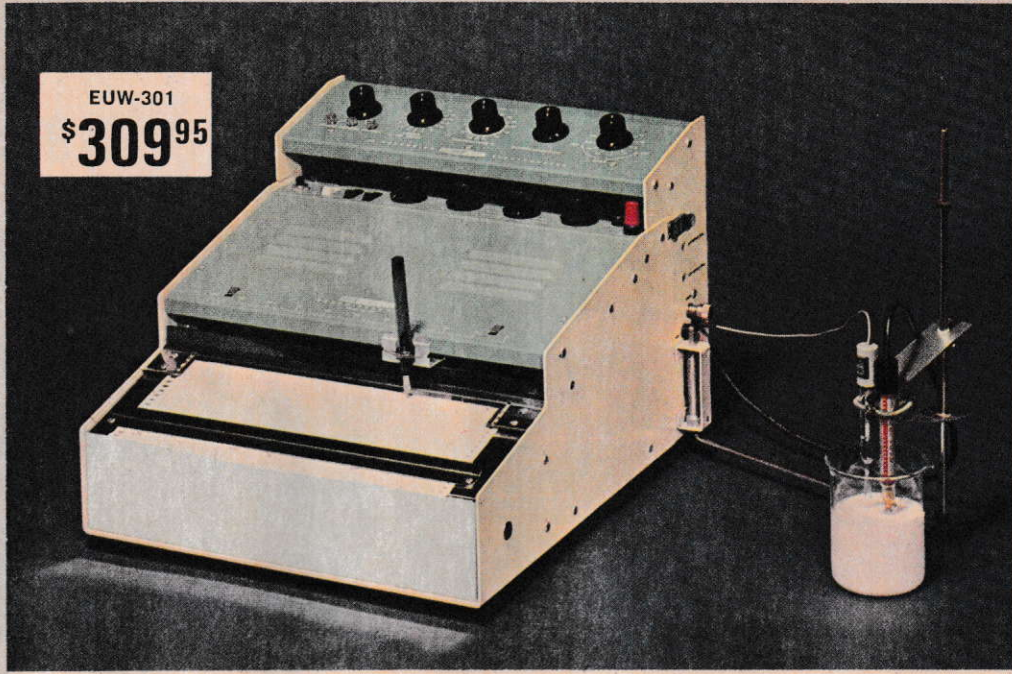
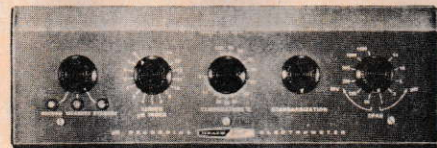


Instrumentation For Chemistry

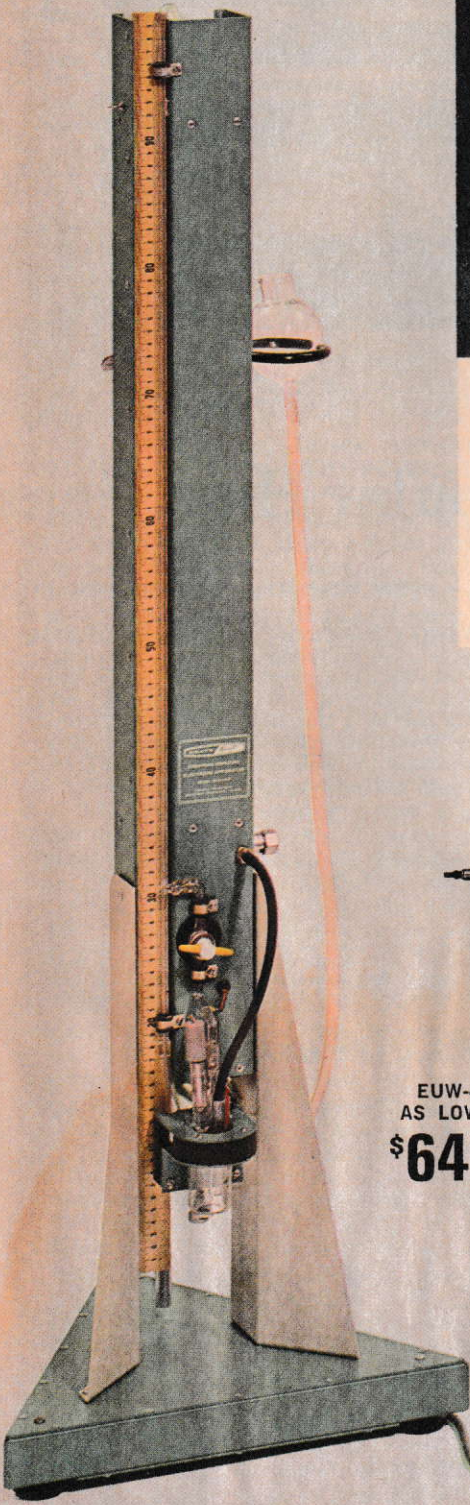
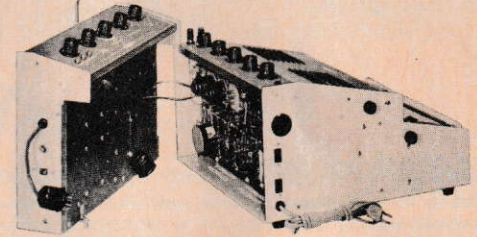
*Includes Dropping Mercury Electrode Apparatus,
Operational Amplifier System,
Polarography Module,
and Servo Chart Recorder*



EUW-301
\$309⁹⁵



pH Module Controls Complete, easy to operate. Regular controls on Chart Recorder are inactivated when pH module is connected.



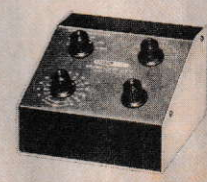
EUW-402
AS LOW AS
\$649⁵⁰



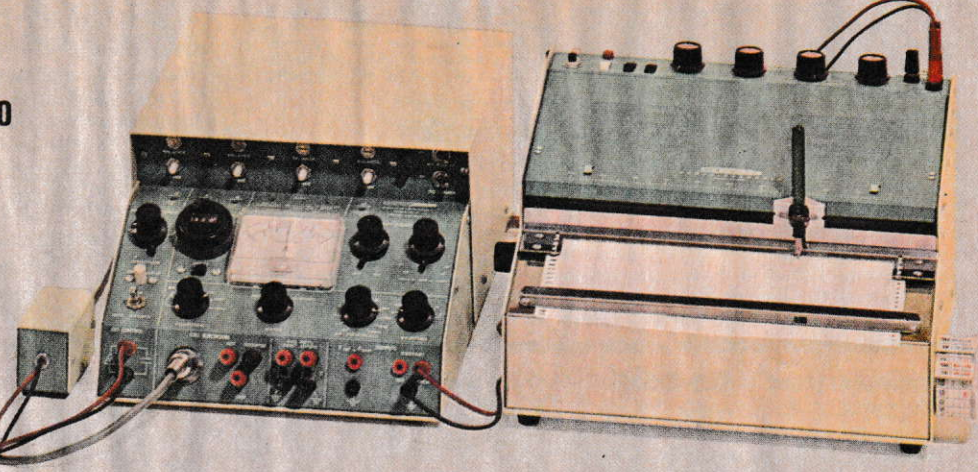
EUA-20-17, Buffer Assortment . . . \$12.75
One pint each of pH 4.01, 7.00 & 10.00 buffers plus a 150 ML bottle of saturated KCL solution.

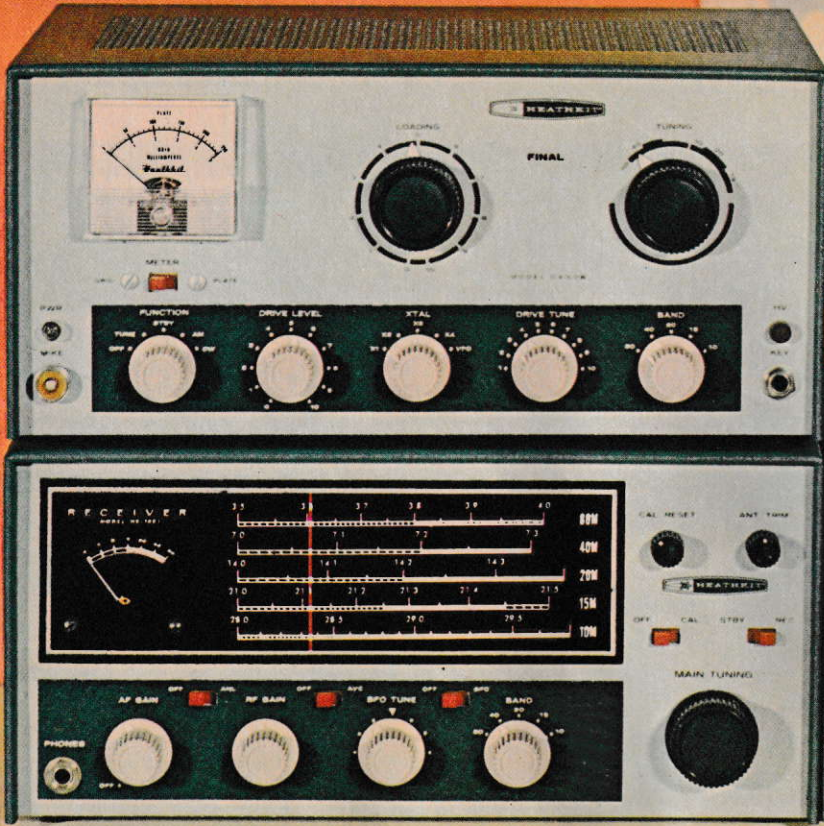


EUA-20-23 Combination pH Electrode . . . \$59.50
Sargent S-30070-10 includes pH and reference electrodes in single glass envelope.



EUA-20-12 pH Test Box . . . \$38.95
Provides quick pH meter check-out independent of cell or buffers through switch-selected output calibrated in pH units, 1% component accuracy. Checks linearity of pH meter from pH 0 to 14.





B DX-60B
\$89⁹⁵

A HR-10B
\$89⁹⁵

C HG-10B
\$47⁵⁰



The World's Most Popular Ham Gear

A Heathkit HR-10B Amateur Band Receiver

- Deep forest-green cabinet and pale gray-green panel matches Single-Banders and HW-16 • "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 superheterodyne circuit • RF amplifier for extra sensitivity—high image rejection • Pre-built, pre-aligned tuning unit for easy assembly

A QUALITY RECEIVER ANY HAM WOULD BE PROUD OF. Ideal for the novice or beginning general class ham who desires full AM, CW and SSB tuning capability, with solid stability for CW & sideband. Each amateur band 80 through 10 meters is accurately calibrated on the illuminated slide-rule dial. Separate RF and AF gain controls and BFO tuning give you the facility you need in a communications receiver. The "S" meter, AVC on/off, and automatic limiter, and provisions for the optional HRA-10-1 plug-in 100 kHz crystal calibrator add the convenience you'll demand. Alignment requires RF signal generator and VTVM.

Kit HR-10B, less speaker, 20 lbs. \$89.95
Kit HRA-10-1, Plug-in 100 kHz crystal calibrator, 1 lb. \$10.95

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.

B Heathkit DX-60B Phone & CW Transmitter For Novices & General Class Operation

- Color styled in deep forest-green & pale gray-green • 90 watts AM or CW on 80 through 10 meters • Neutralized final amplifier for stable, dependable operation on all bands • Built-in low pass filter to eliminate TVI • Grid-block keying—ideal with the HD-10 Electronic Keyer • 4 crystal sockets easily accessible • Full provisions for operation with matching HG-10B VFO • Operates at reduced power for Novice Class • Performance and styling

mate to the HR-10B • A better value than any transmitter in this price range

MORE FOR YOUR TRANSMITTER DOLLAR THANKS TO HEATH TOTAL ENGINEERING. Run 75 watts CW input power for novice class operation—then run the full 90 watts input power on phone or CW (with the HG-10B VFO) when you move up to "general". Pi network output circuit enables easy tuneup to any 50-75 ohm load. Drive Level Control, grid-plate current meter, and Drive Tune control enable you to peak up your DX-60B for maximum output, minimum radiated harmonics, best quality audio characteristics. You will not outgrow your DX-60B.

Kit DX-60B, 24 lbs. . . (less crystals) \$89.95

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. AC, 50/60 Hz, 225 watts. Dimensions: 13 3/4" W x 11 1/2" D x 6 1/2" H.

C Heathkit HG-10B VFO . . . Perfect Mate To DX-60B & 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. 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. \$47.50

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: Phone-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 1/4" D.

Radio Amateur's Handbook

Used all over the world by thousands of hams, engineers, experimenters and students as a reliable, authoritative source of information on almost any phase of electronics and communications. Covers all phases of theory, construction, and operating

principles. Includes "plain-talk" sections on basic electronics; receivers and transmitters for HF, VHF, UHF; gear for AM, CW, and SSB; antennas; and workshop practices; plus, comprehensive tube and transistor data.

HDP-293, 3 lbs. \$4.00



HW-16
\$122.50

Comes From Heath!

Heathkit HW-16 Novice Rig ... A High-Performance CW Transceiver

- An unequalled value for the beginning ham • 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

NOT JUST FOR THE NOVICE, BUT A HIGH-PERFORMANCE 3-BAND TRANSCEIVER FOR ALL CW OPERATORS. Use the HW-16 at your beginning code speed—the built-in sidetone lets you hear what you send, helps you build up speed, helps you develop a near-perfect fist. And through the added gain of the dual conversion circuit, plus an RF amplifier stage, the HW-16 has the high sensitivity you need for working DX. That RF amplifier means excellent image rejection for "clean" reception and superior weak signal capability. Crystal controlled first conversion oscillators and a low frequency VFO provide maximum frequency stability. You'll appreciate the

sharp (500 Hz) selectivity for peeling through crowded nighttime amateur bands provided by the built-in crystal lattice filter. Better than 1 microvolt sensitivity plus a solid state TR switch for automatic antenna change over and receiver muting means real performance. 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 even outperform many of the "expensive" rigs on CW.

EASY ASSEMBLY GETS YOU ON THE AIR FAST! Layout is open, uncluttered. Solder points are easy to get at. 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. Checkout requires only a VTVM, dummy load and appropriate crystals. Headphones, a key, and an antenna are all you need to get on the air. Who said getting a good start in amateur radio is expensive? Order your HW-16 today.

Kit HW-16, 25 lbs. \$122.50
 GD-396, Headphones (not a kit), 1 lb. \$4.50
 Kit HS-24, Speaker, 4 lbs. \$8.95
 Kit HD-10, Electronic Keyer, 6 lbs. \$47.50

HW-16 SPECIFICATIONS—TRANSMITTER SECTION: RF power input: 50 to 90 watts (adjustable). Frequency control: 80-meter crystal or VFO on 80-meter band, 80 or 40-meter crystal, or VFO on 40-meter band, 40-meter crystal or VFO on 15-meter band. Keying: Grid-block. Break-in with automatic antenna switching and receiver muting. Output impedance: 50 ohm, unbalanced. SWR less than 2:1. Sidetone: Neon lamp relaxation oscillator. **RECEIVER SECTION:** Sensitivity: Less than 1 microvolt for 10 db signal-plus-noise to noise ratio. Selectivity: 500 Hz at 6 db down. Intermediate frequency: 3396 kHz. Antenna impedance: 50 ohm, unbalanced. External speaker impedance: 8 ohm. **GENERAL:** Frequency coverage: 3.5 to 3.75 MHz. 7.0 to 7.25 MHz. 21.0 to 21.25 MHz. Power: 120 VAC, 50-60 Hz. Transmitter tube complement: 6CL6 Crystal Oscillator; 6CL6 Driver; 6GE5 Final. Receiver tube complement: 6EW6 RF Amplifier; 6EA8 Heterodyne Mixer-Oscillator; 6EA8 VFO Mixer-Oscillator; 6EW6 IF Amplifier; 12AX7 Product Detector-Oscillator; 6HF8 1st Audio and Audio Output. Transistor complement: 2N1274 muting circuit. Dimensions: 13 3/4" W. x 11 1/2" D. x 6 1/2" H.

Get Your FCC Ham Ticket Fast With This Complete Course

COURSE INCLUDES FOUR HANDBOOKS FROM THE AMERICAN RADIO RELAY LEAGUE: "How To Become A Radio Amateur"; "Radio Amateur's License Manual"; "Learning The Radio-Telegraph Code"; and "Operating An Amateur Radio Station"; plus a Heathkit HD-16 code oscillator kit with key and 3 records that teach code by the revolutionary "word-method."

HDP-22, Complete Amateur Radio Starter Group, 6 lbs. \$20.95
 HDP-32, Code Records Only, 2 lbs. \$9.50
 HDP-42, ARRL Books Only (4), 2 lbs. \$2.00
 Kit HD-16, Oscillator plus Key only, 2 lbs. \$12.95

REVOLUTIONARY
NEW
WORD METHOD
to learn
RADIO CODE

HDP-22
\$20⁹⁵



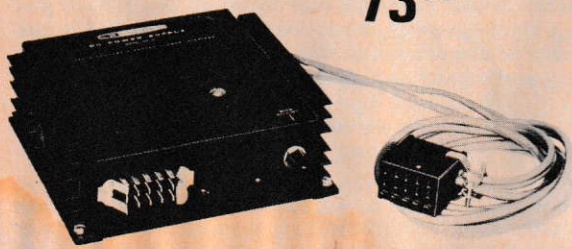
The Heathkit® SB-101 80-10 Meter SSB Transceiver



Kit SB-101
\$394⁹⁵

Microphone
 HDP-21A
\$34⁹⁵

SB-640
\$108⁹⁵



Kit HP-13A
\$73⁹⁵



Kit HP-23A
\$57⁵⁰

Heathkit Solid-State Mobile Power Supply For SSB Rigs

ESPECIALLY DESIGNED FOR MOBILE OPERATION OF THE SB-101, SB-110A, HW-100, AND "SINGLE-BANDERS." This Power Supply is actually three DC power sources in one unit. It provides high voltage (800 volts), low voltage (300 or 250 volts), and bias voltage (-40 to -130 volts). It also switches DC filament voltage for the equipment with which it is used. Primary and filament lines are circuit breaker protected.

The power transformer, an epoxy encapsulated toroid unit is of advanced design, assuring maximum efficiency. Long-life silicon rectifiers and heavy duty filter capacitors, mounted on a rugged circuit board, provide trouble free rectification and filtering. Because the complete Power Supply is physically small, it requires a minimum of mounting space.

Kit HP-13A, DC Power Supply, 7 lbs. \$73.95
 Assembled HPW-13, 8 lbs. \$101.95

HP-13 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 3/4" W x 7 5/8" L x 2 3/8" D. All voltages referenced at 13 VDC input.

Heathkit Fixed-Station Power Supply For SSB Transceivers With Convenient NEW Features

PROVIDES HIGH VOLTAGE, BIAS, AND FILAMENT POWER FOR FIXED-STATION INSTALLATIONS OF THE SB-101, SB-110A, HW-100, AND "SINGLE-BANDERS." This versatile Power Supply features a high voltage source, switch selection of two low voltage sources, fixed and adjustable bias sources, and 6.3 and 12.6 volt filament sources. Extensive filtering and good regulation is provided for the DC sources.

All controls and connections are located on one side of the chassis for easy, convenient installation into the SB-600 speaker console. A circuit breaker in the primary circuit provides overload and short circuit protection.

Kit HP-23A, AC Power Supply, 19 lbs. \$57.50

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.

Is the World's Best Value In Sideband Gear

SB-101 80-10 Meter SSB Transceiver Surpasses Every Other Make of SSB Transceiver . . . Regardless Of Price

- 180 watts input P.E.P. SSB—170 watts input CW on five bands, 80-10 meters • Switch selection of Upper or Lower sideband or CW • Built-in CW sidetone • Operates PTT or VOX • Transceiver tuning with Heath SB-Series LMO (Linear Master Oscillator; features 1 kHz dial calibration) or crystal-control transmit with VFO receive or crystal-control transceiver • Separate offset CW carrier crystal • Triple Action Level Control • Built-in 100 kHz crystal calibrator • Quiet, enclosed relays • Fixed or mobile operation with appropriate power supply • Fast assembly with circuit boards and wiring harnesses • Panel switch selection of USB/LSB filter or optional CW filter • "Unlocked" transmitter frequency control with SB-640 External LMO • Simple alignment—requires only a VTVM or VOM, a dummy load and a broadcast receiver

THE FEATURES & PERFORMANCE OF THE SB-101 MOVES IT FAR AHEAD OF THE FIELD—SURPASSES EVERY OTHER MAKE OF SSB TRANSCEIVER . . . REGARDLESS OF PRICE! A strong claim? . . . Sure! We not only invite you to make the comparison . . . we'll provide you with the complete SB-101 specifications and schematic too.

THE ONLY SSB-CW TRANSCEIVER ON THE MARKET WITH FRONT PANEL SELECTION OF SSB OR CW FILTERS. The SB-101 features full provisions for installation and switch selection of either the standard USB/LSB 2.1 kHz SSB filter or the optional SBA-301-2 400 Hz CW filter. The CW filter provides a symmetrical pass band of 400 Hz at the 6 dB points.

VERSATILE "LOCKED" OR "UNLOCKED" OPERATION. When operated with the SB-640 External LMO, a front panel switch permits selection of transceiver or transmitter/receiver frequency control.

OPERATING THE SB-101 IS A REAL PLEASURE. Select the band, dial the 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. The optional 400 Hz CW crystal filter adds immeasurably to the ease of receiver tuning during the crowded evening hours. And for CW men who prefer headphone listening, there is a separate headphone level control to adjust the headphone audio level independently from speaker volume. These features plus the separate offset CW carrier crystal and built-in sidetone make the SB-101 as much a leader in CW as in SSB Transceivers.

ORDER THE SB-101 FOR THE BEST VALUE IN SSB TRANSCEIVERS . . . REGARDLESS! The SB-101 features the famous Heath pre-built LMO (Linear Master Oscillator) for superior tuning characteristics, USB/LSB selection, TALC, built-in VOX and calibrator, low cost power supplies, plus all the other proven features and performance already established by the SB-100.

Kit SB-101, 23 lbs.....	\$394.95
SBA-301-2, Optional 400 Hz CW crystal filter, 1 lb.....	\$24.95
Kit HP-13A, DC Power Supply, 7 lbs.....	\$73.95
Kit HP-23A, AC Power Supply, 18 lbs.....	\$57.50

SB-101 SPECIFICATIONS—RECEIVER SECTION: Sensitivity: Less than 1 microvolt for 15 dB signal-plus-noise to noise ratio for SSB operation. SSB selectivity: 2.1 kHz minimum at 6 dB down, 5 kHz maximum at 60 dB down—2:1 nominal shape factor—6:60 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 nonreactive load). Output impedance: 50 ohms to 75 ohms with less than 2:1 SWR. Oscillator feedthrough 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 20 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. Dial accuracy—"resetability": Within 200 Hz on all bands. Electrical dial accuracy: Within 400 Hz after calibration at nearest 100 kHz point. Dial mechanism backlash: Less than 50 Hz. Calibration: 100 kHz crystal. Audio frequency response: 350 to 2450 Hz ± 3 dB. Phone patch impedance: 8 ohm or 600 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; —110 volts at 10 ma; 12 volts at 4.76 amps. Cabinet dimensions: 14 $\frac{1}{2}$ " W x 6 $\frac{1}{2}$ " H x 13 $\frac{1}{2}$ " D.

BUDGET TIGHT?

Buy your Heathkit now, pay later. Easy on the pocketbook, easy to arrange credit terms available.

SB-640

**External Linear Master Oscillator
For Versatile Frequency Control Of
Heathkit SB-101 SSB/CW Transceiver**



- Features the same precise calibration and smooth dial mechanism already famous in the SB-101 • SB-Series styling • Same cabinet size as SB-600, SB-610, SB-620, & SB-630 • Red panel light indicates whenever SB-640 is in control of frequency • Includes provisions for two crystal-controlled frequencies • For operation with SB-101 model transceivers only

THE SB-640 & SB-101 MAKE AN UNBEATABLE PAIR. With this combination, you can transceive on this External LMO, on the internal LMO of the Transceiver, or on either of two crystal frequencies. You can also receive on the Transceiver's LMO and transmit on the external LMO. All of these functions are switch-selected from the front panels of the instruments. The SB-640 provides wide versatility for working DX stations in a different sub-band, or for the customary procedure of calling 5 or 10 kHz up or down from the DX station's frequency. You can work a net by transceiving on a crystal frequency, by using either LMO, or by transmitting crystal controlled and receiving on LMO.

FEATURES FOUR MODES OF OPERATION—

1. LOCKED NORMAL—SB-101 internal LMO controls both transmitting and receiving frequency (true transceiving).
2. LOCKED AUXILIARY—SB-640 LMO controls both transmitting and receiving frequency (transceiving with SB-640 control).
3. UNLOCKED AUXILIARY—SB-101 LMO controls the receiving frequency—SB-640 LMO controls the transmitting frequency.
4. CRYSTAL CONTROLLED AUXILIARY—With SB-640 in its XTAL mode of operation, either of two crystals may be used for control of the SB-101 transceiver (LOCKED AUX.) or transmitter (UNLOCKED AUX.) frequency.

Kit SB-640, 9 lbs. \$108.95

SB-640 SPECIFICATIONS—Frequency output, LMO: 5 to 5.5 MHz. Frequency output, crystal: 4.975 to 5.525 MHz. Frequency stability: Less than 100 Hz per hour after 20 minutes warmup from normal ambient conditions. Less than 100 Hz for $\pm 10\%$ line voltage variations. Visual dial accuracy: Within 200 Hz on all bands. Electrical dial accuracy: Within 400 Hz after calibration at nearest 100 kHz point. Dial mechanism backlash: Less than 50 Hz. Front panel controls: Main (LMO) Tuning dial; LMO/XTAL switch; Crystal Selector switch—XTAL 1/XTAL 2. Panel light: ON when transmitting or transceiving frequency is controlled by External LMO. Rear apron facilities: Connector to SB-101. Frequency Adjust trimmers XTAL 1 and XTAL 2. Power requirements (from SB-101 Transceiver): 150 VDC at 5 ma. 12.6 VAC at 450 ma. Dimensions: 6 $\frac{1}{2}$ " H. (plus feet) x 10" W x 11 $\frac{1}{2}$ " D. (including knobs).

Amateur Radio Accessories

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. \$47.50

HD-10 SPECIFICATIONS—Keying: Speed range—15 to 60 wpm. Slow speed option—10 to 20 wpm. Keying output: Keyed line to chassis ground. Voltage polarity: Negative to ground only. Maximum open circuit or spike voltage: 105 volts. Key-closed voltage: 0.2 volts max. Key-closed current: 35 milliamperes, max. General-Audio: Internal speaker or high impedance headphone jack. Transistor complement: (7) 2N407 PNP; (3) 2N2712 NPN; (1) 2N398A PNP. Controls: Off-Operate-Hold switch; Speed control; Dot-To-Space ratio control; sidetone volume control. Rear panel connections: Keyed line; receiver audio; battery +45 volts; battery +22½ volts. External key options: hand key, dash arm, dash, dot. Power requirements: AC operation, 105-125V. AC, 50-60 Hz. Battery operation, 45 volts with 22½ V. tap; 14 milliamperes. Dimensions: 3¾" W x 4¼" H x 10½" D.

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. \$12.95

C Heathkit SWR Meter—Get More Efficiency From Your Rig

• 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 • Styled to match SB-Series equipment

Kit HM-15, 2 lbs. \$17.95

HM-15 SPECIFICATIONS—Operation: Indicates percentage of reflected power to 25%, and voltage standing wave ratio (SWR) to 3. RF Power Handling Capability: One kilowatt. Input and Output Impedance: 50 or 75 ohm. Band Coverage: 160 through 6 meters. Meter: 100 microamperes, full scale. Dimensions: 9¼" L x 3½" W x 2½" H.

D Heathkit Hybrid Phone Patch—A Useful Addition To Any Shack

• Features individual gain controls for receiver-to-line and line-to-transmitter audio level • Convenient one-switch operation • VU meter for quick monitoring of audio levels; also indicates null depth • 30 dB isolation between transmit and receive circuits for positive VOX operation • Matches 3-16 ohm speakers and hi-Z or 600 ohm inputs • Operates VOX or PTT • Matches SB-Series equipment in styling

Kit HD-15, 3 lbs. \$29.95

E Heathkit 100 kHz Crystal Calibrator

Produces a signal every 100 kHz through 54 MHz. An ideal instrument for checking receiver dial calibration, band limits, receiver RF alignment etc. Can be calibrated with trimmer against WWV. Uses 9 v. battery, not included.

Kit HD-20, 1 lb. \$17.95

F Heathkit RF Relative Power Meter

A popular, inexpensive accessory for any "ham." The PM-2 features 0.3 volt RMS sensitivity at the antenna and a frequency range from 100 kHz to over 250 MHz. The circuit requires no power . . . operates on the radiated transmitter signal. The magnetic base makes it ideal for measuring the relative power output of mobile rigs—just mount on the dash. Easy assembly and rugged construction.

Kit PM-2, 2 lbs. \$15.95

G 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. \$34.95

HM-10A SPECIFICATIONS—Frequency range: 3-260 MHz. Bands: 6. Temperature range: 0-120° F. Controls: Frequency, Off-Diode-Osc. switch, Sensitivity. Transistors: (1) 2N407 DC amplifier; (2) T1363 DC amplifier; (1) tunnel diode, oscillator; (1) crystal diode, rectifier; (1) silicon diode, voltage stabilizer. Meter: D'Arsonval type, 0-1 ma full scale. Power requirements: 1.5 volts @ 5 ma. Battery: 1 AA penlite cell (not included). Dimensions: 5½" L x 2¼" W x 4¾" H (cover closed).

H Heathkit Mobile PTT Mike

The GH-12A's high impedance ceramic element is well suited to the rugged work-out given to mobile equipment . . . it is virtually unaffected by the temperature extremes that sometimes occur in closed cars. The new deep green color styling matches both SB and HW Series equipment. Complete with cable, less connector.

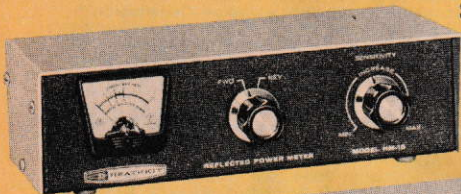
Model GH-12A, 2 lbs. \$10.50

A HD-10
\$47⁵⁰



B HD-16
\$12⁹⁵

C HM-15
\$17⁹⁵



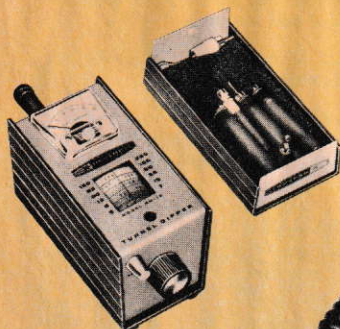
D HD-15
\$29⁹⁵



E HD-20
\$17⁹⁵

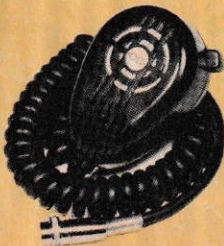


F PM-2
\$15⁹⁵



G HM-10A
\$34⁹⁵

H GH-12A
\$10⁵⁰





SB-110A
\$319.95
 (less mike)

World's Most Advanced 6-Meter SSB Transceiver

Heathkit SB-110A . . . The Only "No Compromise" Six Meter SSB Transceiver

- The only truly high-performance SSB transceiver on six meters
- Uncompromised engineering—the SB-110A features the same high quality crystal lattice filter found on Heathkit 80–10 Meter SB-Series rigs • The same Heath LMO (Linear Master Oscillator) found on 80–10 meter SB-Series rigs • Full SSB-CW transceive operation on Six meters • 180 watts PEP SSB–150 watts CW input • Switch select for Upper Sideband/Lower Sideband/CW operation • Operates PTT & VOX • Separate offset CW carrier crystal for clear, pure CW note • ALC and ANL • Built-in 100 kHz calibrator • Built-in antenna switching • Covers 50-52 MHz with crystals supplied—total coverage 49.5-54 MHz • One kHz dial calibrations—bandsread equal to ten feet per megahertz
- Fixed station or mobile power supplies

GET UNEQUALLED PERFORMANCE ON 6 METERS . . . FIXED OR MOBILE. Get "low band" stability, plus PTT & VOX control, single knob tuning. Switch select modes for either crystal controlled transceiver or crystal controlled transmit with variable-tuning receiver, and operate CW or cross-mode . . . A real advantage for working DX contests or nets.

TRULY UNCOMPROMISED ENGINEERING. The SB-110A provides full 6 meter transceiver operation with the same selectivity, stability, calibration, performance, and value already made famous by the Heathkit SB-Series equipment for operation on 80-10 meters. Enjoy operating features that cannot be found in any other comparable transceiver on the market today! Discover the satisfaction of having a high-performance rig on six that you have assembled yourself. Choose the SB-110A.

- Kit SB-110A, 23 lbs. \$319.95
- Kit HP-13A, DC Power Supply, 7 lbs. \$73.95
- Kit HP-23A, AC Power Supply, 19 lbs. \$57.50
- Kit SBA-100-1, Mobile Mounting Kit, 6 lbs. \$17.95

SB-110A SPECIFICATIONS—RECEIVER SECTION: Noise Figure: 3 db or less. Sensitivity: 0.1 uv for 15 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. Antenna Input Impedance: 50 ohm nominal (unbalanced). Audio Output Impedance: Speaker, 8 ohms. Headphones, 600 ohms or higher. Audio Output Power: 1 watt. AGC Characteristics: Audio output level varies less than 10 db for 50 db change of input signal level (0.5 uv to 150 uv). **TRANSMITTER SECTION:** DC Power Input: SSB, 180 watts PEP. CW, 150 watts PEP. RF Power Output: SSB, 100 watts PEP. CW, 90 watts (50 ohm non-reactive load). Output Impedance: 50 ohm nominal with not more than 2:1 SWR. Carrier Suppression: 55 db down from rated output. Unwanted Sideband Suppression: 55 db down from rated output @ 1000 Hz & higher. Distortion Products: 30 db down from rated PEP output. Harmonic Radiation: 35 db below rated output. Hum & Noise: 40 db or better below rated carrier. Audio Input: .007 v. minimum for rated input. CW Sidetone: Internally switched to speaker with transmitter in CW mode & key depressed. Approx. 800 Hz tone. Keying Characteristics: VOX operated from keyed tone using grid-block keying. **GENERAL:** Frequency Coverage: 49.5 to 54.0 MHz in 500 kHz segments (50.0 to 52.0 MHz with crystals supplied). Frequency Selection: Built-in LMO or crystal control. Frequency Stability: Less than 100 Hz drift per hour after 20 minutes warmup under normal ambient conditions, Less than 100 Hz drift for $\pm 10\%$ supply voltage variations. Modes of Operation: SSB, single sideband (suppressed carrier, with selectable upper or lower sideband). TUNE, continuous wave. CW, keyed continuous wave (800 Hz offset crystal for cross-mode operation between USB and CW). 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. Intermediate Frequencies: Receiver First IF & Transmitter Second IF, 8.395 to 8.895 MHz passband. Receiver Second IF & Transmitter First IF, 3.395 MHz center frequency. **Power Requirements:** High voltage, +700 v. DC @ 250 ma with 1% max. ripple. Low voltage, +250 v. DC @ 100 ma with .05% max. ripple. Bias voltage, -115 v. DC @ 10 ma with .5% max. ripple. Filament voltage, 12.6 v. AC/DC @ 4.355 amps. **Dimensions:** 14 $\frac{1}{2}$ " W x 6 $\frac{1}{2}$ " H x 13 $\frac{1}{2}$ " D.

Special SSB "Ham Radio" Microphone With Desk Stand



HDP-21A
\$34.95

NEW, MODERN STYLING TO MATCH THE PACE SET BY THE SB-SERIES EQUIPMENT . . . this high impedance dynamic mike by EV is recommended for use with SB-Series gear for clear, sharp SSB communications. Mike stand has grip-to-talk switch with lock position. Complete with wiring diagrams. Cables included.
 HDP-21A, 4 lbs. \$34.95

SBA-100-1
\$17.95



Universal Mobile Mounting Bracket For SB-110A, SB-101 and HW-100

GO MOBILE WITH THE SB-110A, SB-101, or HW-100. The SBA-100-1 permits easy installation of either transceiver on the transmission hump or under the dash. Heath-Engineered cantilever suspension provides firm support . . . allows quick plug-in of entire transceiver in your car for easy change from fixed to mobile operation. Supporting rods are concealed behind the mounting base when the transceiver is not installed. Finish matches SB series.

Kit SBA-100-1, 6 lbs. \$17.95



SB-301
\$277⁵⁰



Kit SB-600
\$219⁵

Heathkit® SB-Series Sets "The-State-Of-The-

Heathkit SB-301 Amateur Band Receiver With Pace-Setting Extra-Performance Features

- Sensitivity—better than 0.3 uv • 80 through 10 meter amateur band coverage with all crystals furnished • 15 to 15.3 MHz coverage for WWV reception • Front-panel switching for control of six and two-meter plug-in converters—enables complete coverage from eighty through two meters with front panel control • Crystal-controlled front-end for same rate tuning on all bands • 1 kHz dial calibrations—100 kHz per dial revolution • Bandspread equal to 10 feet per megahertz • Tuning knob to dial ratio approximately 4:1 • Pre-built, pre-aligned Linear Master Oscillator (LMO) for truly linear tuning, high stability • Provision for transceiver operation in conjunction with matching SB-401 Transmitter • RTTY position on mode switch—SB-301 is a fully capable RTTY receiver • Built-in switch-selected ANL (Automatic Noise Limiter) • Improved product detector and audio circuitry for better reception • Circuit board & wiring harness construction for electronic stability & ease of assembly • Simplified assembly procedure with new "subpack" packaging & assembly techniques • 500 kHz coverage per bandswitch position

THE SB-301 SETS HIGH STANDARDS FOR THE INDUSTRY . . . with features such as the Heath pre-built LMO for smooth tuning, maximum stability and precise frequency readout, full capability for AM, CW, RTTY and SSB reception, standard coverage 80 through 10 meters plus optional plug-in converters for six and two, famous Heath crystal-lattice filters for superior pass-band characteristics, and better than 0.3 uv sensitivity for a 10 db signal-plus-noise to noise ratio. The extra tuning range from 15 to 15.3 MHz offers the convenience of WWV tuning. And the famous Heath SB-Series styling gives you the satisfaction of owning gear that's as professional in appearance as it is in performance.

COMPARE! SEND TO HEATH FOR FREE "SPEC" SHEET . . . includes a complete schematic diagram . . . so you can compare the Heathkit SB-301 with any other amateur band receiver you choose. Choose the Heathkit SB-301 for value unmatched in amateur radio communications receivers.

Kit SB-301, less speaker, 25 lbs. \$277.50
SBA-301-1, Optional AM crystal filter (3.75 kHz), 1 lb. \$24.95
SBA-301-2 Optional CW crystal filter (400 Hz), 1 lb. \$24.95

6 & 2 Meter Plug-In Converters For The SB-301

NOW YOU CAN HAVE 80 THROUGH 2 METER BAND COVERAGE AT THE TWIST OF A KNOB! Either the 6 or 2 meter converter may be switch selected from the front panel of the new SB-301 receiver. The 6-meter model covers 48 to 54 MHz (50 to 52 MHz with crystal supplied) and the 2-meter model extends receiver coverage from 142 to 150 MHz (144 to 146 MHz with crystal supplied). These low-noise, high-sensitivity converters exhibit wide-range signal level capabilities through built-in AGC provisions. They extend true SB-Series performance to 6 & 2 meters . . . may also be used with any other receiver providing necessary power and having 10 meter coverage.

SBA-300-3 (6 meter), 2 lbs. \$23.95
SBA-300-4 (2 meter), 2 lbs. \$23.95

SB-301 SPECIFICATIONS—Frequency range (megahertz): 3.5 to 4.0, 7.0 to 7.5, 14.0 to 14.5, 15.0 to 15.3, 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. Electric dial accuracy: Within 400 Hz on all bands after calibration at nearest 100 kHz point. Backlash: No more than 50 Hz. Sensitivity: Less than 0.3 microvolt for 10 db signal-plus-noise to noise ratio for SSB operation. Modes of operation: Switch selected; LSB, USB, CW, AM, RTTY. Selectivity: RTTY: 2.1 kHz at 6 db down, 5.0 kHz at 60 db down (crystal filter supplied). SSB: 2.1 kHz at 6 db down, 5.0 kHz at 60 db down (crystal filter supplied). AM: 3.75 kHz at 6 db down, 10 kHz at 60 db down (crystal filter available as accessory). CW: 400 Hz at 6 db down, 2.0 kHz at 60 db down (crystal filter available as accessory). Spurious response: Image and IF rejection better than 50 db. Internal spurious signals below equivalent antenna input of 1 microvolt. Audio response: SSB: 350 to 2450 Hz nominal at 6 db. AM: 200 to 3500 Hz nominal at 6 db. CW: 800 to 1200 Hz nominal at 6 db. Audio output impedance: Unbalanced nominal 8 ohm speaker and high impedance headphone. Audio output power: 1 watt with less than 8% distortion. Antenna input impedance: 50 ohms nominal. Muting: Open external ground at Mute socket. Crystal calibrator: 100 kHz crystal. Front panel controls: Main tuning dial; function switch; mode switch; AGC switch; band switch; AF gain control; RF gain control; preselector; connector & ANL switch; phone jack. Rear apron connections: Accessory power plug; HF antenna; VHF #1 antenna; VHF #2 antenna; mute; spare; anti-trip; 500 ohm; 8 ohm speaker; line cord socket; heterodyne oscillator output; LMO output; BFO output; VHF converter switch. Tube complement: (1) 6BZ6 RF amplifier (1) 6AU6 Heterodyne mixer; (1) 6AB4 Heterodyne oscillator; (1) 6AU6 LMO osc.; (1) 6AU6 LMO mixer; (2) 6BA6 IF amplifier; (1) 6AU6 Crystal calibrator; (1) 6HFB 1st audio, audio output; (1) 6AS11 Product Detector, BFO, BFO Amplifier. Power supply: Transformer operated with silicon diode rectifiers. Power requirements: 120/240 V. AC, 50/60 Hz, 50 watts. Dimensions: 14 $\frac{1}{2}$ " W x 6 $\frac{1}{2}$ " H x 13 $\frac{1}{8}$ " D. Net weight: 17 lbs.

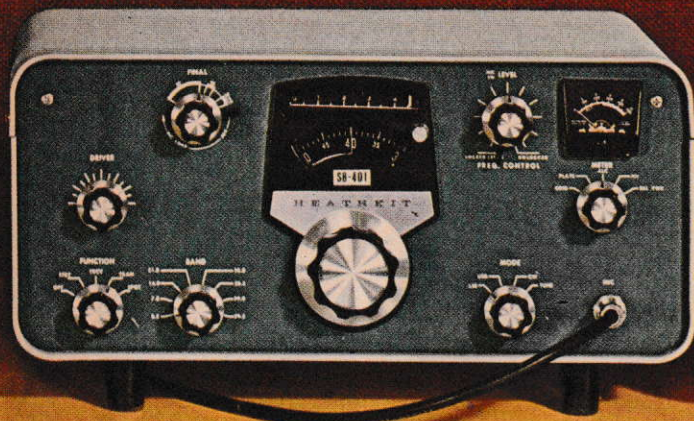
Heathkit SB-Series Communications Speaker

OFFERS FIXED-STATION "SPEAKER" FACILITIES IN HAND-SOME SB-SERIES STYLING. Now you can complete your SB-Series station with this complementary communications speaker. The SB-600 provides the necessary 8 ohm impedance to match the audio output from Heathkit SB-Series and HW-Series equipment. Its audio response is shaped to 300 to 3000 Hz for optimum reproduction of voice frequencies. And for Heathkit Transceiver owners, it provides mounting enclosure for the "remote" HP-23 power supply. Cabinet size is identical to SB-620, SB-640, etc. . . . 10" W x 6 $\frac{1}{2}$ " H x 10 $\frac{1}{2}$ " D.

Kit SB-600, 6 lbs. \$219.5

SBA-300-3 SPECIFICATIONS—Sensitivity (signal-plus-noise to noise in db): AM, less than 0.1 uv for 6 db @ 3750 Hz bandwidth; SSB, less than 0.1 uv for 10 db @ 2100 Hz bandwidth; CW, less than 0.1 uv for 15 db @ 400 Hz bandwidth. Noise figure: 5 db or less. Frequency: Input, 48 to 54 MHz (50 to 52 MHz with crystal supplied). Output, 28 to 30 MHz. Bandpass: Essentially flat over any 2 MHz segment from 48 to 54 MHz. Image rejection: 50 db or better @ 6 MHz. IF rejection: 40 db or better @ 28 MHz. Crystal: 22 MHz $\pm 0.005\%$, 3rd overtone. Tube complement: 6DJ8 cascade RF amplifier, 6EA8 oscillator-mixer. Power requirements: 120 v. @ 12.5 milliamperes, 6.3 v. AC @ 815 milliamperes. Dimensions: Overall, 2 $\frac{1}{2}$ " W x 5 $\frac{1}{4}$ " L x 3 $\frac{3}{4}$ " H.

SBA-300-4 SPECIFICATIONS—Sensitivity: (signal plus noise-to-noise in db) AM, less than 0.2 uv for 6 db @ 3750 Hz bandwidth; SSB, less than 0.2 uv for 12 db @ 2100 Hz bandwidth; CW less than 0.2 uv for 20 db @ 400 Hz bandwidth. Noise figure: 7 db or less. Frequency: Input, 142 to 150 MHz (144 to 146 MHz with crystal supplied); output, 28 to 30 MHz. Bandpass: Essentially flat over any 2 MHz segment from 142 to 150 MHz. Image rejection: 80 db or better at 88 MHz. IF rejection: 50 db or better at 29 MHz. Crystal: 38.67 MHz $\pm 0.03\%$, 3rd overtone. Tube complement: 6DJ8 cascade RF amplifier, 6EA8 oscillator-triplexer-mixer. Power requirements: 130 V. DC @ 12.5 milliamperes, 6.3 V. AC @ 815 milliamperes. Dimensions: Overall, 2 $\frac{1}{2}$ " W x 5 $\frac{1}{4}$ " L x 3 $\frac{3}{4}$ " H.



SB-401
\$304⁹⁵



Kit SB-200
\$235⁹⁵

Art" For Engineering, Performance & Value

Heathkit SB-401 Amateur Band Transmitter Operates USB/LSB & CW . . . "Separate" Or "Transceive"

- 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 receiver when SBA-401-1 crystal group is installed • New simplified assembly procedure through modular "sub-pack" packaging & assembly techniques • Built-in power supply • Built-in antenna change-over relay • LMO (Linear Master Oscillator) frequency control • ALC (Automatic Level Control) for higher talk power • 180 watts PEP SSB, 170 watts CW • Crystal filter SSB generation • Operates upper or lower sideband • VOX and PTT control • 1 kHz dial calibration —100 kHz per dial revolution • 500 kHz coverage per band-switch position

PERFORMANCE COMPANION TO THE SB-301. The Heathkit SB-401 provides full transceive operation with the SB-301 or SB-300 . . . gives you outstanding performance on 80 through 10 meters with single-knob LMO control. In addition, this SB series "combo" goes from transceive operation to independent transmitter-receiver operation with a flip of a single switch on the SB-401 front panel . . . perfect for DXing! The SB-401 derives all the necessary crystal oscillator voltages from the SB-301 or SB-300 . . . eliminates redundant circuitry! Include the SBA-401-1 crystal pack for complete, independent transmitter operation with receivers other than the SB-301 or SB-300.

UNIQUE DESIGN FEATURES. The SB-401 employs compactron tubes for space-saving component layout, and heavy-duty circuit board construction plus pre-cut wiring harness enables fast assembly, assures stable operating characteristics. Complete shielding and isolation of circuits provides a maximum of TVI protection.

NEW EASY ASSEMBLY TECHNIQUE! Use of "modular sub-pack" packaging and assembly procedure adds even greater pleasure and satisfaction to building this deluxe rig . . . like building small kits within a kit! The prebuilt LMO and crystal SSB filter eliminate critical alignment. Make the SB-401 your next ham radio project.

Kit SB-401, 36 lbs. \$304.95

SBA-401-1 Crystal Pack, 1 lb. \$34.95
(Required for SB-401 operation without the SB-301 or SB-300 Receiver.)

HDP-21A, SSB "Ham" Microphone—See Pg. 107 for details.
4 lbs. \$34.95

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; 29.5—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 7/8" W x 6 5/8" H x 13 3/4" D.

Heathkit SB-200 Linear . . . A Complete, Self-Contained KW SSB Linear

- 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

A SINGLE, COMPACT, DESK-TOP UNIT with built-in power supply and SWR meter, providing up to 1200 watts P.E.P. input SSB and 1000 watts CW. And it can be driven by most popular transmitters and transceivers since it requires only 100 watts P.E.P. driving power.

LATEST DESIGN FEATURES . . . uses a pair of heavy-duty 572-B's or T-160-L's (the two are equivalent) for final amplifier tubes. They're fan-cooled for maximum tube-life, completely shielded for maximum TVI protection, and always readily available from Heath for replacement. Closer examination of the SB-200 will reveal a pre-tuned cathode input circuit for maximum efficiency and low distortion . . . an ALC output for automatic exciter control . . . and a rugged, conservatively-rated, built-in, solid-state power supply with circuit breaker protection (no fuses to replace or worry about keeping in reserve). And for versatile operating convenience, the antenna relay automatically switches the antenna to the exciter input when the linear is "off."

UP-TO-DATE CONSTRUCTION TECHNIQUES COMBINED WITH HEATH ENGINEERED LAYOUT AND DESIGN . . . the sturdy, yet lightweight construction of the SB-200 is achieved through the use of a heavy-gauge one-piece aluminum chassis that is partitioned for extra strength and isolation of components and circuitry. Clean, open circuit layout assures easy assembly.

Kit SB-200, 41 lbs. \$235.95

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 7/8" W x 6 5/8" H x 13 3/4" D. **Net weight:** 35 lbs.

Heathkit "Cantenna" Transmitter Dummy Load



NOW AN EVEN MORE FUNCTIONAL "CANTENNA"! Now the HN-31 features all specifications and power derating curve (maximum power input vs. time) screened onto the finish of the container . . . keeps the specifications at hand where you need them. HN-31 provides 50 ohm non-inductive load with SWR less than 1.5:1 for frequencies from 1.5 to 300 MHz. Coax fitting to transmitter line. Phono jack for relative power measurements. Oil coolant (capacity 1 gallon—oil not included) permits power up to 1 kw.

Kit HN-31 3 lbs. \$12.50

SB-Series Accessories...For The Performance-Minded Ham



A SB-620
\$132⁹⁵

B SB-630
\$84⁹⁵

C SB-610
\$84⁹⁵

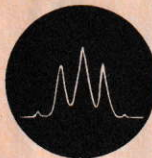
A Heathkit SB-620 "Scanalyzer" Broad Band Spectrum Monitor And Signal Analyzer

- Narrow sweep widths with crystal filter for single signal analysis—10 kHz, 50 kHz; variable width to 500 kHz • Increased sweep width capability for monitoring larger band segments—up to 500 kHz for IF's above 455 kHz, and up to 100 kHz for 455 kHz IF's • Matches SB-Series in style and performance
- Operates with common receiver IF's up to 6 MHz • Both linear and logarithmic amplitude displays • Long persistence CRT for optimum display of narrow band segments • Improved voltage doubler, power supply • Mu-metal fully shielded CRT • Simple connection to receiver • Plus all of the versatile performance and operating features already made famous by the HO-13 Spectrum Monitor

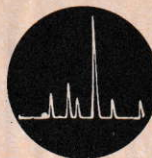
"SCANALYZER" IS THE MOST MODERN, CAPABLE AMATEUR RADIO SPECTRUM ANALYZER ON THE MARKET TODAY. Provides quality instrumentation for the amateur radio station. The scanalyzer displays up to 500 kHz of the spectrum for wideband scanning function (250 kHz either side of center tuned frequency) . . . allows you to easily spot band openings without going through the tedious hunt-and-tune procedure. A 10 kHz sweep width plus a switched 20 dB pad aids in accurate signal-quality reports or when used with a R.F. signal generator, permits bench measurement of carrier unwanted sideband, and distortion product suppression in your transmitter down to 60 dB. Operates with practically all receivers . . . see specifications below.

Kit SB-620, 15 lbs. \$132.95

SB-620 SPECIFICATIONS—RF AMPLIFIER: Input frequencies (Receiver IF): 455, 1000, 1600 to 1680, 2075, 2215, 2445, 3000, 3055, 3395, 5000 to 6000 kHz. **Frequency response:** ±0.5 db at 50 kHz from receiver IF. **IF frequency:** 350 kHz. **Sensitivity:** Approximately 10 uv input signal provides a visible signal (40 DB mark) at full pip gain setting. **HORIZONTAL DEFLECTION:** Horizontal sweep generator: Sawtooth sweep produced by neon lamp oscillator. **Sweep rate:** 0.5 Hz approx. at 10 kHz preset; 2 Hz to 2.5 Hz approx. at 50 kHz preset; 5 Hz to 15 Hz approx. variable. **Sweep width:** Preset 10 kHz; preset 50 kHz; Variable from 10 kHz to 100 kHz at 455 kHz IF frequency; 50 kHz to 500 kHz at 1000, 1600, 1685, 2075, 2215, 2445 kHz IF frequencies; 100 kHz to 500 kHz at 3000, 3055, 3395, 5200, 6000 kHz IF frequencies. (These sweep widths are minimum values. Actual sweep width ranges will be greater than those listed depending on the input IF that the unit is wired for.) **Resolution:** 1 kHz. **Amplitude scales:** LINEAR (10:1 or 20 DB range); LOG (100:1 or 40 DB range). **POWER SUPPLY:** Type: Transformer operated, fused at ½ ampere. **Low voltage:** Full-wave voltage doubler circuit, using four silicon diodes. **High voltage:** Full-wave voltage doubler circuit, using two selenium diodes. **Bias voltage:** Bridge circuit, using four silicon diodes. **Power requirements:** 120 or 240 volts AC, 50/60 Hz, 40 watts. **GENERAL:** Cabinet dimensions: 6½" H x 10" W x 10½" D. **Net weight:** 10 lbs.



Analyzing Function—10 kHz preset sweep width—indicate carrier 100% modulated by 2 kHz time-log scale.



Scanning Function—approximately 250 kHz sweep width—indicates two signals below and three above the received signal, the strongest signal about 30 kHz up the band.

B Amateur Station Console Four Control-Monitor Units In One

- Includes 24-hour clock with digital readout—calibrated in hours, minutes, and seconds • Built-in S.W.R. meter for proper antenna and transmission line match • Built-in hybrid phone patch with separate controls for receiver-to-line and line-to-transmitter audio level • Automatic, resettable electronic 10-minute timer, audio/visual signaling and continuous re-cycle provision • Handsome styling to match the Heathkit SB-Series Amateur Radio gear

110

SHOWS SIGN-IN AND SIGN-OUT TIMES IN DIGITS . . . right in front of you . . . handy to jot into your log. Phone patch and SWR meter right where you need them . . . integral with your station. And the push-button, resettable 10-minute timer is a real convenience, especially during rag-chews. Red "identify" sign lights up to signal end of time interval—buzzer may be switched on or off.

Kit SB-630, 10 lbs. \$84.95

C SB-610 Signal Monitor . . . Accurately Displays Transmitted & Received AM, CW, RTTY & SSB Signals 160 Thru 6 Meters

- Features new versatility—operates with transmitters 160 through 6 meters, 15 watts through 1 KW—operates with receiver IF's through 6 MHz—includes full capability for displaying RTTY signals • Designed & styled to operate with Heath SB-Series equipment • Provisions to operate with virtually any other equipment on the market • Displays signal envelope, AF & RF trapezoid patterns • Fully mu-metal shielded CR tube • Improved two-tone audio test oscillator with separate balance and output level controls • Improved voltage doubler power supply • Easier and faster assembly • Simple to connect and operate • Shows the quality of signals you transmit & receive • Manual includes instructions for interpreting waveforms

NOW YOU CAN GET A SIGNAL MONITOR SCOPE MATCHING THE FAMOUS HEATH SB-SERIES IN BOTH APPEARANCE AND PERFORMANCE. The SB-610 Signal Monitor is designed to operate without modification with all your SB-Series amateur equipment, providing the ultimate in performance for ham radio monitor scopes . . . plus, it has all necessary circuit provisions for operation with most other gear on the market today.

Kit SB-610, 14 lbs. \$84.95

SB-610 SPECIFICATIONS—Receiver IF's: Up to 455, 1600 to 1680, 2075, 2215, 2475, 3000, 3055, 3395, and 5000 to 6000 kHz. **VERTICAL AMPLIFIER:** Vertical response (for 1 inch deflection): Untuned: RTTY, 1 volt nominal; 20 kHz-455 kHz, less than 500 mv. Tuned: 455 kHz, 70 mv nominal; 1600-2500 kHz, less than 200 mv; 3000-3400 kHz, less than 500 mv; 5000-6000 kHz, less than 700 mv. **Input resistance:** 100 k ohm. **HORIZONTAL AMPLIFIER:** Horizontal response: ±3 dB from 3 Hz to 15 kHz. **Sensitivity:** 800 mv per inch deflection. **Input resistance:** 1 megohm. **Sweep generator:** Recurrent type, sawtooth 15 to 200 Hz (variable). **Tone oscillators:** Approximately 1500 & 1950 Hz with 100 mv (nominal) output. **GENERAL:** Frequency coverage: 160—6 meters (50-75 ohm coaxial input). **Power limits:** 15 watts to 1 kilowatt [with special instructions for CB power levels]. **Front panel controls:** Function Selector, Sweep Frequency, Tone Generator, Horizontal Gain, Horizontal Position, Vertical Position, Vertical Gain, Focus, Intensity/Off. **Rear control:** Xmtr. Atten. Attenuates 0 to 24 dB at approximately 8 dB per step. **Power supply:** Transformer operated, fused ½ amp. **Power requirements:** 120/240 V. AC, 50/60 Hz, 35 watts. **Dimensions:** 6" H x 10" W x 11½" D (including knobs).

Displays Actual Signal Waveforms

These and other transmitter envelope patterns are shown in the SB-610 manual. Aid immeasurably in proper tune-up and troubleshooting.

SSB signal voice input correctly adjusted.



RF trapezoid Good linearity. Desirable pattern.



Heathkit® 80, 40 & 20 Meter Gear



HW-12A
\$112⁹⁵

Heathkit Single-Banders Have More Performance, Better Looks, Yet Cost Less

- Fixed or mobile operation with the appropriate power supply (HP-23A or HP-13)
- Electronically stable, easy-to-assemble circuit board construction
- Time-saving wiring-harness cable assemblies
- Durable wrinkle finish
- Upper Or Lower sideband operation on all Single Banders
- Choose 80, 40, or 20 meter model
- Convenient control locations
- 200 watts P.E.P. input
- Single knob tuning with 2 kHz dial calibration
- ALC input for use with external linear amplifiers
- Excellent exciters for operation on the band of your choice with the SB-200 Linear Amplifier
- Superior audio & AVC response
- Crystal filter type SSB generation
- Built-in S-meter, VOX, PTT, and ALC

AN IMPROVED VERSION OF THE SSB TRANSCEIVER THAT OPENED UP A NEW ERA IN AMATEUR RADIO. The number of Single-Banders you hear on the air is proof of their popularity . . . yet to bring you even greater economy and performance Heath improved on these favorite "Hard Working" transceivers. These are truly high-performance transceivers that get you on the air on the band of your choice with a full 200 watts P.E.P. input SSB—either fixed or mobile.

UP-TO-DATE ENGINEERING, UNCLUTTERED STYLING, COMPACT SIZE. Microphone input and gain control are located on the front panel as is the bias adjustment for ease in changing from fixed to mobile operation. A function switch position controls the optional HRA-10-1 crystal calibrator. The 11 pin power plug is compatible with SB Series power supply connections. The receiver is a 10-tube super-heterodyne with 1 uV sensitivity, 2.7 kHz selectivity, and slow AVC action for optimum SSB reception. Heathkit experience in transceiver tuning circuitry has provided the Single-Banders with stable, smooth tuning with the temperature-compensated 1.5 to 1.8 MHz VFO. The

high quality crystal lattice filter produces identical tuning characteristics for both upper and lower sideband signals—for clean transmitted signals with the carrier and unwanted sideband at least 45 dB down. Here is the performance you expect in "high priced" equipment.

DESIGNED FOR EASY ASSEMBLY. Over 90% of the components mount on a heavy-duty circuit board, and the remainder of the circuit is connected with a pre-cut wiring harness. Alignment is easy. The only other gear you need to get on the air are microphone, antenna, power supply, and speaker. (See amateur radio accessories.)

- Kit HW-12A, 80-meter, 15 lbs. \$112.95
- Kit HW-22A, 40-meter, 15 lbs. \$116.50
- Kit HW-32A, 20-meter, 15 lbs. \$116.50
- GH-12A, Push-to-talk and VOX microphone, 1 lb. \$10.50
- Kit HRA-10-1, Plug-in 100 kHz crystal calibrator, 1 lb. \$10.95
- Kit HP-13A, DC Power Supply (Mobile), 7 lbs \$73.95
- Kit HP-23A, AC Power Supply (Fixed station), 18 lbs. \$57.50
- Kit HS-24, Mobile Speaker, 4 lbs. \$8.95

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 uV for 15 dB (S+N)/N ratio. Receiver selectivity: 2.7 kHz @ 6 dB, 6.0 kHz @ 50 dB. Output: 50 ohm fixed (unbalanced). 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) 6EB8 Audio amp. and output; (2) 6GE5 RF output. Power requirements: 800 VDC @ 250 MA peak, 250 VDC @ 100 MA, —130 VDC @ 5 MA, 12 VAC or VDC @ 3.75 amperes. Cabinet dimensions: 6 1/4" H x 12 1/4" W x 10" D.

Famous Low-Cost "Benton Harbor Lunch Boxes" Compact 6 & 2 Meter Transceivers

- Perfect for the ham-on-the-go
- Ideal for CAP, MARS, local net, or emergency operations
- 5-watt input crystal-controlled A.M. transmitter
- HW-30 2-meter model capable of operation on new USCG Auxiliary frequency 143.28 MHz
- Optional power supply available for mobile operation

GO VHF FOR LESS . . . complete transceivers, lunch-box size. Feature crystal controlled transmitter with straight-through final amplifier. Crystals (not supplied) are in the 8 MHz range. Receiver is super-regenerative with RF stage . . . features 1 uv sensitivity! The built-in 120 VAC power supply, speaker, press-to-talk switch on front panel, and ceramic mike included make these units ready to go on the air with your antenna. Power cables for mobile and A.C. operation are included.

- Kit HW-29A (6 meter), 9 lbs. \$52.50
- Kit HW-30 (2 meter), 9 lbs. \$52.50
- Kit GP-11, Mobile Power Supply, 6 lbs. \$21.50



HW-29A
\$52⁵⁰



GP-11
\$21⁵⁰

Mobile DC Power Supply For "Lunch Boxes"

- Compact size
- Operates from 6 or 12 volts DC
- Dependable silicon diode rectifiers
- Easy to install
- Provides remote on/off switching
- Heathkit green color styling

Kit GP-11, 6 lbs. \$21.50

GP-11 SPECIFICATIONS—Power requirements: 6.3 VDC @ 6.5 amperes or 12.6 VDC @ 3 amperes for rated output. Power output: 250 VDC @ 100 mg. ICAS. Power rectifier: Two silicon diodes in voltage doubler circuit. Vibrator: Mallory type 1610 or equivalent. Vibrator frequency: Approximately 115 Hz. Overall dimensions: 4 3/8" H x 6 1/2" W x 4 1/8" D.

CAP, MARS & 160 Meter SSB Transceivers

A unique series of low cost crystal-controlled SSB transceivers especially designed for use by CAP, MARS, and 160 meter hams



Kit HW-18-1
CAP
\$132⁹⁵
(including crystals)

Wired HWW-18-1
CAP
\$196⁹⁵
(including crystals)

Kit HW-18-2
MARS
\$121⁵⁰
(less crystals)

Kit HW-18-3
160 meters
\$121⁵⁰
(less crystals)

The Heathkit HW-18 Series . . . 2-Channel, 200-Watt SSB Transceivers

- 200 watts PEP SSB input • 25 watts input with carrier for compatibility with AM stations • CAP version employs upper sideband, MARS upper or lower sideband, 160 meter model lower sideband • CAP complies with new FCC rule effective June 21, 1968 which establishes a CAP SSB frequency tolerance of .005% until Jan. 1, 1973 and 50 Hz thereafter • Crystal filter sideband generation • 2 channels, switch selected, crystal controlled (tolerance .005%) • Fixed tuned for simple PTT operation • Transmit and receive frequencies locked together for true transceiver operation • Clarifier control adjusts transceiver frequency ± 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 μ v • Selectivity 2.1 kHz • 50 ohm coax output • Mobile or "fixed" use • HP-13 & HP-23A power supplies (See amateur accessories) • Mobile mount included

GOOD NEWS FOR CAP, MARS, AND 160 METER OPS. Now there is a special series of Heathkit SSB transceivers designed with your needs in mind, priced with your budget in mind. No more adapting commercial rigs, no more converting surplus military gear, no more make-shift set-ups. The new Heathkit HW-18 series is tailored just for you with the sensitivity, selectivity, power output, and operating convenience that make for effective, efficient communication at a fraction of the costs you've had to pay in the past.

COMPARE THE FEATURES, COMPARE THE CONVENIENCE, COMPARE THE PERFORMANCE. Power that speaks with authority . . . 200 watts of peak envelope power input on single sideband provides talk-power equal to 800 watts AM input . . . and for compatibility with stations equipped with AM receivers only, just flip a switch to insert carrier. And nothing is easier to operate . . . just select the channel and pick up the microphone . . . no power amplifier tuning, no loading adjustments, no receiver tuning. Automatic Level Control (ALC) holds the transmitter output constant under varying voice levels . . . the built-in meter checks ALC as well as transmitter plate current and received signal strength. Trimming capacitors provide easy, exact adjustment of transmitter frequency.

SENSITIVE, MODERN RECEIVER. No drifting off channel with this one, for transmitter and receiver frequency are crystal-controlled, locked together, always on the same frequency, always on the same sideband. And the Clarifier Control corrects the transceiver frequency within the .005% tolerance to assure accurate "netting." The crystal filter IF provides the high selectivity needed to eliminate adjacent channel interference. The product detector provides clear SSB reception with no control juggling. The Local-Distance switch prevents overloading of the receiver by nearby net stations. Best of all . . . the sensitivity of 1 microvolt for a 15 dB S+N/N ratio means solid copy every time. So easy to use that all that's required is to release the push-to-talk button on the microphone to hear the reply . . . even a 4" x 6" speaker is built-in.

12 TUBE CIRCUIT, 17 TUBE FUNCTION. Multi-section tubes keep the number of tubes low, yet provide the functions required for a sophisticated

transceiver. Nearly everything except the front panel controls mount on one large circuit board for fast, easy construction and a wiring harness makes interconnections simple.

ALIGNMENT REQUIRES ONLY A VOLTMETER, OHMMETER AND DUMMY LOAD. Circuit may be powered by HP-13 DC supply for mobile use or HP-23A AC supply for fixed station operation. Whether you operate CAP, MARS, or 160 meters, this HW-18 series provides fine performance fixed-frequency SSB facilities at the lowest cost anywhere. Order yours now.

Kit HW-18-1, CAP transceiver and crystals for any two channel frequencies from list below; specify choices; 16 lbs. \$132.95

Assembled HWW-18-1, ready to operate CAP transceiver with crystals for any two channel frequencies from list below; specify choices; 16 lbs. \$196.95

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

Kit HW-18-2, MARS transceiver less channel crystals; 16 lbs. . . . \$121.50

MARS Crystals: specify LSB or USB operation & channel frequencies (both channels must use same sideband); 4451.5, 4518.5, 4558.5, 4581.5, 4591.5, 4595 kHz; 1 lb. . . . ea. \$4.95

Kit HW-18-3, 160 M transceiver less crystals; 16 lbs. \$121.50

160 METER MODEL HETERODYNE CRYSTALS for operation on: 1805, 1809, 1813, 1817, 1821 kHz; 1 lb. ea. \$4.95

HW-18 SERIES SPECIFICATIONS—RECEIVER SECTION: Frequency coverage: HW-18-1 & 2, 4450 to 4650 kHz; HW-18-3, 1800 to 2000 kHz. Channels: 2. Sideband: HW-18-1, USB; HW-18-2, USB or LSB option; HW-18-3, LSB. Clarifier range: HW-18-1 & 2, ± 100 Hz; HW-18-3; ± 250 Hz. Sensitivity: All models, 1 μ v input signal will provide at least a 15 dB signal-plus-noise to noise ratio. Selectivity: 2.1 kHz nominal @ 6 dB down, 6 kHz @ 50 dB down (3395 kHz filter). Intermediate frequency: All models, 3395 kHz. Image rejection: 100 dB. IF Rejection: 50 dB. Antenna input impedance: 50 ohm, unbalanced. Receiver audio response: 400 to 3000 Hz. Receiver audio power output: 1 watt. Internal speaker: 8 ohm impedance 4" x 6". **TRANSMITTER SECTION:** Frequency coverage: HW-18-1 & 2, 4450 to 4650 kHz; HW-18-3, 1800 to 2000 kHz. Channels: 2. Transmitting mode: HW-18-1, upper sideband carrier suppressed, and low level carrier with sideband. HW-18-2, upper or lower (optional) sideband carrier suppressed, and low-level carrier with sideband. HW-18-3, lower sideband. Frequency accuracy: HW-18-1 & 2, .005% overall (after adjusting to channel frequency). HW-18-3, .005%. Clarifier range: HW-18-1 & 2, ± 100 Hz; HW-18-3, ± 250 Hz. RF Power input: 200 watts PEP. Output impedance: 50 ohm, unbalanced. Transmitter audio response: 400 to 3100 Hz. Microphone: High impedance ceramic. Unwanted sideband suppression: 45 dB min. below peak output with 1000 Hz modulation. Carrier suppression: 45 dB min. below peak output. Ambient temperature range: +10° to +110°F. Controls: Front panel: Volume with on/off switch, Reception, Mode, Meter, Channel, Clarifier, Meter Zero, Bias Adjust. Circuit board: Carrier null. Chassis rear: Mic. gain. **GENERAL SPECIFICATIONS:** Power requirements: 800 VDC @ 250 mA peak, 250 VDC @ 100 mA, -130 VDC @ 5 mA, 12.6 VAC or VDC @ 3.75 amperes. Tube complement: (3) 6EA8 microphone amp & AF cathode follower, transmitter IF amp & relay amp, RF amp & receiver mixer; (4) 6AU6 heterodyne osc., IF amps (2); transmitter mixer; (1) 12BY7 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.

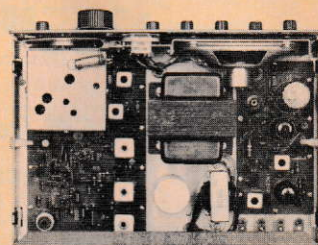
New Solid-State 2-Meter AM Transceiver



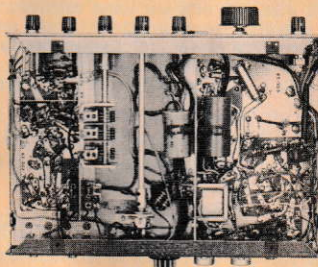
This New Heathkit HW-17 Solid-State 2-Meter AM Transceiver Is Just Right For Local Rag-Chews, Nets, and DX, as well as CAP, MARS, and Coast Guard Auxiliary Use . . . Sensitive Receiver, Reasonable Power Output, Easy-To-Use Features, and a Low Price



HW-17
\$143⁹⁵



Separate Receiver and Transmitter . . . with a separate circuit board for each . . . sharing only the husky power supply and audio output/modulator stage.



Compartmentalized Chassis Construction . . . each function area is shielded for the high stability required at these frequencies.

- Frequency Range 143.2 to 148.2 MHz • Solid-state, dual-conversion superheterodyne receiver • Pre-built, pre-aligned FET tuner • Spot function for finding transmit frequency on receiver dial • Hybrid transistor-tube type transmitter design • 8 to 10 watts power output • 4 crystal sockets plus provision for external VFO such as Heathkit HG-10B (page 40) • 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

The Heathkit HW-17 in detail. It's really a separate receiver and transmitter in one compact, versatile package (the only common circuitry are the power supply and the audio output/modulator). Frequency coverage is 143.2 to 148.2 MHz. The solid-state dual conversion, superheterodyne receiver with a pre-built, pre-aligned FET tuner has a lighted dial with 100 kHz calibration, automatic noise limiter, squelch, and 1 uV sensitivity. Selectivity is 27 kHz at 6 dB down, a figure that's consistent with band occupancy and easy receiver tuning. The front panel meter indicates received signal strength and relative power output. A 3-position switch on the front panel has a "Spot" position for finding the transmit frequency on the tuning dial, a Receive/Transmit position, and a Battery-Saver position that comes in handy during those long periods of monitoring while mobile (the receiver draws only 100 mA during this time). A 3" x 5" speaker is built in.

On the transmitting end is a hybrid circuit including transistors and tubes with a 25 to 30 watt power input and an AM power output of 8 to 10 watts. Modulation is automatically limited to 100% or less. A front panel selector switch chooses any of four crystal frequencies or an external VFO (the Heathkit HG-10B VFO is perfect for this job).

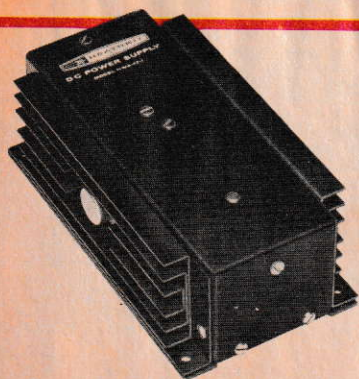
Front panel controls include Final Load, Final Tune, Crystal-VFO switch, Main Tuning, Squelch with ANL switch, Battery Saver-Receive/Transmit-Spot switch; rear panel has S-meter Adjust, Headphone jack, Power socket, VFO power socket, VFO input, and Antenna connector (50-72 ohms, unbalanced).

The 15 transistor, 20 diode, 3 tube circuit is powered by a built-in 120/240 VAC supply. Circuit board construction averages 20 hours. It's all housed in a low-profile Heath gray-green aluminum cabinet measuring 14 1/8" W x 6 1/8" H x 8 1/2" D with everything in place. A ceramic PTT mic. and a gimbal bracket for mobile mounting are included.

Move up to 2 meter 'phone operation this new low cost way with the Heathkit HW-17.

Kit HW-17, 2M Transceiver, 17 lbs. \$143.95
Kit HWA-17-1, Transistorized DC supply, 5 lbs. \$29.95

HW-17 SPECIFICATIONS—RECEIVER: Frequency coverage: 143.2-148.2 MHz. Dial calibration: 100 kHz. IF Frequencies: Double conversion: 1st IF: 24.965 MHz; 2nd IF: 2 MHz. Sensitivity: 1 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; (2) 2N3393 Audio Pre-amplifier, Squelch amplifier X29A829 Squelch Gate; 2N1274 Audio Driver; (2) 40050 Audio/Modulator output. Transmitter: Frequency coverage: 143.2-148.2 MHz. RF Power input: 25-30 watts. RF Power output: 8-10 watts. Mode: Type A3 (AM). Modulation: Automatically limited to 100% or less. Output impedance: 50-72 ohm, unbalanced. Crystal sockets: Accepts FT-243 type holders, pin diameter .093", pin spacing .466" & HC6/U type in diameter .050", pin spacing .466". Transistor/tube complement: 7050 Oscillator/Amplifier Tripler-Tripler; 12GN7 Doubler/Driver; 8156 Power Amplifier; (2) 2N3393 Microphone Pre-amplifier, 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 1/8" W x 8 1/2" D x 6 1/8" H including microphone & mounting feet. Net weight: 13 lbs.



HWA-17-1
\$29⁹⁵

New Solid-State DC Power Supply For HW-17 2-Meter AM Rig

If you are going mobile with your new Heathkit HW-17 2-Meter transceiver, you'll need this compact little power supply. Designed especially for this use, the HWA-17-1 supplies all the voltages required by the HW-17. Its solid-state circuit uses a "C" core transformer for reliable, efficient operation. Big heat sinks assure cool operation with a duty cycle of 50%. Circuit breaker protection guards your mobile battery source. All cables and connectors are included and its small size makes it easy to install anywhere on car or boat.

Kit HWA-17-1, 5 lbs. \$29.95

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.). 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. Negative ground systems only.

Low Cost 5-Band SSB-CW Transceiver



HW-100 \$255⁰⁰

The Heathkit HW-100 Five-Band SSB-CW Transceiver

... with all the features and performance of competitive brands ... 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-23 or HP-13 power supplies • Easy assembly with circuit boards and wiring harness

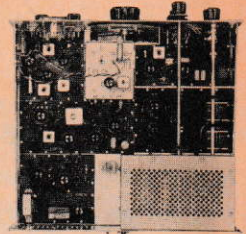
This is what you asked for ... a five-band version of the Heathkit "single-banders" ... a low cost SSB transceiver for 10 or 15 meters ... an SSB transceiver that's equal or superior to many wired rigs, but at much lower cost. It's the HW-100 five-band SSB rig with everything it takes to leave the rest of the field behind.

How did we do it? We expanded on the Heathkit "single-banders," borrowed from the heritage of the SB-101, took a look at the competition, and produced the most SSB equipment you can get for the money. Here's what it's got. You can check the specs, and be impressed, but in general, the HW-100 operates with a hybrid circuit that uses 20 tubes (26 functions), two transistors (one an FET for the VFO), six germanium diodes, nine silicon diodes, and one Zener diode. Everything but the VFO, final amplifier, and various controls mount on nine circuit boards for stable, dependable, easy-to-build circuitry.

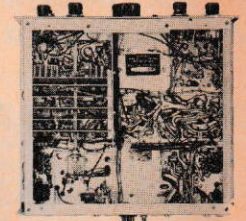
Here's what it delivers. The receiver portion of the HW-100 has a sensitivity figure of less than 1/2 uv for a 10 dB S+N/N ratio for SSB operation. Crystal filter selectivity is 2.1 kHz at 6 dB down, 7 kHz at 60 dB down. Image and IF rejection better than 50 dB.

The transmitter section in SSB continuous duty is 180 watts PEP, CW input is 170 watts on 50% duty cycle. It operates PTT or VOX on SSB, and CW transceiver is provided by operating VOX from a keyed tone, using grid-block keying. CW side-tone is 1 kHz, internally switched to speaker or headphones. Carrier and unwanted sideband suppression is 45 dB down; third order distortion 30 dB down, RF compression (TALC) is 10 dB or better. Frequency stability is outstanding ... less than 100 Hz drift per hour after 30 minute warmup ... less than 100 Hz variation under a 10% line voltage variation. And the HW-100 is the only rig that uses a Field Effect Transistor (FET) in the VFO for superior thermal stability.

A pleasure to use. Everything you need is up front. Dominating the front panel is the Main Tuning dial ... a smoothly operating, vernier action control provides 28 revolutions of the knob per 500 kHz band segment, thanks to the use of the patented Harmonic Drive™ mechanism—a handy zero reset button is adjacent. Readout is on a large, circular, backlit dial with 5 kHz divisions. To the left are the Band Selector switch, Mode selector, Load and Final tune, Driver preselector, Mic/CW Level control, Mic connector, and Phone jack. To the right is the S-Meter with a 3-position switch for checking ALC, Relative Power, and Final plate current. Adjacent is another 3-position



Top View of the HW-100 ... shows the neat layout provided by the five circuit boards which mount on the top of the chassis. Note the completely enclosed VFO and shielded Final Amplifier.



Bottom View of the HW-100 ... shows the four vertical circuit boards with band switch wafers and crystals mounted directly on the boards. Final Amplifier bandswitch is located in its own shielded compartment.



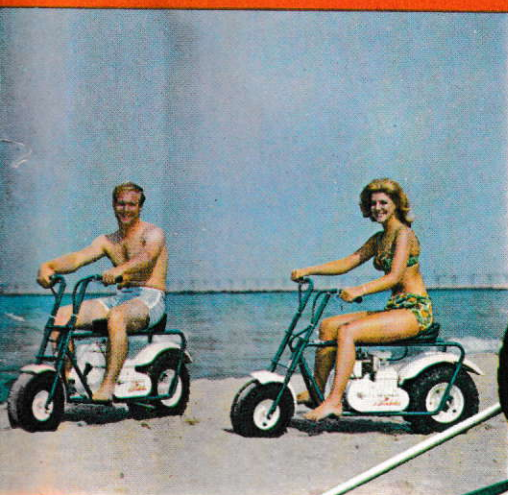
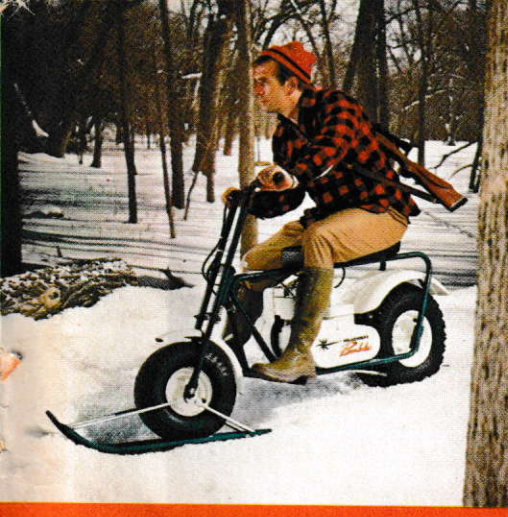
switch for PTT, VOX and Calibrate. RF gain and AF gain controls complete the front panel. Located inside are controls for Meter Zero, Bias, VOX sensitivity, VOX delay, Anti-Trip, Carrier Null, and Neutralizing. On the rear apron are the CW key jack, 8 ohm speaker output, ALC input, Power/Accessory plug, RF output, and Antenna connector. A pleasure to build. You build it all ... even the VFO ... yet it is easy. Most components mount on the nine circuit boards and one large wiring harness makes interconnections simple and fast. A handsome 2-piece green wrinkle finish cabinet is included. For the best value in SSB transceivers anywhere, put the HW-100 to work in your operation ... it's a winner!

Kit HW-100, 22 lbs.....	\$255.00
Kit SB-600, 8 ohm speaker, 6 lbs.....	\$21.95
Kit HP-13A, DC power supply, 7 lbs.....	\$73.95
Kit HP-23A, AC power supply, 19 lbs.....	\$57.50

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: (A1) 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; 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. Front panel controls: Main tuning dial. Driver tuning and Preselector. Final tuning. Final loading. Mic and CW Level control. Mode switch. Band switch. Function switch. Meter switch. RF Gain control. Audio Gain control. Side controls: Meter Zero control; Bias; VOX Sensitivity; VOX Delay; ANTI-TRIP; Tube complement: OAO Regulator (150 V); 6AU6 RF amplifier; 6AU6 1st receiver mixer; 6AU6 Isolation amplifier; 6AU6 1st IF amplifier; 6AU6 2nd IF amplifier; 6BN8 Product detector and AVC; 6AU6 VFO Amp; 6CB6 2nd transmitter mixer; 6CL6 Driver; 6EA8 Speech Amplifier and cathode follower; 6EA8 1st transmitter mixer; 6EA8 2nd receiver mixer and relay amplifier; 6EA8 CW side-tone oscillator and amplifier; 6GW8 Audio amplifier and audio output; 12AT7 Heterodyne oscillator and cathode follower; 12AT7 VOX amplifier and calibrator oscillator; 12AU7 Sideband oscillator; 6146 Final amplifiers (2). Diode complement: 6 Germanium Diodes; Balanced modulator, RF sampling, and crystal calibrator harmonic generator; 9 Silicon Diodes: ALC rectifiers, anti-trip rectifiers, and DC blocking; 1 Zener Diode; cathode bias. 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: 14-13/16" W x 6-5/16" H x 13 3/8" D.

*Triple Action Level Control™

Introducing The Heathkit "Boonie-Bike" ... The All-Season Trail And Snow Bike



Kit GT-18
\$212⁵⁰
(less ski)



Lights and Horn Accessory will be available soon to permit licensing for use on public roads, if desired.

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- Twist grip throttle
- Spring loaded front suspension
- Tubeless tires—giant 8.50x18 rear tire for amazing traction
- Extra large cushioned seat
- Optional Ski Accessory quickly converts the bike for use on snow
- Semi-kit for easy one-evening assembly with the famous Heathkit manual

The New Heathkit "Boonie-Bike" ... It Lets You Go Places ... places other people can't go ... like remote backwoods and forest areas ... isolated lakes and streams ... rugged mountain regions ... rough country roads and long-forgotten paths ... places inaccessible by usual means. With the Heathkit "Boonie-Bike", you're not dependent on paved or dirt roads, or even established trails. You make your own way, explore freely. It's only 24½" wide—if there's room to walk, you can ride this one.

A Versatile, Rugged Performer. Don't let the size fool you—the Heathkit "Boonie-Bike" is one surprise after another. It's larger and huskier than a mini-bike ... smaller, lighter and substantially more powerful than a motorcycle-type trail bike ... and it has the agility, stability, traction and sheer guts of a mountain goat. Let's see what makes it the only way to go when the going gets rough.

Solid, Heavy Duty Construction. The welded ¾" tubular steel frame makes a rigid, one piece mounting surface for the rest of the components. And the easy starting Briggs & Stratton 5 horsepower engine is preassembled and premounted on the frame and gives extra-ordinary power to the 116 pound bike. The engine is 4 cycle, of course, for greatest dependability and there's no messy mixing of fuel and oil. Just fill the 3 quart tank with regular gas and you can run up to 60 miles before refueling. There's a one-piece steel skid pan welded underneath the engine and 6¾" of ground clearance for safe, worry-free running over territory that would ruin many other bikes.

The Widest Wheel In Trail Bikes. Both tires are major name brand quality tubeless, and are premounted and inflated. The front tire is wider than most rear ones on other bikes—5.30 x 4.50, but the flotation-type rear tire is the big secret ... it's a whopping 18 x 8.50!! And that's what's behind the amaz-

ing all-surface performance. There's real traction from that giant tire ... 8½" of tread width ... more than enough to push you through mud, sand, snow, gravel, tall weeds, and rough underbrush. Power up steep hills and rocky paths that would put other trail bikes out of the running. When the going gets snowy, just snap on the optional ski accessory, and use the bike all year around. The ski, equipped with its unique "grip lock" mounting attachment can be easily mounted to the front axle without the removal or addition of any parts or the use of any tools. That saves a lot of lost parts and skinned knuckles. You'll find the Heathkit "Boonie-Bike" with ski is perfect for winter hunters, towing skiers and tobogganers, or just plain fun. Go! A flip of the shift lever mounted in front of the seat and a twist of the throttle engages the centrifugal clutch and you're on the way. Use Low for powering up steep hills, or for extra traction in mud, snow and sand ... High for cruising over relatively flat terrain at up to 30 mph. The big 5" Bendix drum type rear brake is there when you need it for safe, sure stops.

Fun For The Whole Family. Take the Heathkit "Boonie-Bike" camping, hunting, fishing ... to the summer cottage or your mountain retreat. Its 400 pound load capacity makes it ideal for "packing in" or running supplies and it's versatile and powerful enough to go just about anywhere. So small and lightweight that it fits easily into car trunks or on luggage racks, yet it's the most stable, solid-feeling trail-bike around. So easy to ride anyone can master it with a few minutes instruction. So much fun that you'll be looking for reasons to ride it. Order yours now ... and go places!

Kit GT-18, Trail Bike, 140 lbs. \$212.50
Model GTA-18-1, Ski Accessory, 12 lbs. \$19.95

(The GTA-18-2 Lights and Horn Accessory will be available soon to permit licensing for use on public roads, if desired.)

GT-18 SPECIFICATIONS—Engine: Briggs & Stratton 5 h.p. 4 cycle. Clutch: Centrifugal. Crankcase oil capacity: 1½ 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): 24½". Hgt.: (at handlebars): 35½", (at seat): 25½". Wheel base: 42". Ground clearance: 6¾".

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