandise plus applicable sales tax, shipping charges and less any advertised allowances. The "Deferred Payment Price" is the Cash Price plus the **FINANCE CHARGE**. The "Total Payments" is the "Deferred Payment Price" less any "Down Payment". The number of payments is 12 or 18 as listed in the Easy Payment Chart. The **ANNUAL PERCENTAGE RATE** of the **FINANCE CHARGE** is **18%**.

Minimum amount that can be financed is \$35.00. No down payment is required on orders up to \$300; however, a down payment will reduce your monthly payments and **FINANCE CHARGE**. On orders over \$300, a down payment of 10% is required. Write for details on orders over \$500.

HOW TO OPEN AN ACCOUNT

Just fill out the statement, sign the agreement, and mail to Heath with your order.

ADD-ON PURCHASES

Once your credit is established you can add-on purchases of \$35.00 or more with no down payment. List items you want on order blank, check the add-on box and give your account number. Sign the time payment agreement and send to us with original payment book.

NOTICE TO BUYER:

- Do not sign the contract before you read it.
- Under certain conditions you may redeem the property if repossessed for a default.
- The other side of this page is part of this contract.
- If you pay in full in advance, any unearned **FINANCE CHARGE** will be rebated under The Rule of 78. **IF FULL AMOUNT IS PAID WHEN FIRST INSTALLMENT DUE (30 days after shipment), THEN YOU SAVE ENTIRE FINANCE CHARGE.**

EASY PAYMENT CHART

If Cash Price Less Down Payment Amounts To:	12 Monthly Payment Plan		18 Monthly Payment Plan		*Final Payment is an odd amount. Can be larger or smaller than regular payment.
	Finance Charge	Monthly Payment	Finance Charge	Monthly Payment	
\$ 35.00 - \$ 37.50	\$ 3.65	\$ 3.30	220.01 - 230.00	22.60	21.00
37.51 - 40.00	3.90	3.55	230.01 - 240.00	23.60	22.00
40.01 - 42.50	4.15	3.80	240.01 - 250.00	24.60	22.50
42.51 - 45.00	4.40	4.00	250.01 - 260.00	25.70	23.50
45.01 - 47.50	4.65	4.25	260.01 - 270.00	26.70	24.50
47.51 - 50.00	4.90	4.50	270.01 - 280.00	27.70	25.00
50.01 - 55.00	5.25	4.75	280.01 - 290.00	28.70	26.00
55.01 - 60.00	5.75	5.25	290.01 - 300.00	29.70	27.00
60.01 - 65.00	6.25	5.75	300.01 - 310.00	30.70	28.00
65.01 - 70.00	6.80	6.25	310.01 - 320.00	31.70	29.00
70.01 - 75.00	7.30	6.75	320.01 - 330.00	32.70	30.00
75.01 - 80.00	7.80	7.00	330.01 - 340.00	33.70	31.00
80.01 - 85.00	8.30	7.50	340.01 - 350.00	34.70	32.00
85.01 - 90.00	8.80	8.00	350.01 - 360.00	35.70	33.00
90.01 - 95.00	9.30	8.50	360.01 - 370.00	36.70	34.00
95.01 - 100.00	9.80	9.00	370.01 - 380.00	37.70	35.00
100.01 - 110.00	10.45	9.50	380.01 - 390.00	38.80	36.00
110.01 - 120.00	11.50	10.50	390.01 - 400.00	39.80	37.00
120.01 - 130.00	12.55	11.50	400.01 - 410.00	40.80	37.50
130.01 - 140.00	13.60	12.50	410.01 - 420.00	41.80	38.00
140.01 - 150.00	14.60	13.50	420.01 - 430.00	42.80	39.00
150.01 - 160.00	15.60	14.00	430.01 - 440.00	43.80	40.00
160.01 - 170.00	16.60	15.00	440.01 - 450.00	44.80	41.00
170.01 - 180.00	17.60	16.00	450.01 - 460.00	45.80	42.00
180.01 - 190.00	18.60	17.00	460.01 - 470.00	46.80	43.00
190.01 - 200.00	19.60	18.00	470.01 - 480.00	47.80	44.00
200.01 - 210.00	20.60	19.00	480.01 - 490.00	48.80	45.00
210.01 - 220.00	21.60	20.00	490.01 - 500.00	49.80	46.00
				74.00	32.00

ON ORDERS OVER \$500.00 - WRITE FOR DETAILS
Terms chart prepared by D. J. Mello, Heath Co., Benton Harbor, Michigan

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 Order Blank. I will pay \$_____ each month to you at the above address starting 30 days after shipment until the total of payments is made.

This agreement provides for a series of credit sales by Heath of merchandise for my personal use. In accordance with Heath's established terms, **FINANCE CHARGE** will be computed only on each new purchase and the amount financed plus the **FINANCE CHARGE** of each new purchase will be added to my existing outstanding balance.

Until each item is fully paid for, I agree that: I have risk of loss or damage; I will not sell, transfer possession of, remove or encumber the property without your written consent; upon default on the terms of this agreement, you may declare my existing outstanding balance due and payable and you may repossess the property. My installments shall be applied as follows: In case of items purchased on different dates, the first purchased shall be deemed first paid for; in the case of items purchased on the same date, the lowest priced shall be deemed first paid for. This contract is to be governed by the laws of the State of Michigan.

Total Cash Price \$ _____
Add: **FINANCE CHARGE** \$ _____
Deferred Payment Price \$ _____

Date _____ Sign Here X _____

CREDIT APPLICATION

(Please Print) IMPORTANT: Please fill in completely. Omissions and errors cause delays. SIGN TIME PAYMENT AGREEMENT ABOVE.

TERMS DESIRED

12 mo. 18 mo.

ABOUT HEAD OF HOUSEHOLD	Single	Married	Divorced	Separated	No. Dependents	Area Code	Home Phone	Age	Social Sec. No.	If Service man, Serial No.
	Mr.									
	Mrs.									
	Miss									

First Name _____ Initial _____ Last Name _____

Address _____ City _____ State _____ Zip _____ Years At _____

Previous Address (if at present address less than 2 years) If Military, Permanent Mailing Address _____

Occupation _____ Employer _____

Employer Address _____ Previous Employer (if less than 2 yrs. with present employer) _____

ABOUT YOUR WIFE	First Name _____	Occupation _____
	Employer _____	Employer Address _____

PERSONAL DATA	Rent	Own	Board	Trailer	Other	Head of Household's Income Per Month	Wife's Income Per Month	Other Income Per Month
	Rent or Mortgage Payment Per Month \$ _____					\$ _____	\$ _____	\$ _____

Name of Nearest Relative (with whom not residing) _____	Other Credit Accounts	Balance	Monthly Payments	Account Number
Relative's Address _____	Name _____			
Name of Bank _____	Address _____			
Type of Account	Name _____			
Checking Account	Address _____			
Savings Account	Name _____			
Loan	Address _____			
Previous Heath Account: Yes No If Yes Give Acct. No.	Name _____			
	Address _____			

HEATH EASY PAYMENT PLAN

ABOUT EASY PAYMENT PLAN

The "Cash Price" of merchandise on Heath's Easy Payment Plan includes the Cash Price as listed on the page describing the merchandise plus applicable sales tax, shipping charges and less any advertised allowances. The "Deferred Payment Price" is the Cash Price plus the **FINANCE CHARGE**. The "Total Payments" is the "Deferred Payment Price" less any "Down Payment". The number of payments is 12 or 18 as listed in the Easy Payment Chart. The **ANNUAL PERCENTAGE RATE** of the **FINANCE CHARGE** is 18%.

Minimum amount that can be financed is \$35.00. No down payment is required on orders up to \$300; however, a down payment will reduce your monthly payments and **FINANCE CHARGE**. On orders over \$300, a down payment of 10% is required. Write for details on orders over \$500.

HOW TO OPEN AN ACCOUNT

Just fill out the statement, sign the agreement, and mail to Heath with your order.

ADD-ON PURCHASES

Once your credit is established you can add-on purchases of \$35.00 or more with no down payment. List items you want on order blank, check the add-on box and give your account number. Sign the time payment agreement and send to us with original payment book.

NOTICE TO BUYER:

- Do not sign the contract before you read it.
- Under certain conditions you may redeem the property if repossessed for a default.
- The other side of this page is part of this contract.
- If you pay in full in advance, any unearned **FINANCE CHARGE** will be rebated under The Rule of 78. IF FULL AMOUNT IS PAID WHEN FIRST INSTALLMENT DUE (30 days after shipment), THEN YOU SAVE ENTIRE **FINANCE CHARGE**.

EASY PAYMENT CHART

If Cash Price Less Down Payment Amounts To:	12 Monthly Payment Plan		12 Monthly Payment Plan		*Final Payment is an odd amount. Can be larger or smaller than regular payment.
	Finance Charge	Monthly Payment	Finance Charge	Monthly Payment	
\$ 35.00 - \$ 37.50	\$ 3.65	\$ 3.30	220.01 - 230.00	22.60	21.00
37.51 - 40.00	3.90	3.55	230.01 - 240.00	23.60	22.00
40.01 - 42.50	4.15	3.80	240.01 - 250.00	24.60	22.50
42.51 - 45.00	4.40	4.00	250.01 - 260.00	25.70	23.50
45.01 - 47.50	4.65	4.25	260.01 - 270.00	26.70	24.50
47.51 - 50.00	4.90	4.50	270.01 - 280.00	27.70	25.00
50.01 - 55.00	5.25	4.75	280.01 - 290.00	28.70	26.00
55.01 - 60.00	5.75	5.25	290.01 - 300.00	29.70	27.00
60.01 - 65.00	6.25	5.75	300.01 - 310.00	30.70	28.00
65.01 - 70.00	6.80	6.25	310.01 - 320.00	31.70	29.00
70.01 - 75.00	7.30	6.75	320.01 - 330.00	32.70	30.00
75.01 - 80.00	7.80	7.00	330.01 - 340.00	33.70	31.00
80.01 - 85.00	8.30	7.50	340.01 - 350.00	34.70	32.00
85.01 - 90.00	8.80	8.00	350.01 - 360.00	35.70	33.00
90.01 - 95.00	9.30	8.50	360.01 - 370.00	36.70	34.00
95.01 - 100.00	9.80	9.00	370.01 - 380.00	37.70	35.00
100.01 - 110.00	10.45	9.50	380.01 - 390.00	38.80	36.00
110.01 - 120.00	11.50	10.50	390.01 - 400.00	39.80	37.00
120.01 - 130.00	12.55	11.50	400.01 - 410.00	40.80	37.50
130.01 - 140.00	13.60	12.50	410.01 - 420.00	41.80	38.00
140.01 - 150.00	14.60	13.50	420.01 - 430.00	42.80	38.50
150.01 - 160.00	15.60	14.00	430.01 - 440.00	43.80	39.00
160.01 - 170.00	16.60	15.00	440.01 - 450.00	44.80	40.00
170.01 - 180.00	17.60	16.00	450.01 - 460.00	45.80	41.00
180.01 - 190.00	18.60	17.00	460.01 - 470.00	46.80	42.00
190.01 - 200.00	19.60	18.00	470.01 - 480.00	47.80	43.00
200.01 - 210.00	20.60	19.00	480.01 - 490.00	48.80	44.00
210.01 - 220.00	21.60	20.00	490.01 - 500.00	49.80	45.00

ON ORDERS OVER \$500.00 - WRITE FOR DETAILS
Terms chart prepared by D. J. Moffo, Heath Co., Benton Harbor, Michigan

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 Order Blank. I will pay \$_____ each month to you at the above address starting 30 days after shipment until the total of payments is made.

This agreement provides for a series of credit sales by Heath of merchandise for my personal use. In accordance with Heath's established terms, **FINANCE CHARGE** will be computed only on each new purchase and the amount financed plus the **FINANCE CHARGE** of each new purchase will be added to my existing outstanding balance.

Until each item is fully paid for, I agree that: I have risk of loss or damage; I will not sell, transfer possession of, remove or encumber the property without your written consent; upon default on the terms of this agreement, you may declare my existing outstanding balance due and payable and you may repossess the property. My installments shall be applied as follows: in case of items purchased on different dates, the first purchased shall be deemed first paid for; in the case of items purchased on the same date, the lowest priced shall be deemed first paid for. This contract is to be governed by the laws of the State of Michigan.

Date _____ Sign Here X _____

Total Cash Price \$ _____
Add: **FINANCE CHARGE** \$ _____
Deferred Payment Price \$ _____

CREDIT APPLICATION

(Please Print) IMPORTANT: Please fill in completely. Omissions and errors cause delays. SIGN TIME PAYMENT AGREEMENT ABOVE.

TERMS DESIRED

12 mo. 18 mo.

ABOUT HEAD OF HOUSEHOLD	Single	Married	Divorced	Separated	No. Dependents	Area Code	Home Phone	Age	Social Sec. No.	If Service man, Serial No.
	Mr.	Mrs.	Miss							

First Name _____ Initial _____ Last Name _____
Address _____ City _____ State _____ Zip _____ Years At _____

Previous Address (if at present address less than 2 years) If Military, Permanent Mailing Address _____

Occupation _____ Employer _____

Employer Address _____ Previous Employer (if less than 2 yrs. with present employer) _____

ABOUT YOUR WIFE	First Name	Occupation
	Employer	Employer Address

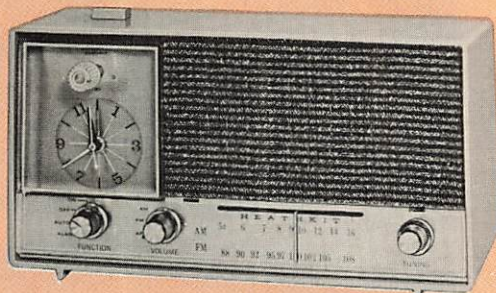
PERSONAL DATA	Rent	Own	Board	Trailer	Other	Head of Household's Income Per Month	Wife's Income Per Month	Other Income Per Month
	Rent or Mortgage Payment Per Month \$ _____					\$ _____	\$ _____	\$ _____

Name of Nearest Relative (with whom not residing)	Other Credit Accounts	Balance	Monthly Payments	Account Number
Relative's Address	Name			
Name of Bank	Address			
Branch	Name			
Type of Account	Address			
Checking Account	Name			
Savings Account	Address			
Loan	Name			
Previous Heath Account: Yes No	Address			
If Yes Give Acct. No.				

Choose Heathkit® Table Radios For Top Performance

With
"Snooze"
Alarm

GR-58
\$47⁹⁵



Heathkit GR-58 Solid-State AM-FM Clock Radio

- 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 • Back-lighted 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 . . . or add your own personalized grille cloth • Easy to build circuit board construction • Heavy duty line cord accommodates high wattage appliances

Wake Up To Music & Fresh Coffee . . . the GR-58 makes it easy. Choose AM news . . . or the clear, bright sound of FM, with AFC for easy tuning. The clock controls the accessory AC socket, so you can have lights turned on or coffee perking. Order an easy way to get up . . . the Heathkit GR-58. Kit GR-58, 6 lbs. \$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, 40Ω voice coil. **Audio Output Power:** .8 watts. **Dimensions:** 5 1/4" high x 10" 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-48
\$39⁹⁵



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 of 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

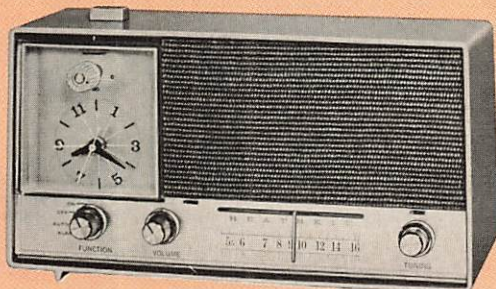
The Perfect Addition To Any Room In The House . . . choose the "pop" sound of AM or the lifelike reproduction of FM . . . the choice is at your fingertips. AFC on FM makes tuning weak stations easy, and AM volume is always constant, thanks to AGC. Built-in AM & FM antennas, backlighted dial and handsome designer styling make the GR-48 an enjoyable, attractive accessory in any room. Order yours now.

Kit GR-48, 5 lbs. \$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 40Ω voice coil. **Audio Output Power:** .8 watts. **Dimensions:** 5 1/4" high x 10" wide x 4 1/4" deep. **Weight:** 3 3/4 lbs. **Power Requirements:** 105-125 volts, 50-60 Hz only, 3 watts.

With
"Snooze"
Alarm

GR-38
\$32⁹⁵



Heathkit GR-38 Solid-State AM Clock Radio

- All solid-state design for remarkable performance and heat-free, trouble-free life • Automatic Gain Control keeps AM volume constant • "Snooze" alarm turns radio on ten minutes before alarm sounds • Dependable Telechron® clock movement • Back-lighted clock dial for easier reading in darkness • AM antenna built-in • Auxiliary AC socket on rear panel is controlled by clock—turns lights, coffee pot, etc., on in the morning • Designer-styled coral cabinet with matching grille cloth—or add your own personally styled grille • Easy, enjoyable circuit board construction

All Solid-State Construction . . . the 7 transistor, 3 diode circuit runs cool, virtually maintenance-free, and an extra untuned RF stage & built-in antenna pull those AM stations in from far and near. "Snooze" Alarm, AGC & handsome styling round out the picture of this top quality AM Clock Radio at low cost. Order yours now.

Kit GR-38, 6 lbs. \$32.95

GR-38 SPECIFICATIONS—Tuning Range: 535-1605 kHz. Intermediate Frequency (IF): 455 kHz. Sensitivity: Better than 100 microvolts per meter for 10 dB signal-to-noise ratio or 280 microvolts/meter for 20 dB signal-to-noise ratio. **Audio Output Power:** 0.8 watt (800 milliwatts). **Speaker:** 3 x 5" oval, 1 oz. permanent magnet, 40 ohm voice coil. **Power Requirements:** 105-125 VAC, 60 Hz. Clock only: 2 1/2 watts. Radio and clock: 5 1/2 watts (no power to AC outlet). **Maximum Load at AC Outlet:** 10 amperes, 1200 watts maximum. **Dimensions:** 5 3/8" H x 10" W x 4 1/8" D. **Net Weight:** 3 1/2 lbs. *Registered T.M. of General Electric Co.

GR-28
\$24⁹⁵



Heathkit GR-28 Solid-State AM Table Radio

- Seven transistor, three diode circuit for cool operation and top performance • Automatic Gain Control for constant AM volume • Excellent sensitivity • Full wave transformer power supply eliminates hum • Bright, clear sound from the 3 x 5" speaker • Designer styled in gold and brown—you can even add your own grille cloth • Fast, enjoyable assembly • An ideal "first kit"

Add The Sound Of Music To Any Room At Low Cost . . . perfect for the kitchen, patio, workshop or teenager's room. Automatic Gain Control keeps the volume constant for different AM stations, and the extra untuned RF stage and built-in ferrite rod antenna make distant stations sound local. Fast, enjoyable assembly make the GR-28 an ideal "first" kit. Order yours soon.

Kit GR-28, 5 lbs. \$24.95

GR-28 SPECIFICATIONS—Tuning Range: 535-1605 kHz. Intermediate Frequency (IF): 455 kHz. Sensitivity: Better than 100 uV/meter for 10 dB signal-to-noise ratio or 280 uV/meter for 20 dB signal-to-noise ratio. **Audio Output Power:** 0.8 watt (800 milliwatts). **Speaker:** 3 x 5" oval, 1 oz. permanent magnet, 40 ohm voice coil. **Power Requirements:** 105-125 VAC, 50-60 Hz, 3 watts. **Dimensions:** 5 1/4" H x 10" W x 4 1/4" D. **Net Weight:** 3 lbs.



GR-36
\$69⁹⁵

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 • Pre-assembled, prealigned "front-end" • Handsome, rich walnut finish wood cabinet • Assembles in about 10 hours

Kit GR-36, 17 lbs. \$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 1/4" 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

All Kits On This Page Are Mailable

Citizen's Band Radio

**Heathkit Solid-State 5-Watt CB Transistor . . .
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. . . (less crystals) . . . \$76.95
Assembled GWW-14A, 8 lbs. . . (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. . . \$184.95
Kit GWA-14-1, AC Power Supply, 5 lbs. . . \$14.95
Kit GWA-14-2, 23 Channel Crystal Pack, 1 lb. . . \$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 7/8" H x 7" W x 11" D.



Kit GW-14A Was \$89.95 Now Only \$76.95	GWS-14A System (Includes kit GW-14A & 23 channel crystal pack) \$152.95
Wired GWW-14A Was \$124.95 Now Only \$109.95	GWW-14AS System (Includes assembled GWW-14A & 23 channel crystal pack) \$184.95



NOTE: CAP Crystals at 26.620 MHz available for all models. Extra Transmit & Receive Crystals. Only \$1.99 each. Specify Heath Transceiver model. 1 lb.

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. . . \$49.95
Kit GW-22D (6 or 12 v. DC), 13 lbs. . . \$54.95

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.

The Right Tools Make Kit Building Even Easier

A Heathkit GH-17A Soldering Iron

This 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 midge 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

Replacement Heater Tips for GH-17A . . .

GDP-317, 1/4" chisel, 1 lb. . . \$3.99
GDP-327, 3-/16" pyramid, 1 lb. . . \$3.99
GDP-337, 3-/16" chisel, 1 lb. . . \$3.99

B Weller W-PS 25 Watt Pencil Soldering Iron

Develops 860° heat fast. 3/4" iron-clad screwdriver tip. 117 v. AC 60 Hz operation. Lightweight, UL and CSA approved.

Model GDP-207, 1 lb. . . \$4.95

C New Heath Solder/De-Solder Set

Solders, de-solders and strips wire. Includes de-solder squeeze-bulb with heat & solder resistant nozzle; pencil-type Ungar iron with 40 watt heat cartridge (750 to 950°F.) and iron-clad gold-plated tip (both replaceable). Handle stays cool with patented heat sink. Heated V-slot wire stripper.

Model GDP-108, 1 lb. . . \$9.95

D Vaco Hollow Shaft Nut Driver Set

7 drivers—1/16", 1/8", 5/16", 1/2", 3/4", 7/8", 1". Self-supporting rack. Color-coded plastic handles.

Model GDP-204, 3 lbs. . . \$6.42

E 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

F Kit Builders Tool Set

• Combination wire stripper & diagonal scissor • Midge long-nose pliers • 3 screwdrivers (1/4", 3/8", 1/2") • Weller W-PS soldering iron • 5 nut drivers (1/16", 1/8", 5/16", 3/8", 1/2") • Nut starter, soldering aid, radio solder, and "Kit-Builders Guide."

Model GH-25, 4 lbs. . . \$19.95

G Z-Lyte Extension Lamp Kit

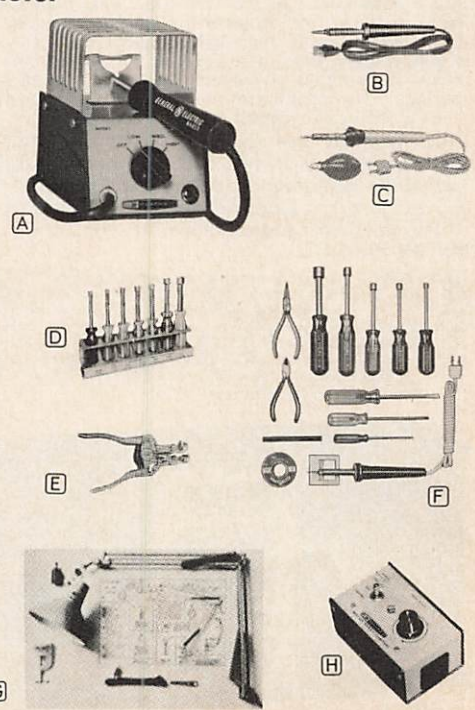
• Assembled extension arm—just attach socket, shade & cord • 45" reach, 360° sweep • Vented shade • Movable • U.L. approved • Less incandescent bulb.

Kit GDP-202, 5 lbs. . . Mfrs. list \$14.50 . . . Only \$11.95

H 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



Heathkit Jr.[®] Fun And Learn Kits

35 Fun Projects For Youngsters To Build

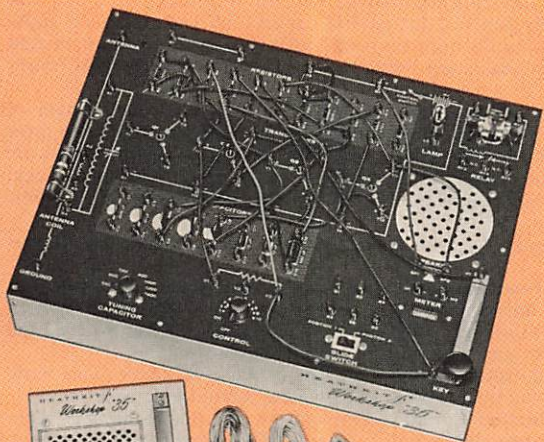
- Radios, transmitters, intercom, alarms, PA systems, etc. • Safe battery operated • No soldering • Easy assembly/takedown • Simple instructions with pictures and diagrams • Text explains functions of circuit parts • Carton stores pieces

The Electronic Workshop "35" introduces the exciting world of solid-state electronics. Youngsters learn how modern circuits work while building them with real transistors, capacitors, resistors, loudspeakers, etc. Spring terminals eliminate all soldering.

Each project begins with a simple explanation of what the circuit does and how it is used. Then the young "engineer" builds the circuit with a detailed pictorial as his guide. Simple tests help him check his work. Each experiment is laid out on a schematic diagram that tells what each part does. Parts are identified by drawings and a dictionary of parts.

You Can Build 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. (4 "D" cells not included) \$19.95

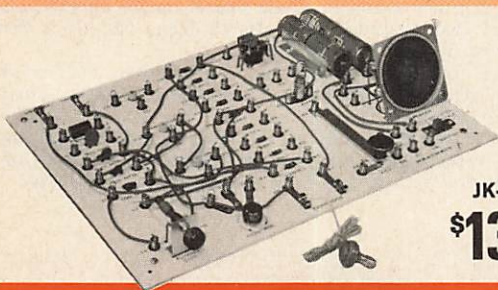


Kit JK-18
\$19.95

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. (less batteries) \$13.95



JK-27
\$13.95



Kit JK-37 **9-Watt Solid-State Single-Channel Guitar Amplifier**
\$29.95

- 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 5¾" 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 8" 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 5¾" 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. \$29.95

"Story Hour" Phonograph 4-Speed Monophonic

Kit JK-17
\$21.95

- Plays 16, 33½, 45 and 78 rpm • Takes 7, 10 & 12" mono records • Built-in 45 rpm adapter • Crystal cartridge with universal sapphire stylus for all types of records • Solid-State circuit for cool, instant operation, long life • 4" speaker • Steel top chassis plate • Tone arm locks in place



The first sounds this durable little phonograph makes will be like magic to your child, especially if you build it together. What a thrill for him to see it come to life! You can build it in an evening. Turntable mechanism comes preassembled; you build one small circuit board. Phonograph is protected by a tough case of wood and hardboard; detachable lid snaps securely in place. The ivory & desert gold polyethylene covering wipes clean.

Kit JK-17, 11 lbs. \$21.95

JK-17 SPECIFICATIONS—AMPLIFIER: Frequency Response: 80 Hz-10 kHz. Music Power Output: 600 Milliwatts EIA. Control: Off-On, Volume. Speaker: 4", 16 ohm Voice Coil. Transistor-Diode Complement: 4 transistors, 1-Silicon Diode. TURNTABLE: Type: 4 Speed Phonomotor. Turntable Diameter: 8½". Cartridge Type: Crystal. Stylus: Universal sapphire 0.7 to 3 mil for all records. GENERAL: Power Requirements: 117 VAC 60 Hz 14 watts. Size: 12¾" W x 11¼" D x 5¾" H.



EK-1
\$24.95



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. \$24.95



EK-2A
\$21.50
(less cabinet)



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. \$21.50
Basic Radio Part II (EK-2B), 5 lbs. \$21.50
AK-8, Cabinet for completed receiver, 3 lbs. \$3.95



EK-3
\$19.95



Basic Transistor Kit-Course

An Excellent Introduction For The Student, Or Refresher 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. \$19.95

All Kits On This Page Are Mailable

**New Heath/Malmstadt-Enke Digital pH/Volt Meter . . .
ideal for classroom and general purpose work . . . \$170.00**



EU-302A SPECIFICATIONS—RANGES: 0-14 pH; 0-1.4 volts. **RESOLUTION:** 0.02 pH; 0.002 volts. **ACCURACY:** $\pm 0.5\%$ of full scale. **TEMPERATURE COMPENSATION:** 0 to 100 degrees Centigrade, manual control. **INPUT CONNECTORS:** Standard glass electrodes (Beckman Type), BNC, and pin or banana jacks for reference electrodes. 5-way binding posts for polarization current. **OUTPUTS:** Potentiometric chart recorder EU-20 B/V or equivalent 10 mV/pH. **POLARIZATION:** 10 μ A. **TOTAL POWER REQUIREMENTS:** 10 watts, 120-240 VAC, 50/60 Hz. **DIMENSIONS:** 11" W x 7 1/8" H x 9" L. **NET WEIGHT:** 8 lbs.

Assembled EU-302A, 10 lbs. \$170.00

New Economy in Lab Instrumentation: the new Heath EU-302A pH/Volt Meter is specifically designed for general purpose lab and classroom applications. Its research quality accuracy, high capability, straightforward, rugged design and low cost enable any lab or classroom to enjoy modern pH instrumentation.

Servo-Digital Readout gives the 302A a meter scale equivalent length of *over 44 inches . . .* and resolution comparable to meters costing three times as much—0.02 pH over the entire range. Parallax and reading errors are completely eliminated, and the servo-digital readout will withstand shock, vibration and user abuse that would ruin conventional meter or display tube readout systems.

All Solid-State Design for high reliability, cool operation and easy maintenance.

High Impedance Potentiometric Input using a Field Effect Transistor provides near infinite impedance at balance, and more than 500 megohms input impedance when the servo is off balance. An isolated, shielded chopper and phase-lock amplifier give high stability and immunity to noise.

High Stability. All voltage supplies are highly stable & Zener diode regulated. True servo null-point operation eliminates reference-point drift.

Front Panel Calibration Controls. Temperature and Standardization Controls allow temperature compensation from 0-100° C. and exact pH readout.

Multiple Inputs . . . for Beckman, Corning, Coleman, Fisher, and most other glass electrodes, and auxiliary BNC and reference electrode jacks accept either banana or pin-type plugs. A high impedance current source is also available at terminals on the rear panel for polarization of electrodes as required for the Karl Fischer titration.

Recorder and DVM Outputs. Output voltages equal to 10 mV per pH unit are available at the rear panel terminals. These signals can be directly connected to the inputs of chart recorders, and also to digital voltmeters that can provide BCD output to printers or computers.

New Electrode Holder accepts electrodes from a pencil-thin combination to a pair of the largest-sized glass and calomel electrodes. Height is adjustable with just finger-tip pressure.

Other features include pushbutton operation, convenient gimbal mount and operating instructions screened right on the mounting bracket. Send for the free pH Brochure now and get the details on the new Heath EU-302A.



Now . . . just \$365 buys a complete logic teaching system for engineers, programmers, scientists, technicians, medical personnel, and students

The New Heath 801C Computer Logic Teaching System is designed to give individuals a practical, working knowledge of the new computer logic. It was designed by Drs. Malmstadt and Enke for practicing scientists and engineers and students at all levels. The equipment and books effectively "open up" the computer so that its logic operations and basic methods of manipulating data become clearly understood. As the authors state, "This information is not only useful in understanding the computer but also provides insight into man's reasoning and an appreciation for how these elegant logic concepts and circuits can be extended into new areas of endeavor."

Complete. The new 801C System includes the EU-801C Computer Logic Analog-Digital Designer (ADD™), a detailed, comprehensive "Computer Logic" workbook containing 50 experiments and referenced to the text "Digital Electronics for Scientists." The EU-801C ADD™ is a complete computer logic training device, including Power, Binary Information and Digital Timing Modules, Circuit cards that plug into the Modules contain 18 NAND gates, 4 And-Or-Invert gates and 8 J-K Flip-Flops. The books, cards, and modules in the 801C provide everything you need to gain a complete basic understanding of computer logic.

Versatile . . . far more so than any other logic training device. Each plug-in circuit card contains a discrete function such as a gate or flip-flop, and the cards can be arranged in any order. All cards are labeled with standard logic symbols. Cards are simply patched together with ordinary hook-up wire without soldering to form complete logic sub-systems or systems. The Chassis Modules can be removed from the cabinet, interchanged, even rack mounted.

Expandable . . . The only system that can be expanded to other uses . . .

quickly and inexpensively. Combinations of low-cost cards can be used to provide teaching and design capability for computer interfacing, digital instruments and analog-digital measurement and control systems . . . merely by plugging in the appropriate cards. No other system at any price has this vast flexibility.

Sophisticated. TTL Integrated Circuit Logic—as used in the new generation of computers—is used throughout to provide reliable operation, high speed and noise immunity and compatibility with today's computers. And because new circuit cards are continually being introduced, the 801C will never be obsolete.

Inexpensive. The complete 801C System is lower in cost than any other system available and yet provides much more. The unique low cost plug-in logic circuit cards used in the system give you the ability to stay abreast of the latest technology . . . easily and inexpensively . . . something other systems are unable to give you except at prohibitive cost.

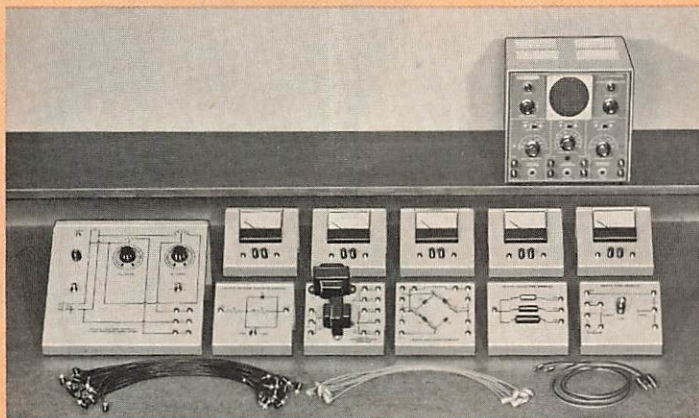
The Workbook, by Drs. Malmstadt and Enke (Published by W. A. Benjamin Inc., New York) is applicable to anyone interested in learning basic computer logic concepts and functions. The Workbook contains descriptive summaries, textbook references and specific instructions for 50 experiments. The format, experiments and presentations are designed for self-teaching and self-checking of one's comprehension.

Text—"Digital Electronics For Scientists" by H. V. Malmstadt & C. G. Enke (Published by W. A. Benjamin, Inc., New York) is a complete, up-to-date reference and study text for modern digital logic techniques. Only the non-electronic portions of this text are used with the 801C System.

Write For The New Free Heath Scientific Instrumentation Catalog Now and investigate this unique method of learning computer logic.

- EU-801C, complete Computer Logic System, 30 lbs. \$365.00**
- EUP-19, "Digital Electronics For Scientists" text, 5 lbs. \$10.75**
- EUP-20, "Computer Logic" workbook, 3 lbs. \$3.50**

Heath Teaching Systems



IDS-100 Complete System \$395⁰⁰

IDW-39 (Less EUW-25 Oscilloscope) \$220⁰⁰

IDW-39 SPECIFICATIONS—SIMULATOR CONSISTS OF: (1) Control Module, (1) Inverse Reducer Module, (1) Transformer Module, (1) Rectifier Module, (1) Capacitor Module, (1) Tube Module, (5) Meter Modules as follows: (1) 0-150 VAC Rectifier Type Voltmeter, (1) 0-300 VAC Rectifier Type Voltmeter, (1) 0-250 VDC Voltmeter, (1) 0-2 AMP. AC Ammeter, (1) 0-50 mA. DC Milliammeter. **Accuracy:** Meters are $\pm 2\%$ for full scale except AC Voltmeters which are $\pm 3\%$ of full scale. **Sensitivity:** All voltage meters are 1000 ohms per volt. AC Ammeter resistance is 0.115 ohm. DC Milliammeter resistance is approximately 1.0 ohm. **Tube:** Type No. 5722 (Sylvania). **Controls:** Filament control (located on control panel) provides variation of the current in the Tungsten filament of the tube. **K.V. Control:** [actual simulator voltage 300 rms. max.] provides voltage control in the primary circuit of the high voltage transformer which in turn determines high voltage (300 volts rms maximum) appearing across the simulator tube. **Dimensions:** All modules measure 6" W. x 4" H. x 5-7/16" D. except for Control Module, which measures 12" W. x 6 3/4" H. x 11 1/4" D. **Power requirements:** 105-125 VAC 50/60 Hz. Approximately 35 watts max. **IDS-100 SYSTEM SPECIFICATIONS:** Same as IDW-39 above plus EUW-25 DC Oscilloscope. **EUW-25 SPECIFICATIONS:** (Vertical and horizontal channels identical): Bandwidth; DC to 400 kHz (3 dB point). **Sensitivity:** 0.1 V (peak-to-peak) per 1/4" (uncalibrated). **Attenuator:** 3-position, compensated type. **Gain Control:** Continuously variable. **Input impedance:** 3.6 megohms shunted by 35 mmf. **Coupling:** Either AC or DC, switch-selected. **Relative phase shift between channels:** Less than 5°. **Sweep generator (recurrent type):** Linear saw-toothed produced by multivibrator type generator covering 5 Hz to 50 kHz in four over-lapping ranges: "External capacity" binding post for lower sweep rates. **Sync. Provision:** Either internal or external, switch-selected. **Power requirements:** 105-125 V 50-60 Hz AC at 100 watts max. **Dimensions:** 9 3/4" H. x 9-3/16" W. x 11-9/16" D.

New Heath X-Ray Machine Simulator . . . The Safe, Low Cost Way To Teach X-Ray Machine Operation

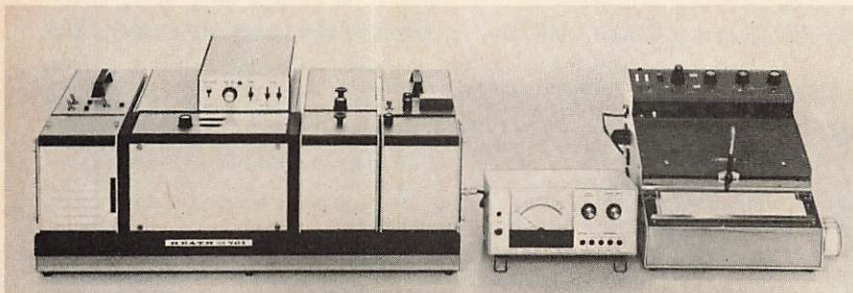
The New Heath X-Ray Machine Simulator is based on a system originally developed by Dr. E. Dale Trout, radiological physicist and his staff at Oregon State University, under contract to the U.S. Dept. of Health, Education & Welfare, and further refined by Heath into a low cost, versatile system for teaching basic X-ray machine operation. Designed for use in the radiological technology classroom, the factory assembled and tested IDW-39 simulates the electrical operating characteristics of the three basic types of X-ray machines (self-rectified, half-wave rectified & full-wave rectified) . . . frees actual X-ray machines for their intended purpose and eliminates the cost, size & hazard problems of using actual X-ray equipment for teaching.

The Simulator . . . composed of six basic modules which electrically simulate the control functions, transformer section, X-ray tube section, basic rectification methods, different lengths of high voltage cable and self-rectified high voltage characteristics of an actual X-ray machine installation. Five Metering Modules are also included to measure the different voltages and currents present, and to visibly indicate to the student the effect of control setting changes throughout the system. All modules have their working surfaces at fixed angles for convenience, and external jacks on the front panels make interconnection easy. All connecting cables are supplied.

Complete Course Materials Supplied. The price of the basic Simulator includes two instructors' manuals and ten student manuals (extra student manuals are available at low cost). The student manuals are designed to give actual classroom experience in the basic operating techniques of X-ray machines, and include lab exercises in Self-Rectified, Half-Wave Rectified, Full-Wave Rectified and No-Load Transformer Ratio problems. A full set of Laboratory Data Sheets, blank graph paper and a thorough discussion section is also included in the manual.

The IDS-100 System includes the IDW-39 Modules, connecting cables and manuals mentioned above, plus the Heath/Malmstadt-Enke EUW-25 DC Oscilloscope, which enables instructors to introduce new information into the course in the form of visual readout and the varying effects of different voltage and current parameters. See your Heathkit catalog or Heath Scientific Instrumentation catalog for additional information on the EUW-25 Oscilloscope. If you are involved in the teaching or supervision of an X-ray Technology Course, the new Heath X-ray Simulator can provide safe facilities and save valuable time and money. Order now, or write for the complete system brochure at no cost.

IDW-39, X-Ray Machine Simulator (less oscilloscope) 23 lbs. . . . \$220.00
IDS-100, X-Ray Machine Simulator (incl. oscilloscope) 41 lbs. . . . \$395.00

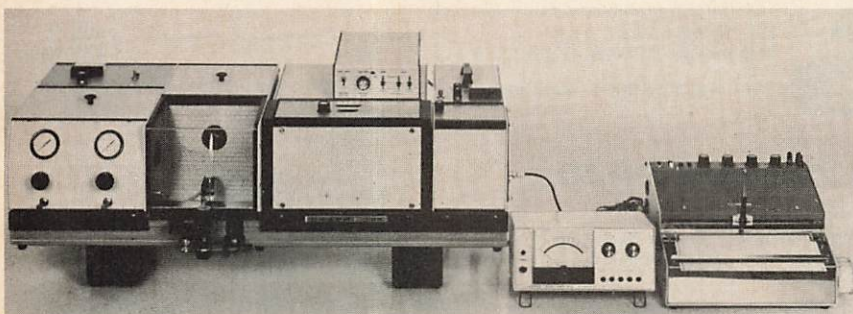


Heath/Malmstadt-Enke Modular Spectroscopy Systems

Heath Spectroscopy Systems are a departure from classical spectrophotometer design, in that they are combinations of discrete modules, locked together into single unitized instruments. This modular concept enables schools, research facilities and labs all over the world to enjoy precision spectroscopy capability at remarkably low cost . . . and conversion to another system is merely a matter of substituting the appropriate module, sliding it onto the instrument base and locking it into the system with perfect optical alignment—in less than ten minutes.

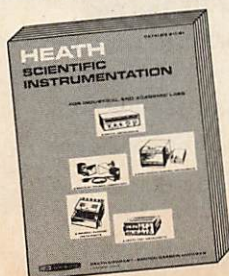
Systems Available Now are the EU-701 (Single Beam UV-VIS) and the EU-703 (Atomic Absorption/Atomic Emission/Atomic Fluorescence). A Double Beam system will be available soon. All Heath systems feature digital stepped scanning in 9 fixed rates to 20 angstroms/sec . . . less than 0.1% stray light . . . precision Czerny-Turner optics . . . choice of readout—analogue meter, chart recorder, digital or all three. For complete information on this low cost way to put complete precision spectrophotometry facilities in your lab, send for your free Heath Scientific Instrumentation catalog.

EU-701A, complete system less readout. \$2245.00
EU-703-A, complete system less readout. \$2736.00



Write On Your School or Company Letterhead For Your FREE Copy Of The Latest Heath Scientific Instrumentation Catalog

Among the many research-quality instruments in the new Heath Instrumentation catalog are the Heath 700-Series Modular Spectrophotometers . . . Digital-Analog Systems . . . for research, design and teaching . . . Heath components for the Berkeley Physics Lab . . . the new EU-51A Experimental Parts Group for electronic design and teaching applications . . . the complete line of Heath/Malmstadt-Enke Laboratory Equipment . . . plus the famous Heathkit Test Equipment. Whatever your lab or instrumentation needs, check this new Heath Instrumentation catalog first . . . for greater versatility, reliability and value. Send for your FREE copy now.



All Items On These Two Pages Shipped REA Or Mtr. Frt.

Accurate, Low Cost Voltmeters For Every Application

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 VOLTMETER: Four Ranges: 0-1, 10, 100, 1000 volts full scale. Input resistance: 11 meg. on all ranges. Accuracy: ±3% of full scale. **AC VOLTMETER:** 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 4½" H x 7½" 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

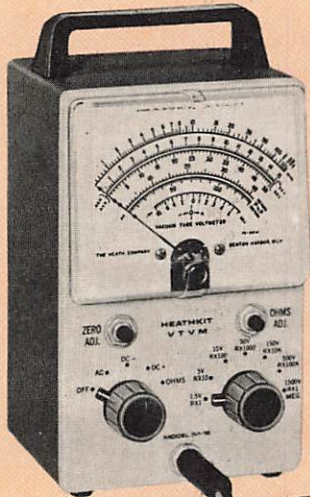
For over 19 years, the Heathkit IM-11 was the world's most popular VTVM, thanks to its convenient size, practical meter ranges and single test probe. And now the IM-18 carries on this tradition, with all the features of the IM-11, plus a few of its own . . . new Heathkit styling in handsome beige & brown, 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. \$29.95
Assembled IMW-18, 5 lbs. \$49.95

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. Input resistance DC: 11 megohms (1 megohm in probe) on all ranges. Circuit: Balanced bridge (push-pull) using twin triode. Accuracy: DC ±3%, AC ±5% of full scale. Frequency response: ±1 dB, 25 Hz to 1 MHz (600 ohm source). Tubes: 12AU7, 6AL5. Battery requirements: 1.5 volt, size "C" flashlight cell (not supplied). Power requirements: 105-125 or 210-250 VAC, 50/60 Hz, 10 watts. Dimensions: 7¾" H x 4-11/16" W x 4¼" D.

Kit IM-18
\$29.95

Wired IMW-18
\$49.95



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

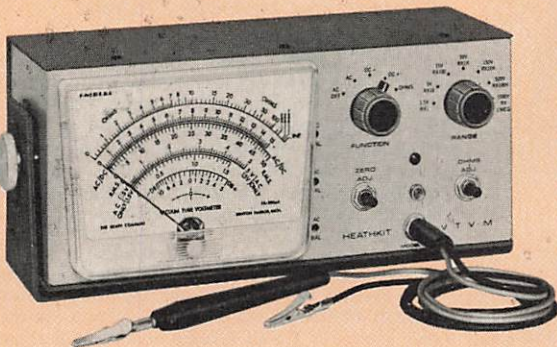
The IM-28 delivers the same remarkable performance as the IM-18 above, but has these extra convenience features: separate 1.5 and 5 VAC scales, large 6" meter for extra accuracy, calibration controls adjustable on the front panel and handy gimbal mounting bracket.

Kit IM-28, 7 lbs. \$39.95
Assembled IMW-28, 7 lbs. \$59.95

IM-28 SPECIFICATIONS—Same as the IM-18 with additional features as noted above.

Kit IM-28
\$39.95

Wired IMW-28
\$59.95



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. \$31.95

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 milliamperes, 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".

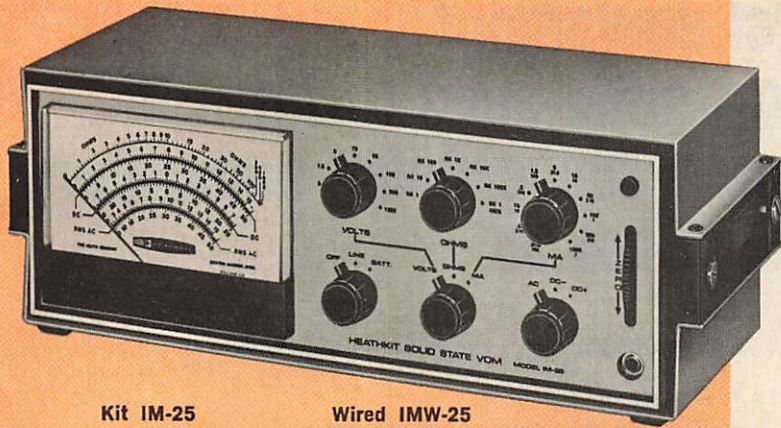
Kit MM-1
\$31.95



"How To Understand & Use Your Vacuum Tube Voltmeter"

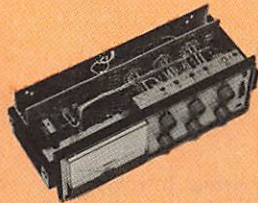
Covers theory, advantages & applications.

- Kit EF-1, Text and special power supply (for VTVM owners), 3 lbs. \$10.95
- Kit EF-1-5, Includes EF-1 and IM-18 VTVM, above, 8 lbs. \$39.95
- Kit EF-1-6, Includes EF-1 and IM-28 VTVM, above, 10 lbs. \$49.95
- Manuals Only For EF-1 (Single copy) \$5.00
- (10 or more copies) ea. \$3.00

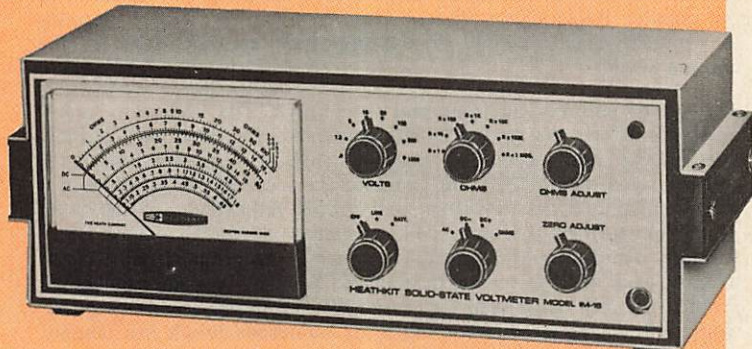


Kit IM-25
\$85⁰⁰

Wired IMW-25
\$120⁰⁰



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
\$46⁹⁵

Wired IMW-16
\$69⁹⁵

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 uA 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. \$85.00
Assembled IMW-25, 11 lbs. \$120.00

IM-25 SPECIFICATIONS—DC VOLTMEETER—9 Ranges: 0-15, .5, 1.5, 5, 15, 50, 150, 500, 1500 volts full scale. **Input resistance:** 11 megohms on all ranges. **Accuracy:** ±3% of full scale. **DC MILLIAMMETER—11 Ranges:** 0-0.15, .05, .15, .5, 1.5, 5, 15, 50, 150, 500, 1500 mA full scale. **Input resistance:** 0.10 ohm (1500 mA) to 10k ohm (.015 mA). **Accuracy:** ±4% of full scale. **AC VOLTMEETER—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:** ±5% of full scale. **Frequency response:** ±2 dB, 10 Hz to 100 kHz. **AC MILLIAMMETER—11 Ranges:** 0-0.15, .05, .15, .5, 1.5, 5, 15, 50, 150, 500, 1500 mA full scale. **Input Resistance:** 0.1 ohm (1500 mA) to 10k ohm (.015 mA). **Accuracy:** ±5% of full scale. **OHMMETER—7 Ranges:** 10 ohm center scale x1, x10, x100, x1k, x10k, x100k, x1 meg. Terminal voltage 70 mV (not sufficient to cause diode junction conduction). **Probe:** Combined AC-OHMS-DC switching probe, single jack input for Probe and Ground connections. Circuit ground isolated from cabinet. **Dividers:** 1% Precision Type. **Meter:** 6", 200 μA, 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 (E1N mercury cell). **Amplifier circuit:** 18 volts. Battery operation; "C" cells. Line operation; Transformer operated 1/2 wave circuit, operable on either 120 or 240 V AC, 50-60 Hz. **Dimensions:** 16 1/2" W x 5 7/8" H x 7 3/4" D.

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. \$46.95
Assembled IMW-16, 11 lbs. \$69.95

IM-16 SPECIFICATIONS—DC VOLTMEETER—8 Ranges: 0.5, 1.5, 5, 15, 50, 150, 500, 1500 volts. **Input resistance:** 11 megohms on all ranges. **Accuracy:** ±3% of full scale. **AC VOLTMEETER—8 Ranges:** 0.5, 1.5, 5, 15, 50, 150, 500, 1500 volts. **Input resistance:** 1 megohm. **Accuracy:** ±5% full scale. **OHMMETER—7 Ranges:** x1 (10 ohm center scale), x10, x100, x1k, x10k, x100k, x1 megohm. Terminal voltage 70 mV (not sufficient to cause diode junction conduction). **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 μA (100° movement). **Transistor & diode complement:** (1) Field effect transistor; (6) 2N3393 silicon transistors; (1) 6.8 V. zener diode; (4) silicon diodes. **Dimensions:** 16 3/8" L x 7 1/4" D x 5 7/8" H. **Net weight:** 7 1/2 lbs. (with batteries).

Now Professional Beige & Brown Styling For The Heathkit IM-38 Laboratory AC VTVM



Kit IM-38
\$41⁹⁵

Wired IMW-38
\$57⁹⁵

- Especially useful for low-level AC & audio measurements • 10 voltage ranges—from 0.01 to 300 volts RMS full scale • Extended frequency response, ±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. \$41.95
Assembled IMW-38, 5 lbs. \$57.95

IM-38 SPECIFICATIONS—Frequency response: ±1 dB 10 Hz to 500 kHz, ±2 dB 10 Hz to 1 MHz, all ranges. **Ranges:** Ten ranges from 0.01 to 300 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 7/8" H x 4 1/4" W x 4 1/4" D.

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. \$5.00
Assembled PKW-3, 1 lb. \$7.00



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. \$6.00
Assembled 336W, 1 lb. \$7.50



Another Heathkit® first in test equipment . . .

new solid-state IO-101 Vectorscope/Color Generator only \$124.95



Accurately performs all of these adjustments:

- Raster
- Static & dynamic convergence
- Purity
- Gray scale
- 3.58 MHz oscillator
- Reactance coil
- Phase detector transformer
- Demodulator angle check
- Chroma bandpass touch-up

New Solid-State Versatility in Color TV Servicing. In response to numerous requests, Heath engineers combined the integrated circuitry of the popular IG-28 Color Pattern Generator with additional circuitry to provide visual readout of the important characteristics of the chroma signal.

The vector pattern—an important service aid. The vector or “petal” pattern indicates the ten color bars generated, amplified and demodulated by the color receiver circuitry. It’s an exact representation of the chroma signal being fed to the guns of the receiver CRT, shows at a glance missing or weak colors, and proper adjustment of the burst phase transformer, reactance coil, oscillator coil and bandpass transformers. Color demodulation angle can also be checked. The vector pattern gives you the means to diagnose virtually any chroma circuit problem in any color receiver . . . quickly, accurately, without guesswork or involved troubleshooting using numerous bench instruments.

All solid-state circuitry, using computer-type integrated circuits, produces twelve patterns plus a clear raster for purity adjustments . . . dots, cross-hatch, vertical and horizontal bars, color bars and shading bars. All of these patterns are available at the turn of a knob, either in the familiar 9 x 9 display or the exclusive Heath 3 x 3 display, which is especially convenient for centering, linearity and static convergence adjustments. Fifteen J-K Flip-Flops and eight gates count down from a crystal-controlled master clock oscillator to eliminate troublesome divider chain adjustment and instability.

Extra convenience for faster servicing. On some color sets the chroma signal is fed to the cathodes of the color CRT, causing the familiar vector pattern to be rotated 180 degrees from the position it occupies on grid-driven sets. To eliminate this possible cause of confusion, the IO-101 has a Grid-Cathode switch on the rear panel, enabling all vector patterns to be displayed in the same relative position, regardless of how the color CRT is driven. Variable front panel tuning for channels 2 through 6 offers added convenience, especially in areas served by many stations. Plus and minus going video signals are available at the turn of a front panel control. And for sync, chroma and in-circuit video problems there’s a handy front panel sync output. For sound trap adjustments there’s a 4.5 MHz crystal controlled sound carrier switchable from the front panel. Shielded leads on the rear panel enable fast connection of RF signal to the antenna terminals or video signal to video circuits, and greatly reduce stray pickup. Front panel gun shorting switches and lead-piercing grid jacks are built-in. For connection of other test equipment or the TV set under test, there are two 500 watt grounded AC outlets on the rear panel.

Fast, enjoyable assembly. The new IO-101 goes together in about 12 hours, and the use of circuit board-wiring harness design makes assembly easy and fun. Component layout is extremely clean and open, and chassis wiring has been kept to a minimum.

Start enjoying a faster, easier, more profitable way to service color TV—order your new Heathkit Vectorscope/Color Generator now!

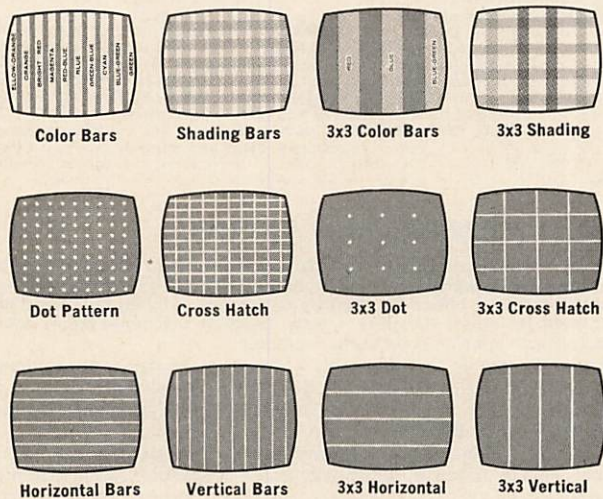
Kit IO-101, 12 lbs. \$124.95

Fast Switch Selection Of Either

Standard 9 x 9
Display

OR

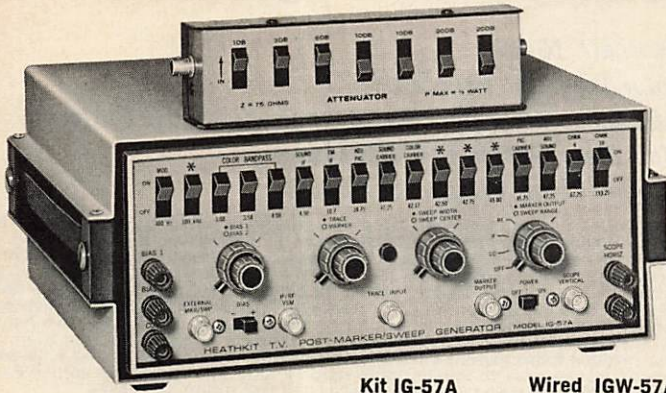
Exclusive Heath
“3 x 3” Display



IO-101 SPECIFICATIONS—PATTERNS—Purity: Produces a snow-free raster for purity adjustments. **Dots*:** 9 x 9 produces a display of 110 small dots, 3 x 3 produces a display of nine dots for convergence adjustments. **Crosshatch*:** 9 x 9 produces a display of 11 vertical and 10 horizontal lines, 3 x 3 produces a display of three vertical and three horizontal lines for convergence and linearity adjustments. **Horizontal Lines*:** 9 x 9 produces a display of 10 horizontal lines, 3 x 3 produces a display of three horizontal lines for vertical linearity and pin-cushion adjustments. **Vertical Lines*:** 9 x 9 produces 11 vertical lines, 3 x 3 produces a display of 3 vertical lines for horizontal linearity and convergence adjustments. **Color Bars*:** 9 x 9 produces a display of ten standard color bars, 3 x 3 produces a display of three standard color bars. A visual fingerprint (voltage pattern) of all ten color bars in the form of a petal pattern is displayed for color circuit servicing. **Gray Scale:** Provides a wide bar crosshatch pattern with six shades of brightness for color gun level adjustments. **OUTPUT SIGNALS—Video:** Greater than ±1 volt peak-to-peak composite signal for composite signal injection beyond the video detector. **RF:** Variable to approximately 25,000 uV output, channels 2 through 6, for composite signal injection into the TV receiver antenna input terminals. **Sync:** Greater than 3.5 volts peak-to-peak signal for servicing sync circuits without video, or sets having separate video and sync demodulator phase adjustments. **GENERAL—Power Requirements:** 105-125 or 210-250 VAC, 50/60 Hz, 20 Watts. **Cabinet Dimensions:** 6 3/4" W x 9 1/4" H x 14 1/2" D. **Net Weight:** 9 1/2 lbs. *The number of dots, lines, and bars indicated for a 9 x 9 display is the number displayed if the receiver under test has no overscan.

Open Your Heath Account—No Money Down Up To \$300—Up To 18 Months To Pay—See Order Blank For Details

Heathkit® "Performance-Plus" Test Equipment



Kit IG-57A **\$135⁰⁰**
 Wired IGW-57A **\$199⁰⁰**



Increase Your Profit . . . Decrease Your Alignment Time & Costs . . . With The New IG-57A Solid-State Post-Marker/Sweep Generator . . . Now With Video Sweep Modulation & Two Bias Supplies

- Unsurpassed value leader in TV alignment instruments • New video sweep modulation capability means faster, more accurate alignment of every TV set on the market • Exclusive Heathkit external attenuator with 7 shielded switches for up to 70 dB attenuation • Produces all the most used alignment frequencies for TV IF, color bandpass, FM IF and VHF channels 4 & 10 • Comprehensive manual with a liberally illustrated application section covers alignment of color and B&W TV and FM IF • Post-injection marker circuitry • 15 crystal-accurate markers • Three sweep oscillators cover the five most-used frequency ranges • Proven saturable reactor circuitry for dependable, linear sweep signals • 400 Hz modulation of all markers for easiest trap alignment • Hi-Z trace amplifier extends your scope sensitivity—provides up to 8 dB gain for weak signals • Phase control matches IG-57A to any scope • Switchable retrace blanking for easy phase control adjustment • Trace reverse function for proper marker sequence • Two variable DC bias supplies for positive or negative bias • Quick-disconnect BNC connectors • Complete with 4 coaxial cables, 4 test leads and demodulation probe • Unmatched by instruments costing hundreds of dollars more

Dependability-Proven . . . by major color TV manufacturers in their training clinics & service centers . . . by thousands of technicians and servicemen. Professionals can't afford to take a chance . . . so they bought the fastest, most accurate & economical instrument available. You can have these advantages too . . . with the new IG-57A. Here's why . . .

Now Complete Any Alignment Job Quickly & Successfully . . . a scope, a VTVM and the IG-57A are all you need to align virtually any B&W or color receiver on the market. You can check the overall receiver frequency response from the antenna terminals through the tuner, IF strip, video detector, to the color bandpass amplifier outputs. New circuitry provides sweep-modulated picture carriers . . . not only at 45.75 MHz for the tuner mixer input, but also 67.25 MHz for the antenna terminal input. The exclusive Heathkit external attenuator enables you to set bandwidth accurately in seconds . . . eliminates guessing important 6 dB amplitudes.

15 Crystal-Controlled Markers . . . 4 for color bandpass, 1 for FM IF, 8 for TV IF frequencies from 39.75 to 47.25 MHz . . . plus markers for channels 4 & 10 picture and sound carriers. Lets you accurately locate picture and sound carriers, 6 dB points and trap locations.

3 Sweep Oscillators . . . in stable Colpitts circuits produce 5 ranges using harmonics . . . for color bandpass, FM IF, Video IF bandpass, VHF channels 4 & 10.

Compact Size . . . Convenient Controls. The new IG-57A measures only 13 3/8" W x 5 1/2" H x 12" D . . . doesn't waste valuable bench space. The front panel controls are easy to read, easy to use . . . there are no gadgets, gimmicks or graphs to distract you. Put this new total capability Marker/Generator on your bench now . . . and discover what thousands of servicemen already know—that excellent alignment facilities don't have to be expensive. Order your Heathkit IG-57A today.

Kit IG-57A, 14 lbs. **\$135.00**
 Assembled IGW-57A, 11 lbs. **\$199.00**

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

Heathkit FM Stereo Generator IG-37 . . . For RF, IF, And Multiplex FM Alignment

- Produces virtually all signals required for trouble-shooting and alignment of multiplex adapters, FM tuners, and receivers • Generates mono FM or composite stereo FM signals • Crystal-controlled 19 kHz (± 2 Hz) pilot signal, adjustable in level from 0 to 10% for check of tuner lock-in range • Switch selection of 400 Hz, 1000 Hz, 5000 Hz, 19 kHz, 38 kHz, and 65 kHz or 67 kHz SCA signals for complete alignment capability • 100 MHz sweep signal (adjustable ± 2 MHz) for overall RF and IF alignment on a clear portion of the FM band • Built-in crystal controlled marker oscillator for IF and dial tracking checks • Phase test for accurate adjustment of subcarrier transformers • No balance adjustment required for equal right and left channel modulation levels

ALL THE SIGNALS YOU NEED FOR FAST, EASY ALIGNMENT OF FM/FM STEREO EQUIPMENT. There's an audio or composite stereo signal for multiplex adapter adjustments . . . an RF carrier modulated by these signals for tuner and receiver adjustments . . . a "phase test" function for accurate adjustment of sub-carrier transformers . . . a variable level crystal-controlled 19 kHz (± 2 Hz) pilot signal to check the lock-in range of stereo receivers . . . and built-in sweep and marker signals for overall RF and IF alignment. Carrier signal is adjustable up to 2 MHz above or below its normal frequency to permit alignment on a clear portion of the FM band.

NEW FRONT PANEL & CONTROLS ARE "HUMAN ENGINEERED" AND "TECHNICIAN PROVEN" FOR MAXIMUM UTILITY. Select either right or left channel signals or the special "phase test" from the front panel—no balancing required for equal right and left channel modulation level. Provides switch-selected frequencies, either direct or modulated RF, of 400 Hz, 1000 Hz, 5000 Hz, 19 kHz, 38 kHz, and one of two special SCA (subscription service) frequencies (65 kHz or 67 kHz), to provide a versatile system for aligning even the most advanced-design tuners. Complete with leads.



IG-37 **\$79⁹⁵**

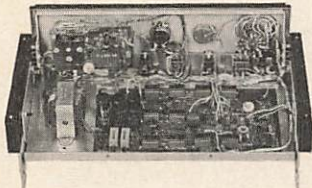
Kit IG-37, 12 lbs., no money dn. **\$79.95**

IG-37 SPECIFICATIONS—RF Signal frequency: 100 MHz adjustable by approx. ± 2 MHz. **Pilot modulating frequency:** 19 kHz ± 2 Hz. **FM Modulation:** Left channel (stereo), right channel (stereo), Phase Test (left plus right channel in phase), Monophonic FM. **Deviation:** Adjustable to 75 kHz. **Sweep rate:** (used for RF and IF alignment) 60 Hz. **Sweep width:** (used for RF and IF alignment) Adjustable to 750 kHz. **RF Attenuator range:** 60 dB in 20 dB steps. **Crystal-controlled markers:** 10.7, 90.95, 96.30, 101.65, & 107 MHz. **Composite Signal output:** Left channel (stereo); Right channel (stereo). Phase test (left plus right channels in phase). **Audio output:** 400, 1000 & 5000 Hz; 19 kHz (± 2 Hz); 38 kHz & SCA (65 or 67 kHz). **Distortion:** (At 400, 1000 & 5000 Hz) Less than 5%. **Front panel controls:** Pilot level control, function level control, function switch, frequency switch, RF frequency adjust, & RF attenuator switches. **Rear panel adjustments:** Balance adjust, 38 kHz sync, pilot level adjust, & SCA frequency switch. **Chassis adjustments:** Oscillator adjust, frequency adjust & modulation adjust. **Tube complement:** 12A17—19 kHz oscillator & 19 kHz doubler; 6AU8—19 kHz buffer & 38 kHz amplifier; 6AN8—Reactance tube modulator & 100 MHz oscillator; (3) 12AU7—Audio osc., audio cathode follower & 19 kHz pilot amplifier; composite audio amplifier & 5.35 MHz crystal osc. **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.

You Can Always Rely On



Heathkit IG-28
Color Bar-Dot Generator . . .
Advanced Integrated Circuitry Produces 12 Patterns
Plus Clear Raster and Eliminates
Divider Chain Instability Forever



IG-28
\$79⁹⁵
 Wired IGW-28
\$114⁹⁵

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 NTSC system 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.

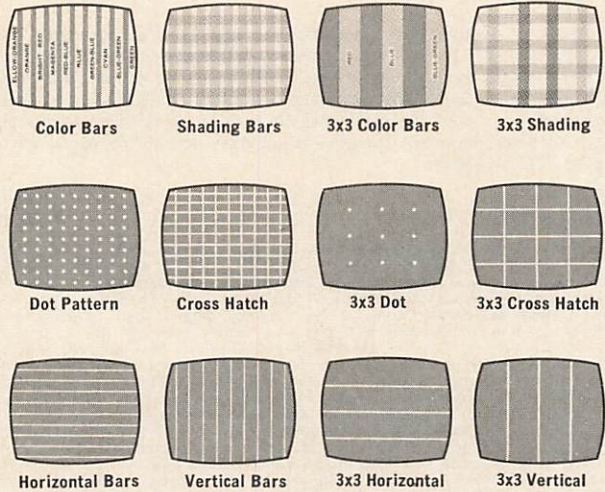
Time-Saving Versatility. The IG-28 has variable front panel tuning for channels 2 through 6 for real convenience. Plus & minus going video signals at the turn of a front panel control. And for sync, in-circuit video or chroma problems, use the front panel sync output. Two front panel AC outlets for test 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. **\$79.95**
 Assembled IGW-28, 8 lbs. **\$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:** 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



TV Alignment Generator For FM & TV "Front End" And IF Alignment

IG-52
\$69⁹⁵

Kit IG-52, 14 lbs. **\$69.95**
 Export model available for 115/230 VAC, 50-60 Hz; write for prices.

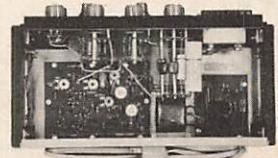
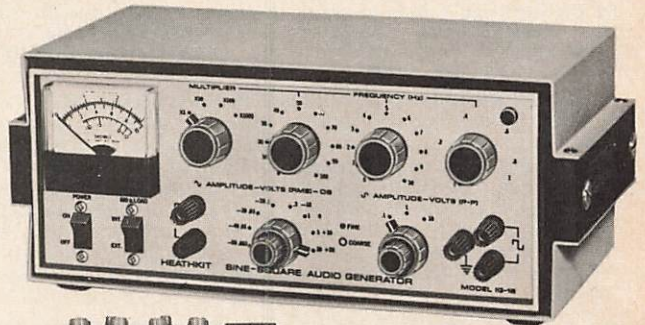
IG-52 SPECIFICATIONS—Output impedance: 50 ohms. Sweep deviation: Continuously variable from 0.4 MHz to 0.42 MHz (depending on base frequency). Crystal marker: 4.5 MHz and multiples thereof. Variable marker: 19 MHz to 60 MHz on fundamentals, 57 MHz to 180 MHz on harmonics. External marker terminals: Provided 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" D.

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. **\$67.50**
 Assembled IGW-18, 9 lbs. **\$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 1/2" H x 13 1/4" W x 7" D. Power requirements: 105-125 VAC or 210-250 VAC, 50/60 Hz, 6 watts. Net weight: 7 lbs.



Kit IG-18
\$67⁵⁰
 Wired IGW-18
\$99⁵⁰

The extremely clean, uncluttered layout of the IG-18 makes building it a pleasure.

Heathkit® Test Equipment

Now An In-Circuit Transistor Tester For Only \$26.95

- 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_{cbo} and I_{ceo} 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 $4\frac{1}{2}''$ 200 μA meter reads directly in DC Beta and Leakage • Two DC Beta ranges, 2-100 and 20-1000 • Expanded leakage current scale, 0-5000 μA , 1000 μA 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. \$26.95

IT-18 SPECIFICATIONS—D. C. Beta: $\times 1$ range—2 to 100, $\times 10$ range—20 to 1000. **Out-of-circuit accuracy:** $\pm 5\%$. **In-circuit accuracy:** Indicates good or bad (accuracy depends upon circuit being tested). I_{ceo} (out-of-circuit only)—0-5000 μA ; I_{cbo} (out of circuit only) 0-5000 μA ; Diodes, forward or reverse current—0-5000 μA . **Power:** One standard "D" cell (not supplied). **Dimensions:** $8\frac{1}{2}''$ wide, $4\frac{1}{4}''$ high, $7\frac{1}{4}''$ deep (including handle). **Net weight:** $2\frac{1}{4}$ 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 μA basic range for leakage (I_{cbo} , I_{ceo}) tests • Four lever switches for fast, easy test selection • Carrying handle for convenience

Kit IM-36, 9 lbs. \$60.00

Assembled IMW-36, 11 lbs. \$90.00

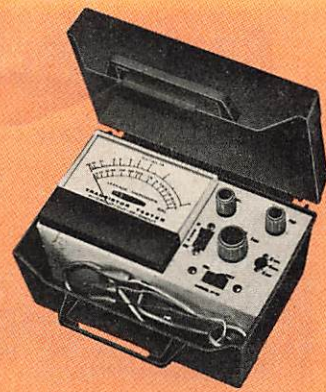
IM-36 SPECIFICATIONS—Checks: Transistors up to 15 amps and diodes up to 1.5 amps. Tests: Shorts, DC Gain (Beta 0-200 & 200-400), Leakage (I_{cbo} , I_{ceo}), Diode Forward and Reverse Current. **Meter:** Current Ranges: 15 μA , 150 μA , 1.5 mA, 15 mA, 150 mA, 1.5 A, 15 A. Voltage Ranges: 1.5 V, 5 V, 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 μA 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_{cbo} and I_{ceo} or diode currents. **Two voltage selector switches:** Gain and Leak Test Voltages can be individually preset at different voltage levels. **Two current range switches:** Collector and Leak currents can be individually preset on different adjacent ranges. **Transistor and diode connections:** Universal transistor socket and binding posts. **External power supply connections:** Binding posts for Gain, Leak and Bias supplies.

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:** $3\frac{1}{2}''$ H x $3\frac{3}{4}''$ W x $3\frac{1}{4}''$ D.

IT-18
\$26.95

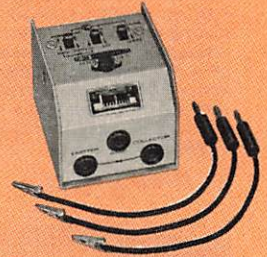


Kit IM-36
\$60.00



Wired IMW-36
\$90.00

IT-27
\$6.95



Lab RF Generator Gives Precision-Attenuated RF Signals

IG-42
\$61.95

- 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. \$61.95

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, OB2. **Power requirements:** 115/230 VAC, 50-60 Hz. **Dimensions:** $13''$ W. x $8\frac{1}{2}''$ H. x $7''$ D.

Heathkit IG-72 Low Distortion, Switch-Selected Audio Generator

IG-72
\$46.95
Wired IGW-72
\$69.95

- 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. \$46.95

Assembled IGW-72, 9 lbs. \$69.95

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 (0 dBm = 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:** $9\frac{1}{2}''$ W x $6\frac{1}{2}''$ H x $5''$ D.

Heathkit IG-102 . . . Your Best Buy In A General Purpose RF Generator

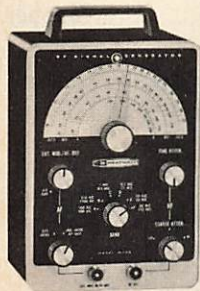
- 2% Tuning Accuracy • 100 kHz to 220 MHz tuning range • Unmodulated or 400 Hz modulated RF output • 400 Hz audio signal for audio frequency checks • Critical circuits pre-wired & tuned

Kit IG-102, 7 lbs. \$31.95

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 μV . **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:** $6\frac{1}{2}''$ W x $9\frac{1}{2}''$ H x $5''$ D.



IG-102
\$31.95

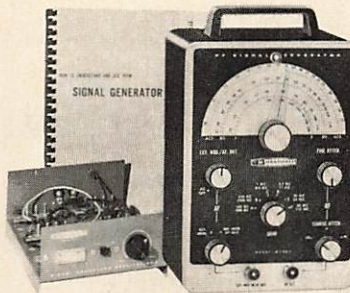
"How To Understand & Use Your Signal Generator"

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. \$14.95

Kit EF-3-2 (EF-3 & IG-102 RF Signal Generator) 10 lbs \$44.95

Manuals only for EF-3 (single copy) \$5.00
(10 or more) ea. \$3.00



Spot Defective Parts FAST With These Testers

Low Cost Tube Checker



IT-17

\$54⁹⁵

- Fills most daily service requirements
- Tests most tube types including new compactrons, novistors, 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. \$54.95

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, loctal, 10-pin miniature, 9-pin novar, 9-pin miniature, 12-pin compactron, 5-pin novistor, 7-pin novistor. 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.

Mutual-Conductance Tube Tester



TT-1A

\$160⁰⁰

- 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, novistor, novar, and 10-pin miniature tube types
- Handsome leatherette covered carrying case

Kit TT-1A, 33 lbs. (REA or Mtr. Frt.) \$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 micro-ampere sensitivity. Voltage regulators: firing voltage and regulation tolerance. Low power thyratrons: 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.

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. 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
- 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

Kit IT-28, 7 lbs. \$36.50



IT-28

\$36⁵⁰

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

Kit IT-12, 6 lbs. \$24.50



IT-12

\$24⁵⁰



IM-48

\$69⁰⁰

Heathkit IM-48 Audio IM Analyzer

Kit IM-48, 13 lbs. \$69.00

IM-48 SPECIFICATIONS—Frequency response—AC VTVM: 10 Hz to 100 kHz ± 1 dB. Wattmeter: 10 Hz to 50 kHz ± 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. Wattmeter: 0.15 mW, 1.5 mW, 15 mW, 150 mW, 1.5 W, 15 W, 150 W, full scale. Maximum continuous power 25 watts, intermittent power to 50 watts. I.M. Analyzer: 1%, 3%, 10%, 30%, 100% full scale. Input Impedance—AC VTVM: 1 megohm of 4, 8, 16 or 600 ohm switch selected. I.M. Analyzer: 1 megohm or 4, 8, 16 or 600 ohm switch selected. Wattmeter: 4, 8, 16 or 600 ohm internal load, 10,000 ohm across external load. Output Impedance—low and high frequency output: 3000 ohm (600 ohm when shunted with 750 ohm resistor). Internal generator frequencies—low frequency, 50/60 Hz (line frequency); High frequency, of 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.

Heathkit IM-58 Harmonic Distortion Meter

Kit IM-58, 13 lbs. \$65.00

IM-58 SPECIFICATIONS—Frequency: 20 Hz to 20,000 Hz in three ranges. Distortion: 1, 3, 10, 30, 100% full scale. Voltmeter: 1, 3, 10, 30 volts full scale. Input resistance: 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 Impedance Bridge

- 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. \$89.00

IM-58
\$65⁰⁰



Heathkit Impedance Bridge

- 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. \$89.00



IN-17

\$27⁹⁵

Decade Resistance Box

Kit IN-17, 3 lbs. \$27.95

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 3/4" D.



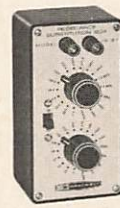
IN-27

\$18⁹⁵

Decade Capacitance Box

Kit IN-27, 3 lbs. \$18.95

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



IN-37

\$7⁹⁵

Resistor Substitution Box

Provides switch selection of any one of 36 EIA standard 10% 1-watt resistors, from 15 ohms to 10 megohms. Hi/Lo switch. Case is 5 3/8" L x 3 3/8" W x 3" H.

Kit IN-37, 2 lbs. \$7.95



IN-47

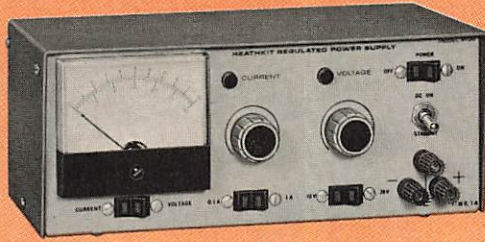
\$7⁵⁰

Capacitor Substitution Box

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

Kit IN-47, 2 lbs. \$7.50

Versatile, Low Cost Power Supplies From Heath



IP-28
\$47⁵⁰

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 (7.5 ampere maximum continuous load below 5 volts). Current limiting: 2 ranges; 10-100 mA & 10 mA-1A, continuously adjustable. Transient response: 25 μ s. Output impedance: 0.3 ohms or less to 100 kHz. Meter accuracy: 3% of full scale. Meter ranges: One switch determines voltage or current reading. 2 voltage ranges; 0-10 V, 0-30 V. 2 current ranges; 0-100 mA, 0-1A. External programming: AC or DC programming. 5000 ohm load on DC. Power requirements: 105-125 or 210-250 VAC, 50/60 Hz, 50 watts, at full load. Dimensions: 10 1/4" W x 4 3/8" D x 6 1/2" H overall. Net weight: 6 1/2 lbs.

Heathkit IP-28 1-30 VDC Regulated Power Supply . . . Adjustable Current Limiting . . . Only \$47.50

- 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

Kit IP-28, 9 lbs. \$47.50

New Heath/Malmstadt-Enke Solid-State Regulated HV Power Supply

- 50 to 300 VDC output
- 20 mA current limiting
- Overcurrent indicator light
- 6.3 VAC output for filaments
- Output regulated to 1%
- Less than 50 mV ripple & noise
- Output available at 5-way binding posts and octal socket
- Suitable for all tube circuits & SCR's, thyratrons, HV transistors, etc.
- Fully compatible with M-E Lab & new EU-51A System

Assembled EU-40A, 7 lbs. \$90.00

EU-40A SPECIFICATIONS—DC POWER SUPPLY: Output voltage: 50-300 DC, in 50 volt steps with each step continuously variable over 50 volt range. Output current: 0-20 mA regulated. 25 mA with output shorted. Regulation: 1% no load to full load. 0.5% with line voltages between 105 and 125 volts (or 210 to 250 volts). Ripple and noise: 50 mV maximum with either side of output to ground. Output impedance: Less than 0.5 ohm/V. Temperature range: 10 degrees C to 40 degrees C. 50 degrees F to 104 degrees F. AC POWER SUPPLY: Output voltage: 6.3 volts AC, center tapped. Output current: 1 ampere. GENERAL: Power requirements: 105-125 volts, or 210-250 volts, 50/60 Hz, 21 watts maximum at full load. Dimensions: 5" H x 8 1/4" W x 7 3/4" D. Weight: 4 1/2 lbs.

New Heath/Malmstadt-Enke Regulated Solid-State LV Power Supply

- Variable output from 0-15 VDC
- Adjustable current limiting from 35-750 mA
- Overcurrent indicating light
- Output regulated to 0.02%
- Stable at 0.02% in 8 hrs.
- External programming feature
- Output available at 5-way binding posts or octal socket
- Fully compatible with M-E Lab and new EU-51A System

Assembled EU-41A, 6 lbs. \$50.00

EU-41A SPECIFICATIONS—Output voltage: 0-15 volts DC, continuously variable. Output current: 0-750 mA. Current limiting: 35-750 mA continuously variable. Current limit indicator: Lights when the preset current level is exceeded. Regulation: \pm 0.02% with line voltages between 105 and 125 volts (or 210 to 250 volts) or load current from 0-750 mA. Ripple: 0.2 mV RMS. Stability: \pm 0.02% for 8 hours. Temperature range: 10 degrees C to 40 degrees C. Temperature coefficient of voltage: \pm 0.01% per degree C. External programming: Output to input voltage ratio is adjustable from 0 to 1:2.1. Input impedance is 8,000 ohms. Power requirements: 105-125 volts, or 210-250 volts, 50/60 Hz, 55 watts maximum at full load. Dimensions: 5" H x 8 1/4" W x 7 3/4" D. Weight: 4 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
- Darlington 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. \$21.95

IP-18 SPECIFICATIONS—Voltage output: 1-15 VDC, continuously adjustable. Load regulation: Less than 50 mV variation from no load to full load. Line regulation: Less than 50 mV change in output voltage for a 10% change in line voltage. Ripple and noise: Less than 5 mV. Current output: 500 mA maximum continuous load. Current limiting: Adjustable from 10 mA to over 500 mA. Transient response: 25 microseconds. Output impedance: .5 ohm or less to 100 kHz. Power requirements: 105-125 or 210-250 VAC, 50/60 Hz, 15 watts at full load. Dimensions: 5 1/2" W x 4 3/8" H x 5 3/4" D. Net weight: 3 1/4 lbs. Programming: AC or DC, 5000 ohm input resistance.

Heathkit IP-17 Variable Regulated High Voltage Supply

- Furnishes 0-400 VDC B+ 0 to -100 VDC Bias & filament voltages
- Separate panel meters for B+ voltage & current
- Isolated output terminals
- Circuit board-wiring harness construction

Kit IP-17, 21 lbs. \$69.95

Assembled IPW-17, 18 lbs. \$110.00

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 \pm 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 1/2" 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 \pm 15 mV regulation
- Four current ranges
- Adjustable current limiter
- Immune to overload from transients
- Can be calibrated from "outside" the case

Kit IP-27, 16 lbs. \$79.95

Assembled IPW-27, 14 lbs. \$125.00

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: \pm 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 1/2" 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 meters for output voltage & current
- Doubles as a battery charger
- Heavy duty components

Kit IP-12, 18 lbs. \$52.95

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.



EU-40A
\$90⁰⁰



EU-41A
\$50⁰⁰



IP-18
\$21⁹⁵



Kit IP-17
\$69⁹⁵

Wired IPW-17
\$110⁰⁰



Kit IP-27
\$79⁹⁵

Wired IPW-27
\$125⁰⁰



IP-12
\$52⁹⁵

Heathkit® Performance-Plus 'Scopes

**Professional DC Laboratory 'Scope . . . 8 MHz Response . . .
Triggered Sweep, Delay-Line Input**

- 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 • 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

• Wiring options permit 115/230 volt, 50-60 Hz operation—no special export order necessary
Kit IO-14, 53 lbs., Express or Motor Freight \$275.00
Assembled IOW-14, 47 lbs., Express or Motor Freight \$399.00

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. Z axis 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 10½" W x 22" D includes clearance for handle and knobs. **Net weight:** 40 lbs.

Assembled Low Capacitance Scope Probe

Impedance in x1 position is 1 Meg/110 pF, 10 Meg/20 pF in x10 position. Response is DC to 25MHz. 600VDC maximum. Features spring-loaded clip tip. Ideally suited for IO-14.
Wired PKW-2, 1 lb. \$12.00

Low Capacitance Scope Probe Kit

Switch provides direct or x10 attenuated operation and a trimmer capacitor provides proper match to scope input. Wiring options 3.3 Megohm (IO-18) or 1 Megohm (IO-14).
Kit PK-1, 1 lb. \$4.95

Scope Demodulator Probe Kit

For distortion checks and observation of modulation of RF and IF signals. Functions as an AM detector. 30 V RMS, 500 VDC maximum.
Kit 337-C, 1 lb. \$5.00
Assembled 337W-C, 1 lb. . . \$6.50

Heathkit "Extra-Duty" Wide-Band 5" Oscilloscope

- 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. \$92.50
Assembled IOW-18, 23 lbs. \$149.95
Assembled IOW-18S. Wired Berkeley Physics Version, 24 lbs. \$152.00

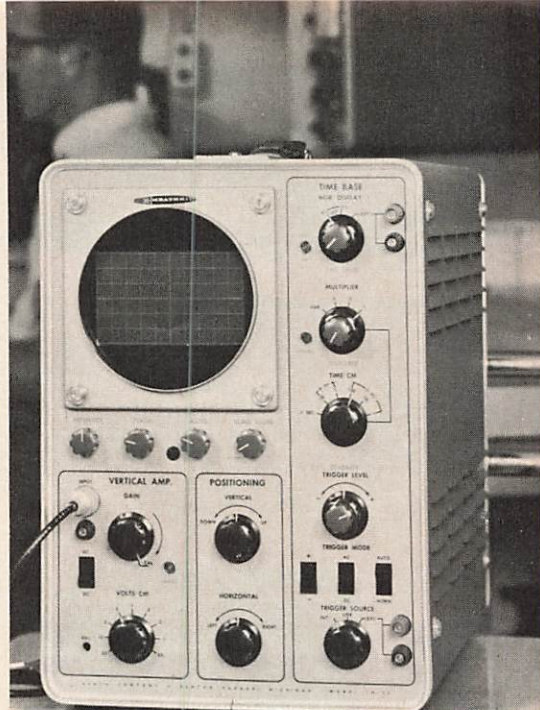
IO-18 SPECIFICATIONS—(Vertical) Sensitivity: 70 mV peak-to-peak per inch at 1 kHz. **Frequency Response (Referred to 1 kHz level):** ±1 dB, 8 Hz to 2.5 MHz; ±1.5 to —5 dB, 3 Hz to 5 MHz; response at 3.58 MHz —2.2 dB. **Rise Time:** 0.08 micro-seconds or less. **Input Impedance:** (at 1 kHz) 2.7 megohms at x1, 3.3 megohms at x10 and x100. **Horizontal Sensitivity:** 0.85 volts peak-to-peak per inch at 1 kHz. **Frequency Response:** ±1 dB 1 Hz to 200 kHz; ±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:** 14½" H x 8¾" W x 16" D.

Heathkit 3" General Purpose 'Scope

- 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 instrument styling conserves bench space, improves appearance • Circuit board construction speeds assembly • Solid-state power supply operates on 105-125v or 210-250v. AC, 50/60 Hz

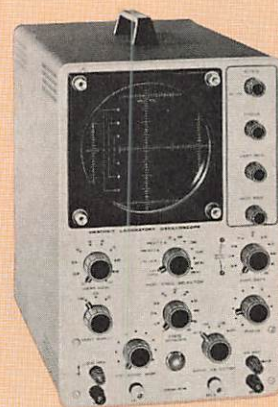
Kit IO-17, 16 lbs. \$79.95

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 ±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 ±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. **Synchronizing:** 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 210-240 volts 50/60 Hz. **Power consumption:** 60 watts. **Overall dimension:** 9½" H x 5½" W x 14½" L. (Dimensions include handle, knobs, etc.). **Net weight:** 12 lbs.



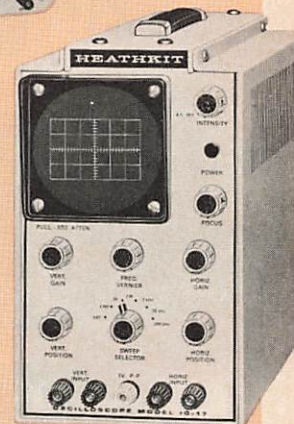
Kit IO-14
\$275⁰⁰

Wired IOW-14
\$399⁰⁰

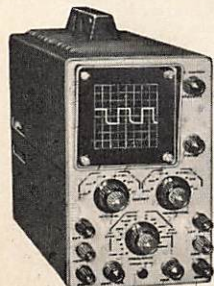


Kit IO-18
\$92⁵⁰

Wired IOW-18
\$149⁹⁵



Kit IO-17
\$79⁹⁵



Kit IO-10
\$99⁹⁵

Heathkit Compact 3" DC 'Scope

- Identical vertical & horizontal amplifiers • AC or DC coupling • DC to 200 kHz bandwidth—less than 5° relative phase shift • Recurrent 4 range sweep—5 Hz to 50 kHz • External capacitor binding posts for slower sweep rates • 0.1 volt sensitivity • Small—easy to carry

Kit IO-10, 16 lbs. \$99.95

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



Kit IO-21
\$61⁹⁵

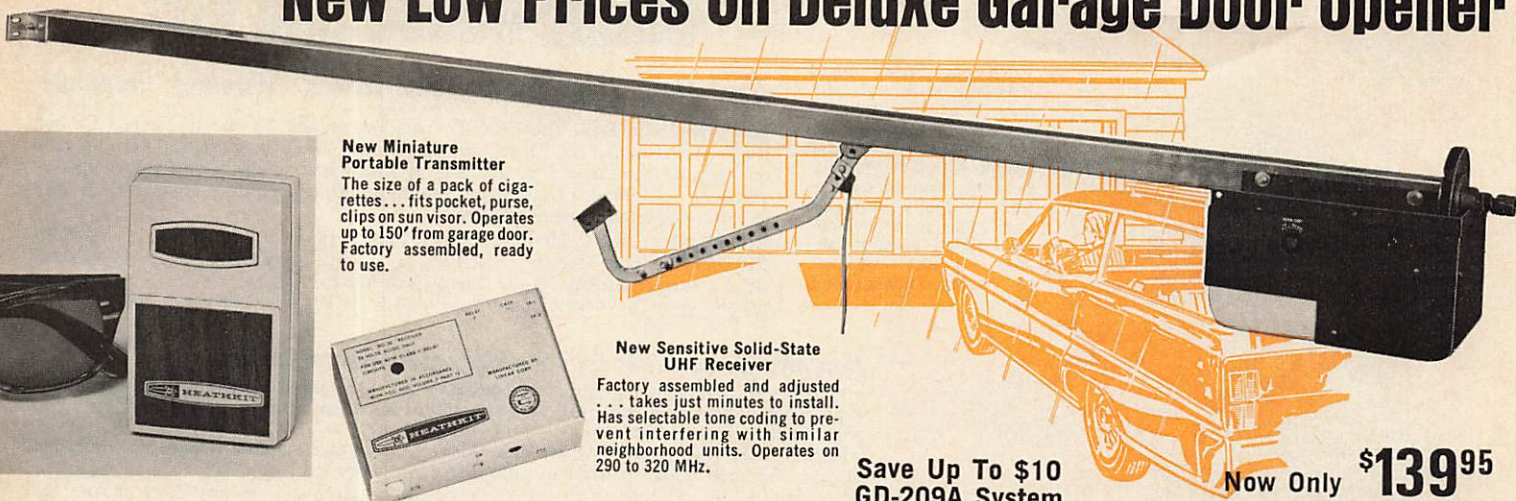
General Purpose 3" 'Scope

- Identical vertical and horizontal amplifiers • 2 Hz to 200 kHz response • Wide range sweep generator—20 to 100 kHz • Automatic Sync, retrace blanking • Direct access to vertical deflection plates • Professional quality components throughout • Focus and astigmatism control • Clean, open circuit layout for easy construction

Kit IO-21, 12 lbs. \$61.95

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

New Low Prices On Deluxe Garage Door Opener



New Miniature Portable Transmitter
The size of a pack of cigarettes... fits pocket, purse, clips on sun visor. Operates up to 150' from garage door. Factory assembled, ready to use.

New Sensitive Solid-State UHF Receiver
Factory assembled and adjusted... takes just minutes to install. Has selectable tone coding to prevent interfering with similar neighborhood units. Operates on 290 to 320 MHz.

Save Up To \$10
GD-209A System
Now Only **\$139⁹⁵**

A Better Buy At New Lower Prices . . . Deluxe Radio-Controlled Screw-Drive Garage Door Opener Semi-Kit

• Factory assembled UHF transmitter & receiver • Miniature portable "wireless" transmitter • Operates up to 150 feet • Powerful screw-drive mechanism—silent, reliable, extra safe • Easy to build—all leads cut to length with connectors installed—just push on terminals, no soldering • Simple installation • Operates 7½' overhead track and jamb & pivot doors (with adaptor) • Positive "locking" action withstands over 6000 lbs. pressure • Four safeties forward, two reverse—cannot injure children, pets, cannot damage car tops, etc • Quick-release door arm permits manual operation in case of power failure • Built-in automatic light • No FCC license required • No interference • Selectable tone coding prevents interference by similar neighborhood units

The Next Best Thing To A Personal Doorman. This new deluxe Heathkit radio-controlled garage door opener combines the convenience you want with the reliability and safety you need. Just a touch of the button on the "wireless" transmitter and your garage door opens and the light turns on... drive inside and another touch of the button closes the door quietly, securely... and the light stays on long enough for you to enter your home.

Rugged, Safe Construction & Long-Term Reliability. The giant 8½' long screw mechanism coupled with the husky ¼ HP motor give many years of dependable operation. The built-in safety switch and slip clutch act together to instantly reverse the door should it meet the smallest obstruction... "safety-engineered" for children, pets, toys, etc. And there's no need to worry about snow or ice build-up causing the door to reverse... the built-in Snow Safety takes over a short distance from the floor to compensate for this.

Virtually Maintenance-Free. Because of the unique screw-drive design, there are no chains to stretch, brake or be oiled... no sprockets to wear. The screw itself is kept clean automatically as it turns, and the motor never needs oil. Internal electrical safeties & limit switches assure instant response to every situation.

Fast, Easy Assembly. Builds in one evening with no soldering... each

lead is cut to length and connectors are installed on each end. The famous Heathkit manual gives complete, detailed instructions for mounting to your particular door. Add new convenience and safety to your home now. Come in out of the rain and snow with the new Heathkit radio-controlled garage door opener.

- GD-209A, 66 lbs., mechanism, 1 transmitter, 1 receiver, (REA or Mtr. Frt.) was \$149.95... **NOW ONLY \$139.95**
- GD-209B, 66 lbs., mechanism, 2 transmitters, 1 receiver, (REA or Mtr. Frt.) was \$159.95... **NOW ONLY \$149.95**
- Kit GDA-209-1, 65 lbs., mechanism only, (REA or Mtr. Frt.) was \$104.95... **NOW ONLY \$99.95**
- Kit GDA-209-2, adaptor arm for use with jamb and pivot type solid doors without track, 3 lbs... **\$7.95**
- GDP-99, 1 lb., 1 transmitter... **\$15.95**
- GDP-119, 2 lbs., 1 transmitter, 1 receiver... Save \$5, was \$49.95... **NOW ONLY \$44.95**
- GDP-129, 2 lbs., 2 transmitters, 1 receiver... Save \$5, was \$64.95... **NOW ONLY \$59.95**

KIT MECHANISM SPECIFICATIONS: 120" long x 12" high x 9" wide. Operates all residential type 7½' high overhead doors, single or double type (also jamb and pivot types without tracks when GDA-209-2 adaptor is used). 117 VAC, ¼ HP, capacitor run, 1500 rpm motor, circuit breaker protected. **Control:** Transmitter-receiver, wall-mounted push-button switch, or custom switches (key type etc.). **Open and Close Time:** Approximately 11 seconds. **Safety:** Door travel reverses, returns to full open position, and stops if obstructed while closing. **Mounting Clearance:** 3" above highest point of door travel. **Safety Lamp:** 75 watt max., automatically turns on when mechanism is activated. Delay circuit keeps lamp on for approx. 90 sec. after motor stops.

UHF TRANSMITTER SPECIFICATIONS: Powered by standard 9-volt transistor type battery (Eveready No. 216 or equivalent). **R. F. Frequencies:** 290 to 320 MHz modulated with 12 to 23 kHz. **Range:** Up to 150' from receiver (adjustable). **Size:** 3¼" x 2¼" x 1½". **Weight:** 5 oz. **Useful Temperature Range:** -50°F to +140°F.

UHF RECEIVER SPECIFICATIONS: Powered by 24 VAC from opener mechanism. Usable on any mechanism having 24 volt AC NEC class II circuit. **R. F. Frequencies:** 290 to 320 MHz modulated with 12 to 23 kHz. **Size:** 4½" x 3¼" x 1½". **Useful Temperature Range:** -50°F to +140°F.

Kit Form Mechanism Assembled Transmitter & Receiver
GD-179A
\$119⁹⁵



New Miniature Portable Transmitter
No larger than a pack of cigarettes... fits easily in glove compartment, pocket, purse or attach to sun visor. Operates up to 150 feet from receiver. Factory Assembled.

New Sensitive Solid-State UHF Receiver
Install in minutes in your garage. Operates on 290 to 320 megahertz... requires no license. Selectable tone coding prevents interference with similar neighborhood units. Factory Assembled.

Radio-Controlled Chain-Drive Garage Door Opener Semi-Kit . . . Solid-State Transmitter & Receiver

• New factory assembled UHF 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 FCC license required—complies with FCC regulations • Won't interfere with aircraft radio frequencies • Selectable tone coding prevents interference with similar neighborhood units

- GD-179A, 63 lbs., mechanism, 1 transmitter, 1 receiver (REA or Mtr. Frt.)... **\$119.95**
- GD-179B, 63 lbs., mechanism, 2 transmitters, 1 receiver (REA or Mtr. Frt.)... **\$129.95**
- GDA-20-3, 61 lbs., mechanism only (REA or Mtr. Frt.)... **\$74.95**

- GDP-149, 2 lbs., 1 transmitter, 1 receiver... **\$49.95**
- GDP-159, 2 lbs., 2 transmitters, 1 receiver... **\$64.95**
- GDP-99, 1 lb., transmitter only... **\$15.95**

KIT MECHANISM SPECIFICATIONS: 125" L x 8¾" H x 13" W, 100 # max. operating force. Operates overhead track and most jamb & pivot doors up to 8' high. 117 v. AC ¼ H.P. motor. Fused.

UHF TRANSMITTER SPECIFICATIONS: Powered by standard 9-volt transistor type battery (Eveready No. 216 or equivalent). **RF Frequencies:** Approx. 290-320 MHz modulated with 12 to 23 kHz. **Operating Range:** Up to 150' from receiver (adjustable). **Useful Temperature Range:** -50° to +140°F. **Size:** 3¼" x 2¼" x 1½". **Weight:** 5 ounces.

UHF RECEIVER SPECIFICATIONS: **RF Frequencies:** Approx. 290-320 MHz modulated with 12 to 23 kHz. **Useful Temperature Range:** -50° to +140° F. **Size:** Approx. 4½" x 3¼" x 1½". **Power Requirements:** 117 VAC, 60 Hz.

GD-51A
\$24⁹⁵



- 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

Handy Household Kits

Save Time, Steps & Your Voice With A "Wireless" Intercom

Just Plug It In, Push The Press-To-Talk Bar to talk, release to listen. PTT bar has a spring-return to "listen" and a "dictate" hold position for keeping tabs on baby, or for predominately one-way transmissions. Saves you valuable steps and time . . . eliminates annoying shouting. Use any number anywhere, as long as they operate on same power line.

- Kit GD-51-2 (pair), 10 lbs. \$48.50
- Kit GD-51A (one station), 5 lbs. \$24.95

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.

Heathkit Solid-State Indoor-Outdoor Intercom System

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

Identify Callers Before You Open The Door . . . with the outdoor remote unit installed at your front entrance. It adds to your personal safety . . . especially late at night, or when your family is alone. You can place up to 5 remote stations anywhere around the house . . . outdoor units at both the front and back entrance . . . indoor units in the den, garage, or basement workshop. Here's real convenience to save you time and steps.

Private Calls Or Paging. The master unit features selective and all-call switches . . . talk to the office "steno", your son in the garage, or call the whole family to dinner. The all-transistor circuitry requires no warm-up time . . . your Heathkit Intercom will be ready and waiting for instant use.

Convenient Outdoor Remote features a weather-resistant aluminum grille, weatherproof seal, specially-coated speaker, doorbell button, and 50' of 2-wire cable.

- Kit GD-121 Master Station, 6 lbs. \$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 3/4" x 4 1/2" panel size (outdoor remote).

All 3 Units
\$44⁸⁵



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, developed by Berkeley Scientific Laboratories, exclusively licensed to Heath, 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.

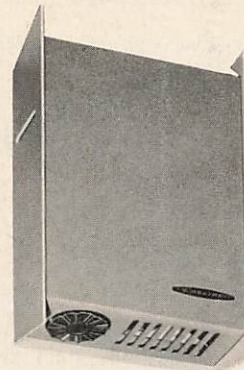
- Kit GD-77, receiver-alarm, 4 lbs. \$39.95
- Kit GD-87, smoke-heat det./trans., 4 lbs. \$49.95
- Kit GD-97, utility det./trans., 2 lbs. \$34.95
- GDA-97-1, miniature magnetic-reed switch for windows and doors, 1 lb. \$1.80
- GDA-97-2, miniature micro switch for windows and doors, 1 lb. \$2.00
- GDA-97-3, 133°F. heat sensing switch, 1 lb. \$2.25

Kit GD-77
\$39⁹⁵



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

Kit GD-87
\$49⁹⁵



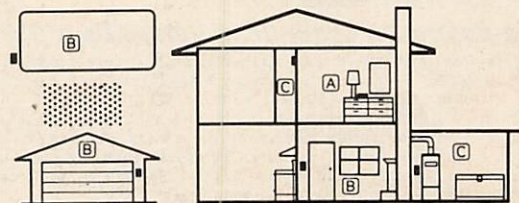
The Smoke-Heat Detector/Transmitter signals Receiver Alarm of fire & excess smoke.

Kit GD-97
\$34⁹⁵



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

Go Places... On The New Heathkit "Boonie-Bike"... The All-Season Trail And Snow Bike



Kit GT-18
\$199⁹⁵

(less ski,
horn, lights
& special muffler)

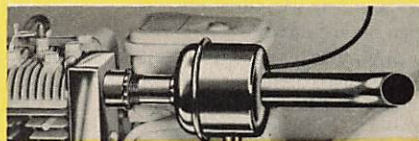


New Horn & Lights Accessory Kit Makes The "Boonie-Bike" Even More Versatile

The new Horn & Lights Kit is the fast, low cost way to add the extra safety & convenience to your GT-18 that night travel demands.

A powerful 5 3/4" sealed-beam headlamp in a chrome housing has both High & Low beams for safety, and On/Off and High/Low switches are mounted on top of the lamp for easy accessibility. The 3 3/4" taillight/stoptlight in a chrome housing means maximum visibility and uses a standard automotive bulb for easy replacement. The 4" chrome plated horn is triggered by a button on the handlebars. All cables are held neatly in place by a spiral wrap. The battery holder matches the GT-18, & details in the manual aid in procuring the recommended battery locally. An inexpensive Charger Kit is also available to keep your battery in peak operating condition always.

Kit GTA-18-2, Horn & Lights Accessory,
10 lbs. (less battery) **\$29.95**
Assembled GTA-18-3 Battery Charger,
3 lbs. **\$6.95**



New Spark-Arresting Muffler For Safe Travel In Wooded Areas

For those planning to travel in forests and wooded areas, Heath now offers this U.S. Department of Agriculture approved Spark-Arresting Muffler. Specifically designed for 5 HP Briggs & Stratton engines, the muffler is chrome plated & easy to install. Play it safe . . . don't take a chance on starting a forest fire . . . order yours now.

GTA-18-4, 4 lbs. \$9.95

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 pre-mounted & 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. (REA or Motor Freight) \$199.95

Model GTA-18-1, Ski Accessory, 12 lbs. \$19.95

Kit GTA-18-2, Horn & Lights Accessory (less battery) 10 lbs. \$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 Heathkit® SB-102



Kit SB-102
\$380⁰⁰
 (less speaker)

The World's Best Rig (the SB-101) Is Now Even Better . . . New "102" Features Solid-State LMO For Faster Warmup, Better Stability . . . New Receiver Circuitry For Improved Sensitivity . . . Plus All The Features That Make The SB-101 The World's Most Popular Rig

• New all solid-state Linear Master Oscillator features 1 kHz dial calibration • Bandspread equal to 10 feet per Megahertz • Improved stability—less than 100 Hz per hour drift after 10 minute warmup • Dial resettable to 200 Hz • New receiver circuitry provides sensitivity of better than 0.35 uV for 10 dB signal plus noise to noise ratio • 180 watt PEP SSB input—170 watts CW input • 80 through 10 meter coverage • Switch-selection of upper or lower sideband and CW • Built-in CW sidetone for monitoring • Built-in 100 kHz crystal calibrator • Triple Action Level Control® reduces clipping and distortion • Front panel switch selection of built-in 2.1 kHz SSB Crystal filter or optional 400 Hz CW Crystal filter • Operate with built-in VOX or PTT • Fast, easy circuit-board wiring harness construction • Run fixed or mobile with appropriate low cost power supplies

The New Heathkit SB-102 . . . proud descendant of the rigs that put many thousands of hams on the air—the famous Heathkit "100" and "101". With a heritage like this you expect top performance, reliability and value . . . and you get it.

Improved Stability & Linearity. The already excellent frequency stability and dial linearity characteristics of the "101" have been improved by the addition of an all-solid-state, factory assembled and aligned Linear Master Oscillator. The result is a rig that stabilizes from a cold start in half the time and tracks more accurately than ever.

New, Hotter Receiver. The SB-101 was known throughout the world for having the most sensitive receiver section of any transceiver on the market . . . so we made it even more sensitive. The new SB-102 delivers a S+N/N of less than 0.35 uV for 10 dB . . . an increase that gives you solid copy longer when the band is on the way out.

Operating The New SB-102 Is Sheer Pleasure. Select the band, feel the smooth, light action of the LMO as you dial your frequency, peak up the preselector and tune. Receiver and Transmitter bandswitching are simultaneous. The preselector control peaks up the driver. Final tuning is quick, sure and positive . . . and the five-position metering leaves no doubt about the important operating conditions. The optional 400 Hz CW crystal filter aids immeasurably to the ease of receiver tuning during the crowded evening hours or in a DX pile-up. And for those who prefer headphone listening, there's a separate level control to adjust headphone audio level independently of speaker volume. These features plus the separate offset CW carrier crystal and built-in sidetone make the new "102" as much a leader in CW as in SSB transceivers.

Versatile "Locked" Or "Unlocked" Operation. When operated with the SB-640 External LMO, a front panel switch permits selection of transceive with the "102" or "640", receiving with the "102" & transmitting with the "640", or transceiving with the "102" or "640" on either of two crystal controlled frequencies.

The New "102" . . . all the flexibility, performance and value that made the "101" the world leader in transceivers plus important new features. Put the world's finest rig in your shack now . . . the new SB-102—from the Hams At Heath.

Kit SB-102, 23 lbs. \$380.00
 SBA-301-2, Optional 400 Hz CW crystal filter, 1 lb. \$21.95
 Kit HP-23A, AC Power Supply, 19 lbs. \$51.95
 Kit HP-13A, DC Power Supply, 7 lbs. \$69.95
 SBA-100-1, Mobile Mount, 6 lbs. \$14.95

SB-102 SPECIFICATIONS—RECEIVER SECTION: Sensitivity: Better than 0.35 microvolt for 10 dB signal-plus-noise to noise ratio for SSB operation. **SSB selectivity:** 2:1 kHz minimum of 6 dB down, 5 kHz maximum at 60 dB down—2:1 nominal shape factor—6:60 dB. **CW Selectivity:** (With optional CW filter SBA-301-2 installed) 400 Hz minimum at 6 dB down, 2.0 kHz maximum at 60 dB down. **Input impedance:** Low impedance for unbalanced coaxial input. **Output impedance:** Unbalanced 8 and 600 ohm speaker, and high impedance headphone. **Power output:** 2 watts with less than 10% distortion. **Spurious response:** Image and IF rejection better than 50 dB. Internal spurious signals below equivalent antenna input of 1 microvolt. **TRANSMITTER SECTION: DC power input:** **SSB:** 180 watts P.E.P. continuous voice; **CW:** 170 watts—50% duty cycle. **RF power output:** 100 watts on 80 through 15 meters; 80 watts on 10 meters (50 ohm non-reactive load). **Output impedance:** 50 ohms to 75 ohms with less than 2:1 SWR. **Oscillator feed-through or mixer products:** 55 dB below rated output. **Harmonic radiation:** 45 dB below rated output. **Transmit-receive operation:** **SSB:** Push-to-talk or VOX. **CW:** Provided by operating VOX from a keyed tone, using grid-block keying. **CW side-tone:** Internally switched to speaker in CW mode. Approx. 1000 Hz tone. **Microphone input impedance:** High impedance. **Carrier suppression:** 50 dB down from single-tone output. **Unwanted sideband suppression:** 55 dB down from single-tone output at 1000 Hz reference. **Third order distortion:** 30 dB down from two-tone output. **Noise level:** At least 40 dB below single-tone carrier. **RF compression (TALC):** 10 dB or greater at .1 ma final grid current. **GENERAL: Frequency coverage:** 3.5 to 4.0; 7.0 to 7.3; 14.0 to 14.5; 21.0 to 21.5; 28.0 to 28.5; 28.5 to 29.0; 29.0 to 29.5; 29.5 to 30.0 (megahertz). **Frequency stability:** Less than 100 Hz per hour after 10 minutes warm-up from normal ambient conditions. Less than 100 Hz for $\pm 10\%$ line voltage variations. **Modes of operation:** Selectable upper or lower sideband (suppressed carrier) and CW. **Visual dial accuracy—"Resettableability":** Within 200 Hz on all bands. **Electrical dial accuracy:** Within 50 kHz after calibration at nearest 100 kHz point. **Dial mechanism backlash:** Less than 50 kHz. **Calibration:** 100 kHz crystal. **Audio frequency response:** 350 to 2450 Hz ± 3 dB. **Phone patch impedance:** 8 ohm receiver output to phone patch; high impedance phone patch input to transmitter. **Front panel controls:** Main (LMO) tuning dial; Driver tuning and Preselector; Final tuning; Final loading; Mic and CW Level Control; Mode switch; Band switch; Function switch; Freq. Control switch; Meter switch; RF gain control; SSB-CW filter switch. **Audio Gain control.** **Internal controls:** VOX Sensitivity; VOX Delay; Anti-Trip; Carrier Null (control and capacitor); Meter Zero control; CW Side-Tone Gain control; Relative Power Meter Adjust control; P.A.—Bias; Phone Vol (headphone volume); Neutralizing. **Rear Apron Connections:** CW Key jack; 8 ohm output; Spare A; Spare B; Phone patch input; ALC input; Power and accessory plug; RF output; Antenna switch; Receiver Antenna. **Power requirements:** 700 to 800 volts at 250 ma; 300 volts at 150 ma; —115 volts at 10 ma; 12 volts at 4.76 amps. **Cabinet dimensions:** 14 7/8" W x 6 1/2" H x 13 3/4" D.

The New Heathkit® SB-220 Linear Amplifier . . .

2 KW PEP SSB
1 KW CW And RTTY
80 Through 10 Meters
Built-In Power Supply
Only \$349.95



Kit SB-220
\$349.95

The New Heathkit SB-220 Is Here . . . With A Price And Performance That Make It Well Worth The Wait!

• A complete 2 kW rig in a compact desk top unit • Uses a pair of Eimac 3-500Z's to develop up to 2000 watts PEP SSB input, 1000 watts on CW and RTTY • Requires only 100 watts drive • Pretuned broadband pi input on 80-10 for maximum efficiency and low distortion • Built-in solid-state power supply • Zener diode regulated operating bias reduces zero signal plate current for extended tube life and cooler operation • Quiet, high volume fan for maximum air flow • Double-shielded for TVI protection and solid construction • Built-in ALC prevents overdriving • Two front panel meters give continuous monitoring of plate current, plus switch selection of grid current, relative power and plate high voltage • Built-in cover interlock for safety • Fast, easy tune up • No after assembly adjustment required • Sharp Heathkit SB-Series styling • Easy 20 hour assembly

The New Heathkit SB-220 uses a pair of conservatively rated Eimac 3-500Z's in the grounded grid final to provide up to 2000 watts PEP input on SSB . . . and is one of the very few finals available that can be loaded to 1000 watts input on CW and RTTY. The broadband pretuned pi input circuit delivers high efficiency with low distortion . . . and the new "220" can be used with most exciters since it requires only 100 watts of drive for full output.

Built-In Solid-State Supply . . . can be wired for either 120 or 240 VAC—and changed to the other in minutes should your power requirements change. Circuit breaker protection eliminates keeping fuses on hand. Zener diode regulated operating bias reduces idling current to a bare minimum for longer tube life and cooler running, and the large quiet fan coupled with an open layout permits the SB-220 to run cooler than most exciters.

Double Shielded. The new Heathkit "220" is the only linear amplifier on the market with double shielding for really maximum TVI protection.

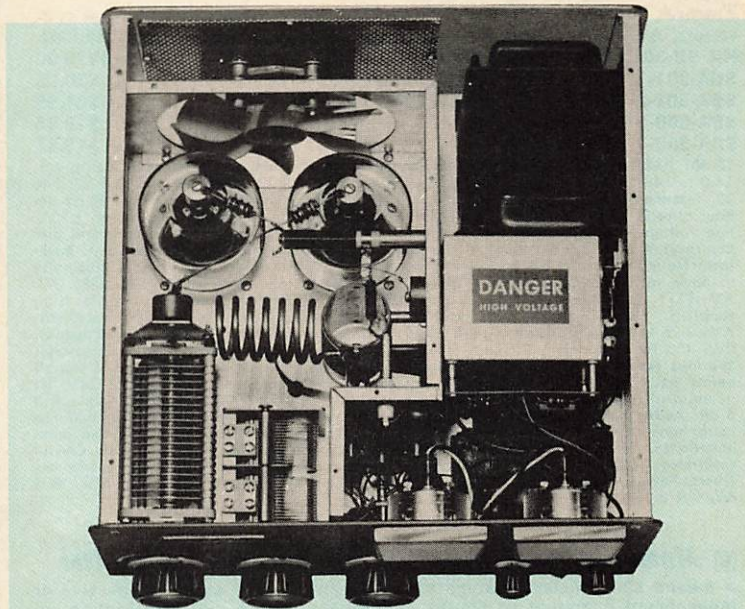
Fast, Easy Tune-Up . . . set the band switch, push the CW-Tune/SSB rocker switch to the CW-Tune position and adjust the Load & Tune controls for maximum relative power. Push the rocker switch to the SSB position and you're ready to go with 2 kW PEP input . . . push it back to CW and you've got a full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

Other Features include ALC to prevent overdriving, complete front panel monitoring facilities, easy 20 hour assembly and the sharp styling common to all the famous members of the Heathkit SB-Series.

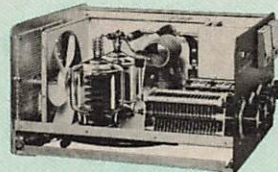
Tired Of Stumbling Barefoot Through The QRM? Put some big shoes on . . . the Heathkit SB-220—the big new hot one from the Hams at Heath!

Kit SB-220, 55 lbs. (REA or Mtr. Frt.) \$349.95

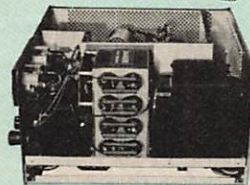
SB-220 SPECIFICATIONS—Band coverage: 80, 40, 20, 15 and 10 meter amateur bands. **Driving power required:** 100 watts. **Maximum power input:** SSB: 2000 watts PEP; CW: 1000 watts; RTTY: 1000 watts. **Duty cycle:** SSB: Continuous voice modulation. CW: Continuous (maximum key-down 10 minutes). RTTY: 50% (maximum transmit time 10 minutes). **Third order distortion:** —30 dB or better. **Input impedance:** 52 ohm unbalanced. **Output impedance:** 50 ohm unbalanced; SWR 2:1 or less. **Front panel controls:** Tune, Load, Band, Sensitivity, Meter Switch, Power, CW/Tune—SSB, Plate meter, Multi-meter (Grid mA, Relative Power and High Voltage). **Rear panel:** Line cord, circuit breakers (two 10 A), Antenna Relay (phono), ALC (phono), RF Input (SO-239), Ground post, RF Output (SO-239). **Tubes:** Two Eimac 3-500Z. **Power required:** 120 VAC, 50/60 Hz at 20 amperes maximum. 240 VAC, 50/60 cycles, at 10 amperes maximum. **Cabinet size:** 14 1/4" W x 8 1/4" H x 14 1/2" D. **Net weight:** 47 lbs.



Inside The New Heathkit SB-220 . . . a clean yet compact design. Note the liberal use of internal shielding for extra strength and isolation of components. The power supply components are on the right, metering and bandswitching circuitry at lower right and the final compartment is at left.



Power To Spare. Two rugged, dependable Eimac 3-500Z's in the final give your signal the sound of authority. Note the large fan behind the finals . . . the SB-220 actually runs cooler than most exciters.

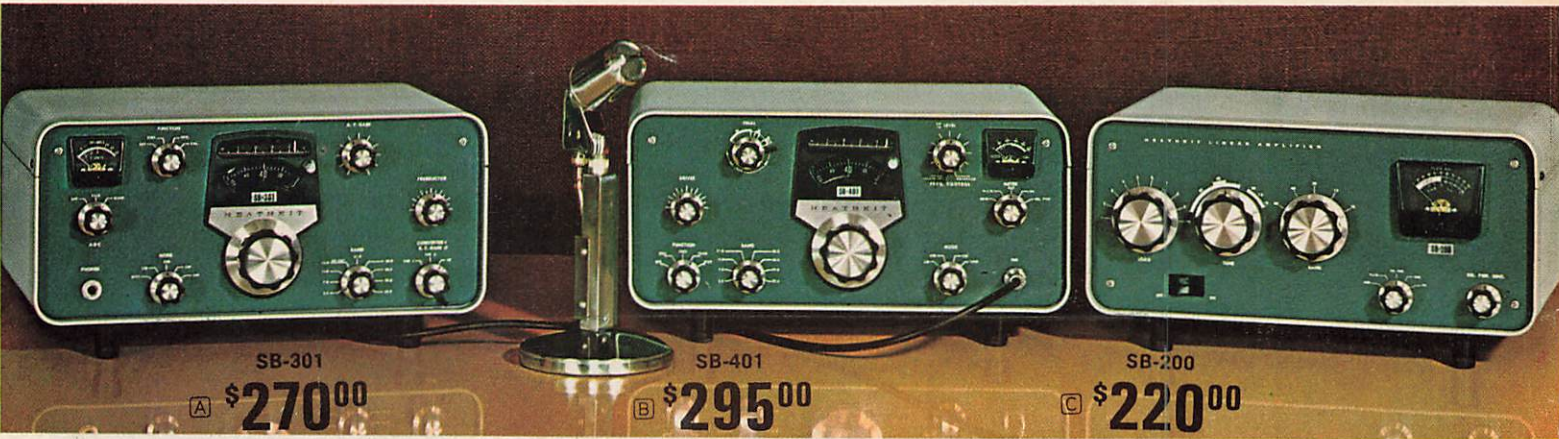


Giant Power Supply. It takes a husky, well regulated supply to meet the demands of high power operation . . . and the SB-220 has one. Note the massive plate transformer on the right and the large filament & bias transformer on the left. The 25 ufd capacitor bank in the center delivers excellent dynamic regulation.



Complete Metering Facilities. You're never in doubt about the important operating characteristics of this final . . . the left meter gives continuous monitoring of plate current, and the one on the right can be switched to read grid current, relative power and plate high voltage.

Heathkit® SB-Series Ham Gear



SB-301
A \$270⁰⁰

SB-401
B \$295⁰⁰

SB-200
C \$220⁰⁰

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. \$270.00

- 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. \$21.95
- SBA-300-3 (6 meter), 2 lbs. \$19.95
- SBA-300-4 (2 meter), 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 available as accessory). 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 at 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 $\frac{1}{4}$ " W x 6 $\frac{1}{4}$ " H x 13 $\frac{1}{4}$ " 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. (REA or Mtr. Frt.) \$295.00

SBA-401-1 Crystal Pack, 1 lb. \$29.95

(Required for SB-401 operation without the SB-301 or SB-300 Receiver)

HDP-21A, SSB "Ham" Microphone—See Pg. 56 for details. 4 lbs. . . \$29.95

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 ± 3 dB. Power requirements: 80 watts STBY, 260 watts key down @ 120/240 V AC, 50/60 Hz. Dimensions: 14 $\frac{1}{4}$ " W x 6 $\frac{1}{4}$ " H x 13 $\frac{1}{4}$ " 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. \$220.00

Kit SB-200, 41 lbs. \$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 pretuned 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 $\frac{1}{4}$ " W x 6 $\frac{1}{4}$ " H x 13 $\frac{1}{4}$ " D. Net weight: 35 lbs.



SB-110A
\$299⁰⁰



Kit SB-500
\$179⁹⁵

Heathkit SB-110A 6-Meter Transceiver

Kit SB-110A, 23 lbs. \$299.00

Kit SBA-100-1, Mobile Mounting Kit, 6 lbs. \$14.95

Kit HP-13A, DC Supply, 7 lbs. \$69.95

Kit HP-23A, AC Supply, 19 lbs. \$51.95

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. 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). Carrier suppression: 55 dB down from rated output. Unwanted sideband suppression: 55 dB down from rated output @ 1000 Hz & higher. 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 minutes warmup under normal ambient conditions. Less than 100 Hz drift for $\pm 10\%$ supply 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: No more than 50 Hz. Calibration: Every 100 kHz. Dimensions: 14 $\frac{1}{4}$ " W x 6 $\frac{1}{4}$ " H x 13 $\frac{1}{4}$ " D.

SB-500 Transverter Puts Your SB-Series Rig On 2 Meters

Kit SB-500, 19 lbs. \$179.95

SB-500 SPECIFICATIONS—RECEIVER—Sensitivity: 0.2 microvolt for 10 dB signal-plus-noise to noise ratio for SSB operation. Spurious Response: All are below 0.1 microvolt equivalent signal input, except at 145.310 MHz (50 MHz IF only). Antenna Input Impedance: 50 ohm unbalanced. TRANSMITTER—DC Power Input: 130 watts PEP. Power Output: 50 watts (50% duty cycle). Output Impedance: 50 ohm with less than 2:1 SWR. GENERAL—Frequency Range: Any 2 MHz Segment between 144 and 148 MHz into 50 MHz or 28 MHz tuned IF. Mode of Operation: SSB or CW only. Power Requirements: (1) 120/240 VAC, 50/60 Hz at 82 watts (internal). (2) 700 to 800 VDC at 200 mA (from driving unit). Fuse: $\frac{3}{4}$ ampere slow-blow for 120 VAC (formerly 3AG); $\frac{1}{2}$ ampere slow-blow for 240 VAC. Cabinet dimensions: 12 $\frac{1}{4}$ " W x 6 $\frac{1}{4}$ " H x 13 $\frac{1}{4}$ " D, excluding knobs and feet.

Heathkit® HW-Series Gear

The Heathkit HW-100 5-Band SSB-CW Transceiver . . . Red Hot Performance At A Money-Saving Kit Price

- Solid-state (FET) VFO • 80-10 meter coverage • Switch selected upper or lower sideband or CW • 180 watts input PEP SSB—170 watts input CW • Crystal filter • Full coverage on all bands with 500 kHz per band segment • Smooth vernier control of frequency with patented Harmonic Drive™ dial mechanism • Built-in 100 kHz calibrator • Separate offset CW carrier crystal • TALC • Quiet, enclosed relays • Fixed or mobile operation with HP-23A or HP-13A power supplies • Easy assembly with circuit boards and wiring harness

The World's Fastest Selling Transceiver . . . and the reasons are clear. The HW-100 is easy to build, a pleasure to use, and most important, it delivers what every ham wants—a solid signal coupled with a hot receiver . . . at lowest possible cost. Here's the hot one close up.

The Receiver boasts a sensitivity of 0.5 uV for 10 dB S+N/N ratio for SSB operation. Crystal filter selectivity is 2.1 kHz @ 6 dB down, 7 kHz @ 60 dB. Image & IF rejection are both better than 50 dB.

The Transmitter delivers 180 watts PEP SSB input, 170 watts CW input. Carrier and unwanted sideband suppression is 45 dB down; 3rd order distortion 30 dB down; RF compression (TALC) is 10 dB or better. Outstanding stability . . . less than 100 Hz/hour drift after 30 minute warmup . . . less than 100 Hz variation under a 10% line voltage change. The HW-100 operates PTT or VOX on either sideband, and semi-break-in transceive by operating VOX from a keyed tone, using grid-block keying. The 1 kHz CW sidetone is internally switched to either speaker or headphones.

A Pleasure To Use . . . the patented Harmonic Drive™ provides 28 knob revolutions per 500 kHz band segment with 5 kHz divisions. Front panel controls include Band & Mode Selectors, Load, Final Tune, Driver Pre-selector, Mic/CW Level, Mic Connector & Phone Jack. Switches for metering functions and PTT/VOX/CAL are adjacent. Put the world's best value in sideband in your shack now . . . the HW-100—another hot one from the Hams at Heath.

- Kit HW-100, 22 lbs. \$250.00
- Kit SB-600, 8 ohm speaker, 6 lbs. \$19.95
- Kit HP-13A, DC power supply, 7 lbs. \$69.95
- Kit HP-23A, AC power supply, 19 lbs. \$51.95



HW-100
\$250⁰⁰

HW-100 SPECIFICATIONS—RECEIVER. Sensitivity: Less than .5 microvolt for 10 dB signal-plus-noise to noise ratio for SSB operation. Selectivity: 2.1 kHz minimum at 6 dB down 7 kHz maximum at 60 dB down (3.395 MHz filter). Input: Low impedance for unbalanced coaxial input. Output impedance: 8 Ω speaker, and high impedance headphone. Power output: 2 watts with less than 10% distortion. Spurious response: Image and IF rejection better than 50 db. TRANSMITTER. DC Power input: SSB: (A3j emission) 180 watt P.E.P. (normal voice; continuous duty cycle). CW: (A1 emission) 170 watts (50% duty cycle). RF Power output: 100 watts on 80 through 15 meters; 80 watts on 10 meters (50 Ω non-reactive load). Output impedance: 50 Ω to 75 Ω with less than 2:1 SWR. Oscillator feed-through or mixer products: 55 dB below rated output. Harmonic radiation: 45 dB below rated output. Transmit-receive operation: SSB: PTT or VOX. CW: Provided by operating VOX from a keyed tone, using grid-block keying. CW Side-tone: Internally switched to speaker or headphone, in CW mode. Approximately 1000 Hz tone. Microphone input: High impedance with a rating of —45 to —55 dB. Carrier suppression: 45 dB down from single-tone output. Unwanted sideband suppression: 45 dB down from single-tone output at 1000 Hz reference. Third order distortion: 30 dB down from two-tone output. RF Compression (TALC*): 10 dB or greater at .1 ma final grid current. GENERAL. Frequency coverage: 3.5 to 4.0; 7.0 to 7.3; 14.0 to 14.5; 21.0 to 21.5; 28.0 to 28.5; 28.5 to 29.0; 29.0 to 29.5; 29.5 to 30.0 (megahertz). Frequency stability: Less than 100 hertz per hour after 30 minutes warmup from normal ambient conditions. Less than 100 Hz for ± 10% line voltage variations. Modes of operation: Selectable upper or lower sideband (suppressed carrier) and CW. Dial calibration: 5 kHz. Calibration: 100 kHz crystal. Audio frequency response: 350 to 2450 Hz. Transistors: MPF105 FET—VFO; 2N3393—Voltage regulator. Rear apron connections: CW Key jack; 8 Ω output; ALC input; Power and accessory plug; RF output; Antenna; Spare. Power requirements: 700 to 850 volts at 250 ma with 1% maximum ripple; 300 volts at 150 ma with .05% maximum ripple; —115 volts at 10 ma with .5% maximum ripple; 12 volts AC/DC at 4.76 amps. Cabinet dimensions: 14 1/8" W x 6 3/8" H x 13 3/4" D.
*Triple Action Level Control™

Heathkit Solid-State Mobile Power Supply for SSB Rigs

Kit HP-13A, DC Supply, 7 lbs. \$69.95

HP-13A SPECIFICATIONS—Input voltage: 12 to 16 volts DC (for negative ground only). Input current: 25 amperes maximum with full load. High voltage output: 800 volts DC, no load; 750 volts DC @ 250 ma. AC ripple: Less than 1% @ 250 ma. Duty cycle: Continuous up to 150 ma; 50% up to 300 ma. Low voltage output: (high tap) 310 volts DC, no load; 300 volts DC @ 150 ma. (low tap) 265 volts DC, no load; 250 volts DC @ 150 ma. AC ripple: Less than .05% @ 150 ma. Continuous duty cycle to 175 ma. Adjustable bias voltage: —40 to —130 volts DC @ 20 ma max. Duty cycle: Continuous. Switching frequency: 1500 Hz (approx.). Ambient temperature: —10° to 122° F. Dimensions: 7 1/4" W x 7-5/16" L x 2 1/4" D. All voltages referenced at 13 VDC input.



Heathkit Fixed-Station Power Supply for SSB Transceivers

Kit HP-23A, AC Supply, 18 lbs. \$51.95

HP-23A SPECIFICATIONS—Power requirements: 120/240 volts AC, 50-60 Hz, 350 watts maximum. High voltage output: 820 volts DC no load; 700 volts DC @ 250 ma ±10%. AC ripple: Less than 1% @ 250 ma. Duty cycle: 150 ma continuous to 300 ma @ 50%. Low voltage output: (High tap) 350 volts DC, no load; 300 volts DC @ 150 ma ±10%. (Low tap) 275 volts DC, no load; 250 volts DC @ 100 ma ±10%. Less than .05% AC ripple @ 150 ma, continuous duty to 175 ma. Fixed bias: —130 volts DC, ±10%, no load; —100 volts DC @ 20 ma. Adjustable bias: —40 to —80 volts DC @ 1 ma maximum. Less than .5% AC ripple. Filament voltage: 6.3 V AC @ 11 amps; 12.6 V AC @ 5.5 amps. Dimensions: 9" L x 4 1/4" W x 6 1/4" H.



HW-12A
\$99⁹⁵



HW-22A
\$104⁹⁵



HW-32A
\$104⁹⁵

Heathkit Single-Band SSB Transceivers Look Better, Work Better, Cost Less

- Now Upper Or Lower sideband operation on all Single Banders • Choose 80, 40, or 20 meter model • Improved styling • More convenient control locations • 200 watts P.E.P. input • Single knob tuning with 2 kHz dial calibration • New ALC input for use with external linear amplifiers • Excellent exciters for operation on the band of your choice with the SB-200 Linear Amplifier • Now with improved audio and AVC response • Crystal filter type SSB generation • Built-in S-meter, VOX, PTT, and ALC • Easy to build—circuit board and wiring harness

The New Single-Banders Bring You Even Greater Economy . . . Better Performance. Microphone input and gain control are now located on the front panel as is the bias adjustment for ease in changing from fixed to mobile operation. An added function switch position controls the optional HRA-10-1 crystal calibrator. A new 11 pin power plug is compatible with SB series power supply connections. Smart new "SB-Series" look.

The Performance You Expect Only In High-Priced Equipment. The receiver is a 14 tube superheterodyne with 1 uv sensitivity, 2.7 kHz selectivity and fast attack-slow release AVC action for optimum SSB reception. Heathkit experience in transceiver tuning circuitry has provided the Single-Banders with a stable, smooth-tuning, temperature-compensated VFO. The quality

crystal lattice filter produces clean transmitted signals with unwanted sideband and carrier at least 45 db down.

- Kit HW-12A, 80-meter, 15 lbs. \$99.95
- Kit HW-22A, 40-meter, 15 lbs. \$104.95
- Kit HW-32A, 20-meter, 15 lbs. \$104.95
- GH-12A, Push-to-talk and VOX microphone, 1 lb. \$8.95
- Kit HRA-10-1, Plug in 100 kHz crystal calibrator, 1 lb. \$9.95
- Kit HP-13A, DC Power Supply, 7 lbs. \$69.95
- Kit HP-23A, AC Power Supply, 18 lbs. \$51.95
- Kit HS-24, Mobile Speaker, 4 lbs. \$7.95

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

HW-17A Solid-State 2-Meter AM Transceiver . . .

Now With Optional FM Adapter Kit

- Frequency Range 143.2 to 148.2 MHz • Solid-state, dual conversion super-heterodyne 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 48) • 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 uV 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. 48). 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. \$129.95
 Kit HWA-17-1, Transistorized DC supply, 4 lbs. \$24.95

HW-17A
\$129.95



HW-17A 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 uV 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; (1) 2N3391 Audio Preamp; (1) 2N3393 Squelch amplifier; (1) X29A829 Squelch Gate; 2N1274 Audio Driver; (2) 40F50 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; 12GN7 Doubler/Driver; 8156 Power Amplifier; (2) 2N3391 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 1/2" 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 7/8" W x 7-5/16" L x 2 1/2" H. Net weight: 3 lbs.

NEW FM Adapter For HW-17 Series Rigs

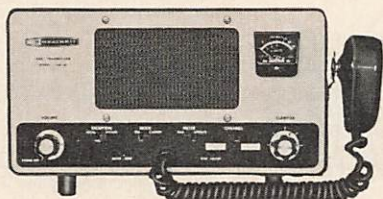
Join Your Friends On 2-Meter FM . . . with the new HWA-17-2 Adapter. This easy to build kit allows transmission of wide band (15 kHz) FM signals with any HW-17 series rig. Installs without drilling any holes. Once installed, going from AM to FM is just a matter of throwing a switch on the adapter. Two crystal controlled positions are provided, and a crystal for the

national calling & working frequency of 146.94 MHz is included. Get on 2-Meter FM now . . . the low cost HWA-17-2 way.

Kit HWA-17-2, 2 lbs. \$17.95

HWA-17-2 SPECIFICATIONS—Band Coverage: 144-148 MHz (crystal controlled). Input Load Impedance: 50 k ohms or greater. Output Voltage: 7 volts RMS, open circuit. Crystal Frequency: 8.000 to 8.222 MHz. Deviation: Adjustable. Tube Complement: (1) 12BA6 Crystal Oscillator; (1) 12AT7 Phase Modulator and Buffer. Power Required: (furnished by HW-17 series) 12.6 VAC @ 300mA; 300 VDC @ 25mA.

A Unique Low Cost Crystal-Controlled SSB Transceiver Especially Designed For Use by CAP



- 200 watts PEP SSB input • 25 watts input with carrier for compatibility with AM stations • Employs Upper sideband, 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 ±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 uV • 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. \$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. \$179.95

CAP CRYSTALS; channel frequency: 4467.5, 4507.5, 4585, 4602.5, 4630 kHz; 1 lb. ea. \$4.95

HW-18 SERIES SPECIFICATIONS—RECEIVER SECTION: Frequency Coverage: 4450 to 4650 kHz. Channels: 2. Sideband: USB. Clarifier Range: HW-18-1 ±100 Hz. Sensitivity: 1uV 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: 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: 4450 to 4650 kHz. Channels: 2. Transmitting Mode: Upper sideband carrier suppressed, and low level carrier with sideband. Frequency Accuracy: .005% overall (after adjusting to channel frequency). Clarifier Range: ±100 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 amps (2), transmitter mixer; (1) 12B7 transmitter driver; (1) 12AT7 prod. detector & carrier osc.; (1) 6EB8 AF amp & AF output; (2) 6GE5 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 IF's above 455 kHz; up to 100 kHz for 455 kHz IF's • Log & Linear displays • Operates with common receiver IF's up to 6 MHz • SB-Series styling Kit SB-620, 15 lbs. \$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. \$79.95



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. \$79.95



SB-640 External LMO

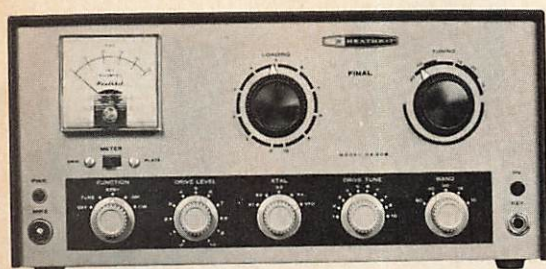
- Same exact calibration and smooth dial mechanism as SB-101 • Four different modes of operation • Panel light indicates when "640" is in control • Provision for 2 crystal frequencies Kit SB-640, 9 lbs. \$99.95



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. \$19.95

In All Types Of Amateur Radio Gear



A DX-60B
\$81⁹⁵

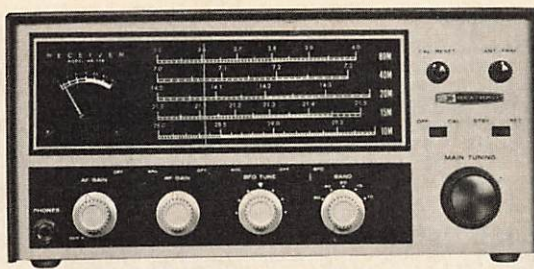
A Heathkit DX-60B Transmitter

- 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 for 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) . . . \$81.95
GH-12A, PTT Mike, 2 lbs. \$8.95

DX-60B SPECIFICATIONS—Power input: 90 watts peak; controlled carrier phone, or CW. Output impedance: 50-75 ohm (coaxial). Output coupling: Pi-network. Operation: CW or AM phone—crystal or VFO control. Band coverage: 80 through 10 meters. Power Requirements: 120/240 V., 50/60 Hz, 225 watts. Dimensions: 13 3/4" W x 11 1/2" D x 6 1/2" H.



B HR-10B
\$81⁹⁵

B Heathkit HR-10B Receiver

- New deep forest-green cabinet and pale gray-green panel matches DX-60B & 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. \$81.95
Kit HRA-10-1, Plug-in 100 kHz crystal calibrator, 1 lb. \$9.95

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 HG-10B
\$44⁹⁵

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. \$44.95

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 5/8" W x 6 1/2" H x 9 5/8" D.

Old Brass Pounder Or Beginning 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 rig 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
\$109⁹⁵

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. \$109.95
GD-396, Headphones (not a kit) 1 lb. \$4.50
Kit HS-24, Speaker, 4 lbs. \$7.95
Kit HD-10, Electronic Keyer, 6 lbs. \$39.95
Kit HG-10B, VFO, 12 lbs. \$44.95

HW-16 SPECIFICATIONS—TRANSMITTER SECTION: RF power input: 50 to 90 watts (adjustable). Frequency control: 80-meter crystal of 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 3/4" W x 11 1/2" D x 6 1/2" H.

Accessories For The Shack

A Heathkit Solid-State Electronic Keyer

• Dependable solid-state circuitry • Speed range—15 to 60 words per min., Slow-speed option—10 to 20 wpm • Self-completing dashes • Solid-state switching—no relays to stick or chatter—no contact bounce to punch holes in characters • Built-in paddle—"feel" is adjustable to your fist during assembly • Adaptable to either right or left handed operators • Engineered to convert easily to semi-automatic operation if desired • Variable dot-space ratio • "Hold" switch for transmitter tuning • Built-in side-tone and speaker • Built-in transformer-operated power supply isolates the keyer from the power line • Fused for protection • For use only with transmitters employing grid-block keying circuits, negative 105 volts @ 35 ma. maximum
Kit HD-10, 6 lbs. \$39.95



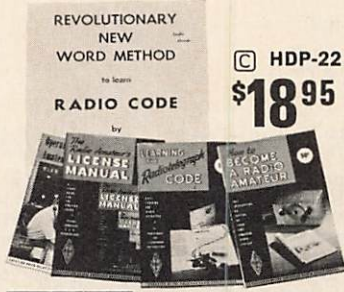
A HD-10
\$39.95

B Heathkit Solid-State Code Practice Oscillator

HD-16 Utilizes A Unijunction Transistor With Separate Controls To Vary Tone Frequency And Volume. Speaker is built in and jack for headphones is provided on front panel. For visual monitoring, just flip the front panel switch and watch the top-panel blinker light. Includes key with phone plug and cord. Requires two 9 volt transistor radio batteries and one "C" flashlight cell.
Kit HD-16, 3 lbs. \$9.95

C The Fast, Simple Way To Get Your FCC Ham Ticket

Course includes four handbooks from the American Radio Relay League covering all phases of licensing, station operation and telegraph code. Also includes Heathkit HD-16 code oscillator kit and 3 records that teach code by the unique "word method".
HDP-22, Complete Amateur Radio Starter Group, 6 lbs. \$18.95
HDP-32, Code Records Only, 2 lbs. \$9.50
HDP-42, ARRL Books Only (4), 2 lbs. \$2.50
Kit HD-16, Oscillator plus Key only, 3 lbs. \$9.95



C HDP-22
\$18.95

D The Radio Amateur's Handbook

Used by thousands of hams, engineers etc. as a reliable source of information on any phase of electronics & communications. Covers theory, construction & operating principles. "Plain talk" sections on basic electronics, HF, VHF, UHF receivers, transmitters, antennas.
HDP-293, 3 lbs. \$4.50



D HDP-293
\$4.50

E 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.
Kit HW-29A (6 meter), 9 lbs. \$49.95
Kit HW-30 (2 meter), 9 lbs. \$49.95
Kit GP-11, Mobile power supply, 7 lbs. \$17.95



E HW-29A
\$49.95

F Heathkit Mobile Speaker

A rugged, reliable 8 ohm speaker for mobile work. Features a sturdy steel cabinet finished in durable forest green wrinkle finish that matches Heathkit gear. Versatile gimbal mounting bracket. Measures 6-11/32" W x 4 3/4" H x 2 1/2" D.
Kit HS-24, 4 lbs. \$7.95



F HS-24
\$7.95

G Special SSB "Ham Radio" Microphone With Desk Stand

New, modern styling to match the pace set by Heathkit SB-Series equipment . . . this high impedance dynamic mike by EV is recommended for use with SB-Series gear. Features ideal response for clear, sharp SSB communications. Mike stand has grip-to-talk switch with lock position. Complete with wiring diagrams and cables.
HDP-21A, 4 lbs. \$29.95

G HDP-21A
\$29.95



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



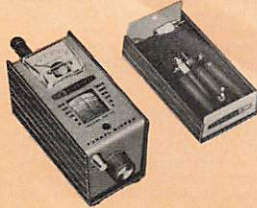
Heathkit Phone Patch

• 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. \$24.95



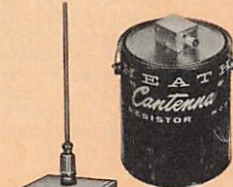
Heathkit Solid-State "Tunnel Dipper"

• Tunnel diode oscillator—no tubes • Covers frequency range of 3 to 260 MHz • Gear-drive tuning • Durable epoxy-coated plug-in coils • Coils color-matched to dial scales • Built-in coil storage
Kit HM-10A (less battery), 3 lbs. \$29.95



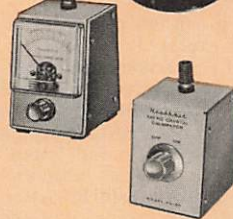
Heathkit "Cantenna" Dummy Load

HN-31 provides 50 ohm non-inductive load with SWR less than 1.5:1 for frequencies from 1.5 to 300 MHz. Coax fitting to transmitter line. Phono jack for relative power measurements. Oil coolant (capacity 1 gallon—oil not included) permits power up to 1 kw.
Kit HN-31, 3 lbs. \$10.95



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.
Kit PM-2, 2 lbs. \$12.95



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. Use 9 v. battery, not included.
Kit HD-20, 1 lb. \$14.95

Heathkit Mobile PTT Mike

The GH-12A's high impedance ceramic element is well suited to the rugged work-out given to mobile gear. Deep green color styling matches SB and HW Series. Complete with cable, less connector.
Model GH-12A, 2 lbs. \$8.95



Special Purpose & Exploration Gear

Hear Police, Fire, Marine & Weather Broadcasts With This Heathkit

VHF-FM Monitor Receiver . . . Covers 152 to 174 MHz

• Receives both narrow and wide band FM signals • 152-174 MHz coverage • High sensitivity and selectivity • Six-to-one vernier tuning control plus single channel crystal control • Adjustable 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 • Jack for external antenna • Accessory AC power supply available • Rugged brown leatherette case • One circuit board & preassembled & aligned tuner save builder time

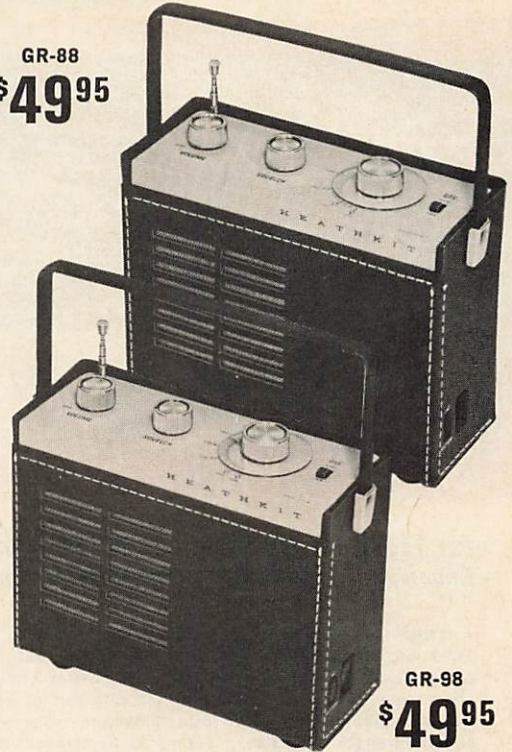
The Heathkit GR-88 is easy to build, smooth to operate and easy to take along . . . anywhere. To make constant monitoring of a particular frequency easier, just plug in a crystal, tune to the approximate frequency, then flip the panel switch to "Xtal" and you're on frequency. The accessory AC power supply, Kit GRA-88-1, fits inside the GR-88 case. Handle turns 90 degrees from vertical to prop up unit on a table.

Kit GR-88, 5 lbs. \$49.95

Kit GRA-88-1, Accessory AC Power Supply, 1 lb. \$7.95

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: ± 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 $\frac{1}{4}$ " W x 7 $\frac{1}{2}$ " H x 3 $\frac{1}{2}$ " D. Net weight: 3 lbs. without batteries.

GR-88
\$49.95



GR-88
\$49.95

Monitor The Aircraft Band With This Heathkit GR-98

• 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

Kit GR-98, 5 lbs. \$49.95

Kit GRA-88-1, Accessory AC Power Supply, 1 lb. \$7.95

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 $\frac{1}{4}$ " W x 7 $\frac{1}{2}$ " H x 3 $\frac{1}{2}$ " D. Net weight: 3 lbs. without batteries.



GR-43A
\$149.95

Deluxe 10-Band AM/FM/Shortwave Transistor Portable

• Tunes Longwave, Standard Broadcast, FM and 2 MHz-22.5 MHz Shortwave bands • 16 transistors, 6 diodes & 44 factory assembled and pretuned circuits & two separate tuners & IF's • Battery saver switch • Optional charger/converter • Rotating tuning dial • Dial light • Earphone & Jack • AFC for FM Kit GR-43A, 19 lbs. \$149.95

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

GR-43 SPECIFICATIONS—AM SECTION: Tuning range: Longwave—150-400 kHz. Broadcast—550-1600 kHz. Shortwave—2.4 MHz; 4.9 MHz; 31 M—9.2-10.2 MHz; 25 M—11.2-12.4 MHz; 19 M—14.5-16.1 MHz; 16 M—16.8-18.8 MHz; 13 M—20.2-22.4 MHz. Sensitivity: At external antenna input for a 10 dB signal-plus-noise to noise ratio. Longwave—12 uv; Broadcast—10 uv; 2.4 MHz—5 uv; 4.9 MHz—3 uv; 31 M—3 uv; 25 M—2 uv; 19 M—2 uv; 16 M—2 uv; 13 M—2 uv. Intermediate frequency (IF): 455 kHz. FM SECTION: Tuning range: 88-108 MHz. Sensitivity: 1 $\frac{1}{2}$ 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 (not supplied). Dimensions: 13 $\frac{1}{2}$ " W x 5 $\frac{1}{4}$ " D x 10 $\frac{1}{4}$ " H including handle.

Heathkit Metal Locator . . . Ideal For Treasure Hunting Hobbyists,

Home Owners, and Professionals

• 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

Professional Metal Detector At Low Cost. The Heathkit GD-48 performs accurate metal detecting functions comparable with other detectors selling for three times the cost. Many locators use a beat frequency system, and the user must depend on noticing a frequency change in the constant tone he hears. The GD-48 is much easier to use; it produces no tone until a metal object enters the field of the search coils and upsets the balance between them. Then it signals the user with a tone either through its speaker or earphones.

The Heathkit GD-48 Is A Precision Instrument. When the locator detects a buried metal object, the tone it emits gets louder as the object is approached. A built-in meter helps you estimate the size/depth ratio of the buried metal. You can set the GD-48 to work at a specific level . . . to comb the surface for small objects or to probe the depths for larger items. The GD-48 is so sensitive it will detect a metal object as small as a dime buried 6 inches. It has a maximum range of around six feet for larger pieces.

Rugged, Reliable And Comfortable To Use. The all solid-state circuitry of the GD-48 means light weight, reliable operation and minimum battery drain. Typical battery life is about 80 hours. The extendable shaft that holds the search head eliminates stooping for most people. The components and the angle of the handle are arranged to balance and make the locator easy to hold.

Simple To Build. The GD-48 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. Only two quick adjustments are necessary after the unit is assembled. You can build the GD-48 in around 6-8 hours. It can be your key to adventure, discovery and excitement.

Kit GD-48, Metal Locator only, 4 lbs. \$69.95

GDA-48-1, 9 volt battery, 1 lb. \$1.30

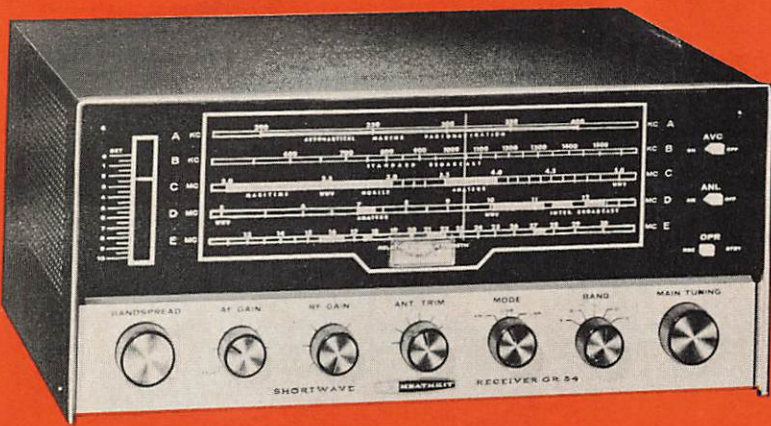
GD-396, Headphones, 2000 ohm (Superex), 1 lb. \$4.50

GD-48 SPECIFICATIONS—Sensitivity: Detects dime-size metal at a depth of 6". Detects quarter-size piece at a depth of 7 $\frac{1}{2}$ ". 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 $\frac{1}{2}$ " height (extended), 36" height (collapsed), 26". Power source: 9 volt battery (NEDA #1602 or equivalent). Battery life: 80 hours approx. Net weight: 3 lbs.

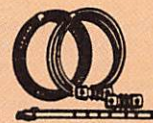


GD-48
\$69.95

The World Is Yours With These Deluxe Heathkit®



GR-54
\$89⁹⁵



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 with GR-54.
GRA-72, 2 lbs. \$2.00



Suporex 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. \$4.50

For The Seasoned SWL . . . GR-54 5-Band Shortwave Receiver . . . Includes Long-Wire Antenna

- 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. \$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 3/8" W x 6-5/16" H x 10-15/16" 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. \$6.95



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

Listen To The Sound Of An Action-Filled World On This Heathkit 4-Band 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
\$42⁵⁰

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. \$42.50

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.

Low Cost Starter Kit For Beginning SWL's

- 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. \$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.



GR-81
\$24⁹⁵

Low Cost, High Performance Shortwave Receivers

New Heathkit GR-78 Six-Band General Coverage Receiver . . . Tunes 190 kHz To 30 MHz . . . Solid-State Portable Convenience



A Highly Versatile General Coverage Receiver . . . for SWL's who appreciate solid tuning . . . for hams who need a standby receiver they can depend on . . . for the "portable people" who want a radio that's ready to go when they are. The new GR-78 fills all these needs & more . . . here's why.

190 kHz—30 MHz Coverage . . . hear intriguing foreign broadcasts, ships at sea, ham operators & your own local AM stations at the turn of a knob. Bandsread Tuning makes it easy to separate closely spaced stations & can be calibrated for either Shortwave or Amateur bands. Select AM or CW/SSB reception with the rocker-type switch. The switchable Automatic Noise Limiter cuts out annoying noise & static, and Automatic Volume Control can be switched in to keep volume constant.

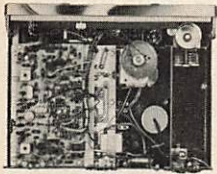
Other Features include a built-in Relative Signal Strength meter, external antenna connector, built-in 500 kHz crystal calibrator for exact dial calibration, receive/standby switch & muting connection for use with ham transmitters and completely portable operation from a nickel-cadmium battery and built-in charger.

For The Best Buy In General Coverage Receivers, order your GR-78 now.

Kit GR-78, 14 lbs. \$129.95

GR-78 SPECIFICATIONS—Frequency coverage: Band A, 190 kHz-410 kHz; Band B, 550 kHz-1300 kHz; Band C, 1.3 MHz-3.0 MHz; Band D, 3.0 MHz-7.5 MHz; Band E, 7.5 MHz-18.0 MHz; Band F, 18.0 MHz-30 MHz. Meter: Indicates relative signal strength. Intermediate frequency: Band A thru E: 455 kHz; Band F: (Double conversion): 1st IF, 4.034 MHz; 2nd IF, 455 kHz. Sensitivity*: AM: (Low End): Band A, 10 uV; Band B, C & E, 3 uV; Band D, 2 uV; Band F, 2 uV. (High End): Band A, 3 uV; Band B, 1 uV; Band C, 0.6 uV; Band D & F, 0.3 uV; Band E, 0.2 uV; CW/SSB: (Low End): Band A, 6 uV; Band B, D & F, 2 uV; Band C, 1.5 uV; Band E, 3 uV; (High End): Band A, 2 uV; Band B, 0.7 uV; Band C, 0.4 uV; Band D, E & F, 0.2 uV. Selectivity: 7.5 kHz \pm 1 @ 6 dB down. Audio output: 300 milliwatts @ 10% distortion. Battery: 9.6 VDC 500 mA Nickel-Cadmium rechargeable. Battery charge rate: The battery is always being charged at 20 to 25 mA when the built-in trickle charging circuit is connected to an external power source with the Receiver turned off. A full battery charge will be maintained if the Receiver is connected to an external power source and used an average of 5 hours daily at a normal listening level. Panel controls: Bandsread; AF Gain-Off; RF Gain; Panel light; RCV-STBY; CAL; AM-CW/SSB; AVC-MVC; ANL-OFF; Bandswitch; Main Tuning. Rear panel: Muting; External Antenna; 12 VDC Receptacle; 120 VAC Receptacle; Phone Jack. Overall size: 6 1/4" H x 11 1/2" W x 9" D. Net weight: 11 lbs.

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



Compact, Well-Engineered Layout, for fast assembly & long, dependable life. Note liberal use of shielding for extra stability.

GR-78
\$129.95

- Receives from 190 kHz to 30 MHz in 6 bands • Advanced solid-state design uses 11 transistors, 5 FET's • Excellent stability and sensitivity • 4 ceramic filters in IF give sharp selectivity & eliminate IF alignment forever • Built-in 500 kHz crystal calibrator • Band-spread tuning • Relative signal strength meter • Switchable ANL • Switchable AVC • Switch-selected AM, CW or SSB tuning • Receive/Standby Switch & Receiver Muting • External antenna jack • Headphone jack • Operates from built-in nickel-cadmium rechargeable battery with built-in charger • Modular construction using Switchboards® for fast, easy assembly • Wiring harness eliminates almost all point-to-point wiring • Handsome Heathkit styling

Heathkit SB-310 Professional Shortwave Receiver . . . Tunes Six Shortwave Broadcast Bands . . . Three Amateur Bands . . . CB Band . . . Optional SBA-310-3 Kit Replaces 11 Meter CB With 13 & 15 Meter Bands

- Covers six shortwave broadcast bands (49, 41, 31, 25, 19 & 16 meters) . . . 80, 40 & 20 meters 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 • "Sub-pack" packaging for fast, easy assembly • World Radio-TV handbook included • Optional SBA-310-3 Kit adds 13 & 15 Meter Coverage in place of 11 meter CB

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. 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 . . . bandsread equal to 10 feet per MHz . . . prebuilt and aligned Linear Master Oscillator for "solid" tuning . . . separate RF and AF gain controls . . . bandsread equal to 10 feet per MHz . . . prebuilt and aligned Linear (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. Choose a lifetime of the finest shortwave listening available . . . order your SB-310 now.

- Kit SB-310 (less speaker), 24 lbs. \$259.00
- Kit SB-600, 8 ohms, 6" x 9" speaker, 6 lbs. \$19.95
- SBA-301-2, Optional deluxe CW filter for optimum CW (400 Hz @ 6 dB down; 2 kHz max. @ 60 dB down), 1 lb. \$21.95
- SBA-310-1, Optional SSB filter plus crystal for switch selection of USB & LSB (2.1 kHz @ 6 dB down; 7 kHz max. @ 60 dB down), 1 lb. \$23.95



SB-310
\$259.00
(less speaker)

- SB-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. . . . \$39.95
- SBA-310-3, Optional 13 & 15M 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 \pm 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 2.1 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 all bands. Calibration: Every 100 kHz. Dial backlash: No more than 50 Hz. Antenna input 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: 14 1/8" W x 6 1/4" H x 13 1/4" 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.

Heath/Mitchell Darkroom Accessories

Cut Paper Costs & Darkroom Time, Speed Enlarging & Make Fine Color Prints . . . With The Colorval® Computer

- 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

Colorval Darkroom Computer Reduces The Cost Of Color Printing . . . eliminates color cast, wasted paper and guesswork. The unique built-in Color Probe helps you visually determine correct filter combinations and the built-in Exposure Probe determines correct exposure. Then just print . . . easily, quickly, without guesswork. Order yours today.

- Kit PM-17, 6 lbs. \$89.00
- Assembled PMW-17, 6 lbs. \$125.00

An optional test negative for 4 x 5" enlargers is also available; order PMA-14-1, \$15.00 ppd.

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.



Kit PM-17 Wired PMW-17
\$89⁰⁰ \$125⁰⁰

Heathkit Photo Timer Gives Electronically Accurate Exposure Control



PT-15 \$29⁹⁵

- 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 AC outlets . . . enlarger & safelight • All-electronic circuitry . . . no gear drive mechanisms 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. \$29.95

NEW! A Color Print Analyzer For Only \$4.95

The New Mitchell Color Wheel System is both a versatile color print analyzer & a professional color standard of great accuracy. Beginners can use the system to match their color negative film to the paper they are using . . . and make consistently beautiful prints. Professionals can use it to make that initial fine print required to calibrate their own color analyzers. Order now.



Model PD-48, 1 lb. \$4.95

A Color Processor For Under \$20.00 . . . 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

Color Processing That You Can Afford . . . a unique design that delivers high quality results at extremely low cost. The print is presoaked in a tray of water at the correct temperature. The print is put in the bottom of the Canoe, which is floated in a tray. Pouring the 1st solution in, forms a "puddle" . . . first one side of the Canoe is lifted, then the other, distributing the chemicals over the face of the print evenly. Result? A color print comparable to any processed by other methods, but at a cost that makes sending out your work expensive by comparison. Order now.

- PD-18, 8 x 10", 4 lbs. \$19.95
- PD-28, 11 x 14", 6 lbs. \$26.95
- PD-38, 16 x 20", 9 lbs. \$39.95



Last Call For The Original Fotoval® Computer For B&W Work . . . Only \$75.00

- 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

Kit PM-14, Fotoval Computer & 35mm Calibration Negative, 8 lbs. \$75.00
Optional test negative for 4" x 5" enlargers available. Order PMA-14-1, \$15.00 ppd.



PM-14
Last Call At Only \$75⁰⁰

New Fotoval® II Darkroom Computer . . . A New, Simplified Way To Produce Excellent B&W Prints



The Fast, Low Cost Way To Fine B&W Printing & Enlargements. Guesswork about paper grade and exposure time is eliminated, and time, money and paper wasting test strips are a thing of the past. Following the comprehensive manual, each of your paper contrast grades is accurately tested & its 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) directly from the illuminated computer scale. It's fast, simple and virtually fool-proof. Choose the new Fotoval II either kit or assembled . . . either way, you'll be making excellent B&W prints—put it in your darkroom now.

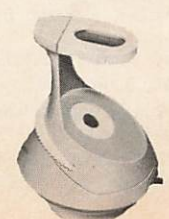
- Kit PM-18, 7 lbs. \$65.00
- Assembled PMW-18, 7 lbs. . . . \$92.00

- Produces beautiful B&W prints every time • Saves darkroom time, cuts paper costs, speeds enlarging
- Automatically determines paper grade & exposure time • Electronic line voltage regulation for accuracy
- Comes with special 35mm test negative for in-depth testing of paper grades • Fast, inexpensive conversion to complete color capability with accessory Color Probe kit available soon • Fast, enjoyable assembly

Last Call On This Color Probe Kit . . . \$49.00

This Color Probe kit will convert your PM-14 to complete color capability. Identical to the one used with the Colorval Darkroom Computer. 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. \$49.00



For R/C Modeling At Low Cost, Build The Heathkit GD-19 5-Channel Digital Proportional System Only \$219.95



**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 • 72 MHz for R/C planes only

Control You Can Count On . . . that's the new Heathkit GD-19. The new slim line transmitter case has a high output, preassembled & prealigned RF circuit for a sure signal. New Kraft sticks deliver precise control and servo travel and operational mode are easily changed. Built-in circuit charges both receiver & transmitter flat-pack nickel-cadmium batteries with one cord. The new miniaturized receiver in a virtually indestructible nylon case fits almost anywhere, and three ceramic IF filters increase selectivity and eliminate IF alignment. 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 advanced R/C system ever produced. Experience a new high in R/C modeling . . . order your GD-19 now.

System Kit GD-19, all system parts; specify freq. desired; 11 lbs. \$219.95
Kit GDA-19-1, transmitter, battery, charging cord; specify frequency. (Note: 72 MHz for R/C planes only), 5 lbs. \$86.50
Kit GDA-19-2, receiver only; specify freq., 1 lb. \$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
Model GDP-59, 1 lb., Soldering Iron \$7.95



**GD-69
\$19.95**

New Heathkit GD-69 "Thumb Tach" . . . Measures RPM On Any Model Engine

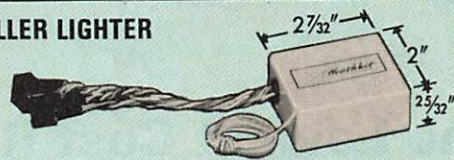
- All solid-state design • Minimum current drain gives long battery life • 0-5000 RPM range for idle adjustments . . . 0-25,000 RPM for top end readings • Zener diode regulated meter circuit and precision switching resistors keep "Thumb Tach" accurate even with aging battery • Dozens of uses—needle valve adjustments . . . differences in glow plug performance . . . select gear trains & props . . . indicates power loss from aging or worn engine . . . peak engine for changes in RPM you can't hear

The New Heathkit GD-69 is the most versatile, valuable R/C accessory you can own. Raise your engine performance now . . . order your new "Thumb Tach".

Kit GD-69, 1 lb. \$19.95

GD-69 SPECIFICATIONS—Range: 0-5000 RPM & 0-25,000 RPM. **Light intensity:** Dusk 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 3/4" L. **Temperature range:** 0° to 160°F. **Net weight:** 10 oz. less battery.

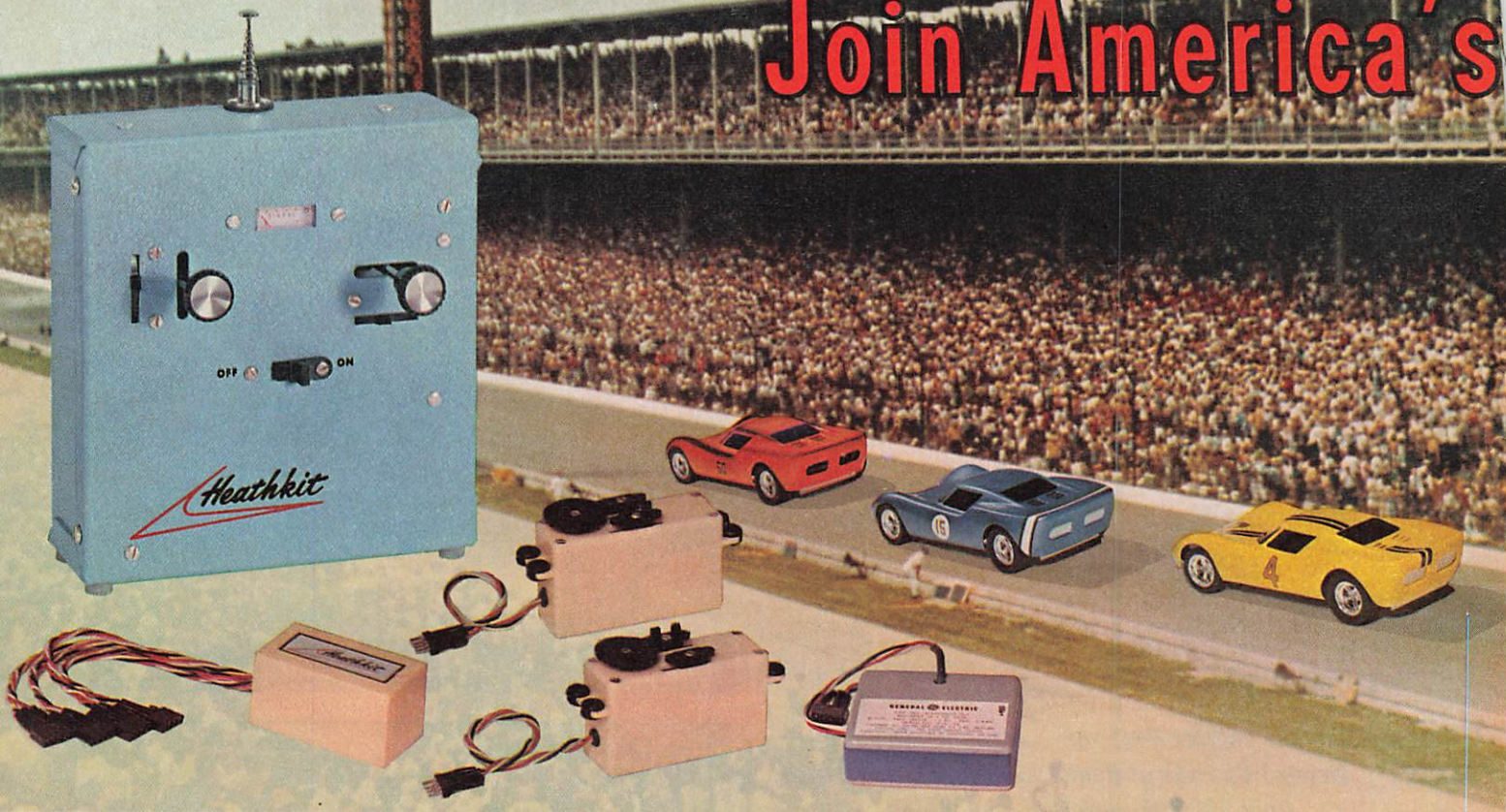
NEW SMALLER LIGHTER RECEIVER



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.

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° to +160° 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 3/8" H x 6 3/4" W x 2-7/16" D. **Net weight:** 2 1/4 lbs. with battery. **RECEIVER—Received frequency:** 1 channel, crystal controlled on 27, 53 or 72 MHz bands (see list below). **Frequency stability:** .003% on 27 MHz, .002% on 53 and 72 MHz bands. **Temperature range:** 0° to +160° F. **Sensitivity:** 5 uV or better. **Selectivity:** 6 dB down at ± 4.0 kHz, 30 dB down at ± 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:** 25/32" H x 2" W x 2-7/32" D. **Net receiver weight:** 2.3 oz. **RECEIVER BATTERY—Type:** Rechargeable nickel-cadmium. **Voltage:** +2.4 V and +4.8 V outputs. **Current rating:** 500 mA hours. **Dimensions:** 3/8" H x 2 1/8" W x 2 3/8" D. **Net weight:** 3.9 oz. **SERVO—Input signal:** Pulse: 1-2 milliseconds wide; 4 volts peak-to-peak. **Thrust:** 3.25 lbs. minimum. **Transit time for 3/4" travel:** 0.7 seconds. **Linear output travel:** 3/8" end-to-end. **Rotary output travel:** Over 100° rotation (end-to-end). **Temperature range:** 0° to +160° 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 3/4" H x 15/16" W x 3-1/16" 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.)

Join America's



The Lowest Cost R/C Rig ... New Heathkit® GD-57 3-Channels with 2 Servos... Only \$129.95

• Powerful transmitter has preassembled, prealigned RF circuitry • Trim Controls don't change stick centering • Switch-locked transmitter prevents accidental turn-on • Collapsible antenna • New flat-pack rechargeable nickel-cadmium transmitter and receiver batteries • New 2 oz. miniature receiver features space-age ceramic filters in the IF for greater selectivity, extra reliability and elimination of IF alignment • Immune to noise and temperature variation • Exclusive Heath space and weight saving military-type connectors • High reliability variable-capacitor servos • Easily reversed servo travel • 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 fully compatible with Heath GD-19 and GD-47 Systems • The ideal system for the Heath GD-101 R/C Car • 72 MHz for planes only

The Most Value And Performance Ever Offered In A 3-Channel Rig. The new Heathkit GD-57 is specifically designed and engineered to deliver the most R/C capability you can get anywhere in a 3-channel rig ... and at an unbelievably low cost. As a starter kit for the newcomer to R/C modeling it has no equal ... as a high performance rig for cars, boats, small planes or gliders the new GD-57 is alone in the field. Here's why ...

Powerful Transmitter gives you a full 500 mW input for out-of-sight range, and the factory assembled and aligned RF section speeds assembly and insures top performance. Positive control is assured because trim controls leave sticks always centered, and for operating convenience, servo travel can be reversed quickly and easily at the transmitter. For extra safety at crowded meets and races, the transmitter is switch-locked.

New Miniature Receiver measures a compact 1-5/32" H x 1-3/16" W x 2-9/32" L ... fits practically anywhere. And for added safety, it's housed in a virtually indestructible nylon case. Advanced ceramic filters in the IF strip deliver very sharp selectivity and never need alignment. A double-tuned front end, RF amplifier and dual AGC combine to give interference-free reception and high immunity to noise. The temperature compensated circuitry assures you of being able to run your model under any weather conditions. The new flat pack receiver battery is a high reliability rechargeable nickel-cadmium type, and gives you up to four full hours of R/C fun on a single charge.

Complete With 2 High Resolution Variable Capacitor Servos. Each servo has two linear outputs (one with vertical tabs) and a rotary output for positive, fast control of virtually any model function. The small, compact size makes installation schemes almost endless, and the servos are housed in a tough nylon case built to take rugged service.

The Entire System For Only \$129.95! The lowest cost 3-channel rig on the market. The GD-57 comes complete with everything you need to put your model under radio control ... transmitter & receiver including

rechargeable nickel-cadmium batteries for both, two servos, all plugs, connectors, cables, a charging cord ... even a soldering iron to assemble the kit. And the famous Heathkit manual makes it easy ... clear, simple instructions guide you every step, and giant fold-out pictorials show location of every single part. Total assembly time is only about 22 hours.

On The Road, In The Water Or Air ... the new Heathkit GD-57 is the 3-channel rig to go with. Order your's now.

System Kit GD-57, (includes transmitter, receiver, batteries, 2 servos, charging cord and switches and free soldering iron) all system parts; specify freq. (Note: 72 MHz for R/C planes only) 11 lbs.....\$129.95

Kit GDA-57-1, transmitter, battery, charging cord; specify freq. desired, 5 lbs.....\$54.95

Kit GDA-57-2, receiver only, specify freq., 1 lb.....\$34.95

Kit GDA-19-3, receiver battery pack only, 1 lb.....\$9.95

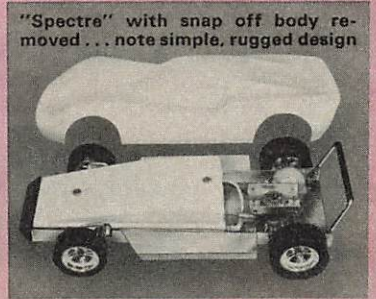
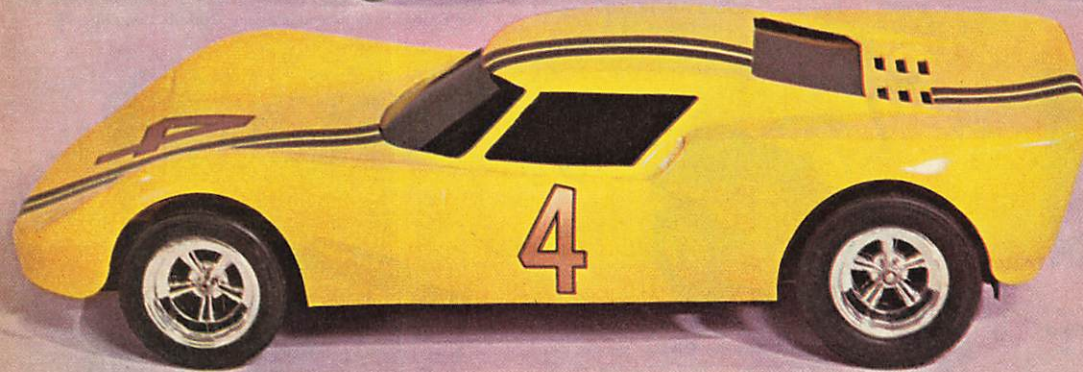
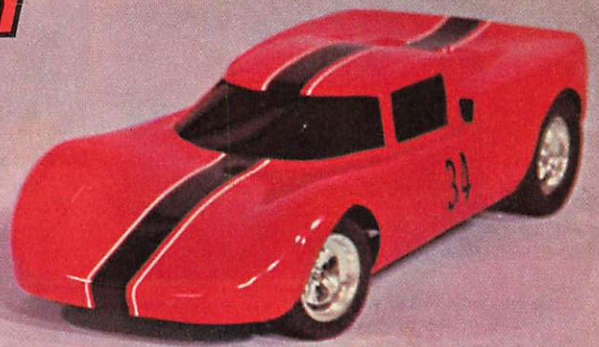
Kit GDA-19-4, one servo only, 1 lb.....\$21.50

GDA-57-1 SPECIFICATIONS—TRANSMITTER—RF Carrier frequency: One frequency, crystal-controlled on 27 MHz, 53 MHz or 72 MHz. **Frequency stability:** Within $\pm 0.005\%$ on 27 MHz band. Within $\pm 0.002\%$ on 53 and 72 MHz bands. **Operating temperature range:** 0 degrees to +160 degrees F. **RF input power:** 500 mW. **Modulation:** On-Off carrier keying. **Approximate current drain:** 100 mA on all bands. **Controls:** Three channels; two with trim. **Power supply:** Internal 9.6 volt nickel-cadmium battery. Rechargeable simultaneously with receiver battery at 40 to 50 mA from 120 volt power line. **Dimensions:** 6 1/2" H x 6 1/8" W x 2-1/16" D. **Net weight, with battery:** 2 lbs.

GDA-57-2 SPECIFICATIONS—RECEIVER—RF Carrier frequency: One frequency crystal-controlled on 27 MHz, 53 MHz or 72 MHz. **Frequency stability:** 0.003% on 27 MHz band; 0.002% on 53 and 72 MHz bands. **Operating temperature range:** 0 degrees to +160 degrees F. **Sensitivity:** 5 μ V. **Selectivity:** 6 dB down at ± 4.0 kHz, 30 dB down at ± 9.0 kHz. **Approximate current drain:** 6 mA. **Intermediate frequency:** 453 kHz. **Power supply:** Heath GDA-19-3 Battery Pack. **Dimensions:** 1 1/8" H x 1-3/16" W x 2-7/32" L. **Net receiver weight:** 2.0 Oz. **Servo channels:** 3.

GDA-19-3 SPECIFICATIONS—RECEIVER BATTERY—Type: Nickel-cadmium. Rechargeable simultaneously with the transmitter battery at 40 to 50 mA from the 120 volt power line. **Voltage:** +2.4 V and +4.8 V outputs. **Current rating:** 500 mA hours. **Dimensions:** 3/8" H x 2 1/8" W x 2 3/8" D. **Net weight:** 3.9 oz. **GDA-19-4 SPECIFICATIONS—SERVO—Input signal:** Pulse: 1 to 2 milliseconds wide; 4 volts peak-to-peak. **Thrust:** 3 lbs. minimum. **Transit time for 1/2" travel:** 0.7 seconds. **Linear Output travel:** 1/2" end-to-end, 1/2" nominal. **Rotary output travel:** 0 degrees to +100 degrees. **Power (battery) requirements:** Idling Current: 2 mA. Stall Current: 350 mA. No Load Running Current: 80 mA typical. **Total gear train backlash:** Less than 0.002". **Mechanical output:** 1-rotary arm., 1-rotary wheel, 2-linear arms. **Mechanical output accuracy:** $\pm 0.5\%$. **Dimensions:** 1 3/8" H x 15/16" W x 3-1/16" L. (Length includes mounting ears. Height includes linear arms.) **Net weight:** 2.5 oz. **GENERAL—Complete system weight:** 12.0 oz. (1 Receiver, 1 Receiver Battery, 1 switch and 2 Servos). **Total operating time (between charges):** Four 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 operations. Class C Citizen's Band license required for 27 and 72 MHz.)

Newest R/C Hobby



"Spectre" with snap off body removed... note simple, rugged design

New Heathkit® "Spectre" R/C Car... Only \$49.95

• The only really complete R/C car kit on the market • Sharp 1/8-scale GT-styled body made from virtually indestructible high impact plastic • Accepts any .15 to .23 cubic inch R/C engine and any proportional R/C system • Rugged chrome-plated steel chassis • Independent front wheel suspension with adjustable toe-in and caster for truly high performance handling • Adjustable centrifugal clutch • Live rear axle • Specially formulated rubber tires for greater traction and road-holding • Only 2 servos required to operate steering, brake and throttle • Chrome-plated high impact nylon "mag" type wheels • Runs at scale speeds up to 200 mph • "Sidewinder"-type engine mounting • Exclusive Heath molded plastic radio equipment case fits inside body to keep R/C gear clean and safe • Kit comes with body, chassis, 4 oz. fuel tank and tubing, radio equipment case and protective foam pads, wheels & tires, gears, axles, all servo linkages and mounting tape, all necessary hardware, decals, numbers and comprehensive manual

Join The Most Exciting Hobby In America... building and racing radio-controlled Grand Prix cars. Feel the tense excitement as a dozen cars slam into the "s" turns of a Le Mans or Riverside styled course... the gripping near-panic as you thread your car through the pack around the tight turns and hills of a Mille Miglia or Watkins Glen course... the surge of excitement at racing your car at scale speeds up to 200 mph. Thousands of experienced R/C modelers and novices alike share this kind of thrill-packed experience and you can too... with the new Heathkit "Spectre" radio-controlled car.

Designed To Win! The new Heathkit R/C car is a newcomer to the market, but it is no stranger on a race course. The "Spectre" has been extensively tested and refined under actual race conditions, and can be credited with starting the trend toward "sidewinder" designs. In a recent midwest meet, a "Spectre" prototype running the Heath GD-57 R/C System and GDA-101-1 Veco .19 engine took four out of five 1st places... the only top spot it missed was a "standing still" event, the Con-course, because it didn't have a finished body on it.

On The Move, Nothing Can Touch It. The design of the "Spectre" is unique among R/C cars. The one piece chrome plated steel chassis gives the car a true frame, resulting in tracking and handling like a real Grand Prix machine. Adjustable caster and toe-in allow you to trim the car for optimum performance. Specially formulated rubber wheels and inde-

pendent front suspension give the "Spectre" traction to take curves at speeds that would put other cars off the track. The 5.5:1 gearing has been selected to provide maximum torque at all speeds.

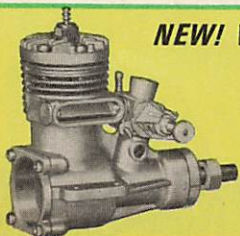
A Simple, Common-Sense Design. The new "Spectre" will not only outperform all other R/C cars on the market... it will outlast them as well. Simple, common-sense design is evident throughout... a virtually indestructible high-impact plastic body that snaps on instead of bolting on... simple coil springs for suspension in place of fragile piano wire "A" arms or torsion bars... a dirtproof, oilproof box inside the car to protect your R/C gear... tires that actually lock onto the "mag"-type wheels... husky, straightforward gear design instead of a fragile shift-able transmission... locking hardware used throughout to insure that the car stays together. The design is simple... reliable... and it works — better than any other R/C car made.

The Only Truly Complete Car Kit Available. The "Spectre" includes everything you need for a complete car except the engine and R/C gear... body, chassis, wheels & tires, fuel tank & tubing, radio equipment case & protective foam, gears, axles, servo linkages & mounting tape, all hardware, decals, numbers and a comprehensive manual. Body is of high-impact white Cyclocol®, suitable for the finish of your choice.

Get On The Track With A Winner... the new Heathkit "Spectre". Order yours now.

Kit GD-101, R/C car only, 8 lbs..... \$49.95
Assembled GDA-101-1, Veco .19 R/C engine, 1 lb..... \$19.95

GD-101 SPECIFICATIONS — GENERAL — Chassis: 16 gauge chrome plated steel. **Body:** GT-Sports, 1/8 scale, high-impact plastic. **Drive:** Gear driven, live rear axle. **Gear ratio:** 5.5:1. **Clutch:** 1" centrifugal type, adjustable. **Brake:** Neoprene-cork shoe. **Suspension:** Front coil spring. **Front tire:** 3" x 1.125". **Rear tire:** 3.250" x 1.375". **Weight:** 6 lbs. 6 oz. (approximately) without radio equipment. **Engine Requirement:** .15 to .23 cubic inches (2.5 to 3.5 cubic centimeters) displacement, R/C throttle glow plug model airplane engine. **Fuel tank capacity:** 4 ounces. **Approximate running time (1 tank of fuel):** 15 to 30 minutes, depending on average running speed. **Speed:** 0 to 25 mph. (0 to 200 mph scale). **CAR DIMENSIONS — Wheelbase:** 12". **Track (front):** 7 3/8". **Track (rear):** 7 1/4". **Length:** 19 3/4". **Height (body):** 5". **Width (body):** 8 3/8". **Ground clearance:** 3/8".



NEW! Veco .19 R/C Engine... The Ideal Power Plant For The New "Spectre"

Assembled
GDA-101-1
\$19.95

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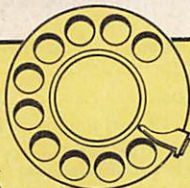
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