HEATHKIT® 1967
CATALOG - 810/67A

over 250 electronic kits—
world's largest selection

COPYRIGHT 1966 HEATH COMPANY
WELCOME TO THE WORLD OF HEATHKIT 1967

There are several new "firsts" in this new Heathkit catalog which we believe you will find interesting kits to build and excellent equipment to own.

Some examples are:

---A portable transistor TV set which is battery or AC powered. In addition, another "first" in the kit industry is included in this set—an integrated circuit—for increased reliability and easy assembly. Turn to pages 10-11.

---Guitars and amplifiers, both in kit form—products you have requested repeatedly. The guitar requires no woodworking and is easy to build. The savings are unusual—even for a kit product. See the center insert.

---A transistor portable phonograph for your youngsters...one they can build for themselves in just one evening. And the sound is much superior to that usually heard on such a low cost unit. It is shown on page 100.

---SSB amateur radio equipment which now include WWV reception and front panel transceive switching for separate receivers and transmitters. See pages 82-83.

---A factory assembled 2-watt walkie talkie which is capable of solid copy up to six miles. See page 105 for details.

---Increased numbers of factory-assembled products in the educational field as well as test instruments.

And, of course, this new catalog contains the complete line of Heathkit stereo/hi-fi, marine, amateur radio, test equipment, color TV, electronic organs, shortwave, Citizen's Band, and photographic units.

If you would like more technical information on any product, send for a schematic-specification sheet on the model. There is no charge. And if you have any new product suggestions, be sure to drop us a line.

Sincerely,

D. W. Nurse
President

P.S. Would a friend of yours like a copy of this new Heathkit catalog? Just jot their names and addresses on the back of the order envelope.
Creative Fun And Unique Satisfaction

Building your own Heathkit provides a chance to create a useful, sophisticated product from your own effort . . . a chance to enjoy a fascinating hobby that's different from the everyday routine . . . a chance to have fun and relax—to forget daily problems. But the biggest thrill comes when you finish and turn it on. You experience that exhilarating sense of self-achievement . . . that feeling of personal victory when you've done something you doubted you could ever do.

Up to 50% Savings Over Factory-Built Versions

Besides the fun, building your own Heathkit is economical. It's like getting paid for the hours you spend enjoying your hobby. For example, when you build the GD-983 Transistor Organ, pg. 12 you “earn” as much as $7 an hour when you consider the big savings. And since there are no dealers or distributors, the usual middleman profits are passed on to you as extra savings.

A Finished Product With Superlative Performance

Over 300 years of accumulated kit engineering, the most experienced staff in the business, are brought to bear on design problems in all Heathkit product areas. And each product group has its own staff of engineering specialists who devote their entire efforts to bringing you the latest techniques and advances in the “state of the art”.

In addition, each new kit design must survive several stages of rigid performance testing. These tests are your assurance that every Heathkit is “specification guaranteed”. But don’t take our word for it. Compare specifications. Read the reviews by respected electronics editors. Or ask any Heathkit owner . . . you’ll find plenty of them around.

Direct Factory-To-You Delivery

Heath has an in-plant post office, plus a host of other reliable shipping services at its command to provide quick delivery right to your front door.

Liberal Credit Terms

Build your Heathkit now . . . pay later with the convenient Time-Payment Plan. No money down and up to 12 months to pay on orders from $25 to $300 . . . 10% down and up to 18 months on orders from $300 to $500. See catalog order blank for details.

FREE Factory Consulting Service

Heath maintains a staff of expert technical correspondents to answer any question about selection, construction and use of your kit. And it costs you nothing. Just drop them a line. In addition, factory repair service facilities are at your command should you ever need it.

EXPORT MODELS AVAILABLE . . . on certain kits for 115/230 v. AC, 50-60 Hz operation. Watch for the “export” note below the price lines.

ATTN: MILITARY PERSONNEL IN EUROPE. Duty-free Heathkit equipment is available at U.S. catalog prices (plus nominal surcharge for freight and handling) from Heathkit Gerate GmbH, 6079 Spredlingen bei, Frankfurt/Main, Germany.

Network Of Authorized Service Centers

Fully staffed and equipped to service all Heathkit electronics and provide replacement parts. They have been selected on their ability to offer you the same high quality service and attention as our factory service center. And they will handle your problems either over the counter or by mail. If there’s one in your area, we suggest you use their facilities for faster attention to your needs.

All Heathkit Electronic Centers and Authorized Service Centers are units of Daystrom Products Corporation.
**READ THIS BOOKLET FIRST**

**KIT BUILDERS GUIDE**

You will find important informations on tools and wiring, plus many pages to get you started:

- How to unpack your kit and check the parts.
- How to solder the transistors in the kit.
- What to do if you have any problems with the assembled kit.

Take a few minutes now to read through the booklet before you start work on your kit.

When you finish your kit, be sure to keep the Assembly Manual and this booklet for reference.

**PARTS LIST**

**NOTE:** The numbers in parentheses in the Parts Lists are keyed to the numbers in parentheses on the pictures of the parts to aid in parts identification.

<table>
<thead>
<tr>
<th>PART No.</th>
<th>PARTS</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BFO coil</td>
<td></td>
</tr>
<tr>
<td>(5) 0-77</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**STEP-BY-STEP ASSEMBLY**

Prepare the speaker wires and connect them to the speaker as follows:

1. Cut two 3' lengths of hookup wire. Strip 1/4" to 3" insulation from each end of each wire. With a small amount of author on the bare ends of each wire.
2. Connect these wires to the speaker terminals by following the directions in Detail 6A.
3. Glue the left damping pad to the rear of the speaker as shown in Detail 6B. Apply a head of any putty-like glue around the metal frame of the speaker.

**TROUBLESHOOTING CHART**

<table>
<thead>
<tr>
<th>CONDITION</th>
<th>POSSIBLE CAUSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit completely inoperative.</td>
<td>1. Battery not charged.</td>
</tr>
<tr>
<td></td>
<td>2. Off-on switch inoperative.</td>
</tr>
<tr>
<td>Receiver dead, transmitter ok.</td>
<td>1. Squelch control misadjusted.</td>
</tr>
<tr>
<td></td>
<td>2. Improper adjustment of coil L1.</td>
</tr>
<tr>
<td></td>
<td>3. Earphone jack open.</td>
</tr>
<tr>
<td></td>
<td>4. Open circuit in diode D1.</td>
</tr>
<tr>
<td></td>
<td>5. Condenser C1, C2, or C3.</td>
</tr>
</tbody>
</table>

**WARRANTY**

The Heath Company warrants that the parts supplied in the kit (except batteries) shall be free of defects in material and workmanship under normal conditions of use and service. The obligations of Heath under this warranty is limited to replacing or repairing any such part upon verification that it is defective in this manner. The obligations of Heath under this warranty are limited to such defective parts for which Heath is notified within a period of ninety (90) days from the date of shipment of the kit.

The obligations of Heath under this warranty do not include any labor in connection with the installation of such repaired or replacement parts. The obligation of Heath with respect to transportation expenses is limited to the cost of shipping the repaired or replacement parts to the buyer, provided such repair or replacement contains within the terms of this warranty.

The foregoing warranty extends only to the original buyer and is expressly in lieu of all other warranties, expressed or implied. The foregoing warranty is limited to the use of all such obligations as they may arise for twenty (20) years from the date of shipment of the kit. This warranty applies only to Heath products sold and shipped to points within the continental United States and to APO and FPO shipments. Warranty replacement for Heath products sold or shipped outside the United States is to be handled by factory branch or distributor. Contact the Heath authorized distributor in your country or write: Heath Company, International Division, Benton Harbor, Michigan, U.S.A.

**1 "Tips" On Kit-Building**

Each Heathkit contains a 16-page, full color booklet packed with valuable tips for the beginning kit builder. Shows you the tools you need . . . how to unpack and set-up the kit for easy building . . . how to identify components by size, shape and coding. Shows you how to mount parts, cut leads and position them . . . completely illustrated in full color describing the right and wrong way so you build your first kit like a professional technician. Even explains and illustrates how to properly solder "point-to-point" and on circuit boards so your kit will perform like a factory-built model!

**2 Detailed Parts List**

Inside every Heathkit manual are descriptions and pictures of each and every part for easy identification while you are building your kit.

**3 Simple Step-By-Step Procedure**

Guides you through each assembly step. Tells you exactly what part to use, what to do, and how to do it. Covers kit construction, alignment and installation . . . nothing is left to chance. Written in non-technical, everyday language so everyone can understand the instructions.

**4 Large "Exploded" Diagrams**

"King-size" illustrations and "fold-outs" show precisely where each component goes. And many detailed diagrams are generously sprinkled among the instructions to illustrate how various assemblies go together . . . greatly reduces the chance for errors.

**5 Operating Instructions**

Covers the use of your kit under virtually any situation, and recommends appropriate accessories where necessary. Even dwells on operational theory, if required for use. For example, the Heathkit Marine Radio Direction Finder includes a full discussion on the theory of direction finding.

**6 Trouble-Shooting Chart & Service Information**

To err is human, so if you do run into trouble, there's an "In Case Of Difficulty" section and a "Trouble-Shooting chart" that lists difficulties and possible causes to assist you in locating your problem. And our staff of Technical Correspondents is at your service to answer any question about construction, accessories or kit selection. The Service Information section explains procedures for returning kits for factory service, should you ever need it.

**7 Circuit Description And Schematics**

If you are technically inclined or interested in learning about electronics, you'll find the Circuit Description and various circuit diagrams and schematics both helpful and educational.

**8 Heath Warranty**

Heath warrants all kit parts against defects in workmanship and materials for a period of 90 days after shipment.
Read What Heathkit® Owners Say

Quality!
MR. RUSSELL E. HEMBROOK, INGLESIDE, ILL.: "Just an unsolicited testimonial as to what I think is a very outstanding job that your company has done putting this Thomas transistor organ in kit form. The step-by-step directions furnished were very clear and precise. I certainly recommend this organ in kit for anyone with a little patience and love for music all wrapped up in a beautiful piece of furniture for their home."

MR. DONALD R. FARME, WILLIAMSON, N. Y.: "It is my personal opinion that Heathkits fill a real need in that they make it possible for many to own electronic equipment of high quality at relatively low cost."

MR. ALFRED J. MENCHEL, BRONX, N. Y.: "The quality of the amplifier (Heathkit AA-100) greatly exceeded my wildest dreams. It is truly unbelievable. I never expected that such realism could be obtained."

MR. BILL PINKENSON, K3WPH, PHILA., PENN.: "For the last two years in my amateur career I was able to tune sideband with the ease of AM. The quality and audio response is terrific. I sure can see the amount of thought and engineering that went into this quality receiver (Heathkit SB-300)."

MR. AL TSCHIRHART, WA5EGG, HOUSTON, TEXAS: "I made side by side comparisons with a receiver which was commercially built, and I have one conclusion. Why pay over twice as much for a receiver which is no better than the (Heathkit) SB-300."

MR. J. I. NEWTON, CHAPEL HILL, N. C.: "My friends tell me the color is better than they have seen on sets costing $895, and I must say that I agree."

MR. B. E. LANNING, LONG BEACH, CALIF.: "Reception on our Heathkit color set is superior to any other color set I have seen regardless of price."

RADIO-TV EXPERIMENTER MAGAZINE: "The repair cost savings during the Heath Color TV set's life compared to commercial units may be more than $200."

EDITOR JUAN D. HIRSCH, HI-FI/Stereo Review Magazine: "One of the best things about the Heath AA-22 is its price, $99.95, in kit form, complete with cabinet."

RADIO-TV EXPERIMENTER MAGAZINE: "Comparing the AR-13A on a feature versus dollar basis, one cannot help but admit that the receiver is a rock-bottom dollar buy, about the best you can hope for in the solid-state market place."

Savings!
MR. DONALD N. EBERT, MAYWOOD, ILL.: "... I was treated in the most courteous manner, and made to feel that satisfying me was of utmost importance. The extra effort the Heath Company uses to make the customer feel that he is more than just a completed order blank or a back in the cash register, has made quite an impression on me."

MR. MURRAY E. SCHMIDT, FT. LAUDERDALE, FLA.: "I would like to tell you in five hundred words or less just how much I enjoy doing business with Heath. To begin, I have always received the very finest service from your mail order department, usually receiving my order within a week."

MR. MICHAEL C. LENNYMER, WEST CALDWELL, N. J.: "Your company is different in that it takes a genuine interest in its customers' views. I heartily compliment you on this. In the past your staff has given me much technical assistance."

MR. T. H. MacKEGAN, TROY, MICHIGAN: "I have had this (FM Tuner) in use for several weeks and must compliment you on a very fine job. Your service and attitude in this case is commendable and I am more than satisfied. This policy must make you many friends."

Service!
MR. ARTHUR DILKS, KANSAS CITY, MO.: "Before I ordered this kit (FM Tuner) from you, my ignorance of anything electronic was monumental. It still is, but my satisfaction with and faith in your products and step-by-step assembly instructions is absolute. I'm not just pleased, I am tickled pink!"

MRS. GEORGE C. DANIELS, JACKSON, MICH.: "This was my first experience with assembling one of your kits and while I was somewhat dubious about my ability to do so at my age (74) I found it surprisingly simple and very fascinating to follow the step-by-step instructions in your assembly manual. When I finished the assembly the results surprised me for I could tune in on broadcasts from many parts of the world."

JOHN SPIRES, WEAVER, ALABAMA: "I am eleven years old and had no help in assembling the kit (GR-81 Shortwave Radio). It was very easy to assemble yet I have never had any experience in soldering or intricate and exacting work. Your kits are indeed the finest in parts and ease of assembly."

MRS. JOSEPH CESSWEIN, BETHESDA, MD.: (Heathkit Color TV owner) "If a housewife with three children under 4 years of age can successfully build it in her few spare moments, it has to be good."

MR. DREW ARLEN COPELAND, WAYNESBORO, VA.: "This was my first experience in kit building and the ease with which this kit (GC-14 Shortwave Radio) went together amazed me. I think the reason for the ease of assembly is because of the excellent manual that was included with the kit. This instruction booklet was clear and concise about the construction of the kit and contained many helpful diagrams to aid the builder. Another thing I found was the consistent quality in the parts and workmanship of the preassembled equipment which came with the kit."

MR. R. D. FROMAN, NEW ROCHELLE, N. Y.: "I managed to assemble it (Heathkit AR-13A Stereo Receiver) with the very complete instructions of the step-by-step manual which was amazing in itself, for I have never done any work of this type before. The thing that amazed me most was that when I plugged the line cord in it really worked."

DR. ALEX VON SCHLICHTON, PHILA-DELPHIA, PENN.: "Several months ago I purchased your AJ-33 tuner and AA-22 amplifier. Never having built a kit before, it was with some trepidation that I undertook the task. I honestly expected fire and sparks to fly, when plugging the units in for the first time. Not only did that not happen, but both units functioned perfectly."

Thousands Of Beginners Prove You Can Build A Heathkit®!

Most manuals cost just 50c ppd. Because of their large size, manuals for the deluxe amateur radio SB series (SB-100, SB-110, SB-200, SB-301, SB-401), AR-13A and AR-14 stereo receivers, both transistor organs, all TV kits and the IO-14 oscilloscope cost $2.00 ppd. Manuals for EK educational and EF applications series are $5 ppd. each. Simply list the model number and write "Manual Only" on the catalog order blank.
Important: As new kits are introduced, some manuals may cost $2 because of their size—please write for a quotation before ordering.
Discover The Fun Of Kit Building...

Start With A Recommended "Beginner's Kit"

NEVER TRIED BUILDING A KIT BEFORE? Then you've probably asked yourself "Can I really build one?" This same question has also crossed the minds of millions of others. People from virtually every background imaginable, and from all age groups. People whose knowledge of electronics went no farther than knowing it has something to do with electricity. People whose skill with tools ended with using a screwdriver. And yet, these same people are now confirmed Heathkit builders. (Read some of their comments on Page 5.)

The reason for their success? First, the thorough Heath step-by-step instructions that are written in non-technical language ... so simple anyone can easily understand. And the "exploded" diagrams that show you exactly where each part goes and how to install it. Even shows you how to solder. Nothing is left to chance. Special tools? All you need are a screwdriver, long-nosed pliers, soldering iron (there are some good ones on pg. 97) and some spare time. And the feeling when you finish your kit is like breaking par on a golf course ... you did it!

To prove our point, we recommend you start with one of these 4 kits. They're all top quality products that represent a small investment, and take only a short time to build. A good way to prove to yourself that you can build a kit. Check over the features, and select the one that appeals to you most. Then give it a try!

A All-Transistor AM Portable...
Includes FREE Tool Kit and Batteries...
Everything You Need To Build It

- 6 transistor, 3 diode circuit for cool, instant operation, and long, dependable life
- Large 4" x 6" permanent magnet speaker
- Insures crystal-clear tone
- Rugged simulated tan leather case
- Prealigned coil and I.F. transformers insure top performance
- Fast, stable circuit board construction
- Includes FREE tool kit and six "C" cell batteries

CURIOUS ABOUT KIT-BUILDING? Then here's an ideal way to discover how fun and how easy it is. Once you start, you'll discover why this fascinating hobby has captured the imagination of millions of people. People from all walks of life. And of all ages.

And when you've finished, you have a handsome all-transistor portable that you can take to the beach, on picnics, to ballparks, camping ... anywhere! Provides countless hours of good listening, and years of dependable trouble-free service.

INCLUDES EVERYTHING YOU NEED to make it as easy and fun to build as it is to use. All parts mount on a clearly marked circuit board. Makes wiring fast and simple ... you'll finish the entire kit in just 4 to 6 hours. The non-technical step-by-step instructions guide you every step of the way ... nothing is left to chance. There's even a section on the theory of radio for the interested novice.

COMPARE IT TO PORTABLES COSTING MUCH MORE! Features a 4" x 6" permanent magnet speaker for a crisp, clean sound ... the kind you can't get from miniatures. A 6 transistor, 3 diode circuit provides extra power and range ... a built-in ferrite rod antenna picks up distant stations with ease ... and a smart, simulated tan leather case that will stand rugged wear.

Also makes an ideal gift for any occasion ... if you can resist keeping it for yourself.

Kit GR-151A, Radio & Tool Kit, 5 lbs ........................................ $20.65

B Low-Cost All-Transistor FM Stereo Tuner

- 14-transistor, 4-diode circuitry for clean "transistor sound" and cool, instant operation
- Stereo phase control for maximum separation, minimum distortion
- 4-stage IF section for a high degree of sensitivity & selectivity
- Automatic stereo indicator light
- Available with or without cabinets

Minimum assembly time is assured through the use of a pre-built, prealigned front-end tuning unit, and simple-to-wire circuit board ... leaves only a minimum of easy point-to-point wiring. Total assembly time runs around 4 to 6 hours. If you already have a stereo amplifier, this is a good point to begin your kit-building career. If you don't own an amplifier, there's one that matches the AJ-14 and takes only 10 hours to build. This way, you can build your own stereo system! See pg. 24 for details.

Kit AJ-14, 6 lbs ... (less cabinet for custom mounting)
- No money down, $5 mo ........................................... $40.95

C Ideal for Boy Scouts, Campers...

4-Transistor Walkie-Talkie

- Operates 1/4 mile or more between similar units
- Built-in battery power
- No license, forms, tests or age limit
- Crystal-controlled transmitter-supregenerative receiver
- Compact ... fits easily in pocket, purse
- Sturdy steel case

You'll be finished with this compact, 2-way transceiver in just one evening. Only one simple circuit board to wire before installing in the sturdy rustproof aluminum case. Includes crystals (specify channel no.) and an alignment tool for quick, easy peaking of the receiver section. Easy to use, too ... just flip it on, push a button to talk, release to listen. Operates 1/4 mile or more. These are fun at any outing, but useful in dozens of practical ways, too ... camping, fishing, construction gangs, etc. See pg. 104 for full details.

Kit GW-31A, 2 lbs ...................................................... $19.95
Kit GW-31-2 (pair), 4 lbs ... no money down, $5 mo ................ $35.00
GWA-30, Battery set (2) ... 1 lbs .................................... $2.95

D New Transistor Portable Phonograph...

Plays 4 Speeds ... Assembles In 2 Hours ... Costs Just $39.95

- Automatic monophonic play of 16, 33 1/3, 45 & 78 rpm records
- All solid-state circuitry insures cool, instant operation
- Dual Sapphire stylus for LP's or 78's
- Compact and lightweight with easy-carry handle for suitcase portability
- Operates on any 117v AC household source

Just one small circuit board to wire, then mount the speaker, and plug in two connectors from the circuit board to the preassembled changer ... you'll finish in 1 to 2 hours. Plays all 4 speeds ... anything from the Beatles to Beethoven. Changer folds up to make a compact case that's easy to carry from room to room, or house to house. Handles stacks of 6 records of the same size. Sturdy pressed wood cabinet with attractive olive & ivory polyethylene covered pressed wood cabinet.

Kit GD-16, 20 lbs ... no money down, $5 mo ..................... $39.95

Heathkit Step-By-Step Instructions And Big Fold-Out Pictorials Are Famous For Clarity And Simplicity
A 6-Transistor AM Portable . . . Includes FREE Tool Kit & Batteries

"Beginner's Kits"

B All-Transistor FM Stereo Tuner . . .
Assemble in 4 To 6 Hours

C 4-Transistor Walkie-Talkie . . .
Finish In An Evening

D New! Transistor Portable Phonograph . . .
Build It In 2 Hours
Deluxe Heathkit ® "295" Rectangular Color TV . . . $469.95!

Read What The Experts Say About This Unique Set!

HUBERT LUCKETT, EXECUTIVE EDITOR OF POPULAR SCIENCE, MAY '66 ISSUE:
"Building your own color TV from a kit is not as outrageously impractical as you might suppose. For those who tremble at the thought of tackling something so fantastically complicated, let me encourage you with a borrowed quote: "The only thing you have to fear is fear itself." "The second most impressive thing about the kit is its instruction manual (the most impressive thing is the viewing quality of the color picture). If you can read and understand ordinary English, the manual is like having a master teacher at your elbow pointing out every step."

"—the circuitry, features and performance of the GR-25 (now the GR-295) match or exceed those of sets selling at twice the price. Some of the features, such as the built-in servicing aids, can't be bought in ready-made sets at any price."

JOHN DRUMMOND, TECHNICAL EDITOR, POPULAR ELECTRONICS, MAY '66 ISSUE: "...we simply had to know how well a 25 hours-to-build $469.95 color TV kit would stack up against the more expensive, well-advertised wired sets people are gobbling up. It didn't take us long to find out that the Heath GR-25 (now GR-295) compares favorably with the best of them."

Some Heathkit Color TV Owner's Comments!

MR. ROBERT D. TAYLOR, SACRAMENTO, CALIF.: "...it's the best TV on the market, nothing compares with it (I have been looking at & checking TV's over 2 years). The manual (service) is a 'gold mine' of savings."

MR. G. A. PETRARCA, WEST CALDWELL, N. J.: "We are still getting oohs, ahhs, 'best I've ever seen', 'how bright the colors are', etc. from our friends and neighbors."

MR. J. K. PETERSON, SPOKANE, WASH.: "There were no problems whatsoever in construction, assembly, test and check-out, or installation."
Space-Saving Rectangular Tube . . . Choice Of 3-Way Installation . . . Exclusive Built-In Servicing . . . And You Can Adjust It Anytime For Peak Performance!

- Hi-fi 90° 295 sq. inch rectangular color tube with anti-glare safety glass and "rare earth" phosphor for brighter pictures, livelier colors • 27-tube, 10-diode circuits • 25,000 volt regulated picture power • automatic degaussing • mobile rotatable de-emphasizing coils • Exclusive Heath "Magni-shield" covers entire tube for improved color purity • Built-in servicing facilities to adjust & maintain set • Extra B+ boost for improved picture definition • Dynamic pincushion correction circuit eliminates picture edge distortion • Deluxe VHF tuner with "memory fine tuning" & long-life nickel silver contacts • 2-speed, transistor UHF tuner • Automatic color control circuit to reduce color fading • New 3-stage IF strip to reduce interference & improve reception • Gated automatic gain control for steady, flutter-free pictures • Circuit breaker protection • New vertical swing-out cabinet for easier servicing & installation • 3-way installation • wall, custom cabinet or Heath factory-assembled cabinet • Assemblies in just 25 hours with all critical circuits prewired & tested • 1-year warranty on picture tube, 90 days on all other parts

NO CUT-OFF CORNERS, NO PICTURE LOSS. With the Heath GR-295 (formerly the GR-25) you see the complete picture with a full 295 sq. inches of viewing area. Yet its rectangular shape takes less space in a cabinet or wall installation. A special "rare earth" phosphor insures brighter, more brilliant pictures . . . a 25,000 volt regulated power supply assures a sharp, clear picture at all times . . . and the anti-glare safety glass protects its handsome face.

NO COSTLY SERVICE CALLS FOR PICTURE ADJUSTMENTS OR SIMPLE REPAIRS. Exclusive built-in servicing facilities—a feature that can't be bought on any other set at any price—includes a dot generator so you can verify the set and maintain the best picture at all times. Full color illustrations and simple instructions in the Heathkit manual show you what to look for and how to achieve it. You become the expert. Results? The best color picture ever.

PICTURE TUBE IS DEMAGNETIZED AND "CLEANED" every time you turn the set on from a cold start . . . thanks to the Automatic Degaussing circuit. Eliminates any manual degaussing. Degaussing coil is included for initial set-up.

STEADY, JITTER-FREE PICTURES EVEN IN HIGH INTERFERENCE AREAS . . . Gated Automatic Gain Control provides a balanced picture, even under changing signal conditions such as airplanes flying over your reception area. A color-killer circuit cuts off color signals when a black and white signal is received.

STRAIGHT PICTURE EDGES WITH NO DISTORTION . . . no more "waves" or contorted corners. Two pincushion transformers with associated correction circuits assure straight vertical and horizontal lines.

HIGH RESOLUTION, IMPROVED DEFINITION AND BRIGHTER PICTURES . . . thanks to the extra B+ boost which accelerates electron beams for a smaller spot size.

COLOR FADING IS REDUCED . . . thanks to Automatic Color Control. You always have the best picture.

TILT OUT, FRONT-PANEL CONVERGENCE CONTROLS . . . cabinet speaker grille tilts out to make dynamic convergence easier (see illust. opposite page). No reaching around the back of the cabinet to adjust mirrors to set up.

2-SPEED, TRANSISTOR UHF TUNER . . . for either fast channel selection of all UHF channels, or fine tuning of individual stations.

DE LUXE VHF TURRET TUNER . . . with "memory" fine tuning . . . no need to readjust picture when you return to a channel. Long-life contacts assure positive switch action. Both channel indicators are lighted for easy reading.

3-STAGE VIDEO IF STRIP . . . reduces interference, improves definition.

"TWO VHF TUNER" inputs or the either 300 ohm balanced or 75 ohm coax input to reduce interference in metropolitan or CATV areas.

HI-FI SOUND OUTPUTS . . . accommodate special contained-field 6" x 9" speaker (included). Also has cathode follower output to play set through your hi-fi.

YOU CAN INSTALL ANY ONE OF 3 WAYS . . . mount in a wall or your own custom cabinet . . . required dimensions: 20" D x 21" H x 26" W. Or install in any of the two handsome factory assembled and finished Heath cabinets. At the time this catalog is being prepared (Aug. '66), we cannot make immediate delivery of 25" color tv kits because of shortages. We expect this situation to ease in the near future.

Kit GR-295, all parts including chassis, tubes, mask, UHF & VHF tuners, mounting kit and special extended-range 6" x 9" speaker, 131 lbs. (REA or motor freight only). . . . $47 dn., as low as $29 mo. . . . $469.95


Contemporary of Early American TV Cabinets!

Contemporary Styed Walnut Cabinet . . . $59.95

Factory assembled of fine walnut veneers and solids . . . all beautifully finished in popular salem-maple, G-295 speaker and convergence panel mount behind tilt-out grille cloth on right side. Measures a slim 19" D x 31" H x 34½" W.
Assembled GRA-295-1, 35 lbs. . . . Express or motor freight, no money dn., $6 mo. . . . $59.95

Expected Shipping Date
Late September

Deluxe Early American TV Cabinet . . . $99.95

Made of a special combination of maple veneers and solids . . . all beautifully finished in popular salem-maple, G-295 speaker and convergence panel mount behind grille cloth on right side. Measures 19¼" D x 31" H x 36½" W.
Assembled GRA-295-1, 48 lbs. . . . Express or motor freight, no money dn., $10 mo. . . . $99.95

NEW STANDARDS FOR TV PICTURE SIZES

Effective January 1, 1967, a new FTC ruling requires TV manufacturers to specify tube size in terms of viewable area. Also, under this new ruling manufacturers can no longer relate model numbers to nominal picture tube size. As a result, our former model GR-25 color TV kit now becomes model GR-295. The total viewing area is exactly the same, 25½ square inches. (For comparison—actual picture size is: Horizontal—20°, Vertical—15½°, Diagonal—23°.)
Take It Fishing... use on any boat. Runs off boat's 12 volt battery or on optional GRA-104-1 rechargeable battery pack.

Take It Camping... its light weight and compact size totes easily, makes it ideal for trailers.

Take It To The Beach... or use it poolside so you won't miss the ball game.

Use It In A Playroom, rec-room, child's room, bedroom, kitchen... any room in the house. Runs on any 117 volt AC outlet.

Use It On The Patio, or in the backyard. Or take it on a picnic... any family outing.

GR-104
$119.95
(less battery pack)

Use it for family entertainment: Enjoy TV in the living room, bedroom, or anywhere in the house with the Heathkit Black & White TV. The unit features a 12 volt battery pack for outdoor use, a 117 volt AC outlet for indoor use, and is lightweight and compact for easy transportation. The Heathkit Black & White TV is priced at $119.95 (less battery pack).

Expected Shipping Date: Late October

Black & White TV... Transistor Portable

- UHF & VHF in one unit for all-channel (2-63) reception
- 16 tube, 5 diode circuit gives 30 tube performance
- High definition 282 sq. inch 90° tube with anti-glare bonded safety glass
- Spark-gap socket for picture tube protection
- Deluxe Nu-visor VHF tuner
- Transistor UHF tuner
- 20,000 volt picture power
- Transformer power supply
- Line Circuit Breaker, filament and B+ protection
- Line thermostat for long tube life
- Gated Automatic Gain Control and Noise Canceller for peak reception
- Wide-band circuitry with 5 interference traps
- DC restorer
- Hi-Fi cathode follower output for hi-fi system
- Hi-Fi sound-power output for speaker
- Finest parts—tubes alone list over $135
- Easy circuit board construction, wiring harness, and pre-built tuner, IF strip, and hi-voltage sections—finish in 12 hours

GR-22A
CHASSIS & TUBES
$169.00
(less cabinet & speaker)
New! World's First Transistor Portable Black & White TV Kit... Plays Anywhere...

Space-Age Integrated Sound Circuit... Assembles In 10 Hours!

- 74 sq. inch (12" diagonal) 110 V shell bond picture tube • 36 transistor, 25 diode circuitry including new integrated sound circuit that replaces 39 component parts • Plays anywhere... runs on household 117 v. AC, any 12 v. automotive type battery or accessory rechargeable battery pack • Instant "ON" AC operation • Covers all channels, 2 thru 83 • UHF dual speed tuning • VHF "memory" fine tuning—no need to fine tune when switching channels • 4-stage IF has gain/loss control • Controlled bandwidth • Gated Automatic Gain control for steady, jitter-free pictures • To reduce regulation of power supply • Circuit breaker protection • One-piece, swing-out chassis for easy assembly and servicing • Rugged designer style cabinet with carrying handle • Preassembled and aligned tuners assures peak performance, speed construction... takes only 10 hours • Front-panel-mounted controls • 1-year-warranty on picture tube, 90 days on all other parts

PLAYS ANYWHERE! With its compact size and light weight, the new Heathkit GR-104 personal portable is ready to go anywhere to give you a full 74 sq. inches (12" diagonal) of beautifully clear black and white TV pictures... on all 82 channels. An optional rechargeable battery pack is available so you can easily tote it play while you are fishing, camping, picnicking, at the beach... anywhere you go. If you're a boat owner, you can run it from your boat's 12 v. battery. And it plugs into any household 117 v. AC outlet... easily totes to the kitchen, bedroom, play room, workshop, patio, basement... any room of the house.

SPACE-AGE CIRCUITY ASSURES DEFENDABLE PERFORMANCE AND DURABILITY. First time in a kit... an integrated sound circuit the size of a single small transistor that actually contains 39 TV parts... 12 transistors, 12 diodes, 15 resistors... reduces heat, consumes less power, makes assembly easier. The picture tube is the shell bond type (no additional safety glass to clean) with a short 20 mm neck (requires less current to heat up). There's geared automatic gain control for steady flutter-free pictures at all times... a front-panel mounted 3" speaker for better sound... three video IF amplifiers for maximum gain with controlled bandwidth... deluxe VHF "memory" tuner that "remembers" so you don't have to fine tune each time you return to a channel... two-speed UHF tuner for fast channel selection or fine tuning individual stations... safe transformer regulated power supply (no drift from supply variations)... lighted channel indicators... two thermal circuit breakers (no fuses to replace)... and complete front-panel controls—horizontal and vertical hold, brightness, contrast, OFF-ON volume and channel selector. Choose the GR-104 now...

FROM PARTS TO PORTABLE PROGRAMS IN JUST 10 HOURS. Both tuners and the coils are prebuilt and aligned at the factory. You just wire two circuit boards, connect a wiring harness, mount the parts and you're ready for deluxe portable TV. The hinged, swing-out chassis helps speed assembly, and makes servicing a breeze. Includes a built-in telescopic whip for VHF, plus an 8" UHF loop that attaches in seconds to the back panel. Also has inputs for 300 ohm balanced and 75 ohm unbalanced fixed antennas. The high impact blue-gray plastic cabinet with pearl mask adds to its modern, slim appearance, withstands rugged handling. Choose the GR-104 now...

Kit GR-104, portable TV for 117 v. AC and 12 v. DC operation, 22 lbs... no money down, $11.00, Expected Shipping Late October... $119.95

Kit GRA-104-1, rechargeable battery pack, 9 lbs. Expected Shipping Date Late November... no money down, $5.00... $39.95


Optional Rechargeable Battery Pack Mount Base (shown opposite) A combination of rechargeable battery packs and charging circuit that plugs into the rear panel for "play anywhere" service. Cost Gilled now at $45.00. Includes 110-130 volts AC @ 0.35 amperes. 40-120 volts DC @ 3 amps. 20 watts. Overall Size: H. 11", W. 15", D. 5-1/4". Weight: 14 lbs.

And Deluxe Home Console

Hi-Fi, Pictures... FM Hi-Fi Sound... Deluxe 282 Sq. In. Black & White TV... Install In-Wall Or Cabinet

REPLACING THAT OLD TV SET? Then consider this Heathkit GR-22A-4 Channel Black & White TV receiver. The same GR-22A that caused HIGH FIDELITY magazine to comment: "the picture is very clear, almost like a glossy photograph." The same set that prompted Major Charles Leonetti of Tampa, Florida to write: "...we have browsed in many quarters only to find that the GR-22A far surpasses all commercial TV's, even the well-known name brands on the market."

GOES FROM PARTS TO PICTURE IN JUST 12 HOURS. And no special skills or knowledge are required. All critical circuits (tuner, I.F. strip and high voltage sections) are factory built and aligned, ready to install. You simply mount the sub-assemblies and controls, wire a non-critical circuit board, connect 2 pre-cut cabinet wiring harnesses, and make a few simple adjustments. All controls are front-panel mounted for easy-to-reach adjustments.

CUSTOM, WALL OR CABINET INSTALLATION. Choose the chassis and tubes, and the handsome custom wall plate (GRA-22-5-OP) for installation in either a custom cabinet or wall unit. Required mounting dimensions: 19" H x 29½" W x 17¾" D. Or choose the modern Heathkit walnut cabinet that blends with any decor.

SAVE ON MAINTENANCE COSTS. The GR-22A's superb manual contains circuit diagram and a "Designing Hints" section. Add to this the familiarity you gain while building the set, and you'll be able to make repairs or adjustments yourself should it ever become necessary. No more costly TV service repair bills.

Kit GR-22A, chassis & tubes, 77 lbs... no money down, $16.00

Express or Motor Freight Only. $168.00


Hi-Fo, Pictures... FM Hi-Fi Sound... Deluxe 282 Sq. In. Black & White TV... Install In-Wall Or Cabinet

Save On These TV Accessories

Deluxe TV Cabinet (illuminated opposite page). Assembled, Walnut finish matches Heath Hi-Fi cabinets, pg. 42. Includes mask, mount, board, 6" x 9" speaker. Measures 36" V x 32½" H x 20½" D. GRA-12, WALNUT cabinet, 65 lbs. (Express or Motor Frt.)... no money down, $9.00... $84.95

GRA-22, TV set & walnut cabinet, 142 lbs. (Express or Motor Frt.)... Save $9.5, no money down, $23.50... $245.00

TV Wall and Cabinet Mask Unfinished. Includes ¾" thick mounting board. Can be fitted into any mounting space: 19" H x 17¼" D x 28½" W. GRA-22-5, TV wall mount, 13 lbs. (Express or Motor Frt.).... Save $23.50... $20.50

JDF Log-Periodic LPV-11 VHF TV Antenna. Receives color, B & W TV (channels 2 thru 13). FM stereo up to 125 miles away. Gold bond anodized finish. Includes "E" elements. GDP-124, 15 lbs... (RA or motor freight only), Mfrs. list $39.95... Only $24.35

Alliance Tenna-Rotor Patented 5-wire bridge type circuit. Expanded metal base, 360° either direction—instantly reversible. Magnetic base, lubricated, Moisture sealed. 115 V, 60 Hz. GDP-214, 11.5 lbs. $23.45

Taco 4-Bay TV Bow-Tie UHF Antenna Open vee type with pivot mount for lock-in, easy adjusting mast. Heavy galvanized steel mesh parabola with 1½" x 1½" square for max. stability and long life. GDP-233, 5 lbs... Mfrs. list $8.75... Only $5.14

Use "No Money Down" Heath Time Pay—See Order Blank For Details

Buy "No Money Down" Heath Time Pay—See Order Blank For Details
VERSATILE ENOUGH FOR THE PROFESSIONAL ... SIMPLE ENOUGH FOR THE BEGINNER. And yet you don’t have to be an “electronics wizard” to build it, or a professional organist to play it. Famous Heathkit know-how reduces assembly to simple steps that require no special talents, tools or knowledge. And the Thomas “Musical Fun Book” is included to start you playing many favorites quickly. Has every feature you want in an organ. It’s like having an entire orchestra at your fingertips. And all parts are made in the Thomas Factory.

17 RICH ORGAN VOICES ... Diapason 16 & 8’, Bass Clarinet 16’, English Horn 8’, Violin 8’, Oboe 8’, Bourdon 16’, Flute 8’, Flute D’ Amour 4’, Trumpet 16’, Quint 5 1/2’, Saxophone 8’, French Horn 8’, Cello 8’, Chimes, Reverb, and Sustain ... all at the simple touch of a tab. And you’ll easily learn a combination of two voices ... Hawaiian guitar, vibraharp, harpsichord, zither, calliope, bagpipes, etc. And many different musical moods ... classical, popular and religious.

TWO SEPARATE SPEAKER SYSTEMS ... a built-in 2-speed rotating Leslie plus two 12” main speakers. With the Leslie system you can create the beauty of a full “theater” organ, or the rich randomness of sound for religious or other applications. The Leslie is driven by both speaker systems at once, you produce an exciting “stereo” effect.

28 NOTES OF CHIMES ... worth $500 to $2000 as an extra on other organs. Create hundreds of chime variations ... carillon, cathedral, etc.

COLOR-TONE ATTACK, REPEAT AND SUSTAIN PERCUSSION ... create an infinite number of musical effects ... xylophone, mandolin, marimba, banjo, string, etc. You can vary the rate of repeat percussion, and select for short or medium sustain.

TWO FULL-SIZE 44-NOTE KEYBOARDS ... tilled upper manual overhangs to bridge the two manuals easily.

MANUAL BALANCE ... to adjust relative volume and accentuate either manual for solo work.

13-NOTE HEEL & TOE PEDAL BOARD ... range C through C.

PEDAL SUSTAIN ... for special rhythm effects such as a string bass.

PEDAL VOLUME CONTROL ... continuously variable. Allows regulating pedal volume to suit the mood of the music.

VIBRATO SWITCH ... adds warmth and beauty.

EXPRESSION PEDAL ... adds volume from a whisper to full majesty.

REVERB ... to add concert-hall realism.

TREBLE ACCENT TAB ... adds new clarity and brightness to solo work.

HEADPHONE OUTLET ... play anytime without disturbing others.

ALL-TRANSISTOR 75-WATT EIA PEAK POWER AMPLIFIER ... assures wide range, clear clean treble and full organ bass.

PRE-TUNED TONE GENERATOR ... to tune the organ yourself by a simple counting method. No “musical” ear needed.

LUXURIOUS HARDWOOD CABINET AND BENCH ... handcrafted and handrubbed with full-bodied walnut finish ... ready for the sub-assemblies as you complete them. Cabinet measures 36” H x 40” W x 24” D.

NO EXTRA NEEDED, NOTHING MORE TO BUY! There are no speakers, amplifiers, or other “hidden necessities” to add as with other organ kits. It’s all there at one price ... even the bench!

SAVE HUNDREDS OF DOLLARS! You can pay as much as a $1000 more for other makes, and still not enjoy as many features as with the GD-983. You actually save hundreds of dollars over the factory assembled version.

Kit GD-983, Organ and matching bench, 245 lbs. (REIA Express or Motor Frt. only), $125.00, as low as $27.00 ....... $849.00.

Self-Teacher Recorded Lessons ... Save $30

Can’t play a note? Learn quickly & easily at your leisure with this complete 40-lesson course on four 12” LP records. Includes music book with many old-time favorites. Provides basic basis of musical knowledge. Manufacturer’s list price $50.

GDA-232-2, recorded lessons, 5 lbs. ....... $19.95.

Thomas Organ

Contains complete organ music & registration charts for both GD-983 and GD-325 Heathkit. Thomas Organ.

HELLO DOLLY ... all words and music from this famous musical.

GDP-165, 1 lb. ....... $2.00

BILLIE JEAN LINDEMAN’S “Always,” “Say It Isn’t So,” 23 Berlin favorites.

GDP-135, 2 lbs. ....... $2.50

AROUND THE WORLD IN WALTZTIME ... 14 waltz favorites, “Fascination,” “My Wild Irish Rose,” etc.

GDP-195, 1 lb. ....... $2.00.

There’s A Heathkit For Every Interest, Every Purpose, Every Budget.

Acclaimed By Experts & Owners Alike

Owner Carl H. MacAuley, Aberdeen, Wash.

"I think the tone and voices are far superior to three of the nationally advertised makes. The assembling was a delight—I was a little sorry when it was all done. I experienced no difficulty at all. The assembly manual is explicit and very easy to follow. Thank you for allowing a dream of a lifetime to come true—both in cost and pride of ownership."

Owner D. W. Welsh, Clinton, N. C.

"I have used this organ (GD-983) for about 5 months and am more fascinated by it each day. This is without a doubt the most value I've ever received for my money, I paid $849.00 for it but I wouldn't sell it for $2,000, if I couldn't replace it."

April Issue, High Fidelity Magazine

"The touch of the keyboards and other controls—gentle, yet positive—suggests, as one player put it, 'the fine breeding of this instrument.' As one would expect, it becomes quickly apparent that—electronics and do-it-yourself notwithstanding—this 'kit organ' is no toy or halfway-to-heaven gadget. It is rather a full-fledged, deep throated, authentic-sounding organ that should interest the serious musician as well as the hobbyist and amateur. Experienced kit-builders will recognize at once that this project is essentially no different in kind from that of building any audio-electronic gear. . . . Thanks to the excellent instruction manual and careful packaging of parts, the job should be within the range of most beginners at kits."

Editor, Hubert P. Luckett, Popular Science, March Issue

"You don't have to be an expert or know anything about electronics to complete the project. . . . Heath engineers have done an excellent job of programming the assembly so that you are never confused. . . . Unlike most kits you've seen, this one can be worked on by several people at a time without getting in each other's way. Ingenious circuit design in the kit-built job takes the development a step further and gives you much of the versatility and many of the special effects of a theater organ."

Hear It Perform Yourself

Send for your 78 rpm Deluxe Organ Demonstration Record. Prove to yourself that the GD-983 has everything you've dreamed of in an organ. Use order blank in center of catalog & enclose 50c to cover handling & postage.

GDA-983-2, demonstration record ....... 50c.

Special Assembly & Adjustment Tools Included

Includes set of Nut Drivers, Phillips Screwdriver, coil alignment tool, keyboard alignment tool w/ shaft handle, and nut starter for GD-983 assembly & adjustment.

Music Books

LIGHT CLASSICS ... "Serenade," "The Swan," 12 popular classics. GDP-145, 1 lb. ....... $1.20

MANCINI MAGIC ... "Dear Heart," "Charade," "I Love You and Don't Forget It," 13 favorites by this famous modern composer. GDP-335, 1 lb. ....... $2.50

SOUNDS OF BROADWAY ... "Fiddler On the Roof," "Sunrise, Sunset," "Matchmaker," "Mr. Wonderful," 12 songs from popular Broadway shows. GDP-349, 1 lb. ....... $2.00
Heathkit® / Thomas BL-3 "Coronado" Deluxe All-Transistor Organ . . . Saves You Hundreds of Dollars Over Comparable Factory Models

GD-983
$849.00

Only $125 down, as low as $27 mo. (including bench)

5-Year Warranty!
The transistorized plug-in tone generator boards, the heart of the organ, are warranted for five years. You buy with confidence when you buy a Heathkit version of the Thomas Organ. Replacement upon prepaid return of undamaged board to the Heath Company.
You Play Complete Songs in Minutes Instead of Months with this NEW Heathkit® / Thomas Color-Glo Transistor Organ

Keys Light Up To Show You Correct Notes And Chords. Just match up the colors with your left hand, the letters with your right...and you play complete songs...even if you've never played an organ before!

Kit GD-325B
$394.90
(including bench)

5-Year Warranty!
The transistorized plug-in tone generator boards, the heart of the organ, are warranted for five years. You buy with confidence when you buy a Heathkit version of the Thomas Organ. Replacement upon prepaid return of undamaged board to the Heath Company.

Heath Has The World's Largest Selection Of Electronic Kits
Save Over $150 By Building It Yourself! Features 10 Organ Voices... Matching Walnut Cabinet And Bench... Long-Life Transistor Circuitry

- Exclusive Thomas Color-Glo to start you playing instantly
- All genuine Thomas factory-fabricated components
- 10 true organ voices
- Variable repeat percussion... produces banjo, mando-
- lin, balalaika effects
- 13-note heel and toe bass pedals
- 2 over-
- hanging 37-note keyboards, range C thru C5, 50 watt EIA peak
- music power amplifier
- 12" speaker
- Vibrato
- Manual balance
- control
- Transistorized plug-in tone generators, the heart of the organ, warranted for 5 years
- Fully transistorized for better tone, longer life, trouble-free operation
- Handcrafted, hand-rubbed walnut cabinet with matching bench... completely assembled

NO LONG, TEDIOUS HOURS OF STUDY Until now, the fun and satisfaction of playing a musical instrument has been achieved only after years of hard practice and study. Now... with this Color-Glo version of the Heathkit/Thomas "Artiste"... you start to play instantly. Special Color-Glo key lights show you the correct notes and chords to play complete songs... with melody, harmony and bass notes.

JUST MATCH UP THE COLORS AND THE LETTERS... IT'S EASY. Switch on the Color-Glo key lights, and you're ready to play. Each white key on the upper keyboard lights up with a letter for you to follow. You simply match the letters on the music with the letters on the keys, and automatically you play the melody. For harmony, there are 3 red keys, 3 black keys and 3 green keys on the lower key-
board. With your left hand, just press and hold the notes that match the background color in the Thomas Color-Glo music book (included).

BUT THAT'S NOT ALL. To add the rich bass notes, press and hold the pedal that's marked with the same color as the harmony notes changing to different colors with your foot, as you change with your left hand. That's all there is to it... and you play complete songs in minutes instead of months! The Color-Glo teacher is your secret.

Touch the switch again, and the Color-Glo key lights disappear, leaving a beautiful spinet organ console that will be the most admired piece of furniture in your living room.

ADD LIVE MUSIC TO PARTIES FOR MORE FUN... great for dancing or song fest when friends gather for an evening. Teens love the rhythm and bounce of its many musical effects, too. And playing this organ is a wonderful way to relax after a hard day.

TEN RICH ORGAN VOICES IN ALL Trombone, reed, flute, oboe, cornet, violin, saxophone, horn, violin, viola, and diapason... all at the touch of a tab. Also features repeat percussion to create banjo and mandolin effects; 13-note bass pedals; variable expression pedal to change the volume; two levels of vibrato intensity; variable bass pedal volume; manual balance control; 12" speaker; and a 50-watt EIA peak music power amplifier.

INCLUDES HANDSOME WALNUT CABINET AND MATCHING BENCH. Nothing to add, no extras to buy as with other organ kits... everything is included at one price. Handcrafted walnut cabinet measures a compact 41 1/4" H x 39 1/4" W x 21 1/4" D.

ASSEMBLES IN AROUND 50 HOURS... SAVE OVER $150 Includes simple step-by-step instructions... genuine Thomas factoryfabricated parts... diagrammed, easy-to-wire circuit boards... factoryassembled walnut cabinet that's ready for the sub-assemblies as you complete them. Takes no special skills or knowledge to build and you enjoy savings of $150 over the same model factory assembled. You even tune the organ yourself with the pre-tuned tone generator using a simple counting method... no "musical ear" needed. Then relax and enjoy your newly discovered talent as you take the "light approach" to music... with instant-play Color-Glo.

Kit GD-325B, organ and matching bench 172 lbs. $40.00, as low as $23.00 (REA Express or motor freight)... $394.90 Export model available for 115-230 v. AC, 50-60 Hz; write for prices.

Like To Hear It Perform? Then send for organ demonstration record no. GDA-325-1, (7"-33 1/3 RPM). Listen to the beautiful voices, true organ tone and professional capabilities of this superb instrument. Use order blank in this catalog; and enclose 90¢ to cover postage and handling.

Self-Teacher Recorded Lessons... Save $30 New, revised 40-Lesson course on four 12" LP records... provides a firm basis of musical knowledge. Includes comprehensive music book with many old-time favorites, and handsome gold-embossed white leatherette album. Learn quickly and easily at your leisure.
GDA-232-5, recorded lessons, 5 lbs. Mrts. List $50........ only $19.95

Full 5-Year Warranty The transistorized plug-in tone generator boards, the heart of the organ, are warranted for five years. You buy with confidence when you buy a Heathkit version of the Thomas Organ. Replacement upon prepaid return of un-damaged board to the Heath Company.

Special Assembly And Adjustment Tools Included

Compare These High Performance Features

Includes a set of high quality Nut Drivers, a coil alignment tool, keyboard alignment tool with shaft handle, Phillips screwdriver, and a nut start to help speed assembly and adjustment.

COLOR-GLO MUSIC BOOK NO. 2... contains words, music and "color-coded" charts for 56 favorites... "Beautiful Brown Eyes," "Camptown Races," "Home On The Range," "Joy To The World," "Goodnight Ladies,"

GDP-355, 1 lb. .......................................................... $2.50

COLOR-GLO MUSIC BOOK NO. 3... contains words and music and "color-coded" charts for 56 favorites... "Away In A Manger," "Bill Bailey," "Glow Worm," "How Dry I Am," "My Darling Clementine," etc.

GDP-385, 1 lb. .......................................................... $2.50

COLOR-GLO ORGAN COURSE, VOL. 1... contains sections on using Color-Glo, legato, stop tabs, manual balance control, percussion, plus 21 song favorites.

GDP-375, 1 lb. .......................................................... $2.50

COLOR-GLO ORGAN COURSE, VOL. 2... continues with sections on chords, scales, fingering, rhythm, plus 21 more song favorites... "Comin' Thru The Rye," "My Bonnie," "Down By The Riverside," etc.

GDP-385, 1 lb. .......................................................... $3.00

Heathkit—Pioneer And World Leader In Electronic Kits
Eagerly Seeks Stations Far And Near and Deluxe AM/FM/FM All-Transistor Stereo Tuner

- 25-transistor, 9-diode circuit for pure, natural "transistor sound", heat-free operation • AM/FM/FM stereo tuning • Automatic stereo switching • Automatic stereo indicator light • Filtered output • circuit, heat-free recording • Separate AM & FM tuning meters • Stereo phase control for maximum separation, minimum distortion • Automatic Gain Control for even, steady volume • Volume installation ... choose unit without a cabinet, or with either walnut wood cabinet or tan vinyl-clad steel cabinet

Just Push The Unique "Push-Push" Switch And Listen. You hear each voice, instrument and note like you've never heard it before. The sound is cleaner, more natural ... thanks to the AJ-43D's solid-state circuitry. Notice the freedom from distortion and hum ... the crisp, full reproduction that only transistors can achieve. Notice the cool, instant operation ... the complete selection of AM, FM or FM stereo with hypersensitive reception. Notice the price ... far below comparable factory-built units.

Compare Its High Performance Features. In addition to those listed above, there's automatic switching to stereo ... you don't lift a finger. An automatic stereo indicator that lights when stereo is received. An automatic frequency control (although it's hardly ever needed) to assure positive tuning. Plus emitter-follower output stages that eliminate high frequency cable losses ... lighted slide-rule dial and heavy flywheels for easy, accurate tuning ... transformer-operated power supply with silicon diode rectifiers for long life, dependability and freedom from heat.

3-Way Installation ... Easy To Build. Installs just anywhere ... in a wall, your own custom cabinet or either Heath walnut-finished or tan vinyl-clad steel cabinets. The "front-end" and 4-stage FM IF section are factory-built and aligned to speed assembly ... requires no special skills or knowledge. Order yours now!

Model AJ-43D, 15 lbs., less cab., for custom mtg. $119.00
Model ME-16, 15 lbs., less cab. $129.00
Model ME-15, 8 lbs. Tan vinyl-clad steel cab. $6.95

Natural "Transistor Sound"...Choice of Installation

Matching 100-Watt Stereo Amplifier ... Accepts Any Source, Easily Drives Any Speaker

- 26-transistor, 10-diode circuit for smooth, uncompromising power response ... 13 to 25,000 Hz ± 1 dB at 35 watts rms per channel (50 watts IHF music power) • Concert hall realism, cool instant operation, complete freedom from microphonic Effects • Encapsulated, epoxy-impregnated modules for fast, simple assembly ...卫视 installation ... choose unit without a cabinet, or with either walnut wood or tan vinyl-clad steel cabinet ... matches AJ-43D

Plenty Of Clean, Uncompromising Power ... a full 100 watts IHF music power, 70 watts RMS from 13 to 25,000 Hz at ± 1 dB ... no faltering at either end of the response range. Add cool, hum-free operation ... long, unchanging life (no tubes to deteriorate) ... transparent, "transistor sound" ... and host of deluxe operating features. This is the modern performance of the deluxe AA-21D.

Complete Controls. On the front panel, those you use most ... 5-position source switch, 5-position mode switch, dual-concentric volume control, dual-concentric bass and treble controls. Conceived, but easily accessible behind the hinged lower front panel ... tape-monitor input switch, speaker phase reversal switch, loudness switch (converts volume control to loudness control for compensated low volume levels), plus controls for all inputs.

Complete Inputs And Outputs ... inputs for tapehead, magnetic phono, tuner, stereo tape, monitor, and auxiliary ... outputs for 4, 8 or 16 ohm speakers, plus tape recorder ... all on the rear chassis panel.

Advanced Circuitry. Transformerless output circuit and multiple feedback loops assure fine fidelity, low distortion, minimum phase shift. Easy to build with preamplifier circuits premade and sealed in 6 epoxy-covered modules. Install in a wall, your own, or either Heath walnut or metal cabinet ... matches AJ-43D tuner.

Kit AA-21D, 23 lbs. ... everything except a cabinet ... No money down, $13.00 monthly. 

Concealed Controls. Secondary controls on both AJ-43D tuner and AA-21D amplifier are protected by hinged lower front-panel from accidental system setting changes.

Fast Circuit Board Construction ... with preassembled, prealigned "front end" FM tuner and 4-stage FM IF circuit board for quick easy assembly.

AJ-43D SPECIFICATIONS—FM SECTION (Manual Only): Tuning range: 88 to 108 MHz. Intermediate frequency: 10.7 MHz. Antenna: 500 ohms balanced, internal line antenna provided. Quieting sensitivity: (400 Hz, 100%, mod.) 1.5 V for 2 dB of quieting, 2 V for 30 dB of quieting, 3 V for 40 dB of quieting. 35 dB: IF rejection: 75 dB, Capture ratio: 3:1. AM suppression: 35 dB. Bandwidth (Complete Tuner): 35 kHz at 6 dB down, 1000 uV input. Detector bandwidth: 35 kHz at 600 Hz. Hum & noise: Complete tuner 55 dB below full quieting. Output impendence: (Emitter Follower) Variable to 3000 ohms. Output voltage: 1 V at 1000 uV input, 400 Hz, 100% mod. Input impedance: 35 dB below full quieting. Tuning range: 535 to 1620 kHz. Intermediate frequency (IF): 455 kHz. Sensitivity: 600 Hz, 7 V for 10 dB below AC 0.004 kHz 4 V for 10 dB above 1400 Hz. Channel separation: 35 dB at 50 Hz, 50 dB at 10,000 Hz. 20 dB at 15,000 Hz. 19 kHz suppression: 50 dB down. 38 kHz suppression: 45 dB down. SCA rejection: 30 db min. 64 kHz to 70 kHz. Hum & noise: 55 dB down. Output voltage: 1 V at 100 uV input, 400 Hz, 100% mod. Output impedance: (Emitter Follower) Variable to 3000 ohms.

Choice Of Cabinets For Installation Versatility

Less cabinet. Ideal for wall or custom mounting. Kit AJ-43D ... $105.00
Luxurious walnut wood cabinet (illust. above) for AJ-43D. Ideal for open component installation on bookshelf or cabinet top. $119.00
Model AA-11 ... $129.00
Tan vinyl-clad steel cabinet (illust. opposite) with polished aluminum trim for AJ-43D. Model AA-15 ... $6.95

Choice Of Cabinets For Installation Versatility

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

Model AA-11, 8 lbs., walnut wood cabinet. ... $12.95
Model AA-15, 8 lbs., tan vinyl-clad steel cabinet. ... $6.95

AA-21D SPECIFICATIONS—RECOMMENDED SYSTEM MATES: Separate Speaker. AS-183. Multi-Position Speaker System. AS-10, pg. 37. All changers & turntables, pgs. 31-32 & 33. Power output per channel: (Heath Rating) 35 watts @ 8 ohm load, 26 watts/8 ohm load, 18 watts/4 ohm load. (IHF music power output) 50 watts/8 ohm load, 34 watts/16 ohm load, 25 watts/4 ohm load @ 0.7 V, 1 kHz. Frequency response: ± 1 dB from 13 Hz to 25 Hz @ rated output; ± 3 dB from 8 Hz to 40 kHz @ rated output. Harmonic distortion (AT rated output): Less than 1%, 20 Hz, 0.5%, 0.1% 1 kHz, 2.5%, 0.2 kHz. Intermodulation distortion (AT rated output): Less than 1%, 60 & 600 Hz signal mixed 4:1. Hum & noise: Tapehead: 40 dB below rated output, Mag. phono: 45 dB below rated output, 60 dB below rated output, Tape monitor, 70 dB below rated output. Channel separation: 40 dB min. @ 20 kHz 55 dB min. @ 1 kHz 50 dB min. @ 20 Hz. Input sensitivity: For 35 watts output per channel, 8 ohm load: Tapehead, 2 mv., Mag. phono: 3 mv., 250 mV. FM Stereo, 250 mV Aux., 250 mV. Tape Monitor, 0.6 V. Output impedance: Tapehead, 60 k ohm, Mag. phono, 30 k ohm. Tape monitor, 10 k ohm, 600 Hz, FM, Stereo, 400 ohm, Mag. phono, 30 k ohm. Tape monitor, 47 k ohm. Outputs: 4, 8 or 16 ohms and low impedance tape recorder outputs. Controls: 5-position mode switch, dual-concentric Volume, Bass & Treble controls, Tape monitor switch, Loudness sw., Phase sw., Input level control (all inputs except Tape Head & Tape Monitor inputs), Push-Push on/off switch. Semiconductor compliment: 26 Transistors, 10 diodes. Power requirement: 105-125 volts, 50-60 Hz. AC, 35 watts idling, no signal; 200 watts full power output, @ 120 volts with no signal. AC receptacle, 1 switch, 1 unswitched. Dimensions: 151/2" W x 9 1/2" H x 14 1/4" D.

Save 5% On Your Heathkit Stereo Hi-Fi System—Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank.

Choice of Cabinets for Installation Versatility

Less cabinet for custom mounting in a wall or cabinet. Kit AA-21D ... $137.00
Luxurious walnut wood cabinet (illust. above) for open component installation on bookshelf or hi-fi cabinet. Model AA-11 ... $119.00
Tan vinyl-clad steel cabinet (illust. opposite) with polished aluminum trim for AA-21D. Model AE-15 ... $6.95
Deluxe Solid-State Stereo Separates

AJ-43D
$109.00 (less cabinet)

AA-21D
$137.00 (less cabinet)
America's Best Buys

Acclaimed By Experts ... Praised By Owners ... Heathkit All-Transistor 66-Watt AM/FM/AM Stereo Receiver ... Handles Any Music Source ... Has Power To Spare

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

JUST ADD TWO SPEAKERS AND ENJOY. There’s wideband AM, FM, and FM stereo tuning to satisfy any listening wish. It has two pre-amps, and coupled with its two power amplifiers, the AR-13A provides 66 watts of IFH music power, 40 watts of continuous sine-wave power at ±1 dB from 15 to 30,000 Hz. All this is housed inside one luxurious, compact walnut cabinet ... just connect two speakers for a complete FM stereo system!

DELUXE FEATURES ADD CONVENIENCE, IMPROVE PERFORMANCE. A solid-state circuit automatically channels the signal through the built-in stereo adapter when stereo is received. Then the automatic stereo indicator lights. The tape recorder outputs are filtered for direct “beat-free” recording. There are dual-tandem controls for simultaneous adjustment of volume, bass, and treble of both channels; a separate control for balancing both channels; and 3 stereo inputs—mag, phono and two auxiliaries. The AM tuner features a high gain RF stage and a high Q rod antenna. The FM tuner has a built-in line cord antenna plus external antenna connectors.

AND THAT’S NOT ALL. There’s a local-distance switch for optimum reception in all signal areas; an FM squeel control; AFC for drift-free reception; plus flywheel tuning and tuning meter, and lighted AM and FM slide-rule dials for fast, easy station selection. The secondary controls are concealed under the hinged lower front section of the gold anodized aluminum front panel to prevent accidental system settings.

Both FM front-end and the AM-FM I.F. strip are pre-assembled and aligned to simplify kit assembly. Walnut cabinet is included.

Kit AR-13A, 35 lbs. ... no money down, $18 mo. $184.00

Export model available for 115/230 VAC, 50-60 Hz; write for prices. Important: The AR-13A is exempt from any Special System Discount.

AR-13A SPECIFICATIONS — Recommended system mates: Speaker systems: A5:10 or A5:31, pag. 37-38; separate speaker: AS-183, pag. 40; all changers, pp. 31, 32 & 33. AMPLIFIER: Power output per channel (Health Rating): 20 watts/8 ohm load, 13.5 watts/16 ohm load, 9 watts/4 ohm load. FM Power Output: 33 watts/8 ohm load, 18 watts/16 ohm load. IF frequency response: ±1 dB from 15 Hz to 30 kHz @ rated output, ±3 dB from 10 Hz to 60 kHz @ rated output. Harmonic distortion (at rated output): Less than 1% @ 20 Hz, less than 0.5% @ 1 kHz, less than 1% @ 20 kHz. Intermodulation distortion (at rated output): Less than 1%. Hum & noise: Mag, phono, 50 db below rated output; Aux. inputs, 65 db below rated output. Channel separation: 40 db @ 20 kHz, 60 db @ 1 kHz, 40 db @ 20 Hz. Input sensitivity: 8 ohm load: Mag, phono, 1 mV; Aux. 25 mV. Input impedance: Mag, phono, 35 K ohm; Aux. 1, 100 K ohm; Aux. 2, 100 K ohm. Outputs: 4, 8, 16 ohm. Low impedance tape recorder outputs. Controls: 3-position Selector; 3-position Mode; Dual Tandem Volume; Bass & Treble Controls; Balance Control; Phase Switch; Input Level Controls (all inputs except Aux. 2); Push-Pull ON/OFF Switch. FM: Tuning range: 88 KHz to 148 KHz. IF frequency: 10.7 KHz. Frequency response: ±3 dB, 20 to 15,000 Hz. Capture ratio: 3:1. Antenna: 500 ohm balanced (internal for local reception). Quieting sensitivity: 1 μv. 20 db of quieting. Frequency: 355 KHz @ 6 db input. Image rejection: 35 dB. IF rejection: 70 dB. AM suppression: 35 dB. Harmonic distortion: Less than 1%. 100% MULTIPLIERS: Bandpass: 3/4 db, 20 to 50,000 KHz. Channel separation: (AGC filter OFF) 35 db, 20 to 2,000 Hz. 25 db at 7 KHz. 19 KH 38 KHz suppression: 45 db from rated output at 1 KHz. SCA rejection: 45 db from rated output at 1 KHz. FM Tuning: 535 to 1620 KHz. IF frequency: 475 KHz. S/N ratio: 20 μv at 600 KHz. SCA frequency: 1 μv at 600 KHz. Image rejection: 40 db at 600 KHz. IF rejection: 55 dB @ 1000 KHz. Harmonic distortion: Less than 2% with 1000 KHz input. 400 Hz with 20% modulation. Hum & noise: 40 db. Overall dimensions: 17" L x 5½" W x 16" H. Power requirements: 110-125 volts, 50-60 Hz AC, 30 watts (8%) 310 watts max.

Julian D. Hirsch On The AR-13A

In the Nov. ’65 issue of Hi-Fi Stereo Review, Mr. Hirsch said: "Unlike many transistor amplifiers, the AR-13A has low IM distortion at low power levels"... "The AR-13A has a remarkably flat power response"... "Hum and noise were inaudible"... "The FM tuner proved to be quite sensitive"... "Drift is negligible."... "The FM stereo channel separation was excellent."... "It is one of the finest integrated stereo receivers I have seen, comparable to many factory-wired tuner costs... far more.

ELECTRONICS WORLD Reviews The AR-13A

"Despite its low price, it is one of the best stereo receivers we have tested, and is comparable to many manufactured units costing twice as much."
In Solid-State Stereo Receivers

Only Your Budget Can Tell The Difference Between Its Performance And Price ... Heathkit All-Transistor 30-Watt FM/FM Stereo Receiver

- 31 transistor, 10 diode circuit for cool, instant operation with the transparent, natural sound only transistors can deliver • ±1 db, 15 to 50,000 Hz at 10 watts per channel continuous (20 watts total), 15 watts per channel HF music power (30 watts total) • Wideband FM/FM stereo tuner plus two preamplifiers and two power amplifiers • Front panel stereo headphone jack • Compact—just 3¼" H x 15¼" W x 12" D • Custom install it in wall, your own cabinet, or either Heath cabinet • Build it in 20 hours

JUST 20 HOURS FROM PARTS TO PROGRAMS. And what sound! Natural and transparent as only transistors can make it. Two preamplifiers and two power amps deliver the coolest 30 watts of music you've ever heard ... at ±1 db from 15 to 50,000 Hz. And its sensitive FM tuner pulls in stations far and near ... stations you never knew existed before! You'll like the effortless way the flywheel tuning dial glides across the band. You'll like its low budget-saving price ... unheard of until now in a stereo receiver of this quality.

NEW TRANSFORMERLESS OUTPUT CIRCUIT ... each channel uses two output transistors—a complementary PNP and NPN pair. This design has proven superior with lower phase shift and distortion, plus wider response.

FRONT PANEL STEREO HEADPHONE JACK ... for private listening without disturbing others. Other controls include a 6-position source switch to handle your tapes and records, stereo or mono; dual concentric volume control for separate adjustment of each channel; a tandem treble control with push-pull power switch; and tandem bass control with push-pull speaker on-off switch when listening with headphones. There's also an automatic stereo indicator light. For beat-free stereo taping, the tuner outputs are filtered. And the output power drives all but the most inefficient speakers.

BOOKSHELF SIZE . . . 3-WAY INSTALLATION. Measures only 3¼" H x 15¼" W x 12" D. Looks sleek and modern with its attractive anodized aluminum front panel that fits neatly in a wall, your custom cabinet or either optional Heath walnut veneer and beige steel cabinets. Marry it with a pair of speakers for superb listening at lowest cost.

AUDIOR Magazine, March '66 Issue Reviews The AR-14

"Although it's seldom the policy of this department to use superlatives in describing any item until further testing has been done, it is one time when it is possible to say that the unit in question is undoubtedly one of the best values we have encountered to date. At a kit price of $99.95, the AR-14 represents an exceptional value. For where else can one obtain an FM-Stereo receiver at such a price? And the low price has not been reached by any apparent sacrifice in quality."

AR-14 Owner, Mr. Raymond J. Zogby. Pritchard, Ala.: "I have completed the AR-14 Stereo Receiver in only a few nights work, and it works perfectly! I have never put together any kit of any kind; but this was easy thanks to the way your directions and illustrations were presented. I had no trouble and did not have to go back and correct anything: everything worked perfectly the first time!"

Kit AR-14, 18 lbs., less cabinet for custom mounting.
no money down, $10 mo. .......................................................... $99.95
Model AE-55, 6 lbs., walnut veneer cabinet ................................ $9.95
Model AE-65, 6 lbs., beige steel cabinet ................................ $3.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices.

Important: The AR-14 is exempt from any Special System Discount.

AR-14 SPECIFICATIONS—Recommended system notes: All speakers & speaker systems, pgg. 37 thru 41, except AS-2A & AS-2D; all changers & turntables, pgs. 31, 32. AMPLIFIER: Continuous power output: 10 watts each channel—20 watts total. Music power output (IMF): 15 watts per channel. Speaker output impedance: 4 through 16 ohm. Tape output impedance: 3.5k ohm. Damping factor: 50, Hum and noise: Phonos: 60 db. Auxiliary: 63 db. Frequency response: 15 to 15,000 Hz ±1 db, 6 to 100,000 Hz ±3 db. Power response: 13 to 50,000 Hz ±1 db, 7 to 90,000 Hz ±3 db. Input sensitivity: Phonos: 4.5 mV; Auxiliary: 300 mV. Input Impedance: Phonos: 47 K ohm. Auxiliary: 15k ohm. Channel separation: 45 db or better. Total harmonic distortion (at rated output): 5% or less @ 100 Hz, 1% or less @ 20,000 Hz. Intermodulation distortion (at rated output): Less than 1% @ 600 Hz & 6000 Hz. AUXILIARY: Phono input terminal: Mono. Speaker tap: Mono Auxiliary; Mono FM, Mono AM, Volume Control, Bass Control, Treble Control, Phone Jack. Rear panel: Fuse AC Power Socket: Switched & Unswitched. Speaker Terminal Blocks: One Left & One Right Speaker Ground Terminals: 1; Triple Phone Sockets: Power requirement: 150-125 volts 20/60 Hz, 32 watts idling, 35 watts full output; (No load on AC power sockets). Dimensions: Overall 15½" H x 3½" D. Mounting position: Horizontal or Vertical. Cutout required 15½" x 3½". Depth required from front of mounting surface 11½". FM tuning range: 88-108 MHz. Antenna: Balanced input for external 300 ohm antenna. Intermediate frequency: 10.7 MHz. Sensitivity (IMF): 5 uv for less than 3% total noise, distortion hum — 35 db. Hum & noise (IMF): 50 db. Audio frequency response (HF): 90-100 db, 1 kHZ. Dynamic range (IMF): 1% or less. Image ratio (IMF): 45 db. Cutoff ratio (IMF): 3 db. AFC correction: 150 kHz per volt, AM suppression (IMF): 55 db. 1F rejection (IMF): 80 db. FM STEREO: Separation: 30 db @ 1 kHz.

Shop The Easy Heathkit Way—Select Your Kits In The Comfort Of Your Home, Mail Your Order, & Get Direct-To-Your-Door Delivery
Acclaimed by Experts...Praised by Owners...

- 20 transistor, 10 diode circuit
- Delivers full 66 watts IHF music power, 40 watts continuous at ± 1 db from 15 to 30,000 Hz
- Less than 1% distortion
- 5 stereo inputs handle any program source
- Secondary controls concealed and protected under hinged lower front panel
- Handsome pre-assembled walnut cabinet...modern low silhouette styling...matches AJ-33 tuner

Julian D. Hirsch, Hi-Fi/Stereo Review On The AA-22: "I operated it at full power for long periods, and frequently over-drove it mercilessly, without damage to the transistors, and with no change in its performance measurements." "Any enthusiasm I may seem to express for this unit, incidentally, is purely intentional."

AA-22 Owner Mr. John M. Libenow, Los Angeles, Calif.: "Its construction details, its excellent chassis layout, its good looks, and wonderful performance (as well as versatility and ease of operation) have left me little more to desire."
Complete Listening At Your Command... the quiet beauty of FM, the
stirring realism of FM stereo, or the music, news and sports of AM... it's
tall there with just a flip of a switch on the AJ-33A. It's all solid-state...
23 transistors, and 8 diodes in all... for cool, instant play that's free
from microphonic. And since there aren't any tubes to deteriorate,
the AJ-33A's life is long and dependable. And the sound is clean, natural
and robust. It's all there at one low price... including the handsome
walnut cabinet.

Advanced Features For Superb Performance. A built-in stereo demodu-
lator automatically separates the stereo signal into both channels. A
sterio indicator lights when stereo is broadcast. An automatic gain
control prevents overload distortion. An automatic frequency control
"snaps in" each FM station, and keeps it there. There's even a phase
control for maximum stereo separation with minimum distortion. Both
channels are filtered for direct, beat-free recording. And the tuning
meter, lighted with precision tuning. A voltage regulated power supply provides high stability, and the adjustable
FM squelch obliterates annoying between-station noise while dialing
cross the band.

Concealed, Easy-To-Reach Secondary Controls. A hinged lower front
panel protects the secondary controls... adds to the neat, all-over
appearance. And yet, they are still convenient to reach. Only the on/off
switch, AM/FM/Stereo mode switch and tuning knob are in open view.

Greatly simplifies operation... a feature the rest of the family will
appreciate.

Includes Luxurious Walnut Cabinet. Add to this the extruded gold
anodized aluminum front panel, and you have a stereo component
that enriches any surroundings. Marry it to the AA-22 amplifier below,
for modern styling and performance.

Kit AJ-33A, 16 lbs... no money down, $10.00... $94.50

AJ-33A SPECIFICATIONS—FM SECTION: Tuning range: 88 to 108 MHz; Intermediate
frequency: 10.7 MHz; Antennas: 200 ohm balanced or built-in line type. Output impedance
(Emitter follower): Variable to 3000 ohms. Output voltage: 1.5 volts. Quieting sensitivity:
2 mV for 20 dB, 2 mV for 30 dB. Audio frequency response: 20-15,000 Hz ±3 dB.
Harmonic distortion: Less than 1% Image rejection: 35 db. Capture ratio: 3 db. AM
suppression: 35 db. Hum & noise: 50 db. MULTIPLE SECTION: Converter bandwidth:
±1/2 dB to 50 to 53,000 Hz Channel separation: 30 db from 50 to 2 kHz and 25 db at 10
kHz. AM SECTION: Tuning range: 535 to 1620 kHz. Intermediate frequency: 455 kHz.
Usable sensitivity: 8 uV @ 1000 Hz. Antenna: Built-in in radial with provision for external
straight wire. Output voltage: 0.25 V. with 99% modulation. Image rejection: 40 db @
600 kHz. Harmonic distortion: Less than 3% (30% mod. @ 1 mw input). Hum & noise:
40 db. GENERAL SPECIFICATIONS: Tuning indicators: Meter. Controls: Tuning, Right
Channel level; Left Channel level; FM squelch; Stereo converter—balance, separation
and phase. Switches: Mode, ASC, Noise filter, SCA filter, local-distance, Transistors
and diodes: 23 transistors, 8 diodes. Power supply: Transformer operated, full wave rectifier.
Power requirements: 105-125 volts, 50/60 Hertz, 7 watts. Dimensions: 15 3/4" W x
3 3/4" H x 11 7/8" D.

Pre-assembled pre-aligned AM/
FM IF strip. 2. Gold anodized ex-
truded aluminum front panel. 3.
Flywheel tuning. 4. Tuning meter.
5. Stereo indicator light. 6. Trans-
former operated power supply. 7.
Built-in stereo demodulator. 8.
Built-in line antenna (FM). 9. 8 kc
output filter. 10. Pressem-
bled, pre-etched FM front.
11. AM, RF amplifier stage. 12.
Superheterodyne circuitry.

66 Watts Of Transistor Power... Handles Any Program Source... Matching All-Transistor Stereo Amplifier

Enjoy the Sound That Only Transistors Can Give You... pure
uncompromising sound with instantaneous bursts of power as the music
demands... a full 40 watts RMS, 66 watts IHF music power from 15
30,000 Hz at ± 1 dB. Enjoy effortless transient response... freedom
from heat and microphonics... and long, unchanging life. As audio
expert Julian D. Hirsch said in a review of the AA-22 in Hi-Fi/STEREO
REVIEW: "The power response curve of this amplifier is one of the
flattest I have ever measured"... "Its RIAA phono equalization was
one of the most precise I have ever measured"... "The hum and noise
of the amplifier were inaudible".

Handles Any Program Source. 5 stereo inputs accommodate stereo
mag. phono, stereo-monos, stereo tape recorders and two auxiliary
sources. And there are outputs for 4, 8 or 16 ohm speakers, plus filtered
outputs for direct stereo taping. A driver transformer in the output
circuit assures greater stability and efficiency.

Versatile Controls Put You In Full Command. On the front panel...
5-position source selector switch, a 3-position "mode" switch, dual-
tandem volume, bass and treble controls, and a push-push on/off switch.
The hinged lower front panel conceals all secondary controls such as the
input level controls, balance control and speaker phase switch... no
need to worry about accidental system setting changes.

Attractive Low-Silhouette Styling. Handsome factory-assembled walnut
cabinet, extruded aluminum-gold front panel and matching brown
knobs with spun gold insets... matches AJ-33A tuner. A handsome
pair that will "fit-in" just about anywhere. They look great... especially in your living room.

Kit AA-22, 22 lbs... no money down, $10.00... $99.95

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

Save 5% On Your Heathkit Stereo/Hi-Fi System—Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank.

AA-22 SPECIFICATIONS—RECOMMENDED SYSTEM MATES: Speakers: AS-21, page 39;
AS-15, page 37; AS-51, page 38; AS-183 and 173, page 40; AS-163, 153 and 133,
page 41, all changes and turntables, page 31, 22 & 33. Simultaneous power output
per channel: (Heath Rating): 20 watts/8 ohm load. 13 watts/16 ohm load. 9 watts/
4 ohm load. (IHF music power Rating): 33 watts/8 ohm load. 18 watts/16 ohm load.
16 watts/4 ohm load @ 0.7% THD. 1 kHz. Power response: ±1 dB from 15 Hz to 30 kHz
(50% output). 6 dB from 10 Hz to 60 kHz (rated output). Harmonic distortion: (at rated
output): Less than 1% @ 200 Hz, 0.3% @ 1 kHz, 1% @ 20 kHz. Intermodulation
distortion: (at rated output) Less than 1%. 60 and 6,000 Hz signal mixed 4:1. Hum and
noise: Mag phono, 50 dB below rated output. Aux inputs, 65 db below rated output.
Channel separation: 40 db @ 20 Hz, 60 db @ 1 kHz, 40 db @ 20 kHz. Input sensitivity:
(20 watts output per channel, 8 ohm load): Mag phono, 6 dy; Tuner, 250 milli; Tape
Recorder 250 milli; Aux 1, 250 milli; Aux 2, 250 milli. Input impedance: Mag phono, 35 k
ohm; Tuner, 100 K ohm; Tape Recorder, 100 K ohm; Aux 1, 100 K ohm; Aux 2, 100 K
ohm. Outputs: 4, 8 and 16 ohm and tape recorder outputs. Controls: 5-position selector
switch, 3-position mode switch, dual tandem volume, bass and treble controls, phase
switch, input level controls, push-on push-off switch. Semiconductor complement:
20 transistors, 8 diodes. Power requirements: 105-125 volts, 50-60 Hz AC, 25 watts
idling, no signal, 105 watts, full power output @ 120 volts with no load on AC rec-
ceptacle. Power output: 2 AC receptacles, 1 switched, 1 unswitched. Dimensions: 15 3/4" W x
3 3/4" H x 11 7/8" D.

1. Circuit Modules. 2. Front Panel mounted Speaker phase switch. 3. Channel Balance Control. 4. Cir-
Cuit Board Construction. 5. Front Panel mounted input level controls. 6. Gold anodized extruded
aluminum front panel. 7. Color and black/white color mode indicator lights. 8. Ac-
Acessory mounting terminal. 9. Five stereo inputs. 10. Low im-
pedance microphone inputs. 11. Transformers, 8, 8, and 16
ohm outputs. 12. RCA germanium drift field power transistors.

NO MONEY DOWN UP TO $300
Build your Heathkit now... pay later with the convenient Heath
Time Payment Plan. No money due down and up to 12 months to pay
on orders from $25 to $300, and 18 months down and up to 18 months
on orders from $300 to $500. See Order Blank for details.

HEATHKIT® Solid-State Stereo Twins

Save 5% On Your Heathkit Stereo/Hi-Fi System—Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank.
Order A Stereo System—Save 5%

HOW TO SELECT A GOOD STEREO SYSTEM

1. Choose Components Rather Than Self-Contained Consoles. Unlike ordinary radios & phonographs, a component is like a doctor's prescription. Everything that goes into it is specified clearly. Each Heathkit component is especially designed to offer highest performance (performance specifications are listed below each hi-fi component described in this catalog). It's like buying a la carte instead of the complete main course. There's no compromising. You specify exactly what you want.

2. Select Components That Fit The Room. Besides their superior performance, another big advantage of separate components is that they never dominate their surroundings. They are readily adaptable to any room plan. They can be placed on shelves or in bookcases, arranged on room dividers, and mounted in the wall.

If you're an apartment dweller, there's a wide array of compact Heathkit tuners, amplifiers, and speakers designed for limited-space areas. Their big sound performance belies their size. And there are larger, more powerful Heathkit components that provide the necessary robust sound for spacious surroundings such as large living rooms, etc.

3. Choose Components That Match. Not only in styling, but performance. For example, it would be unsatisfactory to buy a 100-watt (50 watts per channel) stereo amplifier such as the Heathkit AA-21D, pg. 16, and connect to speakers that are only capable of reproducing 10 watts per channel. Just remember that a music system is only as good as its weakest link.

4. Select A System That Fits Your Budget. Heath offers a selection of components to fit any budget, any listening taste. Below and on the opposite page are a number of recommended Heath stereo systems. If none of these fits your needs, then simply make up your own system—just include any combination of music source (tuner, record player, tape recorder), amplifier, and speaker or speaker system—and deduct 5% from the total cost. The only Heathkit audio components not eligible for discount are the AR-13A and AR-14 stereo receivers pg. 18.

5. Use The Planning Guide, Or Ask Us. The planning guide on the opposite page is designed to help you choose an appropriate hi-fi system for your particular needs. We have grouped the separate components according to price, styling and performance. If you have questions concerning these systems or other possible combinations, just write Technical Correspondents: Heath Company. We'll be more than happy to help. Choose your system wisely. Choose from Heath . . . the world's most complete line of stereo/hi-fi kits.

Recommended Low Cost Stereo Systems

**Versatile Mid-Priced Stereo System . . . Save $13.43**

- ADP-46 Garrard 40 MK II Stereo Record Changer with choice of 1c cartridge, pg. 31, $44.51 plus ADA-66-1 walnut base, $4.50
- Heathkit AJ-14 Transistor FM/FM Stereo Tuner, pg. 24, $49.95 plus matching AE-25 walnut cabinet, $7.95
- Heathkit AA-14 Transistor 30-Watt Stereo Amplifier, pg. 24, $59.95, plus matching AE-25 walnut cabinet $7.95
- Heathkit AS-51W 2-Way Speaker Systems in walnut cabinets, pg. 38, $46.95 each

**Save $8.79 On This Low-Cost Stereo System**

- ADP-46 Garrard 40 MK II Stereo Record Changer with choice of 1c cartridge, pg. 31, $44.51, plus ADA-66-1 walnut base, $4.50
- Heathkit AJ-13 FM/FM Stereo Tuner, pg. 34, $47.00
- Heathkit AA-32 20-Watt Stereo Amplifier, pg. 34, $39.95
- Heathkit AS-81W Hi-Fi Speaker Systems, in walnut cabinets, pg. 39, $19.95 each

Complete System
Kit HFS-80
Reg. .................. $175.86
Save 5% ................ $ 8.79
You Pay Only .............. $167.07

Save 5% On Your Heathkit Stereo/Hi-Fi System—Order Any Program Source, Amplifier, And Speaker: Deduct 5% On Order Blank.
Your Planning Guide To A Custom Stereo System

These are some of the most compatible hi-fi combinations—matched in appearance, performance, and price—choose one to match your budget, or plan your own variation.

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<th>RECORD PLAYERS (or Tape Recorder)</th>
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<td>ADP-56</td>
<td>AJ-12 FM, FM STEREO TUNER</td>
<td>AS-15 or AS-10 or AS-51</td>
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<tr>
<td></td>
<td>AA-151 AMPLIFIER</td>
<td>AS-163 or AS-153</td>
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<tr>
<td>ADP-66</td>
<td>or AJ-32 AM, FM, FM STEREO</td>
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</tr>
<tr>
<td>ADP-46</td>
<td>AJ-14 FM STEREO TUNER</td>
<td>AS-15 or AS-21 or AS-10 or AS-10</td>
</tr>
<tr>
<td>(AD-16)</td>
<td>AA-14 AMPLIFIER</td>
<td>AS-183 or AS-173 or AS-163 or AS-153</td>
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<tr>
<td><strong>LOW COST STEREO</strong></td>
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<tr>
<td>ADP-56</td>
<td>AR-14 FM STEREO RECEIVER</td>
<td>AS-15 or AS-21 or AS-10 or AS-10</td>
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<tr>
<td>ADP-66</td>
<td>or AJ-14 FM, FM STEREO TUNER</td>
<td>AS-183 or AS-173 or AS-163 or AS-153</td>
</tr>
<tr>
<td>(AD-16)</td>
<td>AA-14 AMPLIFIER</td>
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<td><strong>MONO SYSTEMS</strong></td>
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<tr>
<td>ADP-56</td>
<td>AJ-53 AM TUNER</td>
<td>AS-10 or AS-163 or AS-153</td>
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<tr>
<td>ADP-46</td>
<td>AA-23 HIGH POWER AMP</td>
<td>AS-173 or AS-163 or AS-153</td>
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<td>or ADP-66</td>
<td>or AJ-63 FM TUNER</td>
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<tr>
<td></td>
<td>AA-13 MEDIUM POWER AMP</td>
<td>AS-153 or AS-133 or AS-123</td>
</tr>
</tbody>
</table>

NOTES: 1. AA-100 and AA-21D will operate directly from tape head. All other amplifiers require tape head preamps.
2. Individual speakers must be provided with suitable acoustic enclosures, or home-built to included instructions.
3. All interconnecting cables provided except speaker wire.
4. Tuners are not needed for playback of only records or tapes. Amplifiers shown are complete.
World’s Best Values
In Transistor Stereo Separates....
Heathkit® Lowest Cost Solid-State Stereo

To Get 1967 Performance At 1947 Prices ... Build This New Solid-State FM/FM Stereo Tuner
• 14-transistor, 5 diode circuit for cool, instant operation, and the natural beauty of transistor sound • Stereo phase control to maximize stereo separation, minimize distortion • 4-stage IF section insures high sensitivity & selectivity • Filtered outputs for direct "beat-free" stereo recording • Automatic stereo indicator light • Prealigned, preassembled "front-end" tuner & one-circuit board for fast, simple assembly • Install any of 3 ways ... wall, custom or Heath cabinet.

QUICK, LOW COST RECIEVE FOR TRANSISTOR SOUND! The ingredients? Just one package of high quality AJ-14 parts for only $49.95 ... easily prepared in just 4 to 6 hours. Results? The deliciously natural sound of transistor stereo in a compact unit that plays it cool ... no heat or microphonics.

HEATH’S EASIEST-TO-BUILD STereo KIT. Just one simple circuit board on which to mount the parts. One factory assembled and aligned “front-end” to install. And a few miscellaneous parts that mount quickly on the chassis. All you need are a few simple tools. The famous Heathkit step-by-step instructions and king-size pictorials guide you all the way.

MODERN SOLID-STATE CIRCUITRY. 14 transistors, 5 diodes in all. 3 transistors in the “front-end” (containing an RF amplifier and separate local oscillator) tuning section ... 4 transistors in the 4-stage I.F. section produce sensitivity and selectivity comparable to far more expensive tuners. The transformer-operated power supply is solid-state, too ... and the outputs are filtered for clean stereo tape recordings.

Matching 30-Watt Transistor Stereo Amplifier ... Easy 10-Hour Assembly, Wide 15-50,000 Hz Response, Performs Like It Costs Twice As Much

• 17 transistors, 6 diodes • ±1 dB, 15 to 50,000 Hz at 10 watts per channel continuous power (20 watts total) or 15 watts per channel IF Music Power (30 watts total) • Concentric, clutch-volume control • Tandem bass and treble controls • Edge-lighted control dial • Front panel stereo headphone jack

COMPARES TO UNITS SELLING FOR OVER $100 ... that’s the new AA-14 30-Watt stereo amplifier ... with the ability to handle virtually any source, plus the cool, instant operation and natural beauty of transistor sound ... yet costs far below comparable units.

FEATURES TWO IDENTICAL, but separate power amplifiers and preamplifiers that deliver a cool 30 watts IF Music power (20 watts RMS) at ±1 dB over an extremely wide range of 15 to 50,000 Hz ... thanks to a generous power supply design. Its new transformerless output circuit is known as complementary design. Each channel uses two output transistors—a PNp type and an NPN type—complementary. This has proven superior, exhibiting lower phase shift, wider response, and lower distortion. All power transistors are adequately heat-sinked for long life.

COMPLETE OPERATING CONVENIENCE. A 6-position source switch easily handles your records, tuner or tapes ... stereo or mono. For independent adjustment of each channel there’s a clutched volume control. And there are full-range tandem controls for bass and treble boost and cut; an edge-lighted dial that indicates all functions; and a front-panel mounted stereo headphone jack plus a speaker-off switch for private listening.

EASY TO BUILD ... with fast circuit board construction and famous Heathkit assembly instructions ... from parts to performance in about 10 hours.

COMPACT SIZE ... CHOICE OF 3-WAY INSTALLATION. The same size as its matching AJ-14 Tuner, 9¾” D x 2¾” H x 11¼” W ... easily snuggles into bookshelves, on top of mantles, or installs in a wall. You can fashion your own custom cabinet around it, or choose either the Heath metal or walnut veneer cabinets. The brushed anodized aluminum front panel is quietly elegant in any setting.

JUST 4 SIMPLE CONTROLS TO OPERATE ... all on the front panel ... On-Off switch, flywheel Tuning knob, Mono-Stereo switch, and Stereo Phase control to insure maximum separation. You’ll like the convenience of the stereo indicator light that signals when a stereo station is being received. And specially-designed filters are incorporated to remove SCA interference. The slide-rule dial is lighted to insure easy, accurate station selection. And there are connectors on the rear chassis panel for an external antenna.

BOOKSHELF SIZE ... 3-WAY INSTALLATION! Measures only 9¾” D x 2¾” H x 11¼” W ... ideal for installing in a wall, your own custom cabinet or either Heath metal or walnut veneer cabinets. Pair it with the matching AA-14 Amplifier for solid-state listening at lowest cost.

Kit AJ-14, 6 lbs ... (less cabinet for custom mounting) ... $49.95
Model AE-35, 4 lbs ... beige metal cabinet ... $3.50
Model AE-25, 4 lbs ... genuine walnut veneer cabinet ... $7.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices.

AA-14 SPECIFICATIONS (RATED IF STANDARDS) — Tuning range: 88 to 108 MHz. Antenna input impedance: 500 ohms; balanced input. Sensitivity (IF): 5 microvolts. Intermediate frequency: 107 MHz. Audio frequency response (IF): —3 dB to +0 db (20 to 15,000 Hz). Hum and noise (IF): —50 db. Output impedance: 20 K ohms. Output voltage: 0.7 volt with an 1,000 microvolt input signal. 400 Hz with 100% modulation. Harmonic distortion (IF): 1% or less. Image ratio (IF): —45 db. Capture ratio: —3 dB. IF rejection (IF): —80 db. AEC correction: 150 kHz per volt. AM suppression (IF): —40 db. Channel separation: 30 db or more at 1,000 Hz. Channel separation (using a 12 MHz, 1,000 microvolt input signal that is 100% modulated). Dimensions: With Walnut Cabinet 15½”, W x 3½”, H x 9¼”. Custom mounting dimensions: Horizontal or vertical cutout required 11¼” x 2¼”, depth required from front of mounting surface 9¼”.

Kit AA-14, 11 lbs ... less cabinet for custom mounting, no money down, $5 mo ... $58.95
Model AE-35, 4 lbs ... beige metal cabinet ... $3.50
Model AE-25, 4 lbs ... genuine walnut veneer cabinet ... $7.95
Export Model available for 115/230 VAC, 50-60 Hz; write for prices.


Heathkit Performance Specifications Are Guaranteed

24
A Word About The AJ-14 Tuner From Owner John K. Cryer, Little Rock, Arkansas

"Why don't you tell people the truth about your Model AJ-14 FM Stereo Tuner? The quick construction time, fabulous performance and low price have left me at a loss of words to describe my satisfaction."

AJ-14 Owner, Mr. Merlin Bailey, Indianapolis, Indiana writes:

"I find there are many more FM stations around than I thought there were, and am very much surprised and pleased with the performance of this little jewel of a tuner."

AA-14 Owner, Mr. Dave Morris, Ft. Collins, Colo. writes:

"I have but one word concerning your Heathkit Amplifier model AA-14; WOW! I couldn't believe $59.95 could buy so much good listening. I have my amplifier hooked to a Garrard AT-60 turntable and two Rek-O-Kut speakers, and I must confess it sounds just as good as my roommate's $350 receiver."

"P.S. I have been given estimates of $150 on the worth of the AA-14."

More Praise For The AA-14! Mr. Irving Christenson, New York, N. Y. Writes:

"My son assembled the kit in about 14 hours. No problems. It worked right away and sounded great! Tried it with my vast assortment of speaker systems, Altec, Tannoy, Wharedale and Bozak. It even drove the big Bozak system (2 woofers, etc.)."

"The AA-14 is a compact, handsome, reasonably lightweight unit with all the necessary features."
Deluxe AM/FM Stereo Tuner...
Complete Listening At Your Command

- Built-in FM multiplex adapter • Automatic FM Stereo indicator
- Adjustable Automatic Frequency Control for drift-free reception • Stereo phase control for maximum separation and lowest distortion • Adjustable AM squelch • Individual AM and FM tuning meters • Preassembled tuning unit, prealigned coils • Easy to build with 3 simple circuit boards

Take A Spin Across The Dial...enjoy maximum fidelity AM with its news, music and sports...the quiet beauty of FM with its vast selection of good musical listening...or the "concert-hall" realism of the ever-increasing number of FM stereo broadcasts. It's all yours on the AJ-41.

A Host Of Deluxe Features! Like the automatic stereo indicator that lights whenever stereo is broadcast; the built-in stereo adapter; adjustable automatic frequency control for drift-free reception; adjustable phase control for maximum stereo separation; individual tuning meters for AM and FM; FM squelch control to quiet between-station noise while monitoring; decade follower outputs to minimize hum and high frequency losses; and output stages that "tie" together so you can listen from both channels when AM or FM mono is played.

For Added Convenience, there's effortless flywheel tuning; a lighted slide-rule dial; fidelity switch for normal or maximum AM fidelity; built-in antennas; and external antenna connectors.

Styling Adds A Touch Of Modern Elegance to any room...luggage tan vinyl-clad steel cabinet with polished trim and charcoal front panel...matches the AA-100 opposite.

Kit AJ-41, 26 lbs, no money down, $11 mo. ..................$112.50

AJ-41 SPECIFICATIONS—FM: Tuning range: 88 MHz to 108 MHz, 1 kHz frequency. 10.7 MHz Frequency response: ±2 db, 20 to 20,000 Hz. Antenna: 300 ohm balanced (for internal or local reception). Output voltage: Nominal .5 volts (with 3 ohm 20% modulation at 1 kHz). Quiescent sensitivity: 0.2 volt for 20 dB of quieting, 20 volt for full quieting (40 db). Maximum deviation sensitivity: 5 volt, 1400 cycle 100% modulation. Deviation sensitivity: 20 kHz (1100 uV in). Harmonic distortion: Less than 1% (1100 uV 600 cycle 100% modulation). Image ratio: 40 dB. AFC correction factor: 12 db. AMplitude modulation suppression: 25 db. Hum & noises: 40 db below 30% modulation (20 kHz). SPECIFICATIONS MULTIPLEX—Audio frequency response: ±2 db, 50 to 15,000 Hz. Sub-carrier bandpass: ±1 db, 35,000 to 53,000 Hz (Channel separation: 20 db). Hum & noises: -65 db (relative to 1 volt rms output). Output impedance: Cathode follower, variable to 4,000 ohms (each channel). SPECIFICATIONS AM—Sensitivity, narrow bandwidth position: 1400 kHz 3 uV, 1000 kHz, 4 uV, 600 kHz, 8 uV (standard IF varsity antenna, 1 volt RMS reference output). Sensitivity change, narrow to broad position: ±5 db. 1 kHz bandwidth, narrow 14 kHz 6 dB down, Broad 20 kHz, 6 dB down. Image ratio: 1400 kHz 50 db, 600 kHz 75 db. Harmonic distortion: Less than 1%. Hum & noises: 35 db below 30% modulation (1000 kHz unmodulated with 100 uV in). I.F. rejection ratio: 1400 kHz 40 db, 600 kHz 38 db. Power supply: Transformer operated, 117 v., 50-60 Herzt, 100 watts. Dimensions: 5 1/2" H x 15 1/2" W x 14 1/4" D.

Fingertip Convenience...60 Watts Of Power...
Matching Deluxe Stereo Amplifier

- IHF rated at 60 watts (50 watts continuous) • 5 stereo inputs
- Versatile controls • Mixed channel center speaker output
- Separate monophonic phono input • Easy circuit board assembly
- Matches the AJ-41 tuner in styling and performance

What Do Owners Think About The AA-100? Mr. Alfred J. Mancinelli, Bronx, N.Y.: "The quality of the amplifier greatly exceeded my wildets dreams. It is truly unbelievable. I never expected that such realism could be attained." Mr. David Cannon, Waco, Texas: "The construction of the unit was greatly facilitated by easy-to-understand, step-by-step instructions and descriptive diagrams. But the thing that really sold me on Heathkit is performance. It is really excellent."

Now Compare The Deluxe Features! Produces 50 watts continuous, 60 watts music power from 30 to 15,000 Hz at ±1 db. 5 stereo inputs handle any source...stereo mag. phono. AM and FM tuners, tape recorder, plus two pairs for auxiliary sources. Also has outputs for 4, 8 and 16 ohm speakers, plus a mixed-channel output for stereo "fill-in" or monophonic sound to other rooms. Cathode follower outputs minimize hum and high frequency losses, and the tape playback heads can be connected directly without external amplification or equalization.

Fingertip Controls. Includes controls for preamplifier input level; power amplifier input level; hum; mode selector; speaker phase reversal switch; balance and separation; ganged volume; and separate concentric bass and treble tone.

Handsome Designer Styling. Luggage tan vinyl-clad steel cabinet with polished aluminum trim and soft refracted lighting matches the AJ-41 Tuner (opposite) ...blends with any decor.

Kit AA-100, 34 lbs, no money down, $9 mo. ..................$84.95

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

AA-100 SPECIFICATIONS—Recommended System Mates: Separate Speakers, AS-183, AS-110, AS-51, AS-38, 31, 32, 33, Tuner, AJ-41 opposite. Channels: 2, Power output: 50 watts (25 w, per channel), 60 watts (30 w, per channel). Heath Hi-Fi, Rating: 60 watts (30 w, per channel). IHF, Music Power Output (10% THD, 1 kHz), Power response: ±1 db from 30 Hz to 15 kHz at 25 watts output per channel. Harmonic distortion: Less than 0.5% at 25 watts, 1 kHz. Less than 2% at 25 watts, 30-15,000 Hz (each channel). Intermodulation distortion: Less than 1% at 25 watts, and 60, 000 Hz signals mixed 4:1 (each channel). Hum and noise: Mag. phono, 55 db below 25 watts output at 6 mv sensitivity. Tape Head, 35 db below 25 watts output. Tuner and aux. inputs 70 db below 25 watts output. Channel separation: 42 db min. at 1 kHz. Input sensitivity: For 25 watts output per channel, 30 mag. phono, 1.5 mv, stereo mag. phono, 1.5 mv, tape head, 1 mv, tuner, 0.2 mv, aux. 1 & 2, 0.2 mv. Outputs: 4, 8 and 16 ohms; cathode follower tape recorder outputs. Dimensions: 5 1/2" H x 15 1/2" W x 13 1/2" D. (allow 1" for cables at rear)

Save 5% On Your Heathkit Hi-Fi System—Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank.
The Choice of Audiophiles The World Over

Recognized For Great Performance And Dollar-Stretching Value . . . 32-Watt Stereo Amplifier

- Two hi-fi rated 14-watt (16-watt IFH) channels
- Separate preamplifiers and power amplifiers
- Patented Heath ULTRA-LINEAR circuit for unusually fine specifications
- 4 stereo inputs . . . mag. & ceramic phono, tuner, auxiliary
- Matches AJ-32 tuner (opposite) in styling & performance
- Easy to build . . . easy to buy

Just Connect Your Favorite Source To The AA-151, relax and listen. Offers four stereo inputs to handle magnetic and crystal phone, AM or FM stereo tuners, or high level auxiliary sources like a tape recorder or TV. Furnishes 28 watts continuous, 32 watts IFH music power from 30 to 22,000 Hz at ±1 db.

Complete Fingertip Controls. A 6-position mode switch for independent or combined choice of either channel. A dual-concentric volume control provides individual and separate ganged bass and treble controls provide simultaneous channel adjustments. A filament balance control effectively cancels filament hum. A reversal switch changes speaker phase for correct output. And two AC outlets (switched and unswitched) on the back . . . handy for phonograph, tuner or other accessory power.

Attractive Eye-Appealing Styling. Clean and uncluttered . . . just like its performance. Tan vinyl-clad steel cabinet with charcoal gray front panel and anodized aluminum trim. Matches the AJ-32 tuner (opposite)

Kit AA-151, 30 lbs . . . no money down, $6 mo . . . $59.95
Export model available for 115-230 v. AC, 50-60 Hz; write for prices.

What's Your Listening Pleasure . . . AM, FM, FM Stereo?

This Heathkit Tuner Offers Them All At Low Cost

- Built-in multiplex converter . . . FM Stereo indicator light
- Variable AFC for drift-free reception
- 2-bar type "Eye" tuning indicators
- Stereo Phase control
- Filtered stereo outputs
- Styling matches AA-151 amplifier (opposite)

Front-Panel Controls For Complete Operating Convenience. Like the Phase control for maximum stereo with minimum distortion . . . the variable Automatic Frequency Control that captures stations for crisp, drift-free reception . . . individual bar-type "eye" tuning indicators for both AM and FM . . . an AM fidelity switch for maximum selectivity or fidelity . . . level controls to adjust to the input needs of your amplifier . . . and effortless flywheel tuning. There's also a stereo indicator that lights automatically when stereo is received . . . the outputs are specially filtered for tapering stereo favorites without beatnote interference . . . built-in AM and FM antennas, plus separate terminals for outside antennas . . . cathode follower outputs to minimize hum and high frequency losses . . . and a squelch circuit to eliminate between-station noise when tuning.

Assembly Is Fast, Fun, Easy! The "front-end" tuner is preassembled and aligned to get you off to a quick start. And the simple step-by-step instructions and "exploded" diagrams easily guide you the rest of the way. Includes handsome tan vinyl-clad steel cabinet with charcoal front panel and polished trim. Mate it with the matching AA-151 amplifier for a praise-winning pair!

Kit AJ-32, 23 lbs . . . no money down, $9 mo . . . $84.95

AJ-32 SPECIFICATIONS—AM Section: Tuning range: 550 kHz-1600 kHz. Usable sensitivity (normal position): 1400 kHz—10 microvolts (20 db of quieting), 1000 kHz—15 microvolts (20 db of quieting), 600 kHz—40 microvolts (20 db of quieting). Output voltage (750 microvolts—30%, mod.): 1 volt. Harmonic distortion: Less than 1%. Hum and noise: (5000 microwatts, 30%, mod.): 1 volt. FM Section: Tuning range: 88 MHz-108 MHz. Antenna Balanced input for external 300 ohm antenna. Internal line antenna. Noise voltage (20 microvolts—30%, mod.): 1 volt. Harmonic distortion: 5 microvolts—100%, mod. — — 98 MHz. Less than 1%. IF rejection (98 MHz): 65 db. FM audio response (25-70,000 Hz): 21 db. AM suppression: —27 db. Hum and noise (25 microvolts, 30%, mod.): 48 db. Quelling sensitivity: 20 db—25 microvolts, 30 db—35 microvolts, 48 db—30 microvolts (max. quieting). FM Stereo Converter Section: Audio frequency response: ±3 db from 50 to 15,000 Hz. Subcarrier bandpass: ±3 dB from 23,000 to 53,000 Hz. Channel separation: 30 db or more at 1 kHz, 25 db or more at 10 kHz. Hum and noise: 65 db relative to 1 volt rms output. Output impedance (cathode follower): Variable to 4000 ohm, each channel. Size: 6 1/2" H x 15 1/2" W x 11 1/2" D.

Heath Offers You Incomparable "Extra" Customer Service
The World's Most Deluxe Tape Recorder Kit...
The New Heathkit®/Magnecord 1020

Compare These Professional Features

3 Separate Motors...a hysteresis synchronous capstan motor for constant speed, and two permanent split-capacitor types to drive the reels. Brake, tape gate and pinch roller are solenoid-operated for positive action. Everything mounts to a heavy die-cast top-plate.

All Solid-State Circuitry...21 transistors, 4 diodes—your assurance of cool, instant operation and long trouble-free life. Just two circuit boards to wire, and some easy mechanical mounting for the transport components...finish in around 20 hours.

3 Professional Tape Heads...engineered and lapped to a precise hyperbolic curve...4-track stereo or mono record and playback—sound-on-sound record—sound-with-sound record—echo effects.

2 V.U. Meters...for visual monitoring of signal levels from either tape or source...allows quick comparison of source with recorded signal.

Push-Button Operating Convenience...features push-button controls for fast, simple operation of all functions...power On-Off, Stop, Rewind, Record, Safety, Cue, Play and Hi-Fwd. The 7 function selector push-buttons interlock mechanically to prevent the wrong button from being pushed in the wrong sequence thus avoiding accidental erase, tape breakage and spillage.

Complete Inputs and Outputs...jacks for monitor output and tape output, and auxiliary inputs (for tuners, TV's, etc.) are located on the rear chassis panel. Inputs for microphones and outputs for headphones are conveniently located on the front panel for easy access.

Price: $399.50

Heathkit Step-By-Step Instructions And Big Fold-Out Pictorials Are Famous For Clarity And Simplicity
Save Over $170 By Building The Heathkit Version
Of This Professional 4-Track Stereo Tape Recorder

- 4-track stereo or mono record and playback at 7½ & 3¾ ips
- Sound-on-sound, sound-with-sound and echo capabilities
- 21-transistor, 4-diode circuit for cool, instant operation, long life
- 3 separate motors...hysteresis synchronous capstan motor for constant speed, two split-capacitor torque motors to drive supply and takeup reels...Automatically shuts itself off at end of reel
- Two V.U. meters...Digital counter with push button zero reset
- Stereo microphone inputs and headphone outputs...front panel mounted for easy access...Operates in vertical or horizontal positions...Individual gain controls for each channel
- Mount in wall, cabinet, tape drawer or piece on shelf with optional walnut base...All push-button controls for operational modes...Requires amplifier and speakers for playback

Thanks to Heath, you can now save over $170 on the new Magnecord 1020 4-Track Transistor Stereo Tape Recorder by building it yourself. And the only difference between this Heathkit version and the original is the $170 you save (think of all the tape you can buy with that!). All parts are made at the Magnecord factory.

Add to this Magnecord's years of pioneering and developing tape equipment for the broadcasting and recording industries, and you have a sophisticated recorder that will give you years of professional quality and reliability.

VERSATILE, PROFESSIONAL RECORDING. With the AD-16 you can record “live” from microphones, or from auxiliary sources like tuners, TV's, etc., and playback...in 4-track stereo or mono at either 7½ or 3¾ ips. And you can make sound-on-sound, or sound-with-sound (mixing) recordings, or create interesting echo effects.

PROFESSIONAL TAPE TRANSPORT. The tape transport is powered by 3 separate motors. The hysteresis synchronous capstan motor has a dynamically balanced flywheel and a ballbearing inertial stabilizer for constant, accurate speed. Two permanent split-capacitor torque motors drive the supply and takeup reels. With the convenient push-button controls, you can change operational modes instantly and gently with the touch of a button. Compliance arms insure correct tape tension at all times.

The military-type differential band brakes are solenoid operated for instant, gentle stops. And when the tape runs out an automatic switch shuts off all motors, opens the tape gate and retracts the pinch roller by automatic solenoid-operation for positive action.

3 PROFESSIONAL TAPE HEADS. Selectable ¼ track erase, record and play. Engineered and lapped to a precise hyperbolic curve for smooth low frequency response...made with a deep gap, deposited quartz for high frequency response and long life. Removable shields afford double protection against external magnetic fields. Protective, snap-mounted head covers provide easy access for cleaning and de-magnetizing.

OTHER PROFESSIONAL FEATURES. All parts mount on a heavy, die-cast top-plate that won't warp, reduces wear, provides rigid support and stable alignment. Two V.U. meters for visual monitoring of signal levels from either tape or source...allows quick comparison of source with recorded signal. Inputs for microphones and outputs for headphones are all front-panel mounted for easy access. Digital counter with push button zero reset. Low impedance emitter-follower outputs deliver 1 volt or more to your external stereo amplifier inputs. Individual gain controls for each channel. And all solid-state circuitry...21 transistors and 4 diodes...your assurance of cool, instant operation, long reliable life.

FAMOUS HEATHKIT KNOW-HOW SPEEDS ASSEMBLY. Simple step-by-step instructions with generous use of giant pictorials guide you every step of the way. You just wire two circuit boards and do the easy mechanical mounting of the transport components.

And to make construction even easier, the connecting wires and shielded cables are precut, pre-stripped, and marked...even the connectors are installed where necessary; just plug them in! Total assembly time is around 25 hours...that's like getting paid $7 an hour for your efforts.

VERSATILE INSTALLATION. Operates in either vertical or horizontal positions. Mount in a wall, cabinet, tape drawer, or place on a shelf with the optional walnut base. Optional slides and walnut base combine as a tape drawer for sideways mounting in Heath AE-20W or AE-13S equipment cabinets (p. 42) with back panel removed or cut out. Get today's best buy in a professional stereo tape recorder...order the Heath's exclusive kit version of the Magnecord 1020 now!

Kit AD-16, deck & electronics, 45 lbs. $40 dn., as low as $23 mo. $399.50
AD-16-1, walnut base, 11 lbs. $19.95
AD-16-2, adapter ring for cabinet or wall mounting, 2 lbs. $4.75
AD-16-3, slides (combine with walnut base for tape drawer), 6 lbs. $9.95

AD-16 SPECIFICATIONS—Tape speeds: 7½ ips and 3¾ ips. Speed accuracy: ±1% at 7½ ips; ±2% at 3¾ ips. Wow and Flutter: 0.18% at 7½ ips; 0.22% at 3¾ ips. Tape size: ½" wide; 1500 ft. Reel size: Standard N.A.B. 5"; 7½-ips, and 8¼" Magnecord reel. Rewind and hi-fund time: 1200 ft. in 120 seconds or less. Digital counter: 3-digit counter with zero reset. Heads: ¼" track erase, record and playback. Circuitry: 21 transistors, 4 diodes. Frequency response: ±3 db, 30 to 10,000 Hz at 0.75 ips; ±2 db, 45 to 18,000 Hz at 3¾ ips. Signal-to-noise ratio: 48 db at 3¾ ips; 52 db at 7½ ips. Inputs per channel: Hi-Z microphone, auxiliary. Outputs: Emitter follower, output level: 9 V P.M. at 400 Hz. Power supplies: Transformer operated, full-wave rectifier, regulated, 15-16V D.C. Power requirements: 110-130 volts, 60 Hz, 140 watts.

ADDITIONAL OPTIONS...

OPTIONAL WALNUT BASE...measures 19¾" W x 14¾" D x 6½" H. Ideal when mounting the AD-16 on the open on a shelf or bookcase. Converts to a tape drawer for installation in a hi-fi equipment cabinet when combined with optional ADA-16-3 slides (opposite). ADA-16-1, 11 lbs. $19.95

ADAPTER RING...use when mounting in a cabinet or wall. Provides sturdy support of AD-16, and makes an attractive cover for "rough cuts." Handsome brushed extruded aluminum. ADA-16-2, 2 lbs. $4.75

OPTIONAL TAPE DRAWER SLIDES...combine with ADA-16-1 walnut base (opposite) for a handy tape drawer when mounting AD-16 in equipment cabinets. Mounts sideways in Heath AE-20W or AE-13S cabinets with back panel removed or cut out. ADA-16-3, 6 lbs. $9.95

Use “No Money Down” Heath Time Pay—See Order Blank For Details
New Sony Tape Recorders

NEW!

GDP-26
$229.50

New Sony Solid-State Stereocorder “260” . Complete 4-Track Stereo & Mono Record And Playback System

A HOST OF PROFESSIONAL RECORDING FEATURES. 4-Track Stereo and Mono Record and playback at 7 1/2 and 3 3/4 ips. XL-2 Radial Sound—each side of carrying case contains an acoustically isolated infinite baffle enclosure. A special 4" x 8" high compliance elliptical speaker is mounted in each enclosure, and positioned so the sound radiates in an arc... provides... combines to form carrying case lid, separates wide-spaced speakers. Solid-State Circuity... transistorized power amplifiers with 10 watts of music power per channel. FM Stereo Inputs... for recording FM stereo "off the air." 2 Professional VU Meters... for accurate level indications. Dynamically Balanced Capstan Flywheel... advanced "rim drive" eliminates belts, assures smooth operation. Other features include separate bass and treble tone controls; automatic tape lifter heads; pause control and tape counter for editing, cueing and tape indexing; vertical or horizontal operation; automatic shut-off at end of reel; handsome dark gray and satin-chrome carrying case with two Sony F-96 dynamic microphones. Not a kit.
Model GDP-26, 45 lbs., no money down, $229.50...

GDP-26 SPECIFICATIONS—

- Tape speeds: 7 1/2 and 3 3/4 ips.
- Frequency response: 3 db.
- Flutter & wow: Less than 0.19%.
- Inputs: 2 low imp. microphones, 2 high level.
- Outputs: 2 line outputs, 2 external speakers.
- Power requirements: 117 volts, 60 Herzt, 55 watts.
- Dimensions: 21"W x 15"H x 7 1/2"D.

NEW!

GDP-36
$139.50

New Solid-State Sonymatic “105”... Portable Convenience... 4-Track Monophonic Recording And Playback

COMPARE ITS MANY EXCLUSIVE FEATURES. 4-Track Monophonic Record and Playback at 3 speeds... 7 1/2, 3 3/4 and 1 1/2 ips. Full 7" Reel Capacity... up to 8 hours of continuous record or playback. 10 Watts Music Power Output... special switch for operating amplifier and built-in speaker. ControlHead with convenient portable public address system. Sonomatic Automatic Volume Control... adjusts levels of voice recording, AVC defeat switch and VO meter provide complete dynamic range for music recording. Sony RPR... exclusive Retracting Pinch Roller provides an unobstructed tape path for easy threading. Sound-On-Sound Recording... ideal for language and music training. Built-in connections and switching provide immediate student/teacher track comparisons. Other features include power control and digital counter for editing, cueing and tape indexing; tone control; automatic shut-off at end of reel; Sony F-96 dynamic microphones.
Model GDP-36, 27 lbs., no money down, $139.50...

GDP-36 SPECIFICATIONS—

- Tape speeds: 7 1/2, 3 3/4 and 1 1/2 ips.
- Frequency response: 50-12,000 Hz @ 7 1/2, 50-10,000 Hz @ 3 3/4, 50-8,000 Hz @ 1 1/2.
- Flutter & wow: 0.12%, 0.15% and 0.2%.
- Inputs: Low impedance microphone and high impedance aux.
- Outputs: Monaural and 8 ohm external speaker.
- Power requirements: 117 volts, 60 herzt, 45 watts.

GDP-174A
$135.00

Sony 200 Stereocorder... Detachable Speakers Form Lid For Suitcase Portability, Separate For Best Stereo

DESIGNED FOR HOME OR PORTABLE USE. Features 4-Track Stereo And Mono record and playback at 7 1/2 and 3 3/4 ips. Full Range 2-Speaker System... can be used with external sound systems, or as complete P.A. system. Dynamically Balanced Capstan Flywheel... advanced "rim drive"... no belts to stretch or wear out. Two VU Meters... assures accurate indication of recording level. FM Stereo Inputs... record "off the air" from your stereo tuner. Other features include automatic tape lifter; pause control and digital counter for cueing, editing and indexing; full 7" reel capacity; two Sony F-96 mikes; dark gray and chrome case.
Model GDP-184B, 35 lbs., no money down, $179.00...

GDP-184B SPECIFICATIONS—

- Power requirements: 70 watts, 117 volts, 60 Hz (50 Hz optional).
- Tape speeds: 7 1/2 and 3 3/4 ips.
- Frequency response: 50-14,000 Hz @ 7 1/2, 50-10,000 Hz @ 3 3/4.
- Flutter & wow: 0.19%, 0.35%.
- Signal to noise ratio: Better than 45 db.

GDP-174A
$135.00

Sony Solid-State Stereocorder "250-A"... Operates Vertically Or Horizontally

ADVANCED FEATURES FOR COMPLETE OPERATING VERSATILITY. 4-Track Stereo And Mono record and playback at 7 1/2 and 3 3/4 ips. Solid-State Circuity... assures cool, instant operation. Includes recording amplifiers and playback preamplifiers. FM Stereo Inputs... for recording FM stereo "off the air." Dynamically Balanced Capstan Flywheel... advanced "rim drive" eliminates belts, assures smooth operation. Automatic Sentinel Shut-Off Switch... sensing mechanism turns off power at end of reel. Automatic Tape Lifter... protects head from wear during fast forward and rewind. Pause Control And Digital Tape Counter... for precise editing, cueing and tape indexing. Other features include two VU meters for accurate level indications; single knob for simple control of all functions; full 7" reel capacity; vertical or horizontal position operation; and attractive walnut case-cabinet.
Model GDP-174A, 23 lbs., no money down, $135.00...

GDP-174A SPECIFICATIONS—

- Power requirements: 115 volts, 60 Hz (50 Hz optional).
- Tape speeds: 7 1/2 and 3 3/4 ips.
- Flutter & wow: 0.19%.
- Signal to noise ratio: 50 db or more.

Heath Has The World's Largest Selection Of Electronic Kits
Famous DUAL Turntables!

ADP-55
$129.51
(with 1c cartridge)

ADP-116
$109.51
(with 1c cartridge)

ADP-136
$69.51
(with 1c cartridge)

Deluxe Dual 1019
Auto/Professional Turntable
- Variable pitch control on all 4 speeds—6% range
- Automatic tone-arm tracks below ½ gram, yet stops at zero
- Direct drive, continuously variable anti-skating compensation
- Manual tone-arm tracking
- 7½ lb. die-cast dynamically balanced platter
- Single-play spindle that rotates with your records
- Automatically shuts off after play
- Now can be started manually with manual tone-arm tracking or at a standstill
- Plays up to 10 records with less than 2/10 gramsthe first time from 1st track to last track
- Continuously variable numerical gram scale in 1/2 gram steps for tracking precision
- Magnetically driven cartridge
- Holds 100 volt amps, 120 volt home system
- 110%, x 125% x 6" above and 3" below motor board

Model ADP-55, turnover only, 20 lbs.
No money down, $12 month, $129.51
Model ADP-116, changer & choice of any 1c cartridge page 36 (specify by model number) $112.81
No money down, $12 month, $129.51
ADA-24W, oiled solid walnut base, 3 lbs. $119.55
ADA-24-1, 45 rpm spindle, 2 lbs. $4.80


New Dual 1009 SK
Auto/Professional Turntable
- New direct drive continuously variable anti-skating compensation to balance style
- Feather-touch cue control for automatic and manual play
- New single-play spindle rotates with record exactly like single-play turntable
- Non-ferrous, die-cast, dynamically balanced platter
- New continuously variable numerical gram scale in 1/2 gram steps for tracking precision
- New designer styling
- Automatic tone-arm tracking
- Holds 100 volt amps, 120 volt home system
- 110%, x 125% x 6" above and 3" below motor board

Model ADP-116, changer only, 17 lbs.
No money down, $11 month, $109.50
Model ADP-136, changer & choice of any 1c cartridge page 36 (specify by model number) $112.81
Model ADP-136, changer & choice of any 1c cartridge page 36 (specify by model number) $112.81
ADA-24A, oiled walnut base, 3 lbs. $119.55
ADA-24A, 45 rpm spindle, 1 lb. $4.80
ADA-24-1. 45 rpm spindle, 2 lbs. $4.80

ADP-116 SPECIFICATIONS: 1695, 33 1/3, 45 and 78 rpm. Turntable: 7½ lb. 304 stainless steel. 100 volt amp, 120 volt home system. Power requirements: 100-120 volts, 60 Hertz. Dimensions: Required mounting space, 11½" x 12¼" x 6½" above and 3" below motor board

Choose Your Special Offer Cartridge—Limit One Per Changer Ordered.

Model ADP-55, turnover only, 20 lbs.
No money down, $12 month, $129.51
Model ADP-116, changer & choice of any 1c cartridge page 36 (specify by model number) $112.81
Model ADP-136, changer & choice of any 1c cartridge page 36 (specify by model number) $112.81
ADA-24A, oiled walnut base, 3 lbs. $119.55
ADA-24A, 45 rpm spindle, 1 lb. $4.80
ADA-24-1, 45 rpm spindle, 2 lbs. $4.80

Share M44E-7 15 Dynamic Elliptical Stylus
Model ADP-55, turnover only, 20 lbs.
No money down, $12 month, $129.51
Model ADP-116, changer & choice of any 1c cartridge page 36 (specify by model number) $112.81
Model ADP-136, changer & choice of any 1c cartridge page 36 (specify by model number) $112.81
ADA-24W, oiled solid walnut base, 3 lbs. $119.55
ADA-24-1, 45 rpm spindle, 2 lbs. $4.80

Share M44E-15 15 Dynamic Elliptical Stylus
Model ADP-55, turnover only, 20 lbs.
No money down, $12 month, $129.51
Model ADP-116, changer & choice of any 1c cartridge page 36 (specify by model number) $112.81
Model ADP-136, changer & choice of any 1c cartridge page 36 (specify by model number) $112.81
ADA-24W, oiled solid walnut base, 3 lbs. $119.55
ADA-24-1, 45 rpm spindle, 2 lbs. $4.80

Choose Your Special Offer Cartridge—Limit One Per Changer Ordered.

Special Cartridge Offers With Changer Order—Specify By Heath Model Number

Model ADP-55, turnover only, 20 lbs.
No money down, $12 month, $129.51
Model ADP-116, changer & choice of any 1c cartridge page 36 (specify by model number) $112.81
Model ADP-136, changer & choice of any 1c cartridge page 36 (specify by model number) $112.81
ADA-24W, oiled solid walnut base, 3 lbs. $119.55
ADA-24A, 45 rpm spindle, 1 lb. $4.80
ADA-24-1, 45 rpm spindle, 2 lbs. $4.80

EMPIRE 688E Magnetic
AD-6400 MANNUFACTURER'S SPECIFICATIONS: 6 speed—20,000 Hertz, Output: 0.05 millivolt, 45 rpm. Separation: 32 dB, lead impedance: 47,000 ohms. Dimensions: 12 x 18 x 15, depth: tracking force: 1.5 grams, vertical tracking angle: 15°.

Garrard: 80 MKII
Pickering 2109
Shure M44E7
Emprise M555

Pickering V15ATE-3 Magnetic
AD-626A MANNUFACTURER'S SPECIFICATIONS: 6 speed—20,000 Hertz, Output: 0.05 millivolt, 45 rpm. Separation: 32 dB, lead impedance: 47,000 ohms. Dimensions: 12 x 18 x 15, depth: tracking force: 1.5 grams, vertical tracking angle: 15°.

Model AD-626A, 1 lb. $34.95

Model 1009SK
Pickering V15ATE-3
Shure M555
Emprise M555

Model AD-1009, 1 lb. $34.95

Pickering V15ATE-3
Shure M555
Emprise M555

SHURE M44E-7
Pickering V15ATE-3
Shure M44E7
Empire 688E

SHURE M44E-15
Pickering V15ATE-3
Shure M44E7
Empire 688E

Model AD-1009, 1 lb. $34.95

Pickering V15ATE-3
Empire 688E

Shop The Easy Heathkit Way—Select Your Kits In The Comfort Of Your Home, Mail Your Order, & Get Direct-To-Your-Door Delivery

31
New 1967 Garrard Turntables...Many Advanced Features
And Styling At Modest Cost

New 50 Mk II Automatic Stereo Turntable . . . With Manual Cueing And Pause Device Found
Only In Units Costing 2 or 3 Times As Much

New 60 Mk II 4-Speed Automatic Stereo Turntable . . . New Features
For Advanced Performance

• Plays all four speeds automatically or manually • Automatically intermixes records of different size • Oversize turntable and attractive mat cover for better record support • Counterweighted cast aluminum tone arm with adjustable stylus pressure tracks high quality cartridges • Super-sensitive DuPont Delrin® "frictionless" trip mechanism • Compact ... completely assembled

COMPACT IN SIZE AND PRICE ... KING-SIZE IN PERFORMANCE.
That's the new Garrard 40 Mk II with the same fine features as its predecessor, the Model 30 ... like the counterbalanced cast aluminum arm with sensitive Delrin trip mechanism to offset friction, and track high compliance cartridges at minimal tracking force ... 4-pole shaded "Induction Surge" motor with a dynamically balanced rotor for constant speed without hum or vibration ... oversize turntable with an attractive mat ... simple "finger-touch" stylus adjustment ... and stereo-wired Amplok plug. New ebony and walnut cabinet with silver trim optional. See pg. 31 for cartridge offers with changer order.

ADP-46, turtable, 13 lbs. ... no money dn., $5 mo. ........................................... $44.50
ADP-46, turtable with choice of 1c offer cartridge, pg. 31 (specify by model no. 14 lbs. ... no money dn., $5 mo. ........................................... $44.51
ADA-66-2, Garrard LRS20 45 rpm spindle, 1 lb. ........................................... $5.95
ADA-66-1, matching walnut base, 3 lbs. ........................................... $4.50

New 50 Mk II Automatic Stereo Turntable . . . Without Manual Cueing
And Pause Device Found

NEW FEATURES FOR IMPROVED RECORD PERFORMANCE. Thanks to a manual cueing and pause device on this all-new Garrard 50 Mk II, you can place the tubular tone arm on a record in any position. And since it can be activated any time while playing a stack of records, it also acts as a pause mechanism. Simply lift the special cueing lever, and the arm stays above the record as long as desired. When lowered, it resumes right where it left off, and the entire playing cycle continues.
The newly styled ebony and walnut base with silver trim is optional. See pg. 31 for special cartridge offers with changer order.

ADP-56, turtable, 14 lbs. ... no money dn., $5 mo. ........................................... $54.50
ADP-56, turtable with choice of 1c offer cartridge, pg. 31 (specify by model no.) 15 lbs. ... no money dn., $5 mo. ........................................... $56.51
ADA-66-2, Garrard LRS20 45 rpm spindle, 3 lbs. ........................................... $5.95
ADA-66-1, matching walnut base, 1 lb. ........................................... $4.50

New 60 Mk II 4-Speed Automatic Stereo Turntable . . . New Features
For Advanced Performance

• 4 speed automatic or manual play • New resiliently mounted counterweight to reduce rumble and resonance • New stylus pressure adjustment for smooth, accurate tracking force settings • Manual cueing and pause device • Tubular dynamically-balanced counterweight adjusted tone arm •Double-shielded Laboratory Series® 4-pole shaded motor • Super-sensitive DuPont Delrin® trip mechanism • Automatically intermixes records of different size • Heavy, cast oversized turntable, with mat • Completely assembled

FEATURES ADVANCES FOUND ONLY ON MORE EXPENSIVE UNITS!
Like the heavy cast oversized turntable; new stylus pressure adjustment with a knurled camera-type dial for precision, easy setting of tracking force; new resiliently mounted counterweight to further reduce the already minimal rumble and resonance; needle pivots for arm bearings; lightweight cut-away cartridge shell and finger lift; positive-acting tone arm safety catch; and a special manual cueing and pause device. New ebony and walnut base with silver trim optional. See pg. 31 for special cartridge offers with changer order.

ADP-66, turtable, 15 lbs. ... no money dn., $7 mo. ........................................... $74.50
ADP-66, turtable with choice of 1c offer cartridge, pg. 31 (specify by model no.) 16 lbs. ... no money dn., $7 mo. ........................................... $74.51
ADA-66-2, 4 lbs. Garrard LRS20 45 rpm spindle, ........................................... $5.95
ADA-66-1, 1 lb. matching walnut base, ........................................... $4.50

Use "No Money Down" Heath Time Pay—See Order Blank For Details
Performance Features, New Decorator Bases!

New 70 Mk II Automatic Stereo Turntable ... With Garrard's Famous Pusher-Platform For The Safest Automatic Play Ever

- 4-Speed automatic or manual play
- Dynamically balanced tone arm for improved tracking capability and resistance to external shock
- Adjustable stylus pressure and tracking force
- Full size heavy-balanced cast "sandwich" turntable
- Adjustable bias compensator
- Double-shielded Laboratory Series® 4-pole shaded motor
- Exclusive pusher platform for automatic play
- Completely assembled

LUXURIOUS STYLING, SUPERB PERFORMANCE! Like its predecessor, the Type A70, the 70 Mk II offers a host of superlative features to handle modern high compliance cartridges, plus a beautiful iridescent charcoal gray color styling that will enhance any stereo system. A special dynamically balanced tone arm with an adjustable counterbalanced weight assures accurate tracking and resists external jarring. There are audible/visual 1/4 gram click settings on the stylus pressure gauge that's built into the tone arm. And special needle pivots set into miniature ball bearings make vertical motion on the tone arm virtually frictionless.

Also has a foam rubber spring cushion and stereo-wired Amplok plug.

New ebony and walnut base optional. See pg. 31 for special cartridge offers with changer order.

ADP-76, 23 lbs., turntable...no money dn., $9 mo. .................. $84.50
ADP-76, 24 lbs., turntable and choice of any 1c cartridge, page 31 (specify by model no.)...no money dn., $9 mo. .................. $84.51
ADP-76A-1, 4 lbs., matching walnut base ........................................ $5.50
ADP-76A-2, 1 lb., Garrard LRS5 45 rpm spindle ................................. $5.95


Garrard's Finest ... The New Lab 80 Mk II Automatic Transcription Stereo Turntable...

Professional Reproduction Without Compromise

- Insures professional performance of 33 1/3 and 45 rpm records
- Heavy, cast turntable and special mat with deep rings at the 12", 10", and 7" positions
- New provision for playback of single record
- Hydraulically controlled integrated cueing device
- New anti-skating compensator with 1/2 gram marking and counterweight with a window for easy setting
- Repeats records as often as desired
- Dynamically balanced "Afromosia" tone arm
- Laboratory Series® 4-pole shaded motor
- Motor isolation system
- Delrin® trip mechanism with magnetic repulsion

COMPARE THESE PROFESSIONAL FEATURES! In addition to the quality features that made the Lab 80 a favorite among discriminating audiophiles, the new Lab 80 Mk II boasts a newly styled, raised and easy-to-read control center with fluted tab levers; a new mat with deep rings at the 12", 10", and 7" positions which act as a stylus safety feature if someone should activate the automatic control without a record, causing the arm to come down accidentally; provision for automatic play of a single record; a new anti-skating compensator with accurate 1/2 gram settings, employing a counterweight with a window for easy setting; and a special adapter to repeat records as often as desired. New ebony and walnut base optional. See pg. 31 for special cartridge offers with changer order.

ADP-86, 25 lbs. ... turntable...no money dn., $10 mo. .................. $95.50
ADP-86, 26 lbs., turntable and choice of any 1c cartridge, page 31 (specify by model no.)...no money dn., $10 mo. .................. $95.51
ADP-86A-1, 5 lbs., matching walnut base ........................................ $5.50
ADP-86A-2, 1 lb., Garrard LRS9 45 rpm spindle ................................. $5.95


Over 250 Heathkits To Choose From—World's Largest Selection

33
Stereo Hi-Fi

**For Budget-Minded Music Lovers...**

**AA-32**

**$39.95**

**Matching 20-Watt Stereo Amplifier... Full Controls... Operates With Magnetic And Ceramic Cartridges**

- Four stereo inputs... magnetic & ceramic cartridges, tuner & auxiliary. Furnishes 20 watts IHF music power. Full-range controls found only on more expensive equipment. Handsomely styled in mocha brown and beige with black trim. Easy to build... goes from parts to performance in a few evenings.

Plenty Of Versatility... plenty of clean, undistorted power. A full 16 watts continuous, 20 watts music power from 30 to 30,000 Hz at +1 db at 8 watts per channel. Four stereo inputs handle magnetic phono and ceramic phono cartridges, tuner, & auxiliary sources.

Full-R ange Controls. The dual-concentric volume control allows adjustment of both channels individually or simultaneously... a mono/stereo switch for mode selection, a pair of full-range tandem-type tone controls permit simultaneous bass and treble adjustment on both channels... and a power on/off switch.

Two Push-Pull Power Output Stages, plus 2 four-stage preamps highlight the 7-tube amplifying circuit. The power supply is a completely transformer operated, full-wave doubler silicon-diode circuit.

**Save 5% On Your Heathkit Stereo/Hi-Fi System—Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank.**
Low-Cost "Tube-Type" Stereo

Converting To Stereo With AC-11 Multiplex Converter

- 5-tube circuit-9-tube function · Rich moka brown & beige color styling with black trim · Automatic Frequency Control for drift-free reception · Easy to build with factory assembled "front-end" tuner, prealigned IF transformers & encapsulated circuit module · Matches AA-13 & AA-23 amplifiers pg. 36 in styling & performance

Compare The AJ-63's Features! A switched Automatic Frequency Control prevents "drifting"... locks in desired station for clear, sharp reception. Its limiter-ratio detector assures stable, broadband FM reception. A cathode follower output minimizes hum and high frequency cable losses... allows installation with virtually any system. And with the large, easy-to-read slide-rule dial and smooth flywheel tuning, station selection is precise, easy. The "Heath-Engineered" 5-tube circuit works like 9 tubes, and its safe transformer power supply features a modern silicon-diode rectifier.

Quick & Easy To Build!—Famous Heath step-by-step instructions and large "exploded" diagrams show you where every part goes. No special skills or knowledge required. The critical "front-end" tuner is already factory assembled and aligned ... speeds construction and assures top performance. And you enjoy "do-it-yourself" savings, plus the pride and fun of building a sophisticated hi-fi component yourself.

Easily Converts To Stereo! Features a built-in multiplex output connector ... simply plug in a multiplex converter like the Heathkit AC-11 opposite.

Kit AJ-63, 10 lbs., no money dn., $5 mo. $37.50
Export model available for 115/230 V. AC, 50-60 Hz; write for prices.

AJ-63 SPECIFICATIONS—Tuning range: 88 to 108 MHz. Quieting sensitivity: 2.5 uv for 20 db of quieting; 3.5 uv for 30 db of quieting; 25 uv for maximum quieting (38 db). IF frequency: 10.7 MHz. Image ratio: 40 dB. Stereo correction factor: 75 kHz per volt. AM suppression: 25 db. Frequency response: -2.5 db, 20-20,000 Hz. Harmonic distortion: Less than 1%. 100 Hz and 6 Hz; mixed 4:1 1100 uv, 30% modulation. Audio output: 300 ohms balanced. Output impedance: 600 ohms (cathode follower). Output voltage: Nominal 5 volts (with 30% modulation, 20 uv signal). Power requirements: 105-125 volts, 50/60 Hertz AC or 30 watts. Overall dimensions: 4" x 3 1/2" x 5". W x 9 1/4" D.

Add Stereo Realism To Your FM Tuner With This Deluxe Heathkit Multiplex Converter

- Use with most FM tuners having a multiplex output · Compact ... fits anywhere · Stylized to match Heathkit tuners · Built-in power supply · Easy to build ... easy to operate

Features Built-In Power Supply with silicon rectifier, 3 tubes and prealigned coils. Simplified balanced diode detector assures low distortion. Marry it with any good FM tuner such as the Heathkit AJ-63 for complete stereo listening. Convert now ... order yours today!

Kit AC-11A, black, 4 lbs. $23.50
Kit AC-11B, tan, 5 lbs. $23.50


Kit AJ-53, 11 lbs., no money dn., $5 mo. $26.50
Export model available for 115/230 VAC, 50-60 Hz; write for prices.


Heathkit Performance Specifications Are Guaranteed
Low-Cost Tube-Type Hi-Fi Components

3-Watt Monophonic Amplifier... Ideal For "Starter" Or "Extra" Music System
- Built-in preamplifier
- Two switch-selected inputs
- Separate bass, treble, and volume controls
- 3-watt output, ±1 db from 60 to 15,000 Hz
- Less than 3% distortion at rated output
- Satin black & ivory color styling
- Simple to build & operate

Compact Size, Yet Versatile In Performance. Fits just about anywhere, and delivers 3 watts of power from 60 to 15,000 Hz at ±1 db. Perfect for the hi-fi beginner, or the heart of a low-cost second hi-fi system.

Features A Built-In Preamplifier with switch selection of two inputs for crystal or ceramic phonograph, tuner, etc. Has volume, bass treble tone controls, plus outputs for 4, 8, and 16 ohm speakers. Produces sound levels of 85 to 88 db without any audible distortion... more than enough volume for average listening.

Assembles Easily In An Evening. Fits nicely on a bookshelf, end-table... any limited-space area. Handsome black metal cabinet and ivory front panel.

Kit AA-191, 8 lbs. $15.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices.

Heathkit 16-Watt Monophonic Amplifier... Easy To Own, Easy To Build
- Patented Heath Ultra-Linear circuit
- Music Power rated at 16 watts
- 30 to 15,000 Hz, ±1 db at full rated output
- Separate bass & treble controls
- 3 inputs for any program source
- Easy to build
- Mocha brown & beige color styling with black trim... matches AA-63 & AA-53 tuners, pg. 35

Compare These Additional Features! The patented Ultra-Linear output circuit assures full-range sound with low distortion and noise. Has EE-84 output tubes and specially-designed output transformer with taps for 4, 8, and 16 ohm speakers. And a filament balance control virtually eliminates AC hum even at low volume levels.

Simple To Operate & Build. Just switch to the desired program source, set the volume and tone controls. Assembles in just a few relaxing evenings.

Kit AA-13, 17 lbs., no money dn., $5 mo. $29.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices.

For All-Around Hi-Fi Performance, Choose This Versatile 30-Watt Monophonic Amplifier
- Hi-Fi rated at 25 watts continuous, 30 watts IHF music power
- 4 front-panel selected inputs
- Power response ±1 db from 30 to 15,000 Hz
- Separate bass & treble controls
- Ideal for limited-space installations
- Mocha brown & beige color styling with black trim... matches AA-63 & AA-53 tuners, pg. 35

Use For Hi-Fi System Or Public Address Applications! Houses preamp, amplifier, and power supply in one "bookshelf-size" unit. Features 4 separate inputs for microphone, mag. phono crystal or ceramic phono cartridge, and an auxiliary source. Output transformer is tapped for 4, 8, and 16 ohm speakers. And the heavy-duty, shielded power transformer assures years of dependable service. Fixed bias push-pull 7591 output tubes deliver full-rated output with minimum distortion.

Modern Decorator Stylings. Mocha brown metal cabinet with beige front panel and black trim... matches any decor.

Kit AA-23, 20 lbs., no money dn., $5 mo. $42.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices.

AA-23 SPECIFICATIONS—RECOMMENDED SYSTEM
- Speakers: AS-18, AS-20, AS-10, etc., pg. 31, AS-51, etc., pg. 38, AS-173, AS-183, AS-163, pg. 40, All changers & turntables, pg. 31, 32 & 33. Power output: 25 watts Heath Hi-Fi rating, 30 watts IHF music power rating (0.7% THD @ 1 kHz), Frequency response: ±1 db, 30 Hz to 15,000 Hz, ≤10 dB, 30 Hz to 20 kHz, 10% THD @ 1 kHz, Input sensitivity: 0.15 v for 3 watts output, crystal phone and tuner, 0.004 v at 1 kHz crystal phone, 0.2 v/n for 16 watts output with tone controls flat, 20 dB over output with tone controls flat, 0.004 v at 1 kHz crystal phone, 0.2 v, tuner 0.25 v with tone controls flat, Output: 4, 8 and 16 ohms, Damping factor: 10:1. Controls: 3-position function selector switch, bass and treble tone, volume control, Power requirements: 117 v, 50-60 Hz, 25 watts, Dimensions: 6-1/16'' x 10-1/8'' x 6-1/2'' D.
Acoustic Suspension Speaker Systems

Your Best Value
In An Acoustic Suspension Speaker System

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

Like To Own An Acoustic Suspension System? But feel they're too costly, or that the added expense of a new amplifier powerful enough to drive one is not warranted? Then take a close look at the Heathkit AS-10. Here is an acoustic suspension system with the extended bass response, smooth high frequency response and substantially lower distortion that has made this type of system a favorite of audiophiles the world over. And it’s yours to enjoy in a space-saving enclosure that needs only 10 watts to drive, yet handles up to 40 watts ... and costs far less than comparable units.

Why Is This System So Distortion-Free? The speaker cone is mounted with a very free suspension that provides part of the elastic restoring force normally required. The full restoring force is then re-introduced via the pneumatic “spring” of the air enclosed by the cabinet. The cone literally “rides on air” instead of mechanical springs, thus reducing harmonic distortion.

Covers 30 To 15,000 Hz. Includes a high frequency control and L-C crossover network. Its compact cabinet can be used vertically or horizontally, and is available in walnut or unfinished white hardwood. Easy to assemble ... pure pleasure to hear.

Kit AS-10U, unfinished, 43 lbs. ... no money down, $6 mo. ... $69.95
Kit AS-10W, walnut, 42 lbs. ... no money down, $7 mo. ... $64.95


Deluxe Acoustic Suspension System
Acoustic Suspension Woofer ...

Super Tweeter For Extended Highs

- 10" acoustic suspension woofer • 1½" dome-type super tweeter extends high frequency response to 20,000 Hz • Two 5" crossed-fired mid-range speakers • Built-in crossover networks • High frequency level controls • Preassembled cabinets

What Makes This System Different? The addition of a specially designed super tweeter that extends the already remarkable performance range of this system to a full 40-20,000 Hz. For you this means enjoying distortion-free reproduction over the entire frequency range ... from the full high-pitched shrill of a clarinet to the full impact of a kettle drum ... with an astounding authenticity you never dreamed possible in a system this size.

Clean, Clear Bass Response With Low Harmonic Distortion. Made possible by the employment of the acoustic suspension principle where the woofer cone literally suspends in air, thus eliminating the mechanical springs which cause distortion in most other speakers. In the AS-2A, a "cushion" of air inside the air-tight cabinet acts as a restoring force. Result? Full, rich sound with virtually no distortion!

The super tweeter and two mid-range cross-fired speakers are individually controlled by separate level controls. Easy to assemble, too ... just mount speakers in preassembled cabinet, wire the crossover network, and fill the cabinet with the fiberglass furnished. Pick a pair for stereo!

Kit AS-2AU, unfinished, white hardboard, 51 lbs. ... no money down, $9 mo. ... $89.95
Kit AS-2AW, finished walnut, 51 lbs. ... no money down, $10 mo. ... $96.50


Versatile Acoustic Suspension System

- 10" acoustic suspension woofer • Two 5" crossed-fired tweeters
- Wide-range sound with compact speaker versatility • Easy to build with preassembled cabinet

Smooth, Distortion-Free Sound In A Compact Enclosure! That’s what you enjoy with the AS-2U. It’s space-saving cabinet fits just about anywhere. And its superb acoustic suspension, 10" woofer with a 1 lb. Alinico 5 magnet delivers extended bass frequency response with extremely low distortion. The 2000 Hz L-C crossover network combined with the specially treated and equalized 5" crossed-fired tweeters provide unusually clear high frequency distribution.

Easy To Build ... You Enjoy The Savings! Simply mount the speakers in the preassembled cabinet, and connect the leads ... goes together in a couple of hours. And the cabinet is unfinished, so you can apply the finish of your choice to harmonize with any room’s decor. Choose a pair for stereo.

Kit AS-2U, unfinished, 45 lbs. ... no money down, $7 mo. ... $69.95


Save 5% On Your Heathkit Stereo Hi-Fi System — Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank.
Get The Most Sound For Your Dollar...

**Deluxe Heathkit 3-Way System...**

**Features 4 Speakers Of Special Design**

- 12" high compliance, low resonance woofer
- Two special design 2" direct radiator dome-type mid-range speakers
- Special design 1" direct radiator dome-type ultra-high frequency tweeter
- Response 40 to 20,000 Hz
- Big voice coils
- Heavy ceramic ring magnets
- 50-watt program material power capability
- High frequency attenuator
- Middle frequency attenuator
- Preassembled walnut finish enclosure measures 18 1/2" W x 19" D x 32 3/4" H
- Tube vented, bass reflex design
- Styled to match Heath contemporary equipment center

**NO MORE OF THE INADEQUATE "LITTLE BOX"...**

The AS-15 is a well-blended combination of full frequency range response and high power capabilities... all in a reasonably sized enclosure.

**USES THE LATEST IN SPEAKER DESIGNS.** Now enjoy the advantages of direct radiating speakers with their brilliance and clarity in the mid-range frequencies. Both mid-range units have 6 1/2" frames with 4 1/2" ceramic ring magnets weighing 1 lb., and 2" dome radiators which are driven by 1 1/4" voice coils. The ultra high frequency tweeter has a 4 1/2" frame with a 2 1/4" ceramic ring magnet weighing 6 oz. Its 1" radiating surface is driven by a 1" voice coil.

**HIGH COMPLIANCE WOOFER.** The bass notes of this system originate from its 12" high compliance woofer which features a 1 1/4" voice coil and a 1 lb. 11 oz. ceramic ring magnet. Free air resonance is 25 Hz.

**3-WAY CROSSOVER NETWORKS.** LC and RC types. Crossover points: 1000 Hz and 10,000 Hz. Two attenuators: high frequency and mid-frequency, range from full to cutoff, so you can adjust the sound to your preference and room acoustics.

**POWERFUL... easily handles 50 watts, yet can be driven by as little as 5 watts.**

**ATTRACTION FLOOR MODEL CABINET...** styled in rich walnut finish to match Heath contemporary cabinet (pg. 42). Factory assembled of 3/4" solids and veneers.

**Kit AS-15, 82 lbs.** (REX Express or Motor Frt. Only)

No money down, $14.40 a month... $144.95


Crossover network: three channels. Low frequency, low pass LC type; Mid-frequency bandpass LC type; High frequency, high pass RC type filter. Cabinet: Walnut finished, tube vented type. Dimensions: Overall: 18 1/2" H x 19" D x 32 3/4" H.

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**A Favorite Of Thousands...** Low Cost 2-Way Hi-Fi System

**EVERYTHING YOU NEED FOR GOOD LISTENING, including the right price.** Covers 50 to 12,000 Hz range at ±5 db with two specially-designed speakers... an 8" woofer and true compression-type tweeter with exponential horn. A 1600 Hz crossover network is built-in, and a control is provided to adjust tweeter power level. Speaker impedance is 16 ohms, and it will handle as much as 25 watts power. A special tweeter mounting board may be rotated for wide angle dispersion in either vertical or horizontal mounting position.

The "Heath-Designed" bass-reflex cabinet comes preassembled either in walnut veneer or unfinished white hardwood. Assembles easily in a couple of hours simply mount the speakers, and wire the crossover network... everything else is pre-built. Choose a pair for stereo.

**Kit AS-51U, unfinished, 27 lbs.** No money down, $5.00 a month... $39.95

**Kit AS-51W, Walnut, 27 lbs.** No money down, $5.00 a month... $46.95


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Save 5% On Your Heathkit Stereo/Hi-Fi System—Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank
Choose A Heathkit® Speaker System

Known For Its Acoustical Excellence... Respected For Its Achievement In Sound Technology... The "Legato Compact"
- Speakers cover 30-22,000 Hz • 800 Hz crossover network—completely assembled • Can be driven by as little as 3 watts, handles up to 30 watts • Pre-assembled walnut-finished cabinet, ready for simple speaker installation • Styling matches AE-20 hi-fi equipment cabinet, pg. 42

FOR THE AUDIOPHILE WHO DEMANDS THE FINEST!... the "Legato Compact"... with a reputation among audio engineers and hi-fi buffs as a masterpiece in performance, styling and quality. Wait until you hear it!

WHAT MAKES THIS PERFORMANCE POSSIBLE? Begin with the two 12" Altec Lansing high-compliance low-frequency speakers that cover the 30 to 8000 Hz range, capable, accurately. Next, a special Altec Lansing exponential horn and high frequency driver combination is incorporated to recreate the 800 to 22,000 Hz range with complete fidelity and brilliance. The 800 Hz crossover network is factory assembled, ready for easy installation in the carefully designed, acoustically correct cabinet.

EFFICIENT—BEAUTIFUL! Use amplifiers with a power output as low as 3 watts, or as high as 30 watts. The handsome factory-assembled walnut-finished cabinet is constructed of 3/4" furniture-grade plywood... matches the AE-20 equipment cabinet on pg. 42. Pick a pair for stereo.

KIT AS-21W, $142.50... (REA Express or Motor Fert. only), no money down, $22 mo. $239.95


Low Frequency Speakers by Altec Lansing... famous, high compliance 12" speakers with 1 1/2 lb. magnets... cover 30 to 800 Hz.

High Frequency Driver and specially designed exponential horn by Altec Lansing with 5 1/2 lb. magnet... covers 800 to 22,000 Hz... provides 90° horizontal distribution.

Crossover Network by Altec Lansing... 800 Hz constant K shelving type.

Miniature Hi-Fi 2-Way Speaker System... Ideal For Small Spaces
- 6" high compliance, mass-loaded woofer • 3" closed back tweeter • Fast, easy assembly • Preassembled unfinished or walnut finish cabinets

COMPACT SIZE, WIDE 70-16,000 Hz RANGE! High compliance type 6" woofer features a mass-loaded cone that's matched to the enclosure for good bass response. Closed-back, cone-type tweeter prevents speaker interaction. Assemblies in a couple of hours. Order two for stereo.

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


Low Cost Hi-Fi Speaker System... Ideal For A Variety Of Installations
- 6" x 9" extended range dual-cone speaker • Easy assembly • Preassembled unfinished or walnut finish cabinets

COVERS 70 TO 14,000 Hz! Place in an extra room, use as an extension speaker to other rooms, and as a center fill-in for a stereo system. Handles up to 12 watts of program material. Compact in size and price. Choose two for stereo.

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


Use "No Money Down" Heath Time Pay—See Order Blank For Details
**For Custom Installations, Choose From**

**A 12" 3-Way High Compliance, Edge-Damped Hi-Fi Speaker... Superb Reproduction Over 35-15,000 Hz Range**

Handles up to 25 watts of program material. Features a high compliance edge-damped woofer cone for rich, deep bass... a high frequency cone for mid-range realism and presence... and a special Heath designed tweeter for clear-as-a-bell highs.

Separate high frequency level control... permits adjustment to suit room acoustics. In addition, the AS-173 boasts built-in crossover networks... heavy die-cast metal frame for years of faithful service... 1½" and 1" voice coils... 1¾ lb. ceramic annular-ring magnet. Handsomely styled in 2-tone cinnamon and light tan. Includes cabinet recommendations and 1-year guarantee. This speaker will fill virtually every hi-fi listening need, and provide full range sound... at a low price. Choose a pair for extra savings.

Model AS-173, 14 lbs... no money down, $5 mo. ...... $39.95
Model AS-173-2, 28 lbs... no money down, $8 mo. ...... $76.00
Special pair price. .............................................. $76.00


**Our Finest... Deluxe 12" Two-Way High Compliance, Edge-Damped Hi-Fi Speaker With Wide 20-15,000 Hz Response**

Special advanced design assures extended bass response. A high compliance, edge-damped woofer cone, low crossover frequency and a reflexed horn high frequency unit combine to bring you an extremely wide 20 to 15,000 Hz response... provides astounding realism. Easily handles up to 30 watts of program material.

Uses the finest materials available. Like the heavy die-cast metal frame for precision alignment of all elements... high efficiency 1¾ lb. ceramic ring magnet... 1½" and 1" voice coils... separate high frequency level control to balance the "highs"... and polarized speaker terminals for proper phasing. Attractive 2-tone cinnamon and tan color styling. Includes 1-year guarantee and speaker cabinet recommendations. Order a pair for stereo... and enjoy the extra savings!

Model AS-183, 15 lbs... no money down, $5 mo. .... $49.95
Model AS-183-2, 29 lbs... no money down, $10 mo. .... $95.00
Special pair price. .............................................. $95.00


**C Fills A Host Of Hi-Fi Applications... 12" Deluxe 3-Way Coaxial Hi-Fi Speaker**

Reproduces the true quality of any home music system. Features true coaxial design with 3 separate radiating elements... woofer, tweeter, and a specially-designed horn tweeter. Boasts heavy, die-cast frame construction for precise alignment of speaker elements, and high efficiency ceramic annular-ring magnet that assures dependable, trouble-free performance. Handles up to 20 watts and covers 40-15,000 Hz. Mechanical and electrical crossover networks provide smooth sound transition. Polarized and color-coded speaker terminals assure proper phasing with your system. Cinnamon and tan color styling... separate high frequency level control for the tweeter... cabinet recommendations... 1-year guarantee. Order a pair for stereo and enjoy added savings.

Model AS-163, 12 lbs... no money down, $5 mo. ...... $29.95
Model AS-163-2, 24 lbs., no money down, $6 mo., pair price. ...... $57.00


Save 5% On Your Heathkit Stereo/Hi-Fi System—Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank
This Exclusive Speaker Series

12" Two-Way Coaxial Hi-Fi Speaker ... Exceptional Value
AN AMAZING VALUE IN A QUALITY-BUILT COAXIAL SPEAKER! Accommodates up to 15 watts ... covers 50-15,000 Hz. True coaxial design, features separate tweeter and woofer with a built-in capacitive crossover network. High frequency level control permits balancing "highs" and " lows to fit room acoustics. Rigid die-cast frame maintains precise alignment of all speaker elements. Includes polarized binding posts for proper phasing and easy connection to amplifying system ... 2-tone cinnamon and tan color styling ... cabinet recommendations ... and 1-year guarantee. Pick a pair for extra savings.
Model AS-153, 10 lbs ............... $19.95
Model AS-153-2, 20 lbs ... No money down, $5 mo. ... Special Pair Price $38.00


8" Two-Way Coaxial Hi-Fi Speaker
TOP VALUE IN AN SPEAKER. Handles up to 12 watts of program material ... covers 50 to 14,000 Hz. Boasts a separate woofer and tweeter for true coaxial performance, plus built-in crossover network. Has separate high frequency level control ... 10 oz. annular-ring magnet for extra power handling capability ... die-cast metal frame ... cinnamon and tan color styling ... color-dot coded binding post terminals for easy phasing.
MEASURES ONLY 3 3/4" Deep ... Ideal for limited spaces. Complete with multi-speaker instructions and recommended cabinet recommendations. Guaranteed 1 year. Choose a pair for stereo.
Model AS-133, 6 lbs ............... $14.95
Model AS-133-2, 12 lbs ... No money down, $5 mo. ... Special Pair Price $28.50


Space-Saver ... 8" Dual-Cone Hi-Fi Speaker
SLIM 3/4" DEPTH IDEAL FOR IN-WALL MOUNTING ... or any other small enclosures such as shallow cabinets, ceilings, etc. Handles up to 12 watts, covers 50-12,000 Hz. Features husky, die-cast metal frame for extra rigidity of speaker elements, plus a dual-cone design for wide-range. In addition there's a 10 oz. annular-ring magnet, and color-coded binding post terminals for proper phasing. Comes complete with multi-speaker connections instructions, and 1-year guarantee. Enjoy extra savings by ordering a pair!
Model AS-123, 5 lbs ............... $9.95
Model AS-123-2, 10 lbs ... Special Pair Price $19.00


Stereo Accessories For Private Listening ... Armchair Comfort

e) TELEX "Adjustatone" Stereo Headset
BIG 3 3/4" SPEAKERS—over 7 sq. inches of cone area—deliver an extremely wide frequency range of 10 to 15,000 Hz. Exclusive "Forward Sound" acoustic effect puts stereo sound up front ... gives the dramatic stereo perspective of an audience seat! Adjust to normal "in-head" stereo by simply reversing the headphones. Foam cushions and light weight for listening comfort ... easily adjustable. Operates from 3 to 16 ohm sources. 8' cord with phone plug.
Model ADP-135, 2 lbs ............. $15.95

f) For Deluxe Listening ... TELEX ST-11 Stereo Headset
Relax and enjoy your favorite music anywhere in the room without destroying the "true" stereo effect! Soft, pliable foam rubber muff...
Over 250 Heathkit To Choose From—World's Largest Selection

Model AV-124-4, Direct Coupled Receiver, 15 lbs. $79.95

Designed to fit the AV-124 combination cabinet, these unique...

Matching Top Receiver Draws... 100 watts. 60, 45, or 30 watts. $94.95

Model AE-40 (w/9123), AB, Express of Action. Free extra money on $5, 50. Each $44.95

Completepackage (9100, 55.95) for free. 40" 76.96 or $59.95

Heathkit CF-124, 66-Watt Transistor Stereo System, 15" x 9" x 9". $39.95

Transistor Stereo System, Save $7.97. 19 x $79.95


Exclusively Heath Hi-Fi Furniture... Beautiful!

Custom designed for Heathkit Hi-Fi components. - Suits the Heath Hi-Fi System with clear, crystal-clear, perfect sound. A decorator's delight. A beauty in every room. A winner in every contest.
**Exclusive Heath Hi-Fi Furniture...Beautiful**

**Deluxe Stereo Equipment Cabinet...**
**Contemporary Styling With Practical Component Layout**

- Custom designed for Heathkit Stereo/Hi-Fi components...
- Accommodates most makes...
- Beautiful modern walnut finish...
- Factory assembled, ready for component installation...
- Speaker cabinet can be matched to any 12" or 15" speaker for best tone

**A HOME ENTERTAINMENT CENTER OF ATTRACTION.** Solidly constructed of fine furniture woods... accentuated with clean, eye-arresting reliefs. Slim, curved brass handles highlight the "sculptured" effect. And the rich walnut finish adds a modern touch that reflects good taste. You'll be proud to have this skillfully crafted equipment center in your home. Completely assembled, ready to house your hi-fi components.

**Model AE-20W** (walnut), 82 lbs. (Express or Motor Frt. only), no money down, $10 mo. ... **$99.50**

**AE-20 EQUIPMENT ACCOMMODATIONS AND SIZES—**Cabinet, overall: 36" W x 32 1/2" H x 19" D. **Changer compartment:** 17 1/2" W x 15 1/2" D, mounting board is uncut and can be adjusted in height to accept all record changers sold by Heathkit; lid has adjustable friction-loaded support. **Record-tape recorder compartment:** 14 1/2" H x 17 1/2" W x 17 1/2" D, for record storage; space as convertible with accessory sliding drawers below to accommodate tape recorder. **Shelf compartment:** (2) each 17 1/2" W x 6" H x 17" D (inside shelf 14" deep), either shelf accepts any Heathkit or mono tuner, stereo or mono combination amplifier. **Fewer amplifier compartments:** 9 1/2" H x 17" W x 15 1/2" D inside, accepts any Heathkit stereo or mono amplifier.

**B DELUXE SPEAKER CABINET... MATCHES THE AE-20 IN STYLING.** With the addition of the matching AE-40 speaker cabinets, you have a complete music system both in beautifully styled furniture and total stereo performance. Features a 35 1/2" x 10 3/16" slot for a horn tweeter.

And you can match the AE-40 with any 12" or 15" speaker thanks to the AE-40's tube-vented design. A 12" fibertube and instruction sheet are included to make this a simple one. For example, using the AS-183, pg. 40, you determine the proper tube length in relation to the speaker resonance by using the instruction sheet graph. For this speaker, the resonance is 25 Hz, so the tube length needed is 6". You then cut the pre-installed tube to 6" (see illustration opposite). That's all there is to it... you have a perfect speaker-to-cabinet match. Cabinet is preassembled. Measures 18 1/2" W x 19" D x 32 1/2" H. Order a pair for stereo.

**Model AE-40W** (walnut), 58 lbs. (Express or Motor Frt. only), no money down, $5 mo. each **$44.95**

**Matching Tape Recorder Drawer**

Designed to fit the AE-20 equipment cabinet above. Dimensions: 7" H x 16" W x 16 1/2" D, wood 1/4" thick. NOTE: Will not fit AD-16 Recorder. See pg. 28 for special drawer provisions.

**Model AEA-124**, walnut uncut recorder drawer, 15 lbs... **$19.95**

**Save $27.97 On This Transistor Stereo System!**

- Includes AE-20W Equipment Cabinet (above), $99.50 plus pair of AE-40W Speaker Cabinets (above), $44.95 each.
- ADP-85 Garrard Mk II Automatic Stereo Turntable with choice of 1 c cartridge, pg. 31, **$99.51**
- Heathkit AJ-33A Transistor AM/FM/FM Stereo Tuner, pg. 24, **$94.50**
- Heathkit AA-22 66-Watt Transistor Stereo Amplifier, pg. 24, **$99.95**
- Heathkit AS-173-2 Stereo Speakers, pg. 40, **$76.00**

**Complete System Kit HFS-78.**

Reg. ... **$559.36**
Save 5% ... **$27.97**
You Pay Only ... **$531.39**

*Over 250 Heathkits To Choose From—World’s Largest Selection*
For Audiophiles With An Eye As Appreciative As Their Ear . . .
Heath "Early American" Stereo Furniture

- Custom designed for Heathkit components
- Holds most hi-fi/stereo components
- Stunningly styled in a special Heathkit motif
- Luxuriously finished in fashionable salem-maple
- Factory-assembled, ready to use

**A EARLY AMERICAN RICHNESS WITH MODERN COMPONENT LAYOUT.** With this new richly crafted Heathkit Stereo/Hi-Fi Furniture, you have all the beauty and styling of Early American combined with the right touch of the modern in its low, compact size and practical component compartment layout. Adds a touch of luxury and good taste to any room!

**EXCLUSIVE HEATHKIT STYLING . . . SPECIALLY-SELECTED WOODS.** This superb furniture is sturdily constructed with a special combination of maple veneers and solids . . . all beautifully finished in popular salem-maple! The over-all effect is enriched by the handsomely styled "Lancaster-Antique" solid-brass handles.

**COMpletely FACTORY ASSEMBLED & FINISHED.** Ready to accommodate Heathkit components, and will accept most any type or model of Stereo/Hi-Fi equipment. Make your home entertainment center, the center of attraction in your home . . . order this beautiful furniture now!

**Model AE-13S, 76 lbs. (REA Express or Motor Frt. Only). . . no money down, $11.00 . . . $115.00**

**AE-13S EQUIPMENT ACCOMMODATIONS AND SIZES:** Cabinet, overall: 28" H x 36" W x 18" D. Changer compartment: 17 1/2" W x 15 1/2" H. Mounting board is uncut and can be adjusted in height to accept all record changers sold by Heathkit. Lid has adjustable friction-loaded support. Record-tape recorder compartment: 14 1/8" H x 17 1/2" W x 17 1/2" D for record storage; space is convertible with accessory sliding drawer to accommodate tape recorder. Shelf compartments: Top shelf, 6 1/2" H x 17" W x 15 1/2" D. Middle shelf, 6 1/2" H x 17" W x 15 1/2" D. Bottom shelf, 9" H x 17" W x 15" D. Shelves accept any Heath stereo or mono tuner, stereo or mono combination amplifier.

**Matching Speaker Cabinet**

MATCHES THE AE-13S EQUIPMENT CENTER IN STYLING, QUALITY AND FINISH. Handles 12 or 15 inch speakers, and has a 3 1/4" x 10 3/4" slot for horn tweeter. Tube-vented design allows simple cabinet-to-speaker matching—see opposite page for example. Completely factory assembled and finished. Measures 18 1/4" W x 18 3/4" D x 28" H. Use of attractive spindle grille optional. Order a matching pair for stereo now!

**Model AE-23S, 55 lbs. (REA Express or Motor Frt. Only). . . no money down, $6.00 . . . each $55.00**

**Matching Tape Recorder Drawer**

Designed to fit and match the AE-13S Early American equipment center above. Uncut. Dimensions: 7" H x 16" W x 16 1/2" D., wood 1/2" thick. Note: Will not fit AD-16 recorder. See pg. 28 for special drawer provisions.

**Model AEA-13-1, uncut recorder drawer, 16 lbs. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . $20.00**
Heathkit® VTMV’S... The Standard

Heathkit IM-11... The World’s Most Popular VTMV

SINGLE PROBE CONVENIENCE
Slim, all-purpose probe with switch for all functions and unique clip-action for hands-free connections.

CIRCUIT BOARD ASSEMBLY
For uniformity and stability, as well as easy construction, the Heathkit IM-11 uses a printed circuit board for minimum component wiring.

PRECISION RESISTORS
The IM-11 voltage divider networks use precision (1%) resistors to provide high instrument accuracy.

• One probe makes all measurements • 7 AC, 7 DC, 7 Ohms ranges—scales are easy to read • Sensitive, high-quality 4½" 200 µa meter • 1% precision resistors • Extended frequency response ±1 db 25 Hz to 1 MHz • Measures RMS and Peak-to-Peak • Easy-to-build, electronically stable circuit board construction • Costs just 45¢ more than its predecessor of 16 years ago

Price Is Only One Of The Many Reasons For The Pace-Setting Leadership Of The IM-11. There’s a big difference in performance too!performance that has lead the industry for nearly two decades.

Chart The Course Of The Heathkit VTMV Throughout The Past 16 Years. To improve sensitivity, the meter movement was changed from 500 µa to 200 µa... the minimum voltage range was lowered from 3 volts to 1.5 volts. For an improved 4 volts peak-to-peak response, the half-wave rectifier was replaced with a voltage doubler. And circuit board construction now provides greater stability, easier assembly.

Examine The IM-11 More Closely. In addition to the improved features mentioned, functions include AC volts (RMS), AC volts (peak-to-peak), DC volts, resistance and decibel measurements. Precision 1% resistors and the high, 11 megohm input resistance assure high accuracy by minimizing circuit loading of the unit under test. Front panel controls include a rotary function switch (with DC polarity reversing position to eliminate lead changing when alternately measuring positive & negative voltages), a rotary range selector, and Zero Adjust & Ohms Adjust controls.

What’s More, The Single, Simple Plug-In Connector From Test Leads To Meter Is Designed With You In Mind... helps avoid tangled test leads... saves you time in changing from standard to RF or High Voltage probes. The slim, all-purpose test probe supplied with the IM-11 permits switch-selection of AC, Ohms, & DC functions, and is equipped with a miniature "hook" permitting the probe to be clipped to component leads for "hands-free" circuit testing.

Check The IM-11 Specifications You’ll agree that for all-around performance in the electronics industry, there’s not a better buy than the Heathkit VTMV.

VPMV Kit IM-11, 5 lbs... No money down, $5 mo. $24.95
Assembled IMW-11, 5 lbs... No money down, $5 mo. $39.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices. See Page 65 for combination offer with EF-1 Applications Course. No money down, $5 mo. $32.50

IM-11 SPECIFICATIONS—Meter scales: DC & AC (RMS): 0-1, 5, 15, 50, 150, 500, 1500 volts full scale. AC peak-to-peak: 4.0, 14, 40, 140, 400, 1400, 4000, Resistance: 1 ohm center scale x1, x10, x100, x1000, x10k, x100k, x1 meg. Measures 1 ohm to 1000 megohms. Meter: 4½" 200 µa movement. Multipliers: 1% precision type. Input resistance: DC 11 megohms (1 megohm in probe) on all ranges. Circuit: Balanced bridge (push-pull) using twin triodes. Accuracy: DC ±2%, AC ±5% of full scale. Frequency response: ±1 db, 25 Hz to 1 MHz (600 ohm source). Tubing: 12AUG, 6AL5. Battery requirements: 1.5 volt, size "C" flashlight cell. Power requirements: 105-125 volt 50/60 Hz AC, 10 watts. Dimensions: 7½" H x 4½" W x 4½" D.

Etched Circuit RF Probe Kit
This handy RF probe may be used with any 11 megohm VTMV for RF measurements up to 250 MHz. All parts are mounted on a circuit board for high stability and ease of assembly.

Kit 309-C, 1 lb. $3.50
Assembled 309W-C, 1 lb. $4.50

30,000 Volt DC High Voltage Probe Kit
Invaluable for work where extremely high voltages are measured. Sleek red & black plastic body provides plenty of insulation for safety. The multiplication factor is 100 on the DC ranges of an 11 megohm input VTMV... provides a useful 1100 megohm input for measuring voltages as low as 50 volts in very high impedance circuits.

Kit 336, 1 lb. $4.50
Assembled 336W, 1 lb. $5.50

Use Heath's Technical Consultant Service—Just Drop Them A Line On Any Kit Subject
of Value For Two Decades

Heathkit Service Bench VTVM
Especially Designed For Convenience, Accuracy, And Ease Of Use

- Measures AC volts (RMS), DC volts, resistance & db
- Separate 1.5 & 5 volt AC scales for high accuracy
- Gimbal bracket for bench, shelf or wall mounting
- Meter titis to any angle for best viewing
- Smooth vernier controls for zero & ohms adjust
- Large, easy-to-read 6" 200 ua meter
- Single AC/Ohms/DC test probe with switch
- 1% precision resistors

IM-13 Features The Same High Performance Specifications As The IM-11, plus the 6" meter, extra low-voltage AC scales, gimbal mounting bracket, and "service bench" styling.

The IM-13 Is Engineered Right, Shaped Right, And Priced Right For Your "In-Shop" Servicing. Its compact cabinet is attractively and practically shaped to fit under, over, on-top-of, or just anywhere around your bench. And for best viewing, the two thumbwheel nuts on the sides of the case allow meter tilting to any desired angle. The 200 ua meter is 6 inches large, easy-to-read, and has multi-colored meter scales with separate 1.5 & 5 volt AC scales... just a glance tells you correct scale and range in use for fast, accurate readings!

No More Confusing Tangle Of Test Leads. The IM-13 has a single test probe... simply adjust switch to measure AC/Ohms, or DC. And only one input jack connection is required for both test probe and ground leads. Test leads included. It's simple to operate, too. Just a function selector for measuring AC volts (RMS), DC volts, resistance and db... a selector for 7 ranges... and separate Zero and Ohms adjust controls. All calibration controls are easily accessible from the front panel... no need to remove the case for future adjustments or calibration checks.

Available in Kit or Factory Assembled Form. No matter which version you choose, you enjoy big savings over comparable units. If you choose the IM-13 kit, you enjoy extra savings while having fun... the fun of "do-it-yourself." And with famous Heathkit step-by-step instructions and conventional wiring, your IM-13 goes together quickly and easily. The factory assembled IMW-13 is ready to go to work immediately... simply install the internal "ohms scale" battery and mount the gimbal bracket on your shop bench. When you choose a VTVM for your shop or lab, choose wisely... choose the Heathkit IM-13

Kit IM-13, 7 lbs. No money down, $5 mo. $32.95
Assembled IMW-13, 7 lbs. No money down, $5 mo. $49.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices. See Page 65 For Combination Offer with EF-1 Application kit.

IM-13 SPECIFICATIONS--Meter scales DC & AC (RMS): 0-1.5, 5, 15, 50, 150, 500, 1500 volts full scale (1.5 and 5 volt AC ranges read on separate scales). Ohm-meter: Scale with 10 ohm center x1, x10, x100, x1000, x10K, x100K, x1 meg. Measures 1 ohm to 1000 megohms with internal battery. Dividers: 1% precision type. Meter: 6" 200 ua movement. DC Input resistance: 11 megohms (1 megohm in probe) on all ranges. AC Input impedance: 1 megohm shunted by 40 uf (measured at input terminals). Circuits: Balanced bridge (push-pull) using twin triode. Accuracy: DC ±3%, AC ±5% of full scale. Frequency response: ±1 db 25 Hz to 1 MHz (600 ohm source). Tubes: 12AU6, 6BA6. Battery: 1.5 volt size "C," flashlight cell (not supplied). Power requirements: 105-125 volts 50/60 cycle AC 10 watts. Dimensions: 5" H x 12-11/16" W x 4-1/2" D.

ROOMY LAYOUT PERMITS
CONVENTIONAL WIRING
Neat, open circuit design permits fast, easy assembly. Note the high quality components used throughout for years of fine service.

SPACE SAVING CONVENIENCE
The IM-13 easily mounts under a shelf at eye-level reading position for greater convenience. Bracket holds meter securely in any position.

Heathkit Performance Specifications Are Guaranteed

45
Heathkit® Test Instruments... Quality.

Heathkit Laboratory AC VTVM...

For Accurate AC Measurements

- Especially useful for low-level AC measurements • 10 voltage ranges—0.01 to 300 volts RMS full scale • Extended frequency response, +1 db from 10 Hz to 500 kHz • 10 megohm input impedance for high accuracy • Calibrated DB scale for audio measurements

Here’s A Compact Instrument For Accurate AC Measurement... features the same practical-size cabinet as the Heathkit IM-11 VTVM, plus precision components for extended accuracy in measuring AC voltages. A precision voltage divider provides 10 ranges, 10 millivolts to 300 volts RMS full scale... ideal for audio design and development work, laboratory use, or general servicing.

Features A Cathode Follower Input... with a 10 megohm input impedance for a minimum of loading on the circuit under test. The two-stage meter amplifier of the IM-21 includes a total of 19 db of negative feedback... assures high stability and high linearity. The IM-21 meter movement features VU-type ballistic damping... ideal for monitoring audio signals in servicing or R & D applications.

Amplifier filament voltage is supplied from a transformer winding balanced to ground to keep AC noise to a minimum. The DC power supply features a modern silicon rectifier.

Practical Styling... not only compact in size and light in weight, but also easy to use. One knob controls “OFF” and the voltage range. The sturdy carrying handle is open, easy to grab... a real asset on the crowded service bench. And inside you'll find the highest quality components to give you years of reliable, trouble-free service, excellent stability, and repeatable accuracy. You'll enjoy assembling this instrument too. The styling inside is just as practical as the outside... clean, open parts layout... wiring that's easy to get at, easy to assemble.

Kit IM-21, 5 lbs. No money dn., $5 mo. .................................................. $33.95
Assembled IM-21, 5 lbs. No money dn., $6 mo. ........................................... $52.95

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

IM-21 SPECIFICATIONS—Frequency response: ±1 db 10 Hz to 500 kHz, ±2 db 10 Hz to 1 MHz, all ranges. Ranges: Ten ranges from 0.01 to 300 volts RMS full scale. Decibels: Total—50 to +55 db, meter scale —12 to +3 db (0 db = 1 mV in 600 ohms), ten switch selected ranges from —40 db to +50 dB in 10 dB steps. Input impedance: 10 megohms shunted by 12 pf on ranges 10 to 300 volts, 10 megohms shunted by 22 pf on ranges .01 to 3 volts. Tube complement: (1) 6AV8, (1) 6J7/E88CC. Accuracy: Within 5% of full scale. Power requirements: 105-135 volts, AC, 50-60 Hz, 10 watts. Dimensions: 7¼” x 4½” x 4½”.

Heathkit VOM... Features 1% Precision Multiplier Resistors... Accurate 20,000 Ohm/Volt Circuit

- Sensitive 50 microampere 4½” meter • Total of 35 meter ranges • 2-color scale • All 1% precision multiplier resistors for high accuracy • Polarity reversing switch—eliminates transferring test leads • Recessed test jacks—carrying handle

1% Precision Resistors For Maximum Accuracy... the selection of quality components assures you of an accurate, dependable test instrument. The large 4½” meter with 50 microampere movement has more than enough sensitivity for even the lowest voltages on the 1.5 volt scale—a single volt on the lowest range produces a meter deflection of 2½%.

The Self-Contained MM-1 Is Designed Especially For Versatility... those “on-the-spot” field checks, for testing permanently installed or awkward-to-move equipment, and for general use right on your service bench. It’s easy to use. The polarity reversing switch eliminates the need to transfer test leads when alternately measuring positive and negative voltages. The test jacks are recessed to minimize shock hazards during tests with high voltage. And the internal batteries are inexpensive, easy-to-replace standard flashlight cells (not included).

Kit MM-1, 5 lbs. No money dn., $5 mo. .................................................. $29.95

MM-1 SPECIFICATIONS—Sensitivity: 20,000 ohms/volt DC, 5,000 ohms/volt AC. Ranges AC & DC: Full scale, L, S, 5, 50, 150, 500, 1500, 5000. Direct current: 150 microamperes, 15, 150, 500 milliamperes, 15 amperes. Ohmmeter: 0.2 ohms to 20 megohms in three ranges. Decibels: —10 to +60 db. Resistors: 1% precision type. Accuracy: ±3% of full scale. Controls: Range switch, Output, AC, DC, Reverse DC switch, Ohms adjust control. Batteries: 1 type “C” cell, 4 penlight cells. Dimensions: 7½” x 3½” x 4½”.

There’s A Heathkit For Every Interest, Every Purpose, Every Budget.

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Dependability, Accuracy... Up To 50% Savings

Heathkit Laboratory Transistor Tester
Performs Detailed Transistor Analysis

Kit
$54.88
Wired
$84.95

Fast Test Selection
Four lever switches provide simple selection of any test available after initial setting of the current and voltage range switches. Binding post terminals are provided for transistors that do not fit test socket.

Heathkit IM-30 Brings You Complete Laboratory Facilities For Transistor Analysis... enables thorough testing of transistor and diode characteristics, including base current, gain, collector current, collector voltage, diode or collector-to-emitter leakage (Ic(eo)), and collector-to-base leakage (Ic(lo)). Ideal for use in servicing when equivalent transistor types must be chosen... perfect for classroom, laboratory, or industrial shop where design requirements demand complete analysis.

Operation Is Simple! Four lever switches instantly select the desired test on any transistor or diode after initial setting of the voltage and current range switches. Separate voltage and current range switches for both Gain and Leakage settings allow tests of transistors under a wide variety of different conditions. DC Beta (0-150, 150-300) and DC Alpha are read directly on the calibrated Gain scale on the front panel after the meter is nulled. A 3% wire-wound potentiometer assures continued high accuracy.

Internal Battery Supply. All basic tests provided by the IM-30 may be performed with the internal battery power supply which provides any test voltage up to 9 volts in 1.5 volt steps. Provision is also made for the use of an external DC power supply for checks of transistors at higher voltages and current. Appropriate meter ranges for voltage and current are included in the design of the IM-30 for this purpose. A variable bias control allows setting of collector current to any desired value up to 15 amperes for gain tests.

Neat, Functional Styling. The sloping front panel of the IM-30 permits convenient, easy reading of meter and dial scales. Front panel is attractively finished in charcoal-grey with high-contrast white panel screening and red calibration marks. An exceptional value in transistor testing facilities. Less batteries.

Kit IM-30, 9 lbs. No money down. $54.88 Assembled IMW-30, 10 lbs. No money down, $84.95

IM-30 SPECIFICATIONS—Checks: Transistors up to 15 amps and diodes up to 1.5 amps. Tests: Shorts, DC Gain (Beta 0-300), Leakage (Ic(lo), Ic(eo), Diode Forward and Reverse Current. Meter: Current Ranges: 15 μA, 150 μA, 1.5 mA, 15 mA, 150 mA, 1.5 A, 15 A; Voltage Ranges: 1.5 V, 5 V, 15 V, 50 V, 150 V (100 K ohm/volt). Power supply: Internal; seven 1.5 volt size D batteries provide 1.5, 3.4, 4.5, 6, 7.5, 9 volts collector supply for gain or leakage and 1.5 volts for bias. External, 0-50 volts for gain, 0-150 volts for leakage and 0.5 volts for bias. Bias control: Permits any collector current from 10 μA to 15 amperes for gain tests. Gain control: 3% wire-wound potentiometer has calibrated scales to give DC Beta and DC Alpha directly when meter is at null. Power switch: Four spring return levers will individually select the following tests: Base Current, Gain, Collector Voltage, Collector Current, Leakage Voltages, Short Test, Ic(lo) and Ic(eo) or diode current. Two voltage selector switches: Gain and Leak Test Voltages be individually preset at different voltage levels. Two current range switches: Collector and Leakage currents can be individually preset on different ranges. Transistor and diode connections: Universal transistor socket and binding posts. External power supply connections: Binding Posts for Gain, Leak and Bias supplies.

Handy Heathkit Transistor/Diode Checker...

Satisfies Most Service Needs

• Tests low and high power transistors
• Tests forward and reverse current of diodes
• Operates on two standard size "C" flashlight batteries

Provides All Necessary Servicing Checks. The Heathkit IT-10 checks transistors and diodes for shorts, leakage, open element, and current gain. Handles both low and high-power transistors. Versatile switching accommodates PNP or NPN type transistors and eliminates any need for transferring test leads during diode tests. Removable test leads are provided for checking transistors which do not fit the test socket, and for making general continuity checks. Batteries not included.

Kit IT-10, 2 lbs. $6.95


Heathkit—Pioneer And World Leader In Electronic Kits
Engineered For Quality...Priced For

Heathkit Capacitor Checker
A Direct-Reading Bridge
- Tests all capacitor types
- Low bridge voltage for safe testing of miniature electrolytics
- 16 leakage testing voltages
- Direct-reading scales—no involved calculations
- Measures capacitance from 5 ohms to 50 megohms
- Measures capacitance from 10 pF to 1,000 pF
- Comparator circuit meausures "L", "C", or "R" with external standard
- Calibrated power factor control
- "Eye" tube null & leakage indicator

Completely analyzes capacitors...quickly, efficiently, and accurately. Provides all the data you need for circuit design, production testing, or servicing requirements. The IT-11 assembly manual thoroughly discusses measurement techniques, plus gives procedure for quick, easy capacitor check-out.

All Measurements Are Made On Direct-Reading Scales. No involved calculations required! Measures resistance from 5 ohms to 50 megohms in 3 ranges, capacitance from 10 pF to 1,000 pF in 4 ranges. Leakage and shorts are immediately detected by an "eye" tube indicator. 16 leakage testing voltages and 3 leakage sensitivities allow testing of capacitors at their rated values. A unique "leakage" test switch automatically discharges capacitors after test, to eliminate shock hazard to the operator. Order your Heathkit IT-11 now for faster, easier servicing!

Kit IT-11, 7 lbs. No money down, $55 mo. $29.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices.

IT-11 SPECIFICATIONS—Test circuit: AC bridge, powered through special bridge transformer by an internal 60 Hz supply or by an external audio generator with 10 volts output. Upper frequency limit: 10 kHz. Capacitance: 4 ranges: 10 pF to 1,005 pF, 500 pF to 5 pF. Leakage: 50 pF to 100 pF. Resistance, 3 ranges: 5 ohms to 5000 ohms, 500 ohms to 50 k ohms, 50 k ohms to 50 megohms. Comparator circuit: External standard R, L or C. Max. Ratio: 25:1. Power supply: Transformer-operated, half-wave rectifier. Power requirements: 105-125 volts AC, 50/60 Hz, 50 watts. Dimensions: 9 5/8" x 6 1/2" wide x 5 1/2" deep.

Heathkit Visual-Aural Signal Tracer Makes Fast Work Of Trouble-Shooting AM Circuits
- Ideal for trouble-shooting transistor & tube-type AM receivers & audio equipment
- Traces RF, IF, and audio signals
- Locates troublesome noisy or intermittent components
- Convenient audio-RF probe with switch
- Doubles as a utility amplifier or test speaker
- Ideal for safe testing of transistor circuits

Fast, Effective Means For Tracing Signals...checks RF, IF, and audio stages quickly to isolate the defective stage. Signals are traced visually with an electron-eye tube indicator and audibly with a built-in speaker. Both audio and RF inputs are handled by one convenient probe with switch selection for either input.

Enables Safe Testing Of Transistorized Equipment. Sensitive transistor circuits, easily damaged through ordinary testing procedures, can be safely tested, since no voltage is applied through the test probe. The minute signals of microphones, instrument pickups, etc. can be checked out, since the IT-12 features a high-gain amplifier with adjustable level control. Speaker and output transformer are also available for substitution tests. The many features of the IT-12 make it an extremely worthwhile investment in time-saving test facilities.

Kit IT-12, 6 lbs. $19.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices.

IT-12 SPECIFICATIONS—Power supply: Transformer-operated, Power requirements: 117 volts 50/60 Hz AC, 25 watts. Tube complement: 12AX7, 12AC5, 1629. Speaker: 3½" PM. Probe and test leads: 4 input leads for RF and audio with switch on probe body, 2-3 panel test leads with alligator clips. Dimensions: 4½" W x 7½" H x 4" D.

Heathkit "Capaci-Tester" Makes "In-Circuit" Capacitor Checks
- Spots open, shorted or intermittent capacitors without removing them from the circuit
- Fast & simple to use
- Built-in self-testing feature
- Small, compact size—easy to carry

Saves Valuable Time In Trouble-Shooting Circuits. With the Heathkit "Capaci-Tester" most capacitors can be tested for "open" or "short" condition right in the circuit, without disconnecting leads, saving both time & effort in servicing.

Locates Hard-To-Find Intermittent Components. Intermittent capacitors cause the "eye" tube to flicker, assisting greatly in the location of erratic and troublesome components. The IT-22 also detects "open" capacitors from 50 µF up, not shunted by an excessively low resistance value and "shorted" capacitors up to 20 µF shunted by not less than 10 ohms.

Tests Bypass, Blocking, And Coupling Capacitors. Fast and easy checks can be made of all paper, mica, and ceramic capacitors used in these applications. Oscillator is built-in...uses a 60 Hz signal for "short" test, and a 19 MHz signal for "open" test.

Self-Testing...Easy To Use. A simple five-position switch on the front panel controls the power to the instrument, selects the desired test and permits check of instrument performance.

Kit IT-22, 4 lbs. $10.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices.

IT-22 SPECIFICATIONS—Range: Open Test, 50 µF to infinity, shunted by more than 2 K ohms at 50 µF, 400 ohms at 100 µF, 20 ohms at 350 µF or more. Short test, up to 20 µF shunted by at least 10 ohms. Test frequencies: Short test, 60 Hz. Open test, 19 MHz. Power requirements: 105-125 V, 50-60 Hz AC, 5 watts. Cabinet size: 7 5/8" H x 4 1/4" W x 4 1/4" D.

Heath Offers You Incomparable "Extra" Customer Service
**Heathkit TV Alignment Generator...**
Provides All Essential Facilities For FM & TV
"Front End" And IF Alignment

- FM & TV coverage—Sweep oscillator covers 3.6 MHz to 220 MHz with 0-65 MHz max. sweep width • Stable, all-electronic sweep circuit • Built-in marker oscillators • 4.5 MHz crystal & 19 to 60 MHz variable (57 to 180 MHz on harmonics)

A Favorite Among TV Technicians Nationwide! Used with an oscilloscope, such as the Heathkit IO-12 or IO-14, the IG-52 provides all the signal source requirements you need for alignment of FM receivers and TV receivers (TV front end channels from 2 through 13).

Unique Design Features. A trouble-free controllable inductor featured in the IG-52 produces wide-range sweeps with excellent linearity and stability. Frequency is varied by magnetic...not mechanical...means for consistent, reliable performance. The sweep circuit operates on oscillator fundamentals (3.6 to 220 MHz) eliminating troublesome beats and parasitics such as those encountered in beat-frequency type generators. Sweep is smoothly controllable from 0 to as high as 42 MHz (depending upon center frequency).

Fixed-Step And Variable Attenuators. Full control of RF output permits 0.1 volt output for "cold" alignment of tuned circuits, plus attenuated outputs for alignment capability of high-gain stages without danger of overloading.

Crystal And Variable Marker Oscillators Are Built-In. A 4.5 MHz crystal (included with kit) provides an output at 4.5 MHz and multiples thereof. It is also used to calibrate the built-in variable marker oscillator. Marker pip amplitude is individually panel controlled. An external generator may be used with the internal markers to provide three or more simultaneous pips on the waveform.

Increase Your TV Service Profits Now! Order your Heathkit IG-52 today for accurate, dependable test facilities at "big" savings!

Kit IG-52, 14 lbs...No money down, $7 mo. $67.95

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

IG-52 SPECIFICATIONS—Output impedance: 50 ohms terminated at both ends of cable. Sweep Deviation: Continuously variable from 0-4 MHz lower limit, deviation to 0-22 MHz highest max. deviation (depending on base frequency). Crystal marker: 4.5 MHz and multiples thereof. Variable marker: 19 MHz to 60 MHz on fundamentals, 57 MHz to 180 MHz on harmonics. External marker terminals: Provided on panel. Attenuators: Step-switch controls sweep and marker oscillators together, plus variable controls for each output. Blanking: Converts return trace into zero reference line, phasing control also provided. Cables: 3 supplied, output, scope horizontal, scope vertical. Power requirements: 105-125 VAC, 60 Hz, 50 watts. Dimensions: 13" W x 8½" H x 7" D.

**Heathkit Color Bar & Dot Generator...**
Unsurpassed In Performance And Price

- Produces six different patterns for picture adjustment • 10 vertical color bars—including a special shading bar pattern • Crystal controlled for accuracy & stability • Both RF and Video output for maximum versatility

No other color bar and dot generator on the market today offers such an array of features, performance, and quality at so low a price!

Choice Of Six Different Patterns. Patterns include: white dots, cross-hatch, vertical bars, horizontal bars, 10 vertical color bars and a special shading bar pattern for screen and background adjustments to achieve proper gray-scale tracking. Color bars produced by the output carrier method allow AFC, phase and matrix alignment, and are provided with a white leading edge and black trailing edge to check color fit. An adjustable video output permits check of color hue and sync at different signal levels.

Crystal-Controlled Accuracy. Internal sync pulses, crystal-controlled to the same frame-rate as the TV station, lock the patterns firmly on the screen without jitter or crawl...no external sync leads required! One simple connection to the antenna terminals of the TV set is all that is required, and any pattern may be selected without further adjustment to the receiver or generator after initial setting. A crystal-controlled sound-carrier with on/off switch permits fine-tuning control adjustments.

Complete With Crystals, Test Leads, And Comprehensive Assembly & Operation Manual. Your IG-62 will offer you performance and versatility that will be appreciated for years to come.

Kit IG-62, 13 lbs...No money down, $7 mo. $64.95

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

IG-62 SPECIFICATIONS—RF output frequency range: TV channels 2 through 6. Output Voltage: Variable from 100 to 100,000 microvolts. Sounding carrier: Crystal controlled, unmodulated, 4.5 MHz away from picture carrier, off/on switch provided. Video output: Positive or negative output variable from 0-10 volts peak-to-peak open circuit. Modulation: White dot pattern, cross-hatch pattern, horizontal bars, vertical bars, 10 vertical color bars, shading bar pattern. Tube complement: 6-12AT7, 4-12AU7, 1-8077, 1-6256, 1-6282. Power requirements: 117 VAC, 50/60 Hz, 70 watts. Dimensions: 13" W x 8½" H x 7" D.

NO MONEY DOWN UP TO $300
Build your Heathkit now...pay later with the convenient Heath Time Payment Plan. No money down and up to 12 months to pay on orders from $25 to $300...10% down and up to 18 months on orders from $300 to $500. See Order Blank for details.

Use "No Money Down" Heath Time Pay—See Order Blank For Details
Heathkit® Signal Generators...Preferred

Heathkit FM Stereo Alignment Generator
For RF, IF, and Multiplex Alignment Of FM Receivers

- Fills every FM alignment need
- Produces virtually all signals required for trouble-shooting and alignment of multiplex adapters, FM tuners & receivers
- Generates mono FM or composite stereo FM signals
- Crystal-controlled: 19 kHz (±2 Hz) pilot, adjustable in level from 0 to 10% for check of tuning or KFOF check
- Switch selection: 5 kHz, 5000 Hz, 19 kHz, 38 kHz & 65 kHz or 67 kHz SCA signals for complete alignment capability
- 100 MHz sweep signal (adjustable ±2 MHz) for overall RF & IF alignment on clear portion of FM band
- Built-in crystal control and marker oscillator for IF, and dial indicator for carrier
- Phase locked loop in-range of stereo receivers...
- and built-in sweep and marker signals for overall RF and IF alignment. Carrier signal is adjustable up to 2 MHz above or below its normal frequency to permit alignment on a clear portion of the FM band.
- Many Extras For Versatile Operation. Instant selection is made for either right or left channel signals and the special “phase test” on the front panel with no balancing required for equal right and left channel modulation levels. Switch selected frequencies for either direct or RF modulation use include 400 Hz, 1000 Hz, 5000 Hz, 19 kHz, 38 kHz, and two special SCA (subscription service) frequencies (65 kHz or 67 kHz), to provide a versatile system capable of aligning even the most advanced-design tuners.

Easy To Use. RF signals supplied by the generator terminate at a 300 ohm balanced output designed for direct connection to the antenna terminals of the unit being tested...no complicated matching networks for impedance or balance required. A three-step (20 db per step) RF attenuator prevents overloading of tuner input. The IG-112 is complete with test leads and detailed stereo alignment instructions. Order your Heathkit FM Stereo Generator for faster, easier servicing, and greater profits through this rapidly growing field.

Kit IG-112, 11 lbs. No money down, $10 mo. ...........$99.00
Export model available for 115/230 VAC, 50-60 Hz; write for prices.

IG-112 SPECIFICATIONS—RF Signal Frequency: 100 MHz adjustable by approx. ±2 MHz. Pilot modulating frequency: 19 kHz ±2 Hz. FM Modulation: Left channel (stereo), right channel (stereo). Phase locked loop in-range of stereo. Phase test (left + right channels in phase). Audio output: 400, 1000, & 5000 Hz, 19 kHz ±2 Hz, & SCA (65 or 67 kHz). Distortion: (A1 400), 1000 & 5000 Hz Less than 5%. Front panel controls: 19 kHz pilot level control, deviation-sweep-width-compromise level—audio control, function switch, frequency switch, & RF attenuator switches. Rear panel adjustments: Balance, coarse, fine, audio level adjust, & SCA switch. Chassis adjustments: Oscillator adjust, frequency adjust & modulation adjust. Tube complement: 12AT7...19 kHz oscillator & 19 kHz balance, 6AL5. Reactance tube modulator & 100 kHz oscillator; (1) 12AU7—Audio osc., audio cathode follower, & 19 kHz pilot amplifier, composite/audio amplifier & 5,5 MHz crystal osc. Power requirements: 105-125 volts AC, 50/60 Hz, 35 watts. Dimensions: 12 1/2' x 8 1/4' x 10' W.

Heathkit FM Alignment Generator

- Provides all essentials for fast, easy alignment of FM RF & IF circuits...10.7 MHz sweep, sweep width variable 200 kHz to over 1 MHz • Switch-selected 90, 100, & 107 MHz signals • 100 kHz bandwidth markers for checking bandpass.

FM-01
FMO-1

$34.95

A Compact Signal Generator For FM Alignment...the FMO-1 provides 10.7 MHz sweep width (variable from 200 kHz to over 1 MHz) with a stable crystal-controlled center marker and 100 kHz submarkers for IF alignment. Convenient switch selection of 90, 100, and 107 MHz signals permits fast, easy circuit alignment and quick service checks or re-alignment of dial calibration.

Designed To Meet Your Service Requirements...the crystal marker and 100 kHz marker/audio oscillators have their own level controls, and all signals feed through a master output control. A pod is provided on the end of the test cable to provide proper cable termination.

Accurate Receiver Alignment Is Assured...through the comprehensive instructions for step-by-step assembly and tune-up of your FMO-1...plus, detailed instructions on FM alignment are included in your assembly manual.

Kit FMO-1, 5 lbs...No money down, $5 mo. ...........$34.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices.

FMO-1 SPECIFICATIONS—RF alignment output: 90, 100 and 107 MHz switch-selected. Modulation: 400 Hz incidental FM. For IF and detector alignment: 10.7 MHz sweep. Sweep width: 200 kHz to over 1 MHz. Markers: 10.7 MHz bandwidth markers. Modulation: 400 Hz AM. Other outputs: 10.0 MHz (crystal) and harmonics; 100 kHz and 400 Hz audio. Tube complement: (2) 6JB. Power supply: Transformer, silicon rectifier. Power requirements: 105-125 V, 50/60 Hz. 12 watts. Cabinet size: 7 1/4' W x 4 1/4' H x 4 1/2' D.
**Heathkit General Purpose RF Signal Generator**

- Covers 100 kHz to 220 MHz in six bands
- Large accurately calibrated dial scales
- Factory wired and aligned coil and band-switch assembly
- Modulated or unmodulated RF output
- 400 Hz signal modulation and 400 Hz audio output for audio tests
- High-level "RF Direct" output on Berkeley Physics Laboratory version

The Specifications Speak For Themselves! The IG-102’s 100 kHz to 220 MHz tuning range and 2% tuning accuracy have made it widely chosen for a laboratory RF signal source, as well as for the service technician’s accurate, dependable test instrument. The versatility of the IG-102, plus its low price have put it into thousands of service shops around the world. The ease of assembly and additional manual entitled “How To Understand And Use Your Signal Generator” (See EP-3, page 65) have made this a favorite kit with the hobbyist just beginning radio repair.

Modulated Or Unmodulated RF Output is available at up to 100,000 microvolts, controlled by both fixed-step and variable output attenuators. Internal modulation is 400 Hz, and provision is made for external modulation at other frequencies. The 400 Hz signal with 10 volt output is available separately for audio tests.

The Berkeley Physics Laboratory Version (IG-102S) features the additional direct RF output jacks necessary for the course experiments and a 3% tuning accuracy characteristic of the modified instrument. (Caution! This version of the instrument is not suitable for radio and TV servicing, since high-level RF output radiates into receiver circuitry.) Order The IG-102 For The Best Value In General Purpose RF Generators . . . Bar None!

**Kit IG-102, 7 lbs. No money down, $5 mo. . . . $27.95**

**Assembled IGW-102, 7 lbs. No Money down, $6 mo. . . . $54.95**

**IG-102S, Educational Model, 7 lbs. . . . $30.00**

**IGW-102S, Assembled Educational Model, 7 lbs. . . . $60.00**

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

**IG-102 SPECIFICATIONS**
- Frequency range: Band A, 100 kHz to 220 kHz; Band B, 310 kHz to 1.1 MHz; Band C, 1 MHz to 3.2 MHz; Band D, 5.1 MHz to 11 MHz; Band E, 10 MHz to 32 MHz; Band F, 32 MHz to 110 MHz.
- Calibrated harmonics: 100 MHz to 220 MHz; Accuracy: 2%.
- Output: Impedance, 50 ohms; Voltage, 100,000 uV.
- Modulation: Internal, 400 Hz, 30% depth; External, approx. 3 V across 50 k ohms for 30%.
- Audio output: Approx. 1 V open circuit.
- Tube complement: 12AT7, 11AA9B.
- Power requirements: 105-125 V, 50/60 Hz AC, 15 watts.

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

**Heathkit Switch-Selected Audio Generator**

**Provides Near-Perfect Sine-Wave Signals**

- A near-perfect output signal—ideal for servicing or trouble-shooting high-fidelity equipment
- Switch-selected output frequencies—10 Hz to 100 kHz
- Less than 0.1% distortion—20 to 20,000 Hz
- Panel metered output is calibrated in volts & dB
- Output level and frequency accurate to within ±5%

How Can A Kit Be A Precision Instrument? . . . many of our potential customers ask. Very easily! . . . if the circuit is designed through careful “know-how” and meticulous testing . . . if durable, precision components are chosen from well-known manufacturers . . . if the layout of components is designed for logical, straight-forward assembly . . . and if the assembly manual is written with insight and care. Very easily for you, the kit-builder, when you choose Heathkit instruments, since that is the heritage built into every Heathkit electronic instrument . . . the IG-72, for example!

**Less Than 0.1% Of 1% Distortion Throughout The Audible Range!**

With an over-all tuning range of 10 Hz to 100 kHz at ±5% accuracy. Those are the hard and fast specifications of the IG-72. Plus, switch-selected one-Hertz steps from 10 to 100 Hz, 10 db steps in the output attenuator with a “fine” adjustment on each range, and metered output to internal or external 600 ohm loads. Order The IG-72 For Precision Electronics At A Price You Can Afford.

**Kit IG-72, 8 lbs. No money down, $5 mo. . . . $41.95**

**Assembled IGW-72, 9 lbs. No Money down, $7 mo. . . . $64.95**

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

**IG-72 SPECIFICATIONS**
- Frequency: 10 Hz to 100 kHz, switch selected, 2 significant figures and multiplier. Output: 6 ranges 0 to 0.003, 0.01, 0.3, 1, 3, 1 volts RMS into external 600 ohm load or with internal load 1500 ohms. 2 ranges 0 to 3, 10 volts RMS into a minimum of 10,000 ohms, —60 db to +22 db in 8 steps. —60 dbm to +2 dbm (0 dbm=1 mw into 600 ohms). Distortion: less than 0.1% 20 to 20,000 Hz. Tube: 12AT7, 12AU7, 12AX7. Power: 100-125 volts AC, 50/60 Hz, 40 watts. Dimensions: 9 3/4" W x 6 1/4" H x 5 1/2" D.

Heathkit Performance Specifications Are Guaranteed.
Save Up to 50% On Instruments For

Heathkit Sine-Square Wave Generator
A General Purpose Instrument With Wide Frequency Range

- Covers 20 Hz to 1 MHz in 5 bands...from bottom of audio band to half way through the broadcast band...Less than .25% sine wave distortion...Less than .15 microsecond square wave rise time...Sine and square wave output available simultaneously.

Produces Research-Quality Sine & Square Wave Signals...for audio, TV, high-fidelity, and educational laboratory testing. Sine waves are within 0.25% of perfect sinusoidal waveforms...square waves are clean, free from spurious spikes, and have rise times better than 0.15 microsecond. Both the sine and square wave outputs may be used separately or simultaneously without affecting either waveform. Separate output terminals and attenuators permit individual control.

Output Attenuators Operate In Steps Of 10, 1, And .1 Volts For Both Sine And Square Wave. And an extra range of .01 volt is provided for sine wave. The oscillator circuits are well-shielded, and a special control compensates for differences in tube characteristics during initial calibration to assure absolute minimum distortion. Also featured is an exact frequency-calibrating system to insure proper tracking across the dial. Sine wave output impedance is 50 ohms, and square wave output impedance is 50 ohms at all settings on the output controls, except in 10 volt (Hi-Z) ranges.

This attractively styled generator is "Heath-Engineered" throughout for maximum efficiency, ease of assembly, and dependable performance.

Kit IG-82...14 lbs...No money down, $6 mo. ...$51.95
Assembled model EUW-27, 14 lbs...REA Express or Motor Frt. (only)...
No money down, $10 mo. ...$94.00

IG-82 SPECIFICATIONS—SINE WAVE: Frequency range: 20 Hz to 1 MHz. Output voltage (RMS): 0 to 10 volts, 0 to 1 volt, 0 to .1 volt, or 0 to .01 volt when working into a high impedance load. Source impedance: ±10% over range range, 0 to 2.5 k ohms; 1V, 1V and 1V. Frequency response: ±1.5 dB 20 Hz to 1 MHz.

SQUARE WAVE: Frequency range: 20 Hz to 1 MHz. Output voltage: (P-p) ±5% over range. 0 to 10 volt, 0 to 1 volt, 0 to .1 volt, or 0 to .01 volt when working into a high impedance load. Source impedance: ±10% over range range, 0 to 220 ohms; 1V and 1V ranges, 52 ohms. Rise time: less than 15 microsecond. GENERAL: Frequency accuracy: ±3%. Power requirements: 105-125V AC, 50/60 Hz, 55 watts. Dimensions: 13" W x 8 ½" H x 7" D.

Heathkit Laboratory RF Generator
Provides Precision-Attenuated RF Signals

- Metered output voltage and % modulation...Operates on fundamentals...-100 kHz to 30 MHz in five bands...Double shielding of all oscillator circuits...Easy to build with point-to-point wiring.

Especially Valuable For Its Wide Range Of RF Signal Amplitudes...the Heathkit IG-42 Laboratory RF Signal Generator is the perfect instrument to be used for the development of high-frequency oscillators, or for cable-shooting high-gain RF circuits. Its output is 100,000 microvolts with switch-step attenuation in factors of 1, 10, 100, 1000, & 10,000, and with variable attenuation at a 10:1 factor, maximum. Effective use of internal shielding assures that the metered output level is accurate and free from spurious radiation. The IG-42 includes a 400 Hz signal source for 0 to 50% modulation of the output signal, and can be modulated by external sources from 60 to 10,000 Hz.

Well-Designed Throughout. The power supply is transformer operated for safety and high efficiency...features generous filtering and voltage regulation for stable, noise-free output signals. The generator output impedance is 50 ohms, and the terminating resistor, located in the plastic pod at the end of the coaxial cable, is easily changed for specific impedance requirements.

Your IG-42 is engineered to go together quickly, easily...to provide you with the versatility and performance you need to carry out effective and efficient laboratory design work...to give years and years of reliable service...and to save you hard-earned dollars. When choosing test instruments for your lab, choose wisely with the Heathkit IG-42.

Kit IG-42...15 lbs...No money down, $6 mo. ...$56.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices. 

IG-42 SPECIFICATIONS—Frequency range: Band A, 100 to 290 kHz; Band B, 280 to 1000 kHz; Band C, 0.95 to 3.1 MHz; Band D, 2.9 to 9.5 MHz; Band E, 9 to 31 MHz. RF output impedance: 50 ohms, variable from 100 to 300 microvolts max. Attenuator: 0 to 30 dB (5 steps—High, 10 dB steps, continuous, indicated on meter. Amplitude modulation: CW, internal 400 Hz or external audio frequencies. Modulation depth: 0 to 50% variable, indicated on meter. Tube complement: 5ATA4, 6AV5, 12AU7, 6BA6. Power requirements: 105-125V AC, 50/60 Hz. Dimensions: 13" W x 8 ½" H x 7 ¼" D.

Use Heath's Technical Consultant Service—Just Drop Them A Line On Any Kit Subject
Heathkit Harmonic Distortion Meter
For Accurate Analysis Of Hi-Fi Equipment

- Measures harmonic distortion as low as 1% full-scale from 20 to 20,000 Hz
- Meter scales calibrated in volts RMS, % distortion, and dB
- Measures noise levels down to -60 dB
- Quality components for precision measurements
- Easy to assemble and operate

Simple To Use, High Quality, Low Cost. Resourceful engineering, traditional in Heathkit test equipment, has reduced the highly complex and costly equipment required for harmonic distortion measurements to a simple-to-use, low-cost instrument... without sacrificing accuracy, stability, or quality.

When used with an audio amplifier such as the Heathkit IC-72 or IG-82, this superb unit will accurately measure harmonic distortion at any frequency between 20 and 20,000 Hz. Indicates the residual signal in an amplifier under test, after the fundamental frequency is eliminated, to give an accurate reading of hum, noise and harmonic distortion. Distortion is read directly on the meter in ranges of 0.1, 3, 10, 30 and 100% full scale. Noise level measurements are read on a separate db meter scale. High input impedance and 1% precision resistors in the VTVM voltage divider circuit assure excellent sensitivity and high accuracy.

Easy To Build... Easy To Buy. Your IM-12 is designed to go together quickly and easily, provide you with years of faithful service, and save you many dollars over comparable units.

Kit IM-12, 13 lbs... No money down, $6 mo. $54.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices.

IM-12 SPECIFICATIONS—Frequency: 20 Hz to 20,000 Hz in three ranges. Distortion: 1, 3, 10, 30, 100% full scale. Input resistance: 300 k ohms. Minimum input voltage for distortion measurements: 0.3 volts. Output voltage for monitoring: 2.5 volts at full scale meter readings. Accuracy: Voltmeter: ±5% of full scale. Tube complement: OA2, 6X4, 6B7, 12AT7, 12AX7, 12BY7. Power requirements: 105-125 V, 50/60 Hz AC, 30 watts. Dimensions: 13” x 8” x 7” D. 

Heathkit Audio Intermodulation Analyzer
3 Audio Test Instruments In One

- Considerable savings over 3 separate instruments
- Combines function of AC VTVM, Wattmeter & IM Analyzer
- Built-in high and low frequency sources for IM tests
- Built-in load resistors for 4, 8, 16 and 600 ohms
- Large easy-to-read meter—simplified switching system

All The Facilities You Need For Complete and Thorough Intermodulation Distortion Analysis Of Stereo And Monaural High Fidelity Equipment. The compact, easy to use Heathkit IM-22 performs all the basic functions with a unique built-in switching system that allows use of any portion of the instrument separately, or combines its functions internally for simple operation... eliminates a bench-top cluttered with instruments... no more confusing mass of interconnected test leads.

Greater Operating Convenience. Built-in, non-inductive load resistors and high impedance position for stage-to-stage and other circuit analysis. Built-in in kHz and 60 Hz frequency sources for IM tests... no additional equipment is required. And your IM-22 assembles easily... provides you with stable, trouble-free service... presents a substantial savings over the cost of buying all three separate units.
If you service audio gear in your shop, choose this handy 3-in-1 analyzer now.

Kit IM-22, 13 lbs... No money down, $6 mo. $56.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices.

IM-22 SPECIFICATIONS—Frequency response—AC VTVM: 10 Hz to 100 kHz ±1 db. Wattmeter: 10 Hz to 50 kHz ±1 db. I.M. Analyzer high pass filter: 2000 Hz to 12,000 Hz. I.M. Analyzer low pass filter: 10 Hz to 600 Hz. Range AC VTVM: 0.1, 0.3, 1, 3, 10, 30, 100, 300 volts RMS full scale. DBM: –40, –30, –20, –10, 0, +10, +20, +30, +40, +50. Readings from –65 to +52 dBm. Wattmeter: 0.15 mW, 1.5 mW, 15 mW, 150 mW, 1.5 W, 15 W, 150 W full scale. Maximum continuous power: 25 watts, intermittent power to 50 watts. I.M. Analyzer: ™ 1%, 3%, 5%, 10%, 20%, 100% full scale. Input impedance—AC VTVM: 1 megohm or 4, 8, 16 or 600 ohm switch selected. I.M. Analyzer: 1 megohm or 4, 8, 16 or 600 ohm switch selected.
Wattmeter: 4, 8, 16 or 600 ohm internal load, 10,000 ohm external load. Output impedance—low and high frequency output: 3000 ohm (600 ohm when shorted with 750 ohm resistor). Internal generator frequencies—low frequency, 60 Hz, High frequency, approximately 6 kHz. Accuracy—AC VTVM and wattmeter: Within 5% of full scale. I.M. Analyzer: Within 10% of full scale. Power requirements: 105-125 volts 50/60 Hz 20 watts. Dimensions: 13” x 8” x 7” D.
1. BY MAIL
Complete the simple-to-follow Heath order form— incluing the reverse side if you wish to use the liberal Heath Time-Payment Plan. Always Use The SAME Name Whenever You Order. Enclose your check or money order to cover the type of payment plan you've chosen, plus shipping charges only if item can be mailed Parcel Post (see Rate information, opposite page).

2. BY TELEPHONE...
ANYTIME DAY OR NIGHT
Days 8 a.m. to 4:30 p.m. EST, Call Area 616, 983-3961 for personal service. Nights 4:30 p.m. to 8 a.m. EST, Call Area 616, 983-3961, and our Electronic Secretary will record your order. After 8 p.m. (your time), you may call from anywhere in the Continental U. S. (except Hawaii and Alaska) for $1 or less.

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

Important “Hints” on Shipping
See the opposite page for shipping rates and details... and mark the appropriate square on the order blank. This, along with your knowledge of delivery conditions in your area, will help you make the best selection.

Ship To Another Address? If you wish us to send your order to another address, be sure to fill out section 2 of the order blank.

If Your Order Goes REA Express Or Motor Freight... do not send shipping charges. They will be collected by the REA or carrier at the time of delivery. If the REA express office is located in a town or state other than your home address, fill out section 3 of the order blank.

Methods of Payment
Check the appropriate square for whichever method you choose.

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

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

3. CONVENIENT HEATH TIME-PAY PLAN
No money down and up to 12 months to pay on orders from $25 to $300. 10% down and up to 18 months to pay on orders from $300.01 to $500. Larger down payments reduce monthly payments and carrying charges.

To Make “Add-On” Purchases. See back side of order blank.

Attention Residents Of Puerto Rico And Other U.S. Possessions!
A special time pay plan is now available... write our Credit Dept. for details.

SPECIAL ACCOUNTS FOR GOVERNMENT, BUSINESS AND EDUCATIONAL INSTITUTIONS
We offer 30 day terms to governmental, business and educational institutions. An acceptable Dun and Bradstreet rating or names and addresses of five firms with whom you are presently doing business are required.

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

If you move...
please send us your old address, and your new address including Zip Code. This will keep catalogs, correspondence, and your shipments coming without interruption. Use coupon below.

Have You Moved Since Your Last Heathkit Order?
Fill in and mail this coupon to Heath so we can bring your records up to date.
If you have an address label from a previous Heathkit flyer or catalog, send it along with the coupon.

My New Address Is:

Name________________________
Address______________________
City__________________________State_________________Zip________

My Old Address Was:

Name________________________
Address______________________
City__________________________State_________________Zip________

Be sure to include your zip code no.

EASY PAYMENT CHART

| Unpaid Balance | Carrying Charge | Up to 12 Monthly Payments | Unpaid Balance | Carrying Charge | Up to 12 Monthly Payments | Up to 15 Months | Carrying Charge | Monthly Payments
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*All monthly payments are for the amount shown; last payment for balance remaining due.
For Advance News On Future Kits See 4-Color Insert Center of Catalog

Preview of:

- Guitar Kits
- Guitar Amplifier Kit
- Amateur Station Console
- Compact Hi-Fi Speaker
- FM Stereo Table Radio
For Advance News On Future Kits See 4-Color Insert Center of Catalog

Preview of:

- Guitar Kits
- Guitar Amplifier Kit
- Amateur Station Console
- Compact Hi-Fi Speaker
- FM Stereo Table Radio
PREVIEW OF KITS TO COME

EXCITING NEWS! The big sound, the big value in electronic guitars and amplifiers is in these soon-to-be-available quality musical instruments. All in kit form, all at a fraction of their usual cost, they will be ready for delivery early in November... watch for complete details in the Heathkit Christmas Flyer to be mailed in October.

The guitar kits are manufactured for Heath by Harmony, America's largest guitar manufacturer... more people buy Harmony guitars than any other brand. All models are factory finished and wood parts are assembled.

The amplifier kit is straight from Heath labs... all transistor... by the world's most experienced engineers in audio transistor circuitry... with all the features that guitarists have come to want most in amplifiers.

If you are planning to buy a guitar or amplifier, it will pay to wait for these superb new kits.

For complete details on this New Heathkit Line of Quality Guitars and Amplifiers, see the Official Announcement in the Heathkit Christmas Flyer - They're Worth Waiting For!

DELUXE HARMONY-BY-HEATHKIT GUITAR... WITH 3 PICKUPS... ELECTRO-ACOUSTIC DESIGN... TRULY PROFESSIONAL... $329.50 VALUE FOR ONLY $219.95
- American Made - Quality Made for Lasting Value
- Double Cutaway style-highest registers easily fingered
- Ultra-slim fingerboard - short scale (24½") for easy chording, "comping" and solo of ovaled rosewood with 8 large inch position markers
- Ultra-slim "uniform feel" neck with adjustable Torque-Lok reinforcing rod
- 3 pickups with individually adjustable pole-pieces under each string for the most critical adjustment of emphasis and balance
- Flat wound strings for close playing
- 3 silent switches select 7 combinations of pickups
- 6 controls for tone and volume of pickups
- Metal button tuning keys
- "Engraved" headpiece
- Plastic pick-guard matches headpiece
- Professional Bigsby true vibrato tailpiece
- Curly maple Ultra-Thin arched body with "9" holes - 15¼" x 40½". 2" rim
- Factory buffered and polished - gleaming warm cherry red deeply shaded
- White and Blue-Black chipboard carrying case with extra thick red plush lining
- Includes instruction book, Tuning record, Pick, Connecting cord and Deluxe red leather neck strap with cushioned shoulder pad
- All wood parts assembled - you mount trim parts, pickups & controls in pre-drilled holes & install the strings

KIT TG-46, 17 lbs., no money down, $21.95
Expected Shipping Date: Early November

HARMONY-BY-HEATHKIT "ROCKET" GUITAR... TWO PICKUPS... PLUS ELECTRO-ACOUSTIC DESIGN... PROFESSIONAL QUALITY... $158.50 VALUE FOR ONLY $119.95 IN KIT FORM
- American Made Quality For Lasting Value
- Single Cutaway style
- Ultra-slim fingerboard of ovaled black rosewood
- Ultra-slim neck - steel rod reinforced
- 2 pickups with individually adjustable pole-pieces under each string for emphasis and balance
- silent switch selects 3 combinations of pickups
- 4 Controls for tone and volume
- Harmony-type "W" tailpiece - unusually responsive
- Laminated maple Ultra-thin arched body with "F" holes - 15¼" x 40½", 2" rim, celluloid bound edges
- White plastic pick-guard
- Factory buffered and polished - rich cherry red lightly shaded
- Blue-black chipboard carrying case with blue plush lining
- Includes instruction book, Tuning record, Pick, Connecting cord, and Deluxe red leather neck strap with cushioned shoulder pad
- All wood parts assembled and factory finished - you mount metal parts, pickups, & controls in pre-drilled holes & install the strings

KIT TG-36, 16 lbs., no money down, $11.95
Expected Shipping Date: Early November

SILHOUETTE HARMONY-BY-HEATHKIT SOLID-BODY GUITAR... 2 PICKUPS... MODERN DESIGN FOR TODAY'S PLAYING... $145 VALUE FOR $95.95
- American Made - Quality Made for Lasting Value
- "Silhouette" - free form profile designed for comfort and easy playing with its modified double cutaway design
- 15 frets clear of body
- Ultra-slim fingerboard of black rosewood - short scale (24½") for easy chording
- Ultra-slim neck for "uniform feel" - Torque-Lok adjustable reinforcing rod
- 2 pickups with individually adjustable pole-pieces under each string for emphasis and balance
- 3-position toggle switch selects either or both pickups
- 2 Controls for tone and volume
- Harmony type "W" vibrato tailpiece - unusually responsive
- 6-line tuning keys
- Hardwood solid body - 12½" x 15½" x 3¾" button polished - gleaming cherry red deeply shaded
- Extra large white plastic pick-guard mounted directly on the body - extends under strings and around controls to protect finish
- Blue-black chipboard carrying case with blue plush lining
- Includes Instruction book, Tuning record, Pick, Connecting cord, and Deluxe red leather neck strap with cushioned shoulder pad
- All wood parts assembled and factory finished - you mount metal parts, pickups, & controls in pre-drilled holes & put on strings

KIT TG-28, 13 lbs., no money down, $10.00
Expected Shipping Date: Early November
Deluxe SB-Series Amateur Station Console... Four Separate Units In One!

- Includes 24-hour clock, SWR meter, hybrid phone patch and an all-electronic 10-minute timer with audio/visual signaling in one compact unit.
- Matched in styling and performance with the Heath Deluxe SB-Series radio equipment.
- Measures 6" H x 10½" W x 11½" D - same size as Heath SB-400 speaker and SB-410 signal monitor.

Kit SB-630, 9 lbs., no money down, $54.85. Expected Shipping Date: Late November.

Last Call for HEATHKIT® 21" Color TV

Now Save Up To $48.50 On A Deluxe 21" Color TV And Cabinet Combination... A Better-Than-Ever Buy!

GRA-53-7 Deluxe Cabinet
Now Only
$59.50 (Was $108.00)

- Built-in Service Center to adjust & maintain set.
- 26-tube, 8-diode circuit.
- Deluxe Standard-Kollsman VHF tuner with "memory" fine tuning.
- Transistor UHF tuner
- High definition 70° 21" "rare-earth" color tube for brighter reds.
- Anti-glare bonded safety glass.
- 24,000 volt regulated picture power.
- Automatic color control for top color quality.
- Gated automatic gain control for steady "flutter-free" pictures.
- Tuners, I.F. and high voltage assemblies factory-builtin & aligned.
- Just simple circuit boards to wire.
- Line Thermistor for longer tube life.
- Tubes alone list for over $260.
- Transformer operated.
- Circuit breaker protection.
- Two hi-fi outputs plus tone control.
- One-piece metal chassis support for easy set-up & servicing.
- Mounts in wall, custom cabinet or either Heath cabinet.
- 1 year warranty on picture tube, 90 days on all other parts.

Compact 2-Way, 2 Speaker System With Acoustic Suspension Design

- 8" acoustic suspension woofer with 4.5 oz. Alnico IV magnet for extended bass.
- 3½" tweeter with 4.5 oz. Exodo IV magnet.
- Wide 35 to 20,000 Hz frequency response.
- Handles 15 to 25 watts program material.
- 8 ohm impedance.
- High frequency level control.
- 1500 Hz crossover frequency.
- Handsome walnut veneer cabinet with scratch-proof clear vinyl covering for easy cleaning.
- Easy to build in an hour or two... speakers already cabinet-mounted, you just wire the crossover network.

Kit AS-16, 17 lbs., no money down, $49.85. Expected Shipping Date: Late October.

Deluxe Solid-State FM/FM Stereo Table Radio

- All transistor circuit for clean, natural "transistor sound" and cool, instant operation.
- Automatic switching to stereo.
- Automatic stereo indicator light.
- Fixed Automatic Frequency Control for drift-free reception at all times.
- Adjustable phase control for best stereo.
- Easy to read slide-rule dial.
- Tuner and IF section same as used in Heathkit transistor stereo components.
- Two 5½" PM speakers for crisp, bold stereo.
- Clamped volume control for individual adjustment of each channel.
- Tone control.
- Bookshelf size...
- Measures a compact 15½" W x 6½" D x 9½" H.
- Preassembled, prelabeled "front-end" to insure peak performance.
- Assembles easily in about 10 hours with simple circuit board construction.
- Handsome walnut cabinet blends with any surroundings.

Kit GR-36, 24 lbs., no money down, $70.00. Expected Shipping Date: Late October.

See The Cleanest, Clearest Pictures In Color TV... with the unique life-like sharpness and beauty of the Heathkit GR-53A. The only 21" color TV with a "built-in service center" for perfect picture adjustments. Simple-to-follow instructions and detailed color photos show you exactly what to look for and how to achieve it... quickly, easily! You become the expert. Results: True-to-life color pictures day in and day out...and the elimination of many servicing headaches.

From Parts To Picture In Just 25 Hours. And as easy to build as an audio amplifier... you simply wire 3 circuit boards, mount the parts, connect a color-coded wiring harness, and adjust the picture... all critical circuits are performed and aligned at the factory to insure peak performance.

But Don't Take Our Word For It. Ask any GR-53A owner like Mr. James Rusler of Huntington, Ind. He writes: "We have many friends to our house and always receive universal comment that our color is far better than anything they have seen. The satisfaction of assembling the set increases the enjoyment that much more, and I haven't had one bit of trouble in eight months. Your complete and comprehensive manual dealing with service assures me that if there is a need for adjustment that it can be done without the services of a service repairman."

Choice of 3-Way Installation. Another exclusive Heathkit feature! Mount in a wall, your own cabinet, or either of the Heath factory-assembled cabinets.

Kit GR-53A, all parts including chassis, tubes, mask, UHF & VHF tuners, mounting kit and specially shielded, extended range 6" x 9" speaker. 125 lbs. $38.00, as low as $22 mo. (REX Express or Motor Freight only) .................................................. $375.00

Assembled GRA-53-7, deluxe walnut cabinet (measures 44" W x 32¾" H x 26½" D) 82 lbs. no money down, $60 mo. (REX Express or Motor Freight only) .................................................. $108.00, Now Only $59.50

Assembled GRA-53-6, economy walnut-finished hardboard cabinet (measures 37¾" W x 33¼" H x 26¼" D) 51 lbs. no money down, $5 mo. (REX Express or Motor Freight only) .................................................. $46.50, Now Only $39.50

HEATHKIT® 21" Color TV

- Picture size: 21" round, approx. 265 sq. in.
- Deflection: Magnetic
- Focus: Electro-static
- Convergence: Magnetic
- Antenna input impedance: 75 ohm balanced.
- Picture IF carrier frequency: 45.75 MHz
- Sound IF carrier frequency: 41.25 MHz
- Subcarrier frequency: 4.5 MHz
- Tuning range: VHF TV Channels 2-13
- UHF 14-83
- Audio cathode follower: Output impedance, 3k, frequency response, 800-15,000 Hz, harmonic distortion, less than 1%, audio power: 2 W.
- Audio output: Output impedance, 8 ohms.
- Audio power: 2 watts.
- Frequency response: ±2 db, 50-15,000 Hz.
- Harmonic distortion: Less than 3%.
- Power requirements: 120 V, 50-60 Hz, 600 watts.
- Wall mounting space required: 23" D X 25° H X 28" W.
### How To Figure Shipping Costs

The Map And Tables Below Will Help You Choose The Best Way To Ship Your Kits.

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**Parcel Post Rates**

Items in this catalog are mailable unless indicated with "REA Express Or Motor Freight Only" in the price line.

**Important:** Figure postage separately for each kit ordered and remit full amount. When we can combine packages to save you money, the difference will be refunded to you.

**C.O.D. Fees in Addition To Postage**
- Up to $10.00: 60 cents
- $10.01 to $25.00: $0.10
- $25.01 to $50.00: 85 cents
- $50.01 to $100.00: 70 cents
- $100.01 to $200.00: $1.00

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

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### PARCEL POST RATE TABLE

<table>
<thead>
<tr>
<th>Up to 150 miles</th>
<th>150 to 300 miles</th>
<th>300 to 600 miles</th>
<th>600 to 1,000 miles</th>
<th>1,000 to 1,400 miles</th>
<th>Over 1,400 miles</th>
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**PREMIUM ROUTINGS**

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

**MOTOR FREIGHT RATES**

Approximate Motor Freight rates are shown below. For more exact information on rates and deliveries check with a local trucking company.

Do not enclose money for Motor Freight with your order. Shipping charges are collected by the carrier at the time of delivery.

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**MOTOR FREIGHT RATE CHART**

<table>
<thead>
<tr>
<th>Up to 150 miles</th>
<th>150 to 300 miles</th>
<th>300 to 600 miles</th>
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**R.E.A. EXPRESS RATES**

Approximate Express rates are shown below. For more exact information on rates and deliveries check with your local R.E.A. office.

Do not enclose money for Express with your order. Shipping charges are collected by R.E.A. at time of delivery.

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**EXPRESS RATE CHART**

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<th>Up to 150 miles</th>
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<td>$4.98</td>
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<tr>
<td>10 lbs.</td>
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**IMPORTANT:** Parcel Post rate changes enacted April, 1964 are reflected in this table.

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

Kit
$56.95

Wired
$84.95

A Heathkit Classic... features reliable, proven, time-tested circuitry. The dual series-regulators operate well within their ratings for years of dependable service.

Kit
$72.95

Wired
$114.95

Large area heat sink assures long component life and stable operation. Spacious component layout provides ample ventilation... easy assembly.

Kit
$47.50

Husky silicon diode rectifiers maintain a minimum of internal voltage drop—a maximum of efficiency and dependability.

There's A Heathkit For Every Interest, Every Purpose, Every Budget
Heathkit Variable Voltage Regulated Power Supply Provides High Voltage, Bias, And 6.3 VAC For Countless Applications

- Furnishes B+, Bias, & Filament voltages • DC output variable from 0 to 400 volts • Separate panel meters monitor output voltage & current • Output terminals are isolated for safety in AC/DC work

Serves Hundreds Of Uses In The Shop And Laboratory. Originally intended for the experimenter and repair man, the IP-32 now can be found in physics, chemistry, and university electronics laboratories throughout the world. It's the perfect DC voltage source for electrophoresis in chemistry, and has been chosen by The University of California for the new Berkeley Physics Laboratory course.

Saves Time And Labor In Servicing And Design Work. With the Heathkit IP-32 power supply there's no need to build up a separate power supply for each new experimental circuit tried in design and development work. In service applications, faulty or suspected power supplies can be bypassed with the IP-32 to see if the remainder of the circuit is working properly. B+ and bias voltages are furnished for a wide range of applications.

Convenient "Standby" Switch. Separate filament and high voltage transformers used in the IP-32 permit switching all high voltages "off" while circuit changes or repairs are made. Filament voltage remains "on," eliminating time-consuming warm-up time. Built-in circuit protection prevents damage to the power supply should the bias voltage be accidently shorted.

Separate Panel Meters. Output voltage and current are continuously monitored by separate panel meters for exact settings to circuit requirements. Regulated B+ output is variable from 0 to 400 volts DC at up to 100 ma (125 ma maximum). Bias voltage is variable from 0 to 100 volts DC at 1 ma, and filament voltage of 6.3 volts AC is available at up to 4 amperes. Output terminals are separate and well insulated for safety in AC/DC work.

Quality-Designed Throughout. Rugged, well-rated components are used throughout the design of the IP-32 for years of dependable, trouble-free performance. Add this valuable unit to your testing facilities now.

Kit IP-32, 17 lbs. • No money down, $6 mo. • $56.95 Assembled IPW-32, 18 lbs. • No money down, $9 mo. • $84.95 Export model available for 115/230 VAC, 50-60 Hz; write for prices.

IP-32 SPECIFICATIONS—Output: 0-400 volts regulated DC at 0-100 ma cont., 125 ma intermittent. 0 to 100 volts DC at 1 ma variable bias voltage, 6.3 volts AC at 4 amps. Filament voltage. Regulation: Output variation less than 1%, from no load to full load. Line regulation: Less than 1%, from 110 VAC to 127 VAC. Ripple: Less than 0.005 volts RMS, ripple, jitter, and noise. Output impedance: Less than 0.05 ohms. DC to 1 MHz. Meters: Voltmeter 0-400 V or 0-150 V; Milliammeter 0-150 ma. Dimensions: 13" W x 8½" H x 7½" D.

Heathkit "Solid-State" Low Voltage Regulated Power Supply • Current Limiter Protects Equipment Under Test

- All-transistor solid-state circuitry • Relay protected against short circuit & overload • 0.5 to 50 VDC with better than ±15 millivolts regulation • Four current ranges, 50 MA, 150 MA, 500 MA & 1.5 A • Adjustable current limiter, 30 to 100% on each range • Series type voltage regulator, zener diode reference

A Tremendous Value In A DC Supply! The Heathkit IP-20 is another example of the advanced-design instruments available at substantial do-it-yourself savings. Offering more in features and circuit refinements than power supplies costing several times this price, the IP-20 features a solid-state circuit that will deliver up to 1.5 amperes from 0.5 to 50 volts DC for a multitude of applications in servicing and design work or industrial uses.

Ultra-Smooth DC Output. Highly-filtered output has less than 150 microvolts AC ripple... ideal for servicing the new transistorized audio amplifiers, tuners, radios and TV sets now on the market. A necessity for any well-equipped service-shop or lab.

Adjustable Current Limiter. Current output is automatically limited on any range to a pre-set value to protect both the power supply and the circuit under test. An overload relay is also provided to protect against a direct short or heavy overload.

Metered Output Voltage And Current. Voltage and current settings are simplified with the built-in panel meter. A slide-switch selects either output. Four current ranges provide 50, 150, 500 ma and 1.5 amperes full-scale, and the three voltage ranges provide 5, 15 and 50 volts DC. Fitted "heat-sinks" protect the heavy-duty power transistors for long, faithful service. Your best buy in a DC supply.

Kit IP-20, 13 lbs. • No money down, $8 mo. • $72.95 Assembled IPW-20, 16 lbs. • No money down, $11 mo. • $149.95 Export model available for 115/230 VAC, 50-60 Hz; write for prices.

IP-20 SPECIFICATIONS—Input: 105-125 volts 50/60 Hz; 125 watts at full load (50V, 1.5A). Output: 0.5-50 volts DC; 1.5 amps max. DC load regulation: ±15 millivolts, current regulation: ±0.005% change. Ripple & noise: Less than 0.5 microvolts. Transient response: Less than 25 microvolts. Output impedance: Less than 0.1 ohms DC to 10 kHz, less than 0.5 ohms 10 kHz & up. Overload protection: Current limiter & relay. Meter: 3½". 1 ma, 50 ohm Current ranges: 50 ma, 150 ma, 500 ma, 1.5 A. Voltage ranges: 5V, 15V, 50V. Front panel controls: On/Off, Coarse voltage switch, Fine voltage adjust, Current range switch, Current limit adjust, Meter slide switch, DC regulation, Reset Standby toggle switch. Output impedances: (3), (plus (+), minus (−), chassis ground. Dimensions: 9½" H x 6½" W x 11½" D.

Heathkit Battery Eliminator • Variable Voltage Control Makes This A Remarkably Versatile Low-Voltage Supply

- Convenient switch-selection of 6 or 12 volt DC power • Separate outputs for filtered & unfiltered DC • Special filtering circuit holds AC ripple to less than 0.3% • Separate panel meters for output voltage & current • Doubles as a battery charger • Heathkit—Pioneer And World Leader In Electronic Kits

A Modern Source Of 6 Or 12 Volt Power. The IP-12 provides a ready, reliable source of well-filtered 6 or 12 volt DC power for servicing transistor or hybrid electronic equipment. The variable voltage control permits a wide range of uses as a general purpose low-voltage supply, as well. The IP-12 eliminates the need for storage batteries in your shop.

Metered Output. Output voltage and current are continuously monitored by separate panel meters to meet exact test requirements. Output voltage is variable in two ranges from 0-8 volts or 0-16 volts.

Special Ripple-Filter Circuit. Separate terminals are provided for normal output where high current is required, such as in charging batteries, plus a highly-filtered output that holds AC ripple to less than .3% for exceptionally smooth DC. This feature is a necessary requirement for use in servicing transistor and hybrid radios which can tolerate only a small amount of "hum-producing" AC ripple.

Many Applications In Servicing. The Heathkit IP-12 is ideal for use in servicing transistor and hybrid automobile radios, portables, citizen's band two-way radio equipment, portable tape recorders, portable record players, mobile P.A. systems and many more.

Doubles As A Convenient Battery Charger. The IP-12 can be used as a trickle-charger for auto and boat batteries to keep them in peak operating condition and also serves as a handy charger for rechargeable wet-cells such as used in radio-controlled hobby equipment. Easy to build with complete instructions supplied.

Kit IP-12, 18 lbs. • No money down, $5 mo. • $47.50 Export model available for 115/230 VAC, 50-60 Hz; write for prices.

IP-12 SPECIFICATIONS—Continuously variable output: 6 volt range: unfiltered, 10 amp continuous, 15 amp maximum; filtered, 5 amp continuous, less than .3% ripple. 12 volt range: unfiltered, 5 amp continuous, 7.5 amp maximum; filtered, 5 amp continuous, less than .3% ripple. Power requirements: 105-125 volts 50/60 Hz AC at 200 watts. Dimensions: 13" W x 8½" H x 7½" D.

Heathkit—Pioneer And World Leader In Electronic Kits
6-Decade Resistance Kit
This extremely accurate Heathkit resistance decade is specially designed for laboratory use. It will provide resistance values in 1 ohm steps from 1 ohm to 999,999 ohms. Ideal for use as an arm for AC and DC bridges. Range switches have make-before-break contacts for smooth switching action without opening or shorting the circuit.
Kit IN-11, 3 lbs. . . . No money down, $5 mo. ........................................ $24.95

IN-11 SPECIFICATIONS: Range: 1 ohm to 999,999 ohms in 1 ohm steps. Resistors: Precision, ±1% accuracy; 1 watt. Minimum DC resistance: 0.43 ohms or less at terminals with all sw. set at zero. Dimensions: 5 1/4" W x 5" H x 6 9/16" D.

3-Decade Capacitance Kit
This capacitance decade provides convenient, switch-selected, 1% silvered mica capacitor values from 100 pF to 0.111 µF in 100 pF steps. Ideal for use in substitution tests, or in comparison bridge circuits where high accuracy is desired. This precision, laboratory instrument features high quality ceramic wafer switches with positive detent action.
Kit IN-21, 3 lbs. ......................................................... $17.95

IN-21 SPECIFICATIONS—Range: 100 pF to 0.111 µF in increments of 100 pF. Voltage rating: 350 V. DC continuous, 500 V. DC intermittent, 1000 V. DC instantaneous test. Accuracy of incremental capacity: ±1%. Stray capacitance: 10 to 15 µF at terminals. Dimensions: 7 3/4" W x 4" H x 5 5/8" D.

Heathkit Resistance Substitution Box
A valuable addition to the service shop! Enables convenient substitution tests for replacement of unknown or unrecognizable resistors . . . ideal too for experimentally altering circuit characteristics. IN-12 provides switch-selection of any one of 36 E.I.A. standard 10% 1-watt resistors, ranging in value from 15 ohms to 10 megohms. A slide-switch selects high or low resistance ranges. Case measures 5 3/8" L x 3 1/4" W x 3" H.
Kit IN-12, 2 lbs. ......................................................... $5.95

Heathkit Capacitor Substitution Box
Here is a handy kit for use in applications where an open or shorted capacitor is suspected. An 18-position panel switch selects any one of 18 popular E.I.A. standard capacitor values ranging from 0.0001 µF to 0.22 µF. All capacitors are rated at 600 volts except the smallest three and the two largest which are 500 and 400 volts, respectively. High-quality silver-mica and molded tubular capacitors are used throughout. 18" test leads with alligator clips are included. Case measures 5 3/8" L x 3 1/4" W x 3" H.
Kit IN-22, 2 lbs. ......................................................... $5.50

Heathkit Impedance Bridge
- Measures resistance, capacitance, low Q and high Q inductance with four separate bridge circuits • Slanted control panel for easy reading & operation
- Built-in generator & detector amplifier • Battery-type vacuum tube circuitry for fast warmup • 1½% precision resistors and silver-mica capacitors

Dependable Laboratory Accuracy Is Assured Through Use Of Precision Components. The four bridge circuits assembled in this instrument are: a Wheatstone bridge for measuring resistance, a Capacitance Comparison Bridge for capacitance, a Maxwell Bridge for low Q inductance, and a Hay Bridge for high Q inductance.

Battery-Type Vacuum Tube Circuits . . . Ready to go at a flick of the switch, permits measurement over a wide range of component values, and minimizes changes in operating characteristics due to thermal effects.
Kit IB-2A, 11 lbs. . . . No money down, $7 mo. ............................................ $69.95

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

IB-2A SPECIFICATIONS—Circuit: 4-arm impedance bridge. DC Measurements: Built-in power supply. Binding posts provided for external supply. Meter: 100-0-100 microammeter. AC Measurements: Built-in 1000 Hz generator. Terminals on panel for external generator at other audio frequencies. Detector: Vacuum tube detector and amplifier, using built-in meter. Terminals provided for external detector. Resistance: 0.1 ohm to 10 megohm. Capacitance: 0.1 µF to 100 µF. Inductance: 0.1 µH to 100 H. Dissipation factor: 0.002 to 1. Storage factor: (Q) 0.1 to 1000. Accuracy: 1½% decode resistors used. Tube complement: (2) 11A4, (2) 11A4. Power supply: Transformers and silicon rectifier. Power requirements: 100-125 V, 50/60 Hz AC, 10 watts. Dimensions: 8" H x 17" W x 6" D.

Use "No Money Down" Heath Time Pay—See Order Blank For Details

58
Value Leaders For Nearly Two Decades

Heathkit Tube Checker... 
Fills All Daily Service Requirements
- Tests most all tube types including new Compactron, Nuvistor, Novar and 10-pin miniatures
- Multi-colored "bad-?good" meter scale
- Constant tension, free-rolling roll chart mechanism
- Color-coded wiring harness for fast, easy assembly

An Essential Instrument For Radio & TV Servicing. Saves valuable time by eliminating doubt and guesswork as to tube quality before further circuit investigations are made.

Shows Positive Evaluation Of Tube Quality. Tubes are tested for quality on the basis of total emission and for shorts, leakage, open elements and filament continuity. Tube quality is read on a multi-colored "bad-?good" meter scale and a neon bulb indicator shows filament continuity and leakage or shorts between elements.

Flexible Overall Operation. Multiple filament voltages (switch-selected), adjustable cathode current, variable meter sensitivity and individual tube element switching provide complete operating convenience... and protect against obsuceness. Thirteen 3-position lever switches allow checking each tube element individually for open or short conditions and simplifies the addition of new tube types as they become available.

Special Roll-Chart Mechanism. Featured in the IT-21 is a smooth, free-rolling mechanism that is spring-loaded to keep the chart taut throughout its entire length. Chart and meter are both illuminated for easy reading of all tube test data.

Easy To Build. Neat, professional wiring and simplified assembly is assured with the color-coded wiring harness and easy-to-follow instructions supplied. Order your Heathkit IT-21 now for dependable test facilities at low-cost!

Kit IT-21, 12 lbs. ... No money down, $5 mo. ... $44.95


REPLACEMENT ROLL CHARTS
Updated replacement roll charts for all Heathkit tube checkers can be purchased after the 1st of each year. Prices are $1.50 for TT-1A Testers; $1.00 for IT-21 & TC-series Checkers.

Heathkit Mutual-Conductance Tube Tester... Tests Dynamic Transconductance For Highest Quality Tube Check

An Outstanding Array Of Features. Versatile switching facilities accommodate all tube types, regardless of base-pin connections, to protect against obsuceness. The TT-1A will provide quick and accurate tests of mutual conductance (Gm) from 0 to 3,000 microhms, with multipliers to extend this range to 24,000 microhms... an ultra-sensitive grid-current test... direct-reading ohmmeter leakage test... life test... hybrid tube test... and many more! Constant current heater supplies protect against obsuceness by supplying the correct voltage for any tube types drawing 300 ma, 450 ma or 600 ma. A Disconnect Switch removes all voltage potentials from the selector switches to protect both tubes and tester against possible damage during setup. "Cathode bus," "Plate bus," and "Grid bus," switches allow testing both sections of a triode individually with only one group of selector switch settings for extra operating convenience.

Built-in Calibration Circuit. The switch-operated calibration circuit designed into the TT-1A assures continued high accuracy for the life of the tester... no standardized tubes, voltimeters or other instruments are required. Chosen by professionals in virtually every phase of the electronics industry, the TT-1A offers sophisticated, thorough testing facilities at a low acquisition cost.

Kit TT-1A, 33 lbs. ... No money down, $14 mo. ... $149.95


Heath Offers You Incomparable "Extra" Customer Service
Heathkit® Oscilloscopes... For The

Heathkit “Space-Saver” 3” DC Oscilloscope
Identical X and Y Input Channels

• Identical vertical & horizontal DC or AC coupled amplifiers
• DC to 200 kHz bandwidth—less than 5° phase shift
• Recurrent sweep generator, 5 Hz to 50 kHz in four ranges
• External capacitor binding posts for slower sweep rates
• Small, compact, easy to carry from job to job
• Same panel size as IM-11 VTVM

A High-Quality, Professional Instrument, Compactly Designed... the IO-10 occupies only a fraction of the space required by scopes of comparable function, yet offers exceptional versatility to cover a wide range of applications in medical, industrial and general service fields. Identical vertical and horizontal amplifiers may be either AC or DC coupled with simple switch-selection of either input for measurement of AC or DC voltages.

Provides Extremely Low Sweep Rates. The recurrent sweep generator employed in IO-10 covers 5 Hz to 50 kHz in four overlapping ranges... lower sweep rates may be obtained by connecting additional capacitors across the external binding posts provided. This feature is especially useful in medical and industrial applications such as in computer “readout” work where low sweep rates are desired. Less than 5° phase-shift between channels makes this scope ideal for phase-shift measurements.

Faithful Waveform Presentations. A 3-position compensated input attenuator in each channel provides smooth control of waveform display. Trace distortion is minimized by a special alloy CR tube shield and an astigmatism control helps obtain a sharp, fine trace. All critical voltages are regulated for high stability. Power supply is transformer operated for safety and high efficiency.

Kit IO-10, 16 lbs... No money down, $10 mo. ............... $94.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices.

Clean, open circuit layout and the comprehensive assembly instructions make this the perfect scope for the beginner. See “How To Understand & Use Your Oscilloscope” (page 65). By far the most popular Heathkit—“How To...” course!

Heathkit “General Purpose” 3” Oscilloscope
Fulfills Hundreds Of Service
Shop & Classroom Requirements

• Identical push-pull vertical and horizontal amplifiers—2 Hz to 200 kHz response
• Wide-range sweep generator—20 to 100,000 Hz
• Automatic sync retrace blanking
• Professional-quality components throughout
• Clean, open circuit layout for easy assembly

A Dependable, Well-Rated Oscilloscope For General-Purpose Requirements... This handy scope is lightweight, surprisingly versatile, and is provided with modern, stable circuitry. It is a highly capable instrument intended for the service shop, the hobbyist’s den, the ham shack, and as an extra scope for general laboratory use.

Easy-To-Build. The components are arranged on a shallow chassis, eliminating hard-to-get-at corners, and allowing a clean, open circuit layout for easy, trouble-free assembly... perfect for beginners and students.

Extra Quality In Circuit Design. Identical vertical and horizontal amplifiers provide more than adequate frequency response for all general circuit investigations. Focus and astigmatism controls assure a sharp trace, and the special alloy neck shield for the 3RP1 CR tube minimizes the possibility of trace distortion due to external magnetic fields. Direct connection to the vertical deflection plates is available for such applications as high-level RF monitoring in transmitter work. Husky, well-rated power supply is fused for protection. All components are of highest quality. Order this fine scope for the best in instrument values.

Kit IO-21, 12 lbs... No money down, $6 mo. .................. $58.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices. See page 65 for comb. offer with EF-2 Applications Course... $66.95

Over 250 Heathkits To Choose From—World’s Largest Selection
Heathkit 5" Wide-Band Laboratory Oscilloscope Designed To Satisfy
The Rigorous Demands Of Troubleshooting B & W And Color TV Circuity

- 5 MHz bandwidth • Heath patented sweep circuit—10 Hz to 500 kHz • Push-pull vertical & horizontal amplifiers • Circuit board construction • Facilities for two preset adjustments in the horizontal sweep circuit for returning to often-used sweep frequencies • Up to 50% savings over equivalent oscilloscopes

Preferred By Thousands Who Demand A High Performance Instrument! ... the Heathkit IO-12 has proven itself to be an unmatched value. Because of its wide application range, it has found its way into service shops, professional and university laboratories, industries, and home test benches all over the world.

A Dependable Instrument Through Quality Engineering ... Excellent linearity and lock-in characteristics assure stable waveform presentations even at upper frequency limits. Wide band amplifiers and wide range sweep make the IO-12 ideal for many specialized as well as general investigations. Two "pre-set" sweep frequency choices are an invaluable aid in servicing the vertical and horizontal circuits of television receivers.

Chosen For The Berkeley Physics Laboratory. Model IO-12S features output jacks for connection to the HV and sweep circuits ... for application in Berkeley Physics Laboratory experiments.

The IO-12 Has Features That Create High Performance ... including push-pull vertical and horizontal output amplifiers, positive trace position controls, peak-to-peak calibration reference, 3-step frequency compensated vertical input, automatic sync circuit, Z-axis input, SUP1 CR tube, and a husky, well-rated power supply. Chances are, an IO-12 will satisfy your oscilloscope requirements ... compare the specifications.

Kit 10-12, 24 lbs. ... No money down, $8 mo. ... $79.95
Assembled 10W-12, 23 lbs. ... No money down, $13 mo. ... $134.95
Kit 10-12S, Berkeley Laboratory Version, 25 lbs. ... $79.95
Wired 10W-12S, Assembled Berkeley Version, 24 lbs. ... $134.95

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

See Page 65 for comb., offer with EF-2 Applications Course ... $87.95

IO-12 SPECIFICATIONS—(Vertical) Sensitivity: 0.055 volts RMS per inch at 1 kHz. Frequency response referred to 1 Hz to 400 kHz. Input impedance: 4.9 megohms at 1 kHz. Sweep generator: Range—10 Hz to 500 kHz in five steps. 0.05 microseconds or less. Input impedance: (AT 1 kHz) 2.7 megohms at X1, 3.3 megohms at X10 and X100. Horizontal) Sensitivity: 0.3 volts RMS per inch at 1 kHz. Frequency response: ±1 db 1 Hz to 200 kHz; ±3 db 1 Hz to 400 kHz. Input Impedance: 4.7 megohms at 1 kHz. Sweep generator: Range—10 Hz to 500 kHz in five steps, variable, plus any 2 preset sweep frequencies in this range. Synchronizing: automatic lock-in circuit using self-limiting synchronizing cathode follower. Power requirements: 105-125 volts 50/60 Hz AC at 80 watts. fused Dimensions: 14 3/4" H x 8 3/4" W x 16 1/2" D.

Scope Demodulator Probe Kit

Provides added versatility in oscilloscope applications by permitting visual observation of the modulation envelope waveform of RF and IF signals. Useful in both radio and TV servicing in checking for distortion and presence or absence of modulation. Functions as an AM detector ... passes only modulation of signal. Voltage limits are 30 volts RMS, 500 volts DC. Can be used with all Heath Oscilloscopes.

Kit 337-G, 1 lb. ... $3.50
Assembled 337W-G, 1 lb. ... $4.50

Low Capacitance Scope Probe Kit

This probe is an essential aid in high frequency circuit investigations ... minimizes loss of gain, circuit loading or distortion due to overloading of scope input. A switch on the probe body provides direct or X10 attenuated operation and an adjustable trimmer capacitor provides proper match to scope input. An assortment of connectors is included with the kit to match most oscilloscope terminals. Wiring options permit impedance match to IO-12 (3.3 megohms) or IO-14 (1 megohm) input.

Kit 337-G, 1 lb. ... $4.95

Heathkit Electronic Switch ... For Dual-Trace Scope Operation

- Permits display of two separate signals on CRT screen • Displays signal levels as low as 0.1 volt • ±1 db, 0-100 kHz response • Separate gain controls for each channel • All-electronic switching • Four switching rates—150, 500, 1500, and 5000 Hz • Sync output to control scope sweep

Lets You View Two Signals At Once! With this handy scope accessory you can visually observe two different signals on your scope screen at the same time. A typical example of its use is to simultaneously observe a signal or waveform as it appears at both the input and output stages of an amplifier. A position control is provided to superimpose or separate the two signals for comparison purposes or individual study. Both signals are produced alternately at the output at any one of four switching rates provided. Separate gain controls for each channel and sync output to lock scope-sweep or time-base to signal frequency add extra operating convenience. Functions at signal levels as low as 0.1 volt. Simple to use, just connect signal sources to "A" and "B" inputs on the electronic switch and the output directly to the vertical input of the scope.

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

Kit ID-22, 7 lbs. ... $23.95

Look To Heath For The Newest, The Finest In Electronic Kits
Heath Research... Creating Innovations In Electronics For Two Decades

Component Layout Which Can Be Appreciated By The Most Critical Kit Builder. The high-quality performance of the IO-14 is matched by its neat, clean parts layout, and its straight-forward assembly procedure. Components are contained in eight packages which are opened in sequence with eight phases of assembly. The modern circuitry and select components assure a sharp, bright trace... provide 4 kv accelerating potential, high-nickel alloy CRT shield, and precision, cable-type, matched magnetic-core delay lines for fast-rise-time pulse analysis.

Feature For Feature... Price For Price... The World's Best Buy in DC Scopes. 5 fiberglass laminate circuit boards, 2 wiring harnesses, a heavy-duty, well rated power transformer, forced-air cooling, and "U" girder, all aluminum construction, plus Heath engineering know-how have made this the best value in DC, triggered-sweep scopes. The rear access door allows direct connection of deflection plates. Also shown above are 2-axis terminals, holders for 3-wire line cord, and circuit breaker reset button.

Kit IO-14
$299.00

Assembled IOW-14
$399.00

Use Heath's Technical Consultant Service—Just Drop Them A Line On Any Kit Subject
Heathkit® IO-14 Professional DC Oscilloscope

. . . . . The New Standard For Performance And Value In Precision Test Instruments

Nineteen Years Ago Heath Broke The Price Barrier On Oscilloscopes With A Low-Cost Scope For Hams, Hobbyists, And Service Technicians. Now Heath Breaks The Price Barrier Again! . . . With A Precision, Fast-Response, Triggered Sweep, Delay Line Oscilloscope For The Serious Experimenter, Industrial Or Academic Laboratory, And Medical Or Physiological Research Laboratory.

* A High stability 5° DC oscilloscope with triggered sweep * DC to 8 MHz bandwidth and 40 nanosecond rise time * Vertical signal delay through high linearity delay lines—capable of faithful reproduction of signal waveforms far beyond the bandwidth of the scope * Calibrated vertical attenuation * Calibrated time base * Forced air cooling * Input for Z axis modulation * Input for direct access to vertical deflection plates * Easy circuit board construction & wiring harness assembly * Components are packaged separately for each phase of construction * Easy to align * Fullfills many production and laboratory requirements at far less cost than comparable equipment * Remarkable cost-saving capability of fast-rise waveform analysis * No special order for export version required—wiring options enable 115/230 volt, 50-60 Hz operation

HERE IS A TRULY SOPHISTICATED INSTRUMENT . . . designed with modern circuitry, engineered with high quality, close-tolerance components, and capable of satisfying the most critical demands upon its performance specifications. The ultra-stable IO-14 far outperforms oscilloscopes with “synced” recurring sweeps in such work as the analysis of signal waveforms in television circuitry. Its triggered sweep feature enables the operator to accurately display rapidly occurring sweep events in the many applications for which continuous sweep scopes must operate on a strict “hit-or-miss” basis. Therefore, even TV servicemen will find that the additional investment for a scope of this quality is more than justified by its advantages.

THE IO-14 FEATURES PRECISION coaxial DELAY-LINE Circuitry . . . the type of delay circuitry considered by electronic engineers to be the most desirable for high linearity and maximum usable frequency response. The 0.25 microsecond delay circuitry in the vertical channels of the IO-14 allows the horizontal sweep to trigger “ahead” of the incoming vertical signal . . . allows the leading edge of the vertical signal waveform to be accurately displayed. To not only provide this feature in the IO-14, but to assure its “state-of-the-art” quality, as well, Heath engineers chose coaxial-type delay lines capable of reproducing sharp rise-time signals far beyond the high frequency specifications of the oscilloscope. This assures the utmost ability for critical analysis of signal waveform characteristics . . . right up to the limits of the published specifications.

THE IO-14 PROVIDES FEATURES YOU EXPECT ONLY IN HIGH PRICED OSCILLOSCOPES. For example, a calibrated vertical attenuator, a 5X sweep magnifier, and a magnifier indicator lamp . . . external sweep input and external trigger input . . . and many others, including an accurately engraved graticule with variable intensity lighting for optimum results in ‘scope photography.

PRECISION SMALL PARTS . . . Switches are quality, ball-detent type. All major control potentiometers are precision, high-quality sealed components. All critical resistors are 1% precision. And circuit boards are low-loss fiber glass laminate.

BUILT FOR CONTINUOUS USE. The IO-14’s cabinet is heavy gauge aluminum. The chassis and components are well supported structurally. The CR tube is shielded against stray magnetic fields, and forced air ventilation allows the IO-14 to be operated continuously under the demands of industrial use. The power transformer is husky, well rated, and constructed with a heavy base to endow the windings & iron with the capability of the IO-14 to clearly display fast-rise signals. Mode is “triggered” “AC”. Time base is 0.2 microseconds per centimeter. The line leading-edge distortion is less than 0.02% at the 1 megaohm point, and the vertical deflection occurs 0.25 microseconds after the sweep is initiated. The waveform on the right (precision 20 millisecond timing pulses) illustrates the linearity of the horizontal sweep . . . through the accurate 2 cm pulse intervals. Both waveforms are unretouched photographs of signals produced by Telequipment® type C-1 scope calibrator. Scope sensitivity for both waveforms is 0.2 volts/cm.

Here Actual Signal Waveforms Indicate Scope Quality. The waveform on the left (a 1 megohm load) illustrates the capability of the IO-14 to clearly display fast-rise signals. Mode is “triggered” “AC”. Time base is 0.2 microseconds per centimeter. The line leading-edge distortion is less than 0.02% at the 1 megaohm point, and the vertical deflection occurs 0.25 microseconds after the sweep is initiated. The waveform on the right (precision 20 millisecond timing pulses) illustrates the linearity of the horizontal sweep . . . through the accurate 2 cm pulse intervals. Both waveforms are unretouched photographs of signals produced by Telequipment® type C-1 scope calibrator. Scope sensitivity for both waveforms is 0.2 volts/cm.
Heathkit Educational Instruments

Heathkit IMPScope . . . The Biological Oscilloscope That Has Revolutionized The Teaching Of Life Science . . . Lets Students "See" Physiological Phenomena

WHAT IT DOES

$17.50

EV-3

Included With IMPScope
• Input termination and calibrator
• Human EKG electrodes
• EKG paste
• Connecting leads

Kit EV-3, 27 lbs., no money down, $17.50...
Assembled EVW-3, 28 lbs., no money down...
EV-3 Export model available for 115/230 VAC, 50-60 Hz; write for prices.

EV-3 SPECIFICATIONS—VERTICAL AMPLIFIER: Sensitivity: Switch selected; 200 microvolts, 1 millivolt, and 5 millivolts per centimeter. Variable from 200 microvolts to 5 millivolts or 1 millivolt to 10 millivolts per centimeter. Bandwidth: 1 cycle from 10 Hz to 10 kHz, balanced. HORIZONTAL: Sweep frequency (rate per centimeter): Slow, 0.15 to 5 sec. Medium, 7.5 milliseconds to 0.2 sec. Fast, 0.2 to 1.0 milliseconds. Stimulator: Rate, 6 to 30 stimuli per second. Recurrent stimulus or single stimulus with pushbutton—indicator light on front panel. Stimulus duration: 0.25 to 6 milliseconds. May be increased with an external capacitor—jack provided. Power requirements: 70 watts, 105-125 volts, 50/60 Hz A.C. Dimensions: Overall, 11½” W x 7½” H x 19¼” D. Net weight: 17½ lbs.

Heathkit Educational Analog Computer . . .
Brings Analog Computer Electronics
Within The Budget Of Nearly Everyone

• Excellent teaching aid for a course in computer electronics
• Vividly illustrates the electronic analogies to mathematical problems
• Handles problems as complex as fluid flow, damped harmonic motion, and flight of a projectile in a viscous medium
• 9 DC operational amplifiers
• Switchover allows amplifier balance without removing problem setup
• Built-in regulated power supply—3 initial condition power supplies
• Built-in oscillator for re-cycling computer through problem

Industries And Universities Find The EC-1 Ideal for training computer operators and engineers. As a training device, it frees more advanced computer facilities for more sophisticated problem solving.

The EC-1 Computer Operational Manual Discusses Many Problem Setups . . . including problems as complex as the simultaneous second order differential equations for the flight of a projectile such as:

\[
\frac{d^2x}{dt^2} + \frac{C}{M} \frac{dx}{dt} + \frac{Cy}{M} = 0 \quad \text{and} \quad \frac{d^2y}{dt^2} + \frac{C}{M} \frac{dy}{dt} + \frac{g}{M} = 0.
\]

The problem of a bouncing ball is solved, and coefficients and parameters such as gravity, mass, viscosity of the medium, elasticity of the ball, flattening of the ball on impact, and drop height can be varied to show their effects on the flight path, change of momentum, etc.

The EC-1 Is A Highly Capable And Versatile Device. Its capabilities can be further extended through the addition of special function generators, "patched in" to perform non-linear or discontinuous functions.

A large assortment of precision components and patch cords is included for setting up problems. Problem results may be sampled from each of the operational amplifiers and read on the built-in panel meter or on an external readout device such as a DC oscilloscope or pen recorder.

Enabling the effects of varying mathematical parameters to be dramatically illustrated. EC-1 is easy to assemble and operate. Complete instructions are supplied.

Kit EC-1, 48 lbs.

$199.95

EC-1

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

EC-1 SPECIFICATIONS—Amplifiers: Open loop gain approximately 1000. Output—40 +/−60 volts at .7 ma. Power supplies: ±500 volts at 25 ma electronically regulated, variable from +250 to +500 by control with meter reference for setting. −200 volts. Negative 150 volts at 40 ma regulated by VR tube. Repetitive operation: Multivibrator cycles a relay at adjustable rates (0.1 to 15 Hz), to repeat the solution any number of times; permits observation of effect of changing parameters on solution. Meters: 50-0.50 uA movement. Power requirements: 105-125 volts, 50/60 Hz, 100 watts. Dimensions: 19½” W x 11½” H x 13½” D. Large ES-Computer and individual components still available. Address your inquiries to Heathkit, Cooksville, Ontario, Canada.
“How To Understand And Use Your Vacuum Tube Voltmeter”

- Combination kit/textbook project
- Simplified basic theory in everyday language
- Interesting experiments support text material
- Information applies to all VTVMs
- No previous electronic experience required
- Buy in combination with IM-11 or IM-13 VTVMs & save

A Complete Course On The Theory And Applications Of The VTM... discusses the VTM in everyday language. Ideal for beginners, since it assumes no prior knowledge of electronics, yet it does not “talk down” to the electronics technician or experienced student. Excellent unit for a laboratory course in basic electronics, or use it for self-teaching.

You Learn By Doing. Recognized as the most effective method of teaching. Experiments which illustrate and clarify the text material are performed with the special power supply which is included. This “learn-by-doing” method, and the discussion of general “trouble-shooting” principles prepare you for independent investigation of new problems as they arise. Arrangement of textbook topics provides the most value for the beginner and professional alike. For added savings order with IM-11 or IM-13 VTVMs!

Kit EF-1, Text and special power supply (for VTM owners), 3 lbs.
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Kit EF-1-4, includes EF-1 and IM-13 VTM, p. 45, 10 lbs...

Manuals only for EF-1 (single copy)...$5.00
(10 or more copies)...$3.00 each.

“How To Understand And Use Your Oscilloscope”

- A kit/textbook project
- Interesting “learn-by-doing” experiments
- Basic theory explained in everyday language
- Superb spring-clip connectors permit fast, simple circuit changes during experiments
- Big 160-page textbook remains a valuable reference source
- Ideal for beginners and professionals

Most Popular Kit/Textbook Course provides a well-organized, comprehensive introduction to electronics through the operation, circuitry, and use of the oscilloscope. Even for professionals the “EF-2” Course is a fresh, new approach to the basic theory and application of the oscilloscope. It clears away the “mystery” of the oscilloscope which sometimes haunts students in electronics, and provides an excellent reference text, useful for years to come.

You Learn The General Principles Of Electronics And Troubleshooting through laboratory experiments with the oscilloscope and test chassis. Use of the special test chassis clarifies the theory by dramatically illustrating each point as it is discussed in the text. “Solderless” spring-clip connectors allow fast, easy circuit changes and permit re-use of the parts again and again, once the unit is initially constructed. Order either the IO-21 or IO-12 oscilloscope and enjoy extra savings.

Kit EF-2, Text and special chassis & parts, 4 lbs.
Kit EF-2-3, includes EF-2 and IO-21 Oscilloscope, page 60, 16 lbs...
Kit EF-2-4, includes EF-2 and IO-12 Oscilloscope, page 61, 26 lbs...

Manuals only for EF-2 (single copy)...$5.00
(10 or more copies)...$3.00 each.

“How To Understand And Use Your Signal Generator”

- Text written in easy-to-understand, everyday language
- Interesting “learn-by-doing” experiments
- A kit/textbook project
- Applies to most signal generator types
- Text remains a valuable reference source
- Excellent for high school or college-vocational courses in electronics

Written By An Electronics Teacher For Use In The Classroom, For Self-Teaching, Or As A Reference For The Electronics Service Technician. The EF-3 Technical Applications course consists of a complete, thorough discussion of basic electronics; the theory involved in oscillators, power supplies, and other circuits included in modern signal generators; and the applications of signal generators to AF circuit analysis, RF alignment, FM alignment, and troubleshooting. The text describes the Text Chassis And Parts Assembly and then uses this equipment for practical exercises in applying the theories discussed. The student performs interesting experiments using the Text Chassis and the Signal Generator chosen. Special “solderless” spring-clip connectors allow circuit changes to be made quickly and easily, once the kit is initially constructed. The Textbook contains a wealth of information and serves as a valuable reference, once the course has been completed. The perfect addition to the service technician’s library.

Kit EF-3, Text and special test chassis, 4 lbs.
Kit EF-3-2, includes EF-3 and IO-102 Signal Generator, pg. 51, 10 lbs...
Kit EF-3-3, includes EF-3 and IO-82 Signal Generator, pg. 52, Sine-Square Generator, 18 lbs...

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

Heathkit—Pioneer And World Leader In Electronic Kits
Heath Basic Lab Instruments

- Regulated Power Supply—page 57
  Kit IP-32 ............................................ $66.95
  Wired IPW-32 ....................................... $84.95
- Laboratory 9" Oscilloscope—page 61
  Kit IO-12S ........................................... $79.95
  Wired IOW-12S ..................................... $134.95
- RF Signal Generator—page 51
  Kit IG-102S .......................................... $30.00
  Wired IGW-102S .................................... $60.00
- Sine-Square Wave Generator—page 52
  Kit IG-32 ............................................ $51.95
  Wired EUW-27 ...................................... $94.00
- Transistorized Power Supply—page 72
  0-35 VDC @ 200 ma max. Wired EUW-17 .......... $20.00
- Vacuum Tube Voltmeter—page 44
  Kit IM-11 ........................................... $24.95
  Wired IMW-11 ...................................... $39.95

Heath Components For Part A

- Test Chassis & Small Parts Set—standard
  pig-tail small parts are used ... no specialized connectors!
  EPW-14, Test Chassis & Small Parts Set, 12 lbs. ........................................... $60.00
  EPA-10-1, Battery Set Part A, 2 lbs. ......................................................... $5.00
- Cathode-Ray Tube & Deflection Coil Set
  The cathode-ray tube enclosure is completely transparent yet it can be easily disassembled for
  Berkeley experiments. Deflection coils are virtually indestructible—a real advantage since the
  weight increases the chance of damage from abuse. Factory wired.
  EPW-24, Cathode-Ray Tube & Deflection Coil Set, 29 lbs. ................................ $115.00

Heath Components For Part B

- Microwave Transmitter & Receiver Set
  designed for use with the Heath Electronics laboratory equipment... this equipment was exten-
  sively tested by Heath engineers. The result: large horn antennas assure top efficiency. Emp-
  irically designed diffraction & polarization plates yield well defined data. Functional design
  means convenient lab setups. Factory wired.
  EPW-25, Microwave Transmitter & Receiver Set, 10 lbs. ................................ $115.00
- Test Chassis & Accessories
  The Test Chassis for Part B also features ordinary "pig-tail" small parts... assures an open-ended laboratory,
  includes transmission line and delay line.
  EPA-15, Test Chassis & Accessories, 15 lbs. ................................................... $125.00
  EPA-10-2, Part B Battery Set, 1 lb. ................................................................. $5.00

Send For Free Brochure! Describes instruments and components, plus a discussion on the "Berkeley Concept."
The Famous Heath Malmstadt-Enke Servo-

$289.00

All Operating Controls Are On One Panel, Providing A Simple And Yet Complete Control Center.

21 Speeds Instantly! See The Complete Dial Scale On The Opposite Page.

The Heath Malmstadt-Enke Servo-Chart Recorder . . . The Ultimate In Functional Design . . .

Factory Assembled . . . Thousands In Use In A Myriad Of Unique Applications

- True potentiometric null-point balance on all ranges
- Full provisions for plug-in modular accessories
- 10" linear scale
- 0.1 sec./inch response
- 5 ranges of input sensitivity—10, 25, 50, 100, & 250 mV
- Repeatability 0.2%—accuracy better than 1%
- Time scale easily changed with the turn of a knob—21 chart speeds from 5 seconds/inch to 2 hours/inch (12 inches/min. to 0.5 inches/hour)
- Auxiliary input to chart drive permits electronic synchronization of time base to external events or control parameters—enables continuous variation in chart speed from 0 to 12 inches per minute
- Uses inexpensive, practical cartridge pen
- Completely assembled & tested

Standard 5-pin connectors and circuit diagram screened on the back panel permit easy modification for versatile applications...permit use of plug-in modules for specific requirements, such as pH module EUA-20-11.

Order Model EUW-20A for single-speed version of this famous strip-chart recorder. EUW-20A is supplied with 2 inches/min. motor only...see listing for extra motors available. All other specifications are identical to EUW-20M.

EUW-20 CHART PAPER PRICES
(EUA-445-8)
Quan. 1-9 rolls 10-24 rolls 25-99 rolls 100-199 rolls 200-500 rolls
Price $4.50 $4.00 $3.50 $3.00 $2.50

Write for prices on orders exceeding 500 rolls.
Chart Recorder... Now With 21-Speed Chart Drive

Heathkit Servo-Chart Recorders Offer Precision Recording Facilities At Low Cost

VERSATILITY FOR RESEARCH AND EDUCATION... the Heath models EUW-20M and EUW-20A Servo Chart Recorder are precision, laboratory-type, self-balancing, potentiometric instruments designed to provide direct readout of signals (representing experimental phenomena) in the range 10 to 250 millivolts (full scale readings). High quality is emphasized throughout the instruments. The characteristic Heath Malmstadt-Enke design includes many unique features, particularly simple, straightforward modification of the recorders for special requirements. The Heath EUW-20M and EUW-20A Recorders provide chemists, physicists, engineers, and other scientists with an accurate, dependable instrument that fulfills a multitude of research, education, and control applications. Typically these instruments are used for recording pressure, speed, temperature, strain, pH, metallic ion concentrations, percentage of oxygen, intensity of light radiation, and many other phenomena when used with suitable transducers and modular circuitry.

PLUG-IN ADAPTER CHASSIS AVAILABLE. A blank adapter chassis (EUA-20-1) is available as an accessory for the construction of plug-in modules to convert the recorder for specific laboratory functions. One such module (factory assembled) converts the EUW-20M to a versatile and highly sensitive direct-reading and/or multi-speed recording pH/MV electrometer (see page 72). Electronics of your own design can easily be added through the plug-in modules to provide facilities such as: a servo constant-current source, a self-balancing integrating recorder, an integrating microammeter, and other devices with servo-chart recorder readout.

FULL-FEATURED PERFORMANCE. Uses standard, easily-obtained cartridge-type pen or popular felt tip pen. Multi-colored chart plots can be obtained quickly and simply by merely changing the clip-on pen. Other features include a convenient pen lift, rapid chart advance, paper tear-off guide and a special standby circuit to prolong the life of limited-life components, such as the mercury reference cell and clipper. The impedance reduction damping feature of the recorder makes it possible to introduce damping into the servo system without appreciably increasing the dead zone. Additional chart-speed motors are also available at low cost for Model EUW-20A recorders. Easy access to motor mounts permits fast, easy change to other speeds. Model EUW-20M provides a selection of 21 chart speeds from 12 inches per minute to 1/2 inch per hour for convenient matching of read-out time base to the time base of the experimental phenomena... plus, the capability of slaving the chart speed to experimental parameters or events. The Multi-Speed Chart Drive is described separately on this page. Send for the free brochure, which includes a block-diagram type of discussion on the operation of this unit.

ORDER THE HEATH EUW-20M MULTI-SPEED SERVO-CHART RECORDER... for outstanding versatility and accuracy, for the ultimate in functional design—all at the lowest cost.

EUW-20M, Multi-Speed Servo-Chart Recorder, 26 lbs. (REA Express or Motor Frt. only) $289.00
Export model available for 115/230 VAC, 50/60 Hz; 60 watts per hour.

EUW-20A, Single-Speed Chart Recorder, 23 lbs. (REA Express or Motor Frt. only) $198.00
EUA-20-1, Blank plug-in adapter chassis, 5 lbs. $9.00

Chart Drive Motors for EUW-20A Recorders.

Wt. 1 lb. Price ea. $13.00
EUA-20-2 .1 inch/min. EUA-20-5 1.0 inch/min.
EUA-20-3 .2 inch/min. EUA-20-9 12.0 inch/min.
EUA-20-4 .5 inch/min. EUA-20-10

EUW-20M SPECIFICATIONS—Chart Paper: Grid width, 10°. Length, 120 foot roll Markings, 0-100, right to left. Chart Speed: 5 seconds per inch to 2 hours per inch in 21 speeds, with internal signal. Any speed up to 5 seconds per inch with external signal. External input: Input terminals for external chart drive signals. External signal requirements: Sine Wave: 22 volts P-P min., 15 Hz; 3 volts P-P min., 10 Hz; 0.1-10 kHz. Square Wave: 3 volts P-P min., 0.1-10 kHz with 20 usec max rise & fall time. Pulses: 0-10000 pulses per second—with minimum amplitude dependent on pulse duration. Auxiliary output signal: 4-20 P-P square wave, 20 usec rise time & 0.2 usec fall. Auxiliary output impedance: 68 ohms. Controls: 2 position Chart Speed Switch & External-Internal signal switch. Chart-Speed Switch Scale Calibration: Calibrated in seconds, inch/min., & hours/minute. Calibrated speeds are: 5, 10, 15, 20, 30, 40, 50, 100, 125, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1400, 1800, 3000, 3600, 6000, & 7200 seconds/inch—with additional calibration: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 125, 200, 300, 400, 500, 600, & 7200 seconds/inch—with additional calibration: 20, 30, 40, 50, 60, 70, 80, 90, 100, 125, 200, 300, 400, 500, 600, & 7200 seconds/inch. Power requirements: 105-125 VAC 60 Hz 30 watts.

Heath Multi-Speed Chart Drive Provides 21 Speeds At The Twist Of A Knob

DIAL SCALE SHOWS CHART SPEEDS

<table>
<thead>
<tr>
<th>Speed</th>
<th>7200</th>
<th>6000</th>
<th>3600</th>
<th>3000</th>
<th>1800</th>
<th>1200</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR</td>
<td>2</td>
<td>10</td>
<td>1</td>
<td>50</td>
<td>0.5</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>IN</td>
<td>0.5</td>
<td>0.1</td>
<td>1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.5</td>
<td>1</td>
</tr>
</tbody>
</table>

- All solid-state electronics
- Instantaneous selection of 21 accurate speeds from 5 seconds to 2 hours per inch (12 inches/minute to 0.6 inches/hour)—when using internal line frequency signal
- Unlimited variation in speeds up to 12 inches per minute when using an external chart drive signal
- 21-position chart drive switch features five rate scales—seconds per inch, minutes per inch, hours per inch, minutes per hour, and inches per hour. All chart speeds are as accurate as 60 Hz AC line signal, when using internal drive signal
- Auxiliary input terminals enable the chart motor to be programmed by external chart-drive signals
- Output signal for synchronizing experimental events or synchronizing other recorders
- Can be installed in any Heath EUW-20A Servo-Chart Recorder or EUW-301 Recording pH Meter/Electrometer
- Includes complete, detailed instructional manual, giving step-by-step procedure for installation in Heath recorders
- Factory wired and tested

EUA-20-26, Multi-Speed Chart Drive for installation in Heath EUW-20A Recorders & EUW-301 pH Recorders, 4 lbs. $85.00

EUA-20-26 SPECIFICATIONS—Chart Speeds: 5 seconds to 2 hours per inch in 21 speeds, with internal signal. Any speed up to 5 seconds per inch with external signal. External input: Input terminals for external chart drive signals. External signal requirements: Sine Wave: 22 volts P-P min., 15 Hz; 3 volts P-P min., 10 Hz; 0.1-10 kHz. Square Wave: 3 volts P-P min., 0.1-10 kHz with 20 usec max rise & fall time. Pulses: 0-10000 pulses per second—with minimum amplitude dependent on pulse duration. Auxiliary output signal: 4-20 P-P square wave, 20 usec rise time & 0.2 usec fall. Auxiliary output impedance: 68 ohms. Controls: 2 position Chart Speed Switch & External-Internal signal switch. Chart-Speed Switch Scale Calibration: Calibrated in seconds, inch/min., & hours/minute. Calibrated speeds are: 5, 10, 15, 20, 30, 40, 50, 100, 125, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1400, 1800, 3000, 3600, 6000, & 7200 seconds/inch—with additional calibration: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 125, 200, 300, 400, 500, 600, & 7200 seconds/inch. Power requirements: 105-125 VAC 60 Hz 30 watts.

Write For FREE BROCHURE

Fully describes the Multi-Speed Chart Drive for Heath EUW-20A Servo Chart Recorders and EUW-301 pH Recording Electrometers. Includes block diagram and discussion of the "multi-speed" circuitry.

Heathkit Performance Specifications Are Guaranteed
New EUW-19B Operational Amplifier System Provides Improved Stability For Long-Period Operation

- Improved circuitry plus forced air ventilation for extra long-period stability
- Coarse & fine balancing controls for more precise amplifier balance
- Four high-gain operational amplifiers with wide-range signal voltage capability
- Booster amplifier for driving read-out instruments
- Amplifier terminals are standard 5-pin connectors accessible on front panel & with OA symbols to identify pin connections
- Optional modular chassis plug directly on front-panel connectors providing control, input, & feedback circuitry
- A complete self-contained unit with power supplies included
- Amplifier balance controls on front panel
- Fully assembled & tested

A COMPLETE INTEGRATED INSTRUMENT WITH 4 OPERATIONAL AMPLIFIERS, A BOOSTER AMPLIFIER, AND POWER SUPPLY...a single unit with plug-on control circuitry can perform several mathematical or control functions. (For example: The plug-on EUA-19-2 Polarography Module in combination with the Heath OA (Operational Amplifier System) provides the input, feedback, and control circuitry necessary for all the electronic facilities for controlled potential polarography...an analytical technique in electro-chemistry. These electronics include a highly linear sweep generator, a summing amplifier, and voltage comparator circuit with initial potential control circuitry, and a current-summing amplifier.) In this example the mathematical functions performed by the OA's have a direct relationship to the control processes required for polarography. Many other experimental processes in physics and chemistry can be compared to mathematical functions, and these, too, can be performed electronically!

SOLVES A WIDE RANGE OF PRECISION ELECTRICAL MEASUREMENT AND CONTROL PROBLEMS...through circuits for summation, differentiation, integration, and through the use of components to simulate linear, logarithmic, or transcendental functions. There are many valuable texts which discuss the use of operational amplifiers. See chapter eight of the Malmstadt-Enke text, "Electronics for Scientists," (Heath Model No. EUP-11) for a detailed description of the capabilities of the OA.

COMPLETE INSTRUMENT MANUAL INCLUDED...discusses the circuitry, theory, and operation of the EUW-19B.

EUA-19B, Operational Amplifier, 20 lbs, (REA Express or Motor Ftr. only)........................ $135.00
EUA-19-1, Plug-on Chassis includes all 5 amplifiers, 3 lbs........................................... $8.00
EUA-19-3, 5 individual amplifier plug-on chassis, 4 lbs.................................................. $10.00

EUA-19-4 Specifications—Operational Amplifiers: DC Gain, open loop: 21,000 (67 ±1 db). Frequency response to 100 kHz. Voltage range: ±50 V DC to ±50 V DC output. Output current: —1 ma to +1 ma with 50 K ohm load. Output impedance: Less than 1.5 ohms. Rise time: 12 microseconds. Drift: Less than ±5 mV/8 hr, day referred to the input under controlled room temperature and line voltage conditions after 48 hours, or more, aging period. Amplifier 1 bias only. May be switched for follower or inverter operation. BOOSTER AMPLIFIER: Maximum output: ±20 ma at ±50 V DC. Gain: Approx. 0.8. Output Impedance: Less than 0.2 ohms. POWER REQUIREMENTS: AC (Input): 105-125 volts, 50/60 Hz. Filament power only: 44 watts. Total power required: 90 watts at quiescent operating conditions. Fuses: Two ½ ampere slow-blow fuse; one for the filament circuits, and one for the DC+ and DC— supplies. AUXILIARY POWER CONNECTOR: Location: Onto socket on rear of unit. Power available: +300 volts at 20 ma and —300 volts at 20 ma with unit in operation; +300 volts at 60 ma and —300 volts at 60 ma when all amplifier tubes are removed. Balance resistors: Adjustable with dials on auxiliary power supplies and adjust output voltages. GENERAL: Dimensions: 11⅞'' W x 6⅞'' H x 12¼'' D.

New Heath Operational Amplifier Stabilizer For Those Who Demand The Ultimate in OA Stability

- Connectors on both front and back panels enable simple, direct "plug-on" intermediate between Heath Operational Amplifier (OA) and its modular control circuitry
- Provides high stability—better than ±0.1 mV/day
- Increases open-loop gain by a factor of 1000
- Factory assembled & tested—includes complete manual with operating procedure and circuitry discussed in detail

INCREASES THE ±5 mV/DAY STABILITY OF THE HEATH OPERATIONAL AMPLIFIER TO BETTER THAN ±0.1 mV/DAY. When experimental work requires long period or exceedingly high stability (such as a long series of runs in polarography at low concentrations), the Heath EUA-19-4 Stabilizer Module provides the ultimate in stability to OA systems. The "Stabilizer" is plugged-in as an intermediate stage between the EUW-19B Operational Amplifier and its modular control chassis (i.e. EUA-19-2). The open-loop gain is then increased to approximately 21,000,000 (by a factor of 1000), providing even greater precision to the OA circuit functions; the frequency response is maintained uniform, 0 to 100 kHz (with unity gain); and the average noise level is held to a minimum, 1 millivolt peak-to-peak average (at unity gain).

EUA-19-4, 6 lbs.................................................. $135.00

Heath Has The World's Largest Selection Of Electronic Kits
**Instruments... Individually Or As A Complete Lab**

**EUW-15 Universal Laboratory Power Supply**
- Functions as a full-wave, half-wave, bridge or voltage doubler power supply
- Spring-clip connectors on jumper wires permit fast, simple circuit changes
- Partial schematic diagrams are screened inside the chassis for handy reference
- Separate power & high voltage on/off switches • Fully assembled & tested

**EUW-15** $75.00

The following specifications are for the EUW-15 Power Supply when it is wired for voltage-doubler operation.

**EUW-15 SPECIFICATIONS:**
- Voltage output: 200 to 350 volts DC regulated, at 0 to 100 milliamperes continuous. Full-wave output: 120, 200, 300, 400 volts AC at 3 amperes. Half-wave regulation: 0.2 volt or 2% output variation less than 1.5% from no load to full load at 300 volts. Output variation less than ±0.1 volt for ±10 volt variation in the AC line. The peak to peak ripple, litter, and noise: 8% output impedance: less than 10 ohms from 4-100,000 Hz. Divider voltage (unregulated): Approximately 500, 300, 200, 100, 50, 0.5 volt. Voltage divider: Internal, using five 5000 ohm 10 watt resistors • Also can be used as a variable internal load. Power requirements: 105-125 volts, 50/60 Hz, 85 watts. Dimensions: 5 1/2" W x 6 3/4" H x 12 1/2" D.

**EUW-16A Voltage Reference Source**
- 0.1-100 volts DC output-Zener stabilized • Accuracy 1% or 0.1 mv whichever is larger • Diode and diode-potentiometer type operation • Polarity reversal & push-button zero switches • Signal input position • Fully assembled & tested

**EUW-16A** $65.00

**EUW-16A SPECIFICATIONS:**
- Output voltage: 0-100 millivolts DC. Resolution: ±1 mv on X1 range; ±10 mv on X10 range; ±100 mv on X100 range. Accuracy: ±1% for coarse switch setting and ±0.5% for fine control. Direct reading on 3 dials. Coarse Voltage, Fine Voltage, Range. Power requirements: 25 watts, 117 v. AC, 50/60 Hz. Dimensions: 5 1/2" W x 6 3/4" H x 8" D.

**EUP-26 20,000 Ohm/Volt VOM**
- Large 50-microamperes meter, Diode Protected • Weston model 980 Mark II Analyzer • Battery powered for portable convenience • Completely factory assembled & tested

**EUP-26** $55.00

**EUP-26 SPECIFICATIONS:**
- Sensitivity: 20,000 ohm/volt DC, 1000 ohm/volt AC. Range: DC Voltages: 1-6-40-160-400-800-4000. AC Voltages: 1-6-40-160-400-800-1600. DC Current, ≤0.0001 microamperes, 1-6-8-20-40-100-200-500-1000 microamperes. Power requirements: 117 v. AC, 50/60 Hz. Dimensions: 5 1/2" W x 8 1/4" H x 7 1/2" D.

**EUW-27 Sine-Square Generator**
- Less than .25% sine wave distortion • Less than .15 microsecond square wave rise time • Sine and square wave output available simultaneously • 20 Hz to 1 MHz in 5 bands • Factory assembled and tested

**EUW-27** $94.00

**EUW-27 SPECIFICATIONS:**
- Sine wave: Frequency range: 20 Hz to 1 MHz. Output voltage (RMS): 0 to 10 volts, 0 to 1 volt, 0 to 0.1 volt when working into a high impedance load. Source impedance: (±10%), 0 volt range, 0 to 3.5 k ohm; 1V, 1V, and 0.1 V range, 600 ohm. Distortion: Less than .25%, 20 to 20,000 Hz. Frequency response: ±1.5 db 20 Hz to 1 MHz. Square wave frequency range: 20 Hz to 1 MHz. Output levels: 0 to 10 volt, 0 to 1 volt, 0 to 0.1 volt, into a high impedance load. Source impedance: (±10%), 0 volt range, 0 to 220 ohm; 1V and 1V range, 55 ohm. Rise time: less than .15 microsecond. General: Frequency accuracy: ±5%. Power requirements: 105-125 V AC, 50/60 Hz, 55 watts. Dimensions: 13" W x 8 1/2" H • 7 5/8" D.

**EUP-24 Vacuum Tube Voltmeter**
- Single AC/Ohms/DC probe • 7 AC, 7 DC, & 7 Ohms ranges • Easy to read 4 3/8" meter • 1% precision resistors • Factory assembled and tested • Front panel Servo Recorder connections

**EUP-24** $62.00

**EUP-24 SPECIFICATIONS:**
- Meter scales: DC & AC (RMS): 0.1, 0.5, 1.5, 5, 10, 50, 150, 500, 1000 ohms full scale. AC peak-to-peak: 1,4, 14, 140, 1400, 14000, 140000. Resistance: 10 ohm center scale x1, x10, x100, x1000, x10K, x100K, 1M. Measures 0.1 ohm to 1000 megohms with internal battery. Meter: 4 3/8" 200 uv movement. Multiplier: 1% precision type. Input resistance DC: 11 megohms; AC: 1 megohm in probe. Circuit: Balanced bridge-push-pull using twin triode. Accuracy: DC ±3%, AC ±5% of full scale. Frequency response: ±1 db 25 Hz to 1 MHz. Battery: 1.5 volt, size "C" flashlight cell. Power requirements: 105-125 volt 50/60 Hz 10 watts. Dimensions: 6 1/2" W x 11 1/2" H x 8 1/4" D.

**EUW-25 3" DC Oscilloscope**
- Identical vertical & horizontal AC or DC coupled amplifiers • DC to 400 kHz bandwidth • Rise time: less than 1.5 microsecond • Recurrent sweep generator, 5 Hz to 50 kHz in 4 ranges • External capacity binding posts for slower sweep rates • Factory assembled and tested • Terminals for Z-axis modulation and direct connection to deflection plates

**EUW-25** $168.00

**EUW-25 SPECIFICATIONS:**

Save Up To 50% With Heath Do-It-Yourself Electronic Kits
EUW-301M Multi-Speed Recording pH Meter/Recording Electrometer

THE NEW HEATH EUW-301M MULTI-SPEED pH RECORDING ELECTROMETER HAS A SPLIT PERSONALITY! It can serve many useful and valuable roles in the chemistry laboratory. It can be used as a general purpose laboratory pH meter (in the "Measure" mode of operation), as a highly versatile multi-speed recording pH meter (in the "Record" mode of operation), and as a 50-1400 millivolt full-scale electrometer (with the "Span" switch in the "Millivolt" position). On all scales and at all times the instrument operates as a null-point device with electrometer input. This feature enables pH and millivolt measurement from transducers with impedances as high as 10,000 megohms. Operated with suitable laboratory equipment, the Heath pH Recording Electrometer provides acid-base titration curves, reaction-rate curves, oxidation-reduction titration curves, stability curves, and data readout from a multitude of electro-chemical laboratory apparatus.

Compare The Features And Price With Any Other Instrument

- **MULTI pH RANGES!** Full scale pH spans of 1, 2, 5, 10 and 14. Any 1 pH unit, 2 pH units (etc.) over entire pH region of interest can be switched for full scale on 10° scale or recorder chart.
- **MULTI MV RANGES!** Full-scale millivolt spans of ± 50, 100, 200, 500, 1000 and 1400. There are 14 calibrated 50 mv increments of zero suppression that can be switched in on all millivolt spans.
- **DIRECT READING!** pH is read directly from a 10° scale; expanded ranges are made direct reading by interchangeable scales (e.g. 6000-8000 pH, etc.).
- **21 RECORDING SPEEDS!** From 12°/min. to 1/2 Hour. The wide range of chart speeds allows you axis rate of data readout to be matched to the rate of chemical reaction or process. Plus, chart rate may be continuously varied up to 12°/min. by auxiliary input. This permits chart rate to be slaved to other laboratory apparatus. See pages 68 & 69 for details on this new 21 speed chart drive. EUW-301 Single-Speed pH Recording Electrometer features a standard chart rate of 2°/min. extra chart motors are available.
- **SCALE READABILITY!** 0.1% of full-scale span (e.g. 0.001 pH on span of 1 pH, 0.01 pH on 10 pH, 0.05 MV on span of 50 MV, etc.).

**EUW-301M**

$369.00

**EUW-301**

$280.00

- **HIGHLY ACCURATE!** Better than 0.5% of any calibrated full span, 0.005 pH on span of 1.
- **TEMPERATURE COMPENSATION!** Calibrated 0 to 100° C manual control. May be automatically controlled by accessory Thermistor probe.
- **COMPLETELY ASSEMBLED & TESTED!** Made of the finest components, and factory tested to insure you many years of faithful performance.
- **ACCEPTS GLASS AND CALOMEL ELECTRODES!** Beckman, Corning, Leeds & Northrup, Thomas, etc. without adapters.
- **ACCOMMODATES ELECTRODES OF DIFFERENT DIAMETERS!** Pencil-size combination electrodes & larger diameter standard glass and calomel electrodes.
- **POLARITY REVERSAL!** All pH and millivolt scales can be switched to provide lower values on the right or left end of scale or chart.
- **CAPABLE OF HIGH INPUT SOURCE RESISTANCE!** More than 1000 megohms.
- **ADAPTS TO PLUGS OR MODULES!** Easily added because of the modular design and connector arrangement provided.

A Precision Instrument Through Modular Construction Techniques

DESIGNED BY DR. HOWARD V. MALMSTADT, PROFESSOR AT THE UNIVERSITY OF ILLINOIS, the EUW-301 is a truly unique instrument. It consists of a Heath Servo Chart Recorder coupled with a special pH module, EUW-20.11. It may be purchased as a complete unit, or those who already own an EUW-20A or EUW-20M Servo Chart Recorder may purchase the pH module separately for simple conversion (in a matter of minutes) to a pH Recording Electrometer. A special parts kit, EUW-301-1, is also available for converting the EUW-301 to a conventional Servo Chart Recorder.

PRECISION MODULAR ELECTRONICS PROVIDE EXPANDED pH RANGES AND FUNCTIONAL VERSATILITY. The expanded scales make it possible to measure the pH very precisely and accurately. Therefore, reliable measurements can be made for the determination of Kw, activity co-efficients, formation constants, and junction potentials. The unit can be used for Karl Fischer titrations, redox, precipitation and complexation titrations, nonaqueous titrations, the determination of sodium and potassium concentration with the new specific glass electrodes, and all potentiometric measurements. The pH Recording Electrometer can be easily adapted for control of automatic burettes and for pH Stat.

**EUW-301M, pH Recording Electrometer with Multi-Speed Chart Drive** ........................................... $389.00

**EUW-301, pH Recording Electrometer with interchangeable chart drive motor (2°/min. provided) ...** $280.00

**EUW-20-11, pH Module only, 12 lbs. (converts Heath EUW-20A or EUW-20M to pH Recording Electrometer) ................................................................. $125.00

**EUW-301-1, Parts Kit, 2 lbs. (chopper kit converts EUW-301 or EUW301M recorder portion to standard EUW-20A or EUW-20M Servo Chart Recorder) ................................................................. $20.00

Send for FREE Brochures!

A brochure describing the functions and applications of the EUW-301 pH Recording Electrometer in detail and a comprehensive data sheet on the Multi-Speed Chart Drive are yours FREE by simply dropping a note or card with your name and address to the Heath Company, Benton Harbor, Michigan 49022.

A COMPLETE LABORATORY FOR CONTROLLED POTENTIAL POLAROGRAPHY . . . developed by Dr. Chris Enke of Michigan State University. The Heath EUW-402 Polarography Laboratory provides exact qualitative and accurate quantitative electrochemical analysis for oxidizable or reducible ions in organic or inorganic solutions. It consists of a highly versatile Dropping Mercury Electrode Apparatus, a Polarography Module and Operational Amplifier for producing the required electronic functions, and a Servo-Chart Recorder for displaying the read-out data.

THESSES ARE THE CAPABILITIES OF THE COMPLETE LABORATORY . . . EUW-402. • 3-electrode controlled potential polarography • 2-electrode polarography • Manual polarography • Controlled potential electrolysis • Controlled current electrolysis • Chronopotentiometry • Amperometric titrations • Other similar electro-chemical techniques requiring the Dropping Mercury Electrode, the highly versatile electronic instrumentation, and direct or strip-chart read-out.

THESES ARE THE CAPABILITIES OF THE LABORATORY WHEN ASSEMBLED WITH OTHER CONVENTIONAL EQUIPMENT (supplied by the customer) . . . Coulometry (with external coulometer) • Cyclic polarography (with triangle generator and X-Y recorder readout) • AC polarography (with sine wave generator & tuned AC amplifier) • Oscillographic, harmonic, & phase polarography (with triangle or sine wave generator, whatever amplifier is necessary, and oscilloscope) • Oxygen analysis for bio-medical purposes (with suitable oxygen electrodes) • Pulse-type polarography and other variations of the above techniques when the necessary accessory generators etc. are chosen.

ELECTRONIC INSTRUMENTATION (included in the combination of the Polarography Module (EUA-19-2) and the Operational Amplifier (EUW-19B)) . . . provides an electronic sweep potential in six 1%-calibrated sweep rates from 0.05 to 2 volts/min., and the capability for measuring d.m.e. currents from 0.5 to 1000 microamperes full scale. Five degrees of damping can be applied to the readout waveform. The 0.5%-calibrated initial potential is continuously variable—±3 volts. And full capabilities are included: for adjustable electrode current suppression and adjustable charging current suppression. All equipment supplied factory assembled.

EUA-19-2 SPECIFICATIONS—• Potential control: Max. output voltage: ±50 v. Current: ±1 ma. Stability: ±10 mv after warm-up. Noise: Max. 1 mv or less at electrode output. Input resistance: approx. 100M ohms at reference electrode input. Electrode potential range: ±6 v. Electrode potential output: Resistor: 25 ohms. Initial potential source: Range: ±2 v. Accuracy: ±0.5%, Repetitiveness of adjustments: ±10 mV. External control voltage inputs: Input impedance: 100K. Frequency response: 3 dB at 10 KHz, 30 microsecond rise time. Sweep generator: Calibrated sweep rates: 0.05, 0.1, 0.2, 0.5, 1.0, 2.0 volts/min., plus or minus. Accuracy: ±1%, Stabilized to calibrate to 0.1%. Linearity better than 1% for 1 volt sweep. Range: ±5V. Hold: will hold at any potential ±5 mv for 1 min. or more. Current measurement: Calibrated ranges: 0.5, 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000 microamperes. Outside 10 x full scale and 1000 mv full scale. Accuracy: ±1% at output, ±5% on meter. Timing: Time constants: off, 0.1, 0.5, 0.7, 1.3, 2.5 sec. on off 100 mv output only. Current suppression: up to ±90 microamperes in 2 ranges. Charging current suppression: up to ±1 microampere/1 volt of sweep. *Plugged on front of Heath EUW-19A Operational Amplifier, and using 3-electrode cell and dropping mercury electrode.

Send For FREE BROCHURES

Discusses polarography, gives specifications on the electronics for the Heath Polarography System, and suggests additional techniques with which the system can be used. Also describes the Dropping Mercury Electrode Apparatus (D.M.E.) which completes the Heath Polarography Laboratory. Write to Heath Company, Benton Harbor, Michigan 49022.
Heath Malmstadt-Enke Lab Instruments

**EUW-18 Lab Meter With Shunts**
- 1 MA, 50 ohm meter movement
- Two scales 0-15 & 0-50
- Four ranges with shunts 1.5, 5, 15, 50 MA
- Sturdy aluminum case
- 5-way binding posts for easy connection
- Fully assembled and tested

EUW-18...2 lugs...$22.00

**EUW-28 Resistance Substitution Box**
- Selects each of 36 resistors—15 ohms to 10 megarohms
- Resistors E.I.A. standard 10%–1 watt
- Two-position switch for high and low range
- Terminals space for 3/4" dual banana plug

EUW-28, 2 lugs...$16.00

**EUW-17 Transistorized Power Supply**
- Output voltage variable from 0-35 volts DC
- Current output to 200 ma
- Solid-state circuitry and electronic filter
- Dependable silicon rectifiers
- Fully assembled & tested

EUW-17, 3 lugs...$20.00

**EUW-29 Capacitance Substitution Box**
- Selects each of 18 capacitances 0.0001 mfd to 0.22 mfd
- Matches dual banana plug with 3/4" spacing

SELECTS STANDARD CAPACITOR VALUES...with voltage ratings of 500 volts for the three smallest capacitors, 400 volts for the two largest, and 600 volts for all remaining capacitors.

EUW-29, 2 lugs...$14.00

**EU-13A Universal Experimental Chassis & Components**
- Four separate chassis
- Small parts including potentiometers, resistors, capacitors, tube sockets, and many other typical components
- 73 test leads
- Over 400 separate components

EU-13A IS A REAL BREAKTHROUGH FOR RESEARCH AND EDUCATIONAL LABS!...enables on-the-spot experimental setups of test circuits for research, instrumentation, and educational purposes. Additional spring-clips available separately...write for details.

EU-13A, Universal Experimental Parts, 18 lbs...$177.00

EU-14A SPECIAL EXPERIMENTAL CHASSIS AND PARTS...includes tubes, transistors, diodes, earphone, chopper, transformer, parts for utility amplifier, and more...for performing experiments in course "Electronics for Scientists," described on page 57.

EU-14A, Special Experimental Chassis & Parts, 5 lugs...$64.00

EUA-14-1, Additional Utility Amplifier Parts, 2 lugs...$5.00

**EUW-30 Six-Decade Resistance Box**
- Selects values from 1 ohm to 999,999 ohms in 1 ohm increments
- 1½ of 1% accuracy
- Make before break switches

Provides excellent resistance arm for dc or ac bridges. Precision resistors assure accuracy to 0.5%. 3/4" terminal spacing for dual banana plugs. 7½" W x 5" H x 6½" D.

EUW-30, 4 lugs...$34.00

Over 250 Heathkits To Choose From—World's Largest Selection
Explore The Exciting World Of Amateur Radio With The Heathkit HR-10... Only $75

- An unequalled value for the beginning ham
- High stability and excellent tuning accuracy is achieved through "amateur bands only" coverage
- Tunes SSB, AM, & CW on 80-10 meter bands
- High quality lattice-type crystal filter for optimum communications selectivity
- Optional 100 kc crystal calibrator plugs-in inside of receiver enclosure
- 7-tube superheterodyne circuit with RF stage for extra sensitivity
- Prebuilt, pre-aligned tuning unit for fast, simple assembly.

WHO SAID HAM RADIO HAS TO BE EXPENSIVE?... here's the way to start your amateur station on a budget beginners can afford. Build the HR-10! You'll enjoy the easy step-by-step construction, the handsome completed receiver, and the pleasure of operating this excellent performer. Here's a stable, selective receiver. Each band is individually calibrated, and an illuminated slide-rule dial provides accurate frequency settings. A full complement of front-panel controls assures that you will not outgrow your HR-10... tunes AM, CW, and single sideband.

GET THE FEATURES YOU FIND IN "EXPENSIVE" RECEIVERS! The HR-10 has a built-in "S" meter, provisions for a plug-in 100 kc crystal calibrator, separate RF and AF gain controls, and a BFO tuning; plus the features you need for operating a complete amateur station... a crystal calibrator switch, standby-receive, AVC on/off, and an automatic noise limiter. Send for your HR-10 today!

- Kit HR-10, 20 lbs, $8mo. $75.00
- Kit HRA-10, 1 Plug-in 100 kc crystal calibrator, 1 lb. $8.50
- Kit HS-24, Speaker, 4 lbs. $7.00

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

Novice Or Old-Timer... You'll Enjoy The DX-60A Phone & CW Transmitter... Just $79.95

- 90 watts phone or CW—80 through 10 meters
- Neutralized 6146 final amplifier
- Built-in low pass filter
- Grid-block keying
- Keyed beautifully with the HD-10 Electronic Keyer
- Easy access to crystal sockets
- Go VFO with HD-10G
- May be run at reduced power for novice operation
- Mate to the HR-10 NO OTHER TRANSMITTER IN THIS PRICE RANGE WILL OFFER YOU MORE! If you're a novice, the DX-60A is right for you. Operate it at the required 75-watt maximum (crystal control) for novice class CW... and later when you get your general class phone license, go to VFO control and use the DX-60A's full 90 watts of power. (See the HD-10 VFO and Novice Keyer on page 76.)

GET ON THE AIR WITH A QUALITY PERFORMER. The DX-60A is the style and performance mate of the HR-10. Its quality, well-rated components, thoughtful circuit layout, clean rugged construction, and attractive styling make it the ideal low power transmitter. Building this versatile performer is fast and easy... step-by-step instructions and a precut wired wiring harness make it a satisfying project.

COMPARE—SEE WHY YOU GET MORE FOR YOUR MONEY WITH THE DX-60A! Check these advanced features... a low-pass filter to suppress harmonic interference... a neutralized final amplifier for high stability... excellent grid block keying... switch selection of four crystal positions or external VFO for full coverage of amateur bands... meter that shows final grid or plate current... plus single-knob bandswitching and pi-network for complete operating convenience. Less crystals. Compare!... you'll choose the DX-60A.

- Kit DX-60A, 24 lbs. $99.95
- Kit DX-60A, 24 lbs. + (less crystals... no money dn., $8 mo.) $79.95

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

Low-Cost 6 & 2 Meter VHF Transceivers... Go VHF For Less Than $50 With The "Bentor Harbor Lunch Boxes"

- 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 USGC Auxiliary frequency 143.28 MHz
- Optional power supply available for mobile operation

A COMPLETE TRANSCEIVER... LUNCH BOX SIZE... features crystal-controlled transmitter with straight-through final. Crystals (not supplied) are in the 8 MHz range. Receiver is superregenerative with RF stage. 1 microvolt sensitivity! The built-in 120 VAC power supply, press-to-talk switch on front panel and ceramic microphone included make these units ready to go on the air with your antennas. Power cables for mobile and A.C. operation are included.

- Kit HW-29A (6 meter), 9 lbs., $44.95
- Kit HW-30 (2 meter), 9 lbs., $44.95
- Kit GP-11, Mobile Power Supply, $16.88

Mobile Power Supply For "Bentor Harbor Lunch Boxes"

- Ideal for use with the "Sixier" and "Tweener"... Operates from 6 or 12 volt DC source... Silicon diode rectifiers... Smell, compact—easy to install... Provides remote off switch...

Heathkit Performance Specifications Are Guaranteed
**The World’s Largest Selection**

**Heathkit Solid-State Electronic Keyer**
- All solid-state circuitry
- Speed range—15 to 60 words per min.
- Slow-speed option—10 to 20 wpm (furnished)
- Built-in sidetone for monitoring transmissions or off-the-air practice
- Solid-state switching—no relays to stick or chatter
- Built-in paddle—“feels” adjustable to your fist during assembly
- Adaptable to either right or left handed operators
- Convertible to semi-automatic operation
- External paddles or keys may be connected for multi-operator use
- Variable dot-space ratio
- Self-completing dashes
- Sealed switches on paddle—no exposed contacts to require cleaning or adjustment
- “Hold” switch for transmitter tuning
- Built-in transformer-operated power supply isolates keyer from power supply line
- Fused for protection
- For grid-block-keying transmitters only—105 v. @ 35 ma max.

**SLOW SPEEDS FOR THE NOVICE OR RED-HOT FOR THE EXPERIENCED BRASS FOUNDER**

...that’s the Heathkit all solid-state electronic keyer. Solid-state electronic switching means no relays to clutter... no contact bounce to punch holes in characters. Novices!... use the “Keyer” with the low-cost DX-60A Transmitter. The slow-speed option and built-in sidetone of the “Keyer” let you build up a good fist. CW men!... the HD-10 has plenty of natural weight to remain well “planted” on your desk even during the hottest contest hours. For grid-block keyers transmitting only... note max. current and voltage rating.

Kit HD-10, 6 lbs., no money down, $5 mo. ... $38.95

HD-10 SPECIFICATIONS:
- Keying: Speed range—15 to 60 wpm. Slow speed option—10 to 20 wpm.
- Keying output: Keyed line to chassis ground. Voltage polarity: Negative ground only. Maximum open circuit or spike voltage: 105 volts.
- Keyed closed voltage: 0.2 volts, max. Key-closed current: 35 milliamperes, max.
- General: Internal speaker of high-impedance headphone jack. Transistor complement: (7) 2N4070 PNP, (3) 2N3717 NPN, (1) 2N3989A PNP. Controls: Off-Speak-Switch, Speed control, DOT-TO-SPACE ratio control, sidetone volume control. Rear panel connections: Keyed line, receiver audio, battery +4.5 volts; battery +22½ volts. External key options: hand key, dash arm, dash, dot. Power requirements: AC operation, 105-125 vac, 50-60 Hz. Battery operation, 45 volts with 22½ V. tap; 14 milliamperes. Dimensions: 3¼” x 4¼” x 10½” D.

**Heathkit Amateur Band VFO**

**WORK VFO ON 80 THROUGH 2 METERS** Calibrated for “80 through 2,” the Heathkit HG-10 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-10 features a 28-ohm drive, plus a "spit" 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-10, 12 lbs. ... no money down, $5 mo. ... $34.85

HG-10 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: 500 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 ma. (Power available directly from the DX-60G.) Dimensions: 9½” x 6¼” x 9¼”. D.

**Radio Amateur’s Handbook**

**LATEST EDITION OF THIS MOST POPULAR REFERENCE BOOK** 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

**Here’s The Way To Practice Radio-Telegram Code**

**ASSEMBLE TWO CO-1’s (THE HEATHKIT CODE PRACTICE OSCILLATOR)... then practice with a friend—conversation in code improves both sending and receiving ability, and helps develop clear, distinct, properly formed characters. The CO-1 features an authentic CW tone, a blinker light for practice in reading Navy-type blinker communications, and built-in battery power. Uses 2 "C" cell batteries (not included). Complete with standard telegraph key.**

Kit CO-1, 2 lbs. ... $7.75

**Complete Amateur Radio License Course**


HDP-22, Complete Amateur Radio Starter Group, 6 lbs., Save $3.00 ... $15.95

HDP-32, Code Records Only, 2 lbs. ... $9.50

HDP-42, ARRL Books Only (4), 2 lbs. ... $2.00

**Kit CO-1, Oscillator plus Key only (See description above.) 2 lbs. $7.75**

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There’s A Heathkit For Every Interest, Every Purpose, Every Budget
Of Amateur Radio Equipment

Heathkit SWR Meter . . . Checks Antenna Efficiency
• 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 • Easy to assemble

HEATHKIT REFLECTED POWER METER (SWR METER) ENABLES YOU TO ADJUST YOUR ANTENNAS FOR MAXIMUM EFFICIENCY. HM-15 provides direct reading of percentage of forward and reflected power, and voltage-standing-wave ratio (VSWR). Ideal for matching impedances between exciters and final amplifiers, or for designing multi-element antenna, VSWR can be read from 1:1 to over 3:1. Sensitivity control adjusts readings to match power levels of various transmitters.

Kit HM-15, 2 lbs ........................................ $14.95


Heathkit Phone Patch . . . Matches SB-Series Styling
• Features individual gain controls for receiver-to-line & line-to-transmitter audio level • VU meter to monitor audio levels • Operates with VOX or PTT • Convenient one-switch operation

JUST A FLIP-OF-A-SWITCH TO "PATCH IN" THE TELEPHONE . . . ideal for heavy SSB phone patch traffic. The HD-15 transfers audio to 600 ohm telephone lines with negligible hum or crosstalk. Operates with virtually all transmitters and receivers. Styled to match the new Heathkit SB series equipment. Use with 3 to 16 ohm speakers and Hi-Z or 600 ohm transmitter phone patch inputs. The HD-15 Hybrid Phone Patch is a fun kit to build! . . . assembles in just one evening. It’s the perfect complement to the well-outfitted amateur station.

Kit HD-15, 3 lbs, no money dn, $5 mo ........................................ $24.95


A “Cantenna” The Famous Heathkit Transmitter Dummy Load
MAKE TRANSMITTER CHECKS WITHOUT CREATING HARMFUL INTERFERENCE. The Heathkit “Cantenna” provides a 50 ohm non-inductive load for testing up to 1 kw transmitters. Standing Wave Ratio (SWR) is less than 1.5:1 for frequencies from 160 to 2 meters. Connected to the transmitter output, this dummy load eliminates oscillation and reflects all spurious harmonics back toward the transmitter. The Cantenna phone jack is provided for use with any standard VOM of VTM. Oil coolant capacity 1 gallon (oil not included). Kit HN-31, 3 lbs ........................................ $9.95

B 100 KHz Crystal Calibrator
PRODUCES CALIBRATING SIGNALS EVERY 100 KHz . . . from 100 KHz to over 54 MHz. 9-volt battery (not included) provides built-in power to transistorized 100 KHz oscillator with 0.005% tolerance. Trimmer tunes output to exact frequency (against WWV or another standard). Kit HD-20, 1 lb ........................................ $14.95

C Heathkit PM-2 Handy RF Power MeterSHOWS RELATIVE POWER OUTPUT OF TRANSMITTERS . . . 100 KHz to 250 MHz. Use it to make a quick check on ham, marine, commercial, or CB transmitters. 0.3 volts RMS at meter antenna gives full scale reading. A strong magnet in the base holds the PM-2 to any solid ferrous surface. No power connections or battery required. Kit PM-2, 2 lbs ........................................ $12.95

D Special SSB “Ham” Microphone With Desk-Stand
NEW, MODERN STYLING TO MATCH THE FACE SET BY THE SB-SERIES EQUIPMENT . . . this high impedance dynamic mke features special response (300 to 3,000 Hz) to favor voice frequencies 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, no money dn, $5 mo ........................................ $29.40

E Push-To-Talk Mobile Microphone
HERE'S A LONGTIME FAVORITE MOBILE MIKE. Featuring a special “shaped” response for voice frequencies, the GH-12’s 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. Complete with cable, less connector.

Model GH-12, 2 lbs ........................................ $6.95

Heathkit Solid-State “Tunnel Dipper”
• Up-to-date, solid-state equivalent to the grid-dip meter • 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

A MODERN SOLID-STATE INSTRUMENT . . . MAKES TUBE-TYPE GRID-DIP METERS OBSOLETE. The tunnel diode oscillator provides a dependable signal throughout the entire tuning range . . . indicates resonance with the circuit under test by a “dip” in the meter reading. Doubles as a sensitive wavemeter. (Less batteries.)

Kit HM-10A, 3 lbs . . . no money down, $5 mo ........................................ $34.95


Use Heath’s Technical Consultant Service—Just Drop Them A Line On Any Kit Subject
Heathkit Solid-State Mobile Power Supply For SSB Rigs

ESPECIALLY DESIGNED FOR MOBILE OPERATION OF HEATHKIT SSB TRANSCIEVERS... “Single-Banders,” the SB-100, and SB-110. Full provisions are included for “remote” mobile operation... so that the power supply can be installed in the engine compartment or elsewhere. Primary and filament lines are circuit breaker protected. Husky ratings.

Kit HP-23 AC Power Supply... $19.00. No money down, $5.00...........$39.95

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

Heathkit Mobile Speaker

Features rugged steel cabinet with gimbals mounting... 8 ohm speaker... Dimensions—6-3/4" W x 4-1/4" H x 2-3/4" D.

Kit HP-24, 4 lbs..................$7.00
**Values In Amateur Radio Equipment**

Heathkit "KW Kompact"...

World's Smallest Kilowatt SSB Linear Amplifier

- 1000 watts P.E.P.
- Tuned 80 through 10 meters
- ALC output to exciter
- Built-in antenna change-over relay
- Built-in SWR meter aids antenna adjustments on the road & monitors for maximum efficiency
- Prefiltered broad-band input circuit requires no tuning
- Engineered with a pair of rugged tubes ideally suited to mobile operation (527-B's or T-160-L's)
- Full provision for control of "remotely" located AC or DC power supply

A NEW DIMENSION IN AMATEUR RADIO... 1000 WATTS x 1 FOOT WIDE x $99.95... the Heathkit KW Kompact SSB linear amplifier sets new standards for size and price. It can be installed in the dash of nearly every model of car with plenty of room to spare—room enough in most cars to allow it to be staked with your Transceiver, providing a complete under-the-dash mobile kilowatt station. Or picture the KW Kompact on your desk top... its ultramodern low profile and handsome styling merits your pride in owning the world’s smallest kw SSB linear.

THE PERFECT FINAL FOR THAT SINGLE-BANDER OR SB-100. The KW Kompact gives you the value you expect from Heathkit Amateur Radio Equipment... matches the high performance standards designed into the Single-Banders and SB-Series equipment. And the KW Kompact's full line of features makes it as versatile as linear amplifiers come. In addition to the small size, the mounted SWR meter enables on-spot antenna checks and adjustments, allowing continuous peak performance over the entire range of tuning. The antenna change-over relay is built-in, and provides "barefoot" operation when the linear is off. Input circuitry is pre-tuned.

EVER CONSIDERED A KILOWATT IN A CAR?... IT MEANS REAL SOCK FOR MOBILE AND EMERGENCY COMMUNICATIONS. And to give you that sock, Heath chose a pair of husky 572-B's or T-160-L's (the two types are equivalent) operating in parallel to provide a clean signal with third order products 30 db down or better at the full 1000 watts PEP input. The matching power supplies (HP-14 & HP-24 below) are completely remote controlled and circuit breaker protected.

Kit HA-14, 10 lbs... No money down, $10 mo. $89.95
Kit HP-14, DC Power Supply, 10 lbs., no money down, $9 mo. $89.95
Kit HP-24, AC Power Supply, 22 lbs., no money down, $5 mo. $49.95

HA-14 SPECIFICATIONS—Band coverage: 80, 40, 20, 15, and 10 meters. Maximum power input: 527-B, 1000 watts P.E.P. Driving power required: 100 watts P.E.P. Duty cycle: 50% (SSB voice modulation). Third order distortion: —20 db or better at 1000 watts P.E.P. Output impedance: Fixed 52 ohms unbalanced, SWR not to exceed 2:1. Input impedance: 52 ohms unbalanced, broad-band pre-tuned input circuit. Meter functions: 0-6 relative power & 1:1 to 3:1 SWR. Front panel controls: Tuning, band switch, relative power sensitivity control, meter switch (FWD & SWR), power switch (off, on). Tube complement: Two 572-B's (or two T-160-L's) in parallel. Power requirements: 2000 VDC at 500 ma SSB peak, —110 VDC at 60 ma, and 12.6 V. AC or DC at 4 amperes. Recommended for 12 v. neg. ground, alternator equipped cars only. Cabinet Size: 12¾" W x 3¾" H x 10¾" D.

---

**Operate The KW Kompact In Your Car... With The HP-14 Power Supply**

- Excellent dynamic regulation
- All solid-state circuitry
- Efficient 1500 Hz switching frequency
- Circuit breaker protection
- Includes all interconnecting cables
- Remote switching from KW Kompact front panel

PROVIDES HIGH VOLTAGE AND BIAS (ALL NECESSARY OPERATING VOLTAGES) FOR THE KW KOMPACT. The HP-14 Mobile Power Supply achieves exceptionally high efficiency and small size and weight through use of a toroidal core transformer and solid-state switching circuitry operating at a frequency of 1500 Hz. It is Heath-Engineered to be installed and forgotten... there are no fuses to replace, the circuit breakers reset automatically. HP-14 and the KW Kompact are recommended for operation with 12v, alternator equipped, negative ground cars only.

Kit HP-14, 10 lbs... No money down, $9 mo. $89.95

---

**Heathkit HP-24 Power Supply... For Fixed-Station Operation Of The KW Kompact**

- All solid-state circuitry
- Remote switching from the KW Kompact front panel
- All necessary operating voltages—HV, Bias, and Filament for the KW Kompact
- Circuit breaker protection

PROVIDES ALL NECESSARY FIXED-STATION POWER FOR THE KW KOMPACT. The HP-24 features the high dynamic regulation required to produce clean SSB signals. And this well rated power supply produces less than 1% ripple voltage at its full peak power output (500 ma.). All connecting cables are included.

Kit HP-24, 22 lbs... No money down, $5 mo. $49.95

**Use "No Money Down" Heath Time Pay—See Order Blank For Details**

79
The Heathkit SB-100...The Ultimate in 80-10 Meter SSB Transceivers

- 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 side-tone
- Operates PTT or VOX
- Transceiver tuning with Heath SB-Series LMO (Linear Master Oscillator, features kHz dial calibration) or xtal-control transmit with VFO receive or crystal-control transceive
- Separate offset CW carrier crystal
- Triple Action Level Control
- Built-in kHz crystal calibrator
- Quiet, enclosed relays
- Fixed or mobile operation with the Heathkit HP-23 or HP-13 power supplies and SBA-101 mobile mount (below)
- Fast assembly with circuit board and wiring harnesses
- Simple, fast alignment—requires only a VTM RF probe or VOM, a dummy load and a broadcast receiver

WE INVITE YOU TO COMPARE THE SPECIFICATIONS of the SB-100 WITH THOSE OF ANY OTHER MAKE OF SSB TRANSCEIVER...REGARDLESS OF PRICE! Write to Heath...we will provide you complete SB-100 specifications with schematic so that you may make your comparison in detail. Then talk to other hams who already own the Heathkit SB-100. You will discover it includes all of the high-performance innovations you’ve heard about.

HERE’S ENGINEERING THAT SETS THE PACE FOR THE INDUSTRY! The SB-100 features a 6 pole lattice filter (6 individual crystals) producing a superior 2 to 1 shape factor and symmetrical pass band. Result: Sharper receiver tuning. Greater sideband suppression. Identical characteristics on both upper and lower sideband signals. And SSB reception with steep skirts for adjacent signal rejection. What’s more, the entire filter assembly is hermetically sealed to retain its published specifications.

HEATHKIT SWITCH-BASED TECHNIQUE PRODUCES BETTER-THAN-FACTORY-ASSEMBLED RESULTS! virtually eliminates the point-to-point wiring common to tuning circuitry of other equipment...assures high mechanical stability, and minimum interaction between tuning circuits. TALC (TRIPLE ACTION LEVEL CONTROL) SETS NEW STANDARDS FOR AUTOMATIC LEVEL CONTROL. Three separate circuits are combined in TALC to provide greater speech compression.

ORDER THE SB-100 FOR THE BEST VALUE IN SSB TRANSCEIVERS...REGARDLESS! Make your comparison. You will agree that the SB-100 is the best investment you can make in amateur radio equipment. (Recommended for hams with previous electronic or kit building experience.)

<table>
<thead>
<tr>
<th>Kit</th>
<th>Price</th>
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<tbody>
<tr>
<td>SB-100-1, Mobile Mounting Kit, 6 lbs.</td>
<td>$36.00</td>
</tr>
<tr>
<td>HP-13, DC Power Supply, p. 78, 7 lbs., no money down, $6 mo.</td>
<td>$59.95</td>
</tr>
<tr>
<td>HP-23, AC Power Supply, p. 78, 19 lbs., no money down, $10 mo.</td>
<td>$39.95</td>
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</table>

**SB-100 SPECIFICATIONS—RECEIVER SECTION:**
- **Sensitivity:** Less than 1 microvolt for 15 db signal-to-noise ratio input for SSB operation. SSB selectivity: 2.1 kHz minimum at 6 db down, 5 kHz maximum at 60 db down...2:1 image shape factor...650 db 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 55 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 power output. RF power output on 10 meters (50 ohm nonreactive load). Output impedance: 50 ohms to 75 ohms with less than 10% mismatch. 
- **Oscillator feedback products:** 55 db below rated output.
- **Harmonic radiation:** 40 db below input level.
- **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 be in CW mode. Approx. 1000 Hz.
- **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 1.1 m final grid current. GENERAL: Frequency coverage: 3.5 to 4.0; 7.0 to 7.5; 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 (mismatch distortion at midpoints 25 db or less). Frequency stability: ±10 ppm from normal ambient conditions. Less than 100 Hz for ±10%, line voltage variations. Monitoring operation: Selective or lower sideband operations (TALC) on SWR or C.W. Dial accuracy: “readability” Within 200 at all bands. Electrical dial accuracy: Within 500 at calibration of approximately 100 kHz point. Dial mechanism backlash: Less than 5°. Dial mechanism power consumption: 400 mW at 120V. Dial calibration: 350 to 2450 Hz ±3 db. Phone jack impedance: 8 ohm or 600 ohm receiver output to phone jack; high impedance phone jack for phone output. Phone output: Main Line: 500 milliamps of rated output into 300 ohms. Output: Driver tuning and Preselector; Final tuning; Final loading. Mic and CW Level Control: Mode switch; Band switch; Function switch. DSC Mode switch; Meter switch; RF Gain control; Internal controls: VOX Sensitivity; VOX Control; Delay; ANT-VOX; Carrier Null (control and capacity). Meter Zero control; CW Side- Tone Gain control; RF Power Meter; Adj. control; P.A.; Bias; Phone Volt (head- phone volume). Neutralizing: Rear Aeron connection: CW Key jack; 8 ohm output; 600 ohm output, 800 ohm input. Output level: ±10% of rated output. RF output: ±10% of rated output. Audio output: ±10% of rated output. 
- **Audio output:** Switch: Receiver Antenna Power requirements: 700 to 800 watts to 250 mV; 300 volts at 150 ma; —110 volts at 10 ma, 12 volts at 4.76 umps. Cabinet dimensions: 14” x 6” x 13½ “. D.

The World’s Most Advanced

Famous SB-Series Performance On VHF

<table>
<thead>
<tr>
<th>Kit</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB-110, 23 lbs.</td>
<td>$32.00</td>
</tr>
<tr>
<td>HP-13, DC Power Supply, 7 lbs., no money down, $6 mo.</td>
<td>$59.95</td>
</tr>
<tr>
<td>HP-23, AC Power Supply, 19 lbs., no money down, $5 mo.</td>
<td>$39.95</td>
</tr>
<tr>
<td>SBA-101, Mobile Mounting Kit, 6 lbs.</td>
<td>$14.95</td>
</tr>
</tbody>
</table>

**SB-110 SPECIFICATIONS—RECEIVER SECTION:**
- **Noise Figure:** 3 db or less. Sensitivity: 0.1 µV for 50 dB signal-to-noise ratio input for SSB operation. 50 dB at 200 Hz down. 1000 Hz down. 2000 Hz down. Image Rejection: 50 db or better. IF Rejection: 50 db or better. Audio Output: 400 mW at 120V. Audio Output Impedance: Speaker, 8 ohms. Headphones, 600 ohms or higher. Audio Output Power: 1 watt. 
- **AGC Characteristics:** Audio output changes by 30% of rated output level, 25 Hz to 1500 Hz. 
- **Audio Output:** Switch: Receiver Antenna Power requirements: 700 to 800 watts to 250 mV; 300 volts at 150 ma; —110 volts at 10 ma, 12 volts at 4.76 umps. Cabinet dimensions: 14” x 6” x 13½ “. D.

Universal Mounting Bracket For SB-110 & SB-110

Go Mobile With the SB-110 or SB-100! The SBA-101-1 permits easy installation of either transceiver on the transmission truck, 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 mobile to home location. Interchangeable, foot space is concealed behind the mounting base when the transceiver is not installed. Finish matches SB series.

Kit SBA-101-1, 6 lbs. | $14.95
Amateur Band SSB Transceivers

SB-100
$360.00

SB-110
$320.00
Heathkit® Deluxe SB-Series... Unsurpassed

New! Heathkit SB-301 Amateur Band Receiver

- Increased sensitivity - RTTY position on mode switch - SB-301 now a fully capable RTTY Receiver! - 15 to 15.5 MHz coverage for WWV reception - Built-in switch-selected ANL (Automatic Noise Limiter) - Front-panel switching for control of 6 and 2 meter plug-in converters - enables convenient amateur band tuning from 80 through 2 meters - Simplified assembly procedure through "sub-pack" packaging & assembly techniques - Improved product detector and audio circuitry for better reception.

Plus These Pace-Setting Features That Have Already Made The SB-300 Famous In Amateur Radio...

- 80 through 10 meter amateur bands with crystals furnished, plus provision for VHF converters - 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 dial to knob ratio approx. 4-to-1 - Provision for transceive operation with matching SB-401 Transmitter - Prebuilt Linear Master Oscillator (LMO), wiring harness and two heavy-duty circuit boards for fast, easy assembly.

THE NEW SB-301 RAISES THE STANDARDS FOR AMATEUR BAND RECEIVERS... brings full RTTY reception capability to the SB-Series, plus amateur band coverage from 80 through 2 meters to your fingertips when the plug-in converters are installed. The new 15 to 15.5 MHz tuning range enables the most accurate attainable frequency check on the built-in 100 kHz crystal calibrator (by WWV), and the ANL feature now provides impulse noise rejection for the receiver. Signals received in high noise locations are now easily readable! Order the new SB-301 for unmatched value in a deluxe single-band amateur radio communications receiver.

NEW "SUB-PACK" PACKAGING & ASSEMBLY SPEEDS CONSTRUCTION TIME. Components are packaged separately for each phase of construction... saves you time in selecting components... lets you see your progress more clearly as each phase is completed.

WHEN COMPARING THE SB-301 WITH OTHER RECEIVERS... notice the Heath pre-built LMO (Linear Master Oscillator), the heart of SB-301 tuning, surpasses the tuning characteristics of every other receiver on the market. The SB-301 provides receiver tuning with bandspread equivalent to 10 feet per megahertz... truly linear tuning over the entire receiver coverage... the good solid feeling of tuning.

Non-backlash vernier dial mechanism... plus the ultimate in tuning repeatability that means real satisfaction in on-the-air performance. Compare and see the specifications and features with those of any other SSB receiver on the market and see what an outstanding dollar-value the SB-301 represents!

Kit SB-301, less speaker, 23 lbs... no money down, $23 mo. SSB-301 2 Optionals CW crystal filter (400 Hz), 1 lb. $20.95 Export model available for 115/230VAC, 50-60 Hz; write for prices.

SB-301 SPECIFICATIONS - Frequency range (megahertz): 3.5 to 4.0, 7.0 to 7.5, 14.0 to 14.3, 28.0 to 28.5, 29.0 to 29.5, 29.9 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 ± 1% line voltage variation. Visual dial accuracy: Within 0.015 kHz on all bands after calibration at nearest 100 kHz point. Backlight: More than 50 Hz. Sensitivity: Less than 0.3 microvolt for 10 dB signal-to-noise ratio for SSB operation. Modes of operation: Switch selected, USB, CW, AM, RTTY, Selectivity: RTTY, 2.1 kHz at 30 dB down; 5.6 kHz at 60 db down (crystal filter supplied); SB, 2.1 kHz at 6 db down, 5.6 kHz at 60 db down (crystal filter supplied); AM: 3.73 kHz at 6 db down, 1.5 kHz at 60 db down (crystal filter available as accessory). Output: 400 Hz at 6 db down, 600 Hz at 60 db down (crystal filter available as accessory). Spurious responses: Imaging 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: with I.F. or 1kHz-square wave at 0.5 W (600 ohm speaker). 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, prescaler, connector & ANL switch, phone jack, rear output connectors. Accessory power: plug, HF antenna; VHF 1 antenna; VHF 2 antenna; mute; speaker; on/off switch; 500 ohm 8 ohm speaker; line cord socket; heterodyne oscillator output, LMO output, BFO output, VHF converter switch, tube complement: (1) 6B6, RF amplifier. (1) 6AU6, Heterodyne mixer, (1) 6AG6 Heterodyne oscillator; (1) 6AU6 LMO osc. (1) 6AU6 LMO mixer; (2) 6BA6 IF Amplifier, (1) 6SL7 Crystral calibrator; (1) 6F6, 1st audio, audio output, (1) 6AS7 Product Detector, BFO, BFO Amplifier. Power supply: Transformer operated with silicon rectifiers. Power requirements: 120 volt AC, 50/60 Hz, 50 watts. Dimensions: 14½" W x 6½" H x 10½" D.

New Heathkit Communications Speaker-Matches SB-Series Gear

HERE'S THE FINAL TOUCH TO A COMPLETE AND PROFESSIONAL SB-SERIES STATION... the SB-600 provides space to mount the HP-23 AC power supply out of sight in a cabinet that boasts neat, clean styling to match the SB-Series of Heathkit Amateur Gear. The 8 ohm 6 x 9" speaker features communications response to 3000 Hz. Cabinet dimensions: 10½" W x 6½" H x 10½" D.

SB-600, 5 lbs. $17.95

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 switched 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. $19.95
SBA-300-4 (2 meter), 2 lbs. $19.95

Use Heath's Technical Consultant Service...Just Drop Them A Line On Any Kit Subject
New! ... Heathkit SB-401 SSB Amateur Band Transmitter—Greater Convenience and Value

- Single panel switch selects transceive or independent operation of SB-401 and SB-301 (or SB-300) combination—no costly changeovers required. A single transmitter 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 dial revolution ... 800 kHz coverage per band-switch position.

VALUE COMPARISON TO THE SB-301 OR SB-300. 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 compacton tubes for space-saving component layout, and heavy-duty circuit board construction plus precut 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, 34 lbs. ... No money down, $27 mc. Expected Shipping Date Late September $285.00

HDP-21A SSB “Ham” Microphone—See PG. 77 for details.
4 lbs., $20.00, $15.00, $10.00 (For SB-301 operation without the SB-301 or SB-300 Receiver) $29.95

SB-401 SPECIFICATIONS—Emission: SSB (upper or lower sideband) and CW. Power input: 170 watts CW, 180 watts PEP SSB. Power output: 100 watts (80-15 meters), 80 watts (10 meters). Output impedance: 50 ohm, less than 2.1. SWR, Frequency range: 3.5-40 MHz. Frequency stability: Less than 100 Hz per hr. after 2 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, modified by switch, VOX from keying tone (Grid block keying). CW sidetone: 1000 Hz, ALC characteristics: 10 db or greater @ 0.2 ma input current. Noise level: 50 db below rated carrier. Visual dial accuracy: Within 2 Hz (all bands). Electrical dial accuracy: Within 400 Hz after calibration of nearest 100 kHz point (max.). Backlash: Less than 50 Hz. Oscillator feedback or mixer products: 55 db below rated output except 5910 kHz crossover which is 45 db.

100 watts PEP, input SSB—1000 watts CW at 80 through 10 meter band coverage ... Built-in SSB meter ... Automatic 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 installation in your own SSB amplifier cabinet at the factory price of $200.

IMAGINE BUYING A COMPLETE KW SSB LINEAR AMPLIFIER FOR ONLY $200! Yet here it is ... a single, compact unit with its own built-in power supply and SWR meter. The SB-200 provides up to 1200 watts PEP. input SSB and 1000 watts CW. It requires only 100 watts PEP. driving power.

LATEST DESIGN FEATURES. You’ll find many advance-design features throughout this superb Linear ... such as the pre-tuned cathode input circuit for maximum efficiency and low distortion ... ALC output for automatic exciter control ... two heavy-duty 572B/160-L final amplifier tubes, fan-cooled for maximum life ... complete shielding for TVI protection and stability ... a rugged, conservatively-rated solid-state power supply, circuit-breaker protected (no fuses to replace or worry about) ... plus a built-in SWR meter and antenna relay for extra operating convenience (Antenna is automatically switched to the exciter when the linear is switched "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. Well-rated components will provide years of dependable service.

IT’S EASY TO GO HIGH POWER when you choose the SB-200. If you’ve been yearning for a full-gallon, put the SB-200 on your desk top. Here is high quality, high power single sideband & CW at the price you’ve been waiting for. Order your SB-200 today.

Kit SB-200, 41 lbs. ... No money down, $19.00 ... $200.00

NO MONEY DOWN UP TO $300

Build your Heathkit now ... pay later with the convenient Heath Time Payment Plan. No money down and up to 12 months to pay on orders from $25 to $300 ... 10% down and up to 18 months on orders from $300 to $500. See Order Blank for details.

Heathkit Performance Specifications Are Guaranteed
New! SB-610 Signal Monitor
Shows Transmitted Or Received Signals
• Features new versatility—operates with transmitters 160 to 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 • Easier & faster assembly • Simple to connect and operate • Shows the quality of signals you transmit & receive • Manual includes instructions for interpreting waveforms
ONLY HEATH COULD IMPROVE ON THE WORLD'S MOST WIDELY CHOSEN AMATEUR SCOPE! Now you can get a Signal Monitor Scope matching the famous Heath SB-Series in both appearance and performance. The new SB-610 Signal Monitor is designed to operate with your SB-Series equipment, but it features all necessary circuit provisions for operation with virtually any other gear on the market today. Use it for checking AM, CW, SSB signals, and the new SB-610 is also fully capable of displaying RTTY signals.
DISPLAYS ACTUAL SIGNAL WAVEFORMS • use of the SB-610 enables you to make an accurate analysis of your transmitted or received signals. It positively identifies waveform distortion, such as over modulation, etc. • enables exact tuning to RTTY signals. The comprehensive assembly and operating manual shows you how to connect your Signal Monitor, and then how to interpret the signal waveforms. Various wiring options permit assembly for use with any one of the receiver IF's listed in the specifications below. You can be assured that your amateur radio gear is performing properly when Monitor Scope waveforms are "clean" • add this valuable instrument to your amateur station today.
Kit SB-610, 14 lbs. • no money down, $7 mo. • $69.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices.

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): Unshifted: RTTY, 1 volt nominal; 2 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 300 mv; 5000-6000 kHz, less than 700 mv. Input resistance: 100 k ohm. HORIZONTAL AMPLIFIER: Horizontal response: 0.5-db from 3 Hz to 15 kHz. Sensitivity: 800 mv per inch deflection. Input resistance: 1 megohm. Sweep generator: Recurrent type, sweep speed 15 to 250 Hz (variable). Tone oscillator: 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: Xmt: Aten. Attenuates 0 to 24 db at approximately 8 db per step. Power supply: Transformer operated, fused 2 amp. Power requirements: 120 VAC 50/60 Hz, 35 watts. Dimensions: 6" H x 10 1/2" W x 11 1/2" D (including knobs).

Available Soon! New Model SB-620 "Hamscan" Spectrum Monitor
• New narrow sweep function with crystal lattice filter for single signal analysis • Increased wide sweep capability for monitoring larger band segments • Matches SB-Series in style and performance • Operates with common receiver IF's up to 6 MHz • Retains all other high-performance features of its HO-13 predecessor
WATCH FOR FULL DETAILS IN THE CHRISTMAS FLYER!
The new SB-620 "Hamscan" features include a new voltage doubler power supply • fully mu-metal shielded CRT • easier assembly techniques • simple connection to receiver and more.

Heath Has The World's Largest Selection Of Electronic Kits

These And Other Transmitter Envelope Patterns Are Shown In The SB-610 Manual ••• Aid Immeasurably In Trouble Shooting

SSB signal, voice input, correctly adjusted.
Normal SSB signal, two tone, input, tones properly adjusted for equal amplitude.
Plate modulated AM, nearly 100% modulated.
RF trapezoid, Good linearity. Desirable pattern.
RTTY signal, proper shift, correctly tuned in.
Good CW pattern, string of dots indicating properly shaped keying.
Heathkit "Mariner" 3-Band RDF  
For Safe, Sure, Offshore Navigation
- Use your "Mariner" for easy, precise offshore navigating.  
- Use it for work on your AM or FM shortwave radio, or for monitoring the marine channels.  
- Covers beacon/consol, AM & Marine telephone bands.  
- All-transistor circuitry for dependability, long life & low battery drain.  
- Independent built-in battery power supply.  
- Simple to build—complete with factory built & aligned "front-end" tuner and printed circuit component package.

CRUISE WITH SAFETY . . . Your "Mariner" is always ready to show you exactly where you are through accurate triangulation—as easy as reading a map. "Mariner" provides you with weather bulletins. . . doubles as a communications receiver in emergencies . . . even entertains you and your crew with music, news, and sports.

CRUISE RELAXED . . . SURE. "Mariner" resolves the problem of the double null. All three extra-sensitive bands of the MR-21A provide long range, accurate bearings. Strong or weak signals, the front panel "Sensitivity" control sharpens the accuracy of the tuning null. Automatic gain control circuitry makes it a deeper, more distinct null. And the signal phasing sense circuit assures that it is the correct null . . . the true bearing. Read it directly from the 6½" compass rose located beneath the rotary loop antenna, then begin plotting your position on your chart . . . sure and accurate. Your "Mariner" and your compass are your two most valuable navigation instruments.

TRUE NAUTICAL STYLING AND ENGINEERING . . . The "Mariner's" power is self-contained—indispensable to the boat's power plant for extra safety. A spring-return switch provides dial and meter lighting without putting a continuous load on the batteries. And Heath engineering has created efficient, sensitive circuitry, so that battery life is as high as 1000 hours . . . usually a full season's use. Your "Mariner" is designed with you in mind. The styling is modern featuring a rust-resistant aluminum cabinet, marine-styled in black, white, gray, and blue "baked-on" enamels . . . a handsome addition to any boat.

Order this performance proved and value leader for your boat now.

Kit MR-21A, 13 lbs. . . . No money down, $11.00 . . . $109.95

MR-21A SPECIFICATIONS—Beacon band, 160 to 410 kHz. Broadcast band, 325 to 1620 kHz. Marine band, 1650 to 3450 kHz. Sensitivity for 5 dB signal-to-noise ratio: BC band, 0.335 mw/1 kHz. BC band, 70 uv/meter. Marine band, 20 uv/meter. Normal operating range: 30-90 kHz. Sounding rate: 1000 feet per minute. Battery life: 500-1000 hours. Dimensions: 10" x 4" x 11" D, including base and loop.

NO MONEY DOWN UP TO $300
Build your Heathkit now . . . pay later with the convenient Heath Time Payment Plan. No money down and up to 12 months to pay on orders from $25 to $300 . . . 10% down and up to 18 months on orders from $300 to $500. See Order Blank for details.

Heathkit MI-11A Depth Sounder . . . Safety For The Yachtsman . . . An Aid To The Fisherman
- Accurately readable to 1 foot divisions with 5% accuracy.
- Range: 0-200 feet on hard bottoms. Sensitive all-transistor circuit—even instant operation, reliable performance. Self-contained or boat battery powered for added convenience.
- Simple, stable circuit board construction. External power connections. Match on chart. . . , no cumbersome accessory transducer.

NO NEED TO WORRY ABOUT A BROKEN TRANSDUCER . . .
- Or worse yet, the cost of repairs. There's no need to wonder about the depth of your shipping water when your boat is equipped with the all-transistor Heathkit Depth Sounder. It "senses" shal lows depths with 5% accuracy on all readings . . . probes down to 200' on hard sandy bottoms, 100' on soft muddy bottoms. You can spot your favorite fishing ground by "reading" the type of marine terrain from the quality of the return echoes, or actually "see" schools of fish. And the MI-11A is an invaluable aid for cruising rivers and inland waterways.

COMPARE WITH MORE COSTLY UNITS. The sensitive all-transistor circuits put your MI-11A in operation instantly . . . keeps it operating season after season, faithfully, accurately—within 5% on all readings. And the internal-external battery switch permits easy selection of either self-contained or boat battery power . . . makes the MI-11A even more versatile. For portable use in small boats, say for fishing, use the 9 standard "C" cell batteries that provide self-contained power (batteries not included) and the convenient accessory transducer transom mount. For use on large craft, use the 12 volt ship power and mount the transducer through the hull in a convenient forward location. Your Heathkit Depth Sounder will add extra pleasure to boating at lowest cost. It may also reduce your insurance premiums.

STYLED TO COMPLIMENT YOUR BOAT . . . the large black-shaded dial with big white numerals reads easily. Attractive rustproof metal cabinet is finished in nautical gray, white, black, and blue color styling. And a gimbal mounting bracket permits installation virtually anywhere. Includes transducer.

ASSEMBLES IN JUST 4 TO 6 HOURS with stable, durable, fiberglass circuit board construction . . . takes no special skills or knowledge. Your assembly manual is complete in every detail. Order your MI-11A for more pleasurable boating.

Kit MI-11A, 8 lbs. . . . No money down, $7.00 . . . $69.95

Accessory transducer mount; Model MIA-11, 2 lbs. . . . $8.95

MI-11A SPECIFICATIONS—Dial: 200 feet in one foot divisions. Range: 0-200 feet on hard bottoms, 0-100 feet on soft bottoms. Frequency: 200 kHz. Sounding rate: 1440 soundings per minute, or 24 per second. Accuracy: Within 5% of actual depth. Depth indication: Neon lamp flashes at 25 feet and again as indicated depth. Transducer: Barium titanate ceramic element encased in a waterproof housing with solid brass fittings, fixed at 15 foot length of 2 conductor shielded cable. May be mounted permanently to the hull or temporarily with a transom mount. Controls: Combined On-Off-Sensitivity. Power supply: 13.5 volts from nine self-contained cells. Flashlight cells, or external 12 volt battery. Flashlight cells are contained in three leakproof plastic housings. Battery drain: 100 milliamperes. Average battery life: Up to 25 hours intermittent operation. Dimensions: 7½" x 5¼" x 4½" D.

Over 250 Heathkits To Choose From—World's Largest Selection
Choose Marine Electronics With

**A** Heathkit Marine Power Converter Provides

**Shore-Side Power For Small Appliances**
- Converts 6 or 12 volt battery power to square wave 117 V. AC
- Delivers up to 175 watts for small electronic devices
- All transistor circuit
- Two AC receptacles

_A compact power converter for boat, trailer, or car... measures only 7½” x 5¼” x 4½”. Provides household power for incandescent lamps, electric shavers, etc., from 6 or 12 v. batteries._

Not recommended for TV, tape recorders, record players, compressor-type refrigerators, etc., which require high starting current and/or standard sine wave, rather than square wave AC power for normal operation. Write for MP-10 Applications Bulletin.

> **Kit MP-10**... $29.95
> **Assembled MPW-10**... $5 mo. $39.95

**MP-10 SPECIFICATIONS—**
- Power source: 6 or 12 volt storage battery
- Power output: Nominal 117 volt, 60 Hz AC, 12 volt operation, 175 watts continuous, 240 watts max.
- 6 volt operation, 120 watts continuous and max.
- Input current for continuous ratings: 6 volt operation, 23 amperes; 12 volt operation, 16.5 amperes.

**B** Heathkit Fuel Vapor Detector An Absolute “Must” For Power Boats And Auxiliaries

- New more dependable circuitry
- Fully transistorized
- Gives both visual and audible warning of combustible gas fumes
- Self-testing
- Built-in “Fail-Safe” provision—sounds alarm in the event of component failure
- Built-in relay circuits for control of bilge blower & additional warning devices
- Simple to install and is available in kit form and mfrs. list $34.95

_Fire at Sea!... Your most fearsome peril! You can’t afford to overlook any precaution or safety feature... and a sensitive fuel vapor detector is your first line of defense against explosion due to accumulated gasoline fumes. When you “check-out” your completed MI-25, the sensitivity of this instrument will amaze you... the smallest traces of combustible fumes are detectable. The new MI-25 fuel vapor detector features a performance proven detector “head,” plus new advanced circuitry to provide even greater security. In addition to the “SAFE—DANGEROUS—EXPLOSIVE” meter reading, a built-in 2500 Hz audible alarm sounds whenever fumes are present. Present detector cables unplug from the unit for fast, easy removal from your boat. The Heathkit MI-25 is your best assurance to a safe voyage._

> **Kit MI-25**... $39.95
> **Specifications—**
- Voltage: 12 VDC, +10%.
- Current: 1 amp nominal.
- Panel size: 2” x 1-1/8” W x 5-1/16” H
- Detector head size: 1” round x 1-1/8” long.
- Length of interconnecting cable supplied: 15’.
- Color: Maroon white & black.

**C** All-Transistor

**Tachometer For Boat Or Car**
- All-transistor circuit for maximum versatility & accuracy (2%)
- Operates on 6, 12, 24, or 32 V. DC systems
- 2 switch-selected ranges
- Lighted dial for easy night reading
- Simple to build & install

_Perfect for the outboard cruiser._ Helps you achieve optimum fuel economy on cruises... works on all inboard or outboard marine and auto engines (1-6 cylinder, 2 cycle or 1-16 cylinder, 4 cycle) that use standard (not transistorized) coil and distributor ignition systems. Features switch selection of 0-4000 and 0-8000 rpm ranges, plus wiring option for 0-2000 and 0-4000 rpm. 2 transistors, Zener diode. Unaffected by normal voltage or temp. variation. Ball and socket mount. Positive or negative ground.

> **Kit MI-31A**... 3 lbs... no money down, $4.95

**D** Heathkit Marine Electrical Ground System

- Provides recommended grounding surface
- Simple, foolproof keel installation
- Simple thru-hull connection to ground system

_Hundreds in use._ Extends radio range... the MD-14 is more than adequate for most boat electrical systems. Two 8-gauge copper tubes, tapered at ends, minimize water resistance, require only bolting through keel (min. length 9”, max. thick. 5”) and 1 through-hull fitting. Does not affect balance, steering, or maneuverability of craft. Corrosion-proof. Won’t catch on rocks, logs, etc. The answer to most radiotelephone problems is an adequate ground... the Heathkit MD-14 is the answer.

> **Kit MD-14**... 20 lbs. (Motor Freight or Express only), no money down, $29.95

**E** University Deck Speaker

_Heathkit Recommended Horn Projector... the MDP-104 is excellent for use as a deck monitor or deck hailer speaker with the MWW-14A & MWW-15 Radiotelephones. The driver unit and horn are weatherproof and feature a marine-gray finish which may be painted, if desired. The mounting bracket permits “any-angle” installation and has a neat, “ship-shape” appearance on the deck of your craft. The well-rated specifications are: power rating, 25 watts; impedance, 8 ohms; frequency response, 200 to 13,000 Hz._

> **Model MDP-104, 7 lbs... mfrs. list $34.95... Net $20.29**

---

*Save Up To 50% With Heath Do-It-Yourself Electronic Kits*
the Famous Heath Heritage

Heathkit Fog Horn/Hailer/Boat Horn
All Transistor For Instant Operation

- Instant operation—no waiting for warm-up
- Just flip a switch to use as a fog horn, deck hailer, or boat horn
- All-transistor 30-watts peak circuit
- ... powerful, dependable
- 10" Weatherproof horn speaker for deck mounting
- Fused for protection
- Gimbal mounting bracket for versatile installation
- Marine styled in black, gray & white
- Fast, stable circuit board construction.

USE IT AS A FOGHORN... The new MD-24 provides a powerful warning tone that penetrates the foggy atmosphere for more than a mile. Just set the function switch to "foghorn" and the electrically-timed tone sounds for six seconds, rests for twenty seconds, then recycles.

USE IT AS A DECK HAILE... The MD-24 projects your voice up to several hundred yards. No garbling at higher talk powers as with other models. "Hail Gain" control lets you adjust the power to suit conditions. Excellent for docking, fueling, and signaling other boats... just turn the switch to "Hail" and use the "push-to-talk" microphone.

USE IT AS A BOAT HORN Push the panel-mounted horn button for a 30-watts peak-power blast to warn other craft, signal for bridge openings, etc.

DESIGNED FOR YEARS OF RELIABLE PERFORMANCE... the efficient, powerful, all-transistor circuitry assures dependable performance at all times. Runs cool, thanks to conservative design. No component deterioration as with tube-type units.

Kit MD-24... Includes basic unit, plus PTT mike, & 10" deck speaker, 12 lbs. No money down, $8 mo. ...$79.95


MWW-13AS Complete Pre-Tuned System...

$189.95

Heath-Built 25-Watt Radiotelephone
For The Small Sailing Auxiliary Or
Medium Cruising Range Power Craft

- Choose complete system for owner installation on outboards or separate unit for installation on any boat with technician check-out
- 4 crystal-controlled transmit & receive channels
- Covers 2-3 MHz marine & standard AM bands
- 10-transistor, 5-diode, 3-tube circuit
- Built-in heavy-duty transistor power supply
- FCC type accepted
- Compact, factory assembled & ready to install

PRACTICAL COMMUNICATIONS FOR MARINERS ON THE GO.
Go ahead, set course to "cruse." You can take off on those longer jaunts with a new sense of confidence when you have the knowledge that your reliable MWW-13A is ready to put you in instant touch with the Coast Guard, other ships, or the phone company. Also tunes AM broadcast band to keep in touch with weather and news.

ORDER THE COMPLETE DO-IT-YOURSELF PACKAGE MWW-13AS FOR OWNER INSTALLATION ON OUTBOARD CRUISERS. Includes 25-watt Radiophone with gimbal mounting bracket; 13" antenna (MDP-93); ground, antenna, and power cables; crystals for two channels (2182 & 2638 KHz); push-to-talk microphone; FCC license pack; and complete installation and operating instructions. No technician tune-up required when outboard motor is used as ground per instructions.

ORDER THE MWW-13A RADIOTELEPHONE FOR ANY SMALL BOAT, SAIL OR POWER. Install it yourself. Electrical connection to the internal bulkant on fiberglass boats makes a near-perfect ground. Microphone, gimbal mounting bracket, and crystals for 2182 & 2638 KHz (cabling-distress & ship-to-shore frequencies) are all included. Just have an FCC licensed technician tune up and check out your installation.

Assembled MWW-13AS, Complete system for do-it-yourself installation on outboard powered boats only, includes radiophone, antenna & instructions, 22 lbs. (Express or Motor Frt.) No money down, $15 mo. ...$189.95

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

MWP-93, 13" Fiberglass Antenna, 5 lbs. (Motor Freight or Express only), no money down, $5 mo. ...$34.95

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

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

Audio output: 3 watts to external speaker. Transistor complement: (1) 2N1525 Mixer; (1) 2N1426 Oscillator; (1) 71254 1st I.F.; (1) 2N1424 1st Audio; (2) 2N1425 2nd & 3rd I.F.'s; (2) 2N3010 Audio Output & Modulator; (6) diodes, AVC, overload, Squelch, Noise Limiter & Detector; Transmitter RF input: 25 watts. RF Output: 13 RF watts. Transmitter tube complement: (1) 6AK6 Oscillator; (2) 6A25 amp. Power requirements: 12 V DC, receiver only, 350 amps; standby, 1.2 amps; transmit, 5 amps. Dimensions: 4 3/4" H x 8 1/2" W x 10 3/4" D.

Complete Package MWW-13AS For Do-It-Yourself Outboard Installation! Includes: 25-watt Radiophone, "gimbal" mounting bracket, 13' antenna (MDP-93), antenna cable, ground cable, power cable, crystals, push-to-talk microphone, FCC License pack and complete instructions!
A Now! New Low Price! Heath-Built 150 Watt Marine Radiotelephone With Optional Channel-Switching Remote Control

- 150 watt power input
- 8 crystal-controlled transmit & receive channels
- Covers 2-3 and 4-5 MHz marine bands
- Receives standard AM broadcast
- 15-watt amplifier for dynamic control of full remote control operation, including channel switching
- All-transistor receiver with R.F. stage for long range–ceramic Transistors® for extra selectivity
- Local-Distance switch on heavy-duty solid-state power supply for added margin of dependability
- Solid-state modulator for full audio power
- FCC type accepted for commercial (party boat) use and DOT approved
- Completely assembled & tested

Owner's manual includes all information for installation & operation.

THE HEATH MWW-15 RADIOTELEPHONE SETS NEW STANDARDS FOR MARINE ELECTRONICS... dollar per watt, dollar per feature, there's no better value! The MWW-15 with its 150 watts of power reaches out all the way when you need it, contacting other ships, the Coast Guard, and the telephone company...up to 150 miles away! MWW-15 provides complete communications facilities plus AM broadcast reception. Features variable squeal control & automatic noise limiting: a "Local-Distance" switch to prevent receiver overload from strong signals; Transistored All-Transistor receiver & modulator to deliver more power output across the entire tuning range. It features rust-proof exterior hardware, relays that are sealed against corrosion, and electronic circuitry which has been sprayed against corrosion and tropical fungus. And the compact MWW-15 can be mounted at any angle.

NEVER BEFORE HAVE BOAT OWNERS BEEN OFFERED SUCH A DEPENDABLE, HANDSOME RADIOTELEPHONE. Picture the MWW-15 on the bridge of your boat, or next to the chart table. And you can install this radiotelephone yourself! The owner's manual is complete in every detail, clear regulations, license information, and forms are included. Crystals for 2182 & 2638 kHz are included. All you must do is have the first turn-up made by a 1st or 2nd class FCC licensed technician.

Assembled MWW-15, 31 lbs...$38 dn., as low as $22 mo. ... $375.00
Assembled MWW-15R, 41 lbs. 150 watt 'phone plus remote control...write for credit details $474.00
Assembled MWW-15R-Radio remote control unit, 10 lbs...no money down, $10 mo. ... $58.00
Assembly Manual, Optional Panel, 2 lbs. ... $15.00
Extra transmit & receive crystals (specify), 1 lb. ... $2.95

MWW-15 SPECIFICATIONS—RECEIVER:
Frequency range: Marine, 2-5 MHz; Broadcast: 540-1620 kHz. Sensitivity: (providing a 40 db signal-to-noise ratio) Marine: 2 microvolts; Broadcast: 10 microvolts. Audio output: 3 watts to internal speaker/provision for external speaker. 15 watts to PA "dackbell." Transistor complement: (1) 2N1526 R.F. Amplifier, (4) 2N1525 Marine Crystal Oscillator Mixer, 2nd I.F., & 3rd I.F.; (1) 11384 1st I.F.; (1) 2N1274 AGC Amplifier, 1st & 2nd Audio; (2) 2N6232 FM R.F. Amplifier, (1) 2N6231 Modulator—(2) Power Inverters; (2) Diodes. TRANSMITTER:
Frequency range: 2-5 MHz marine bands. RF Input: 150 watts. RF Output: 80 watts. Transmitter tube complement: (1) 12BF7 Colpitts Oscillator, (1) 6Q5 Power Amplifier. Power requirements: 12 volts DC. Receiver only, 0.6 amp. Standby, 2.9 amp. Transmit, 20 amp. Dimensions: 6 1/2" H x 11 1/4" W x 17 1/4" D.

B Heath-Built 75-Watt Marine Radiotelephone With Unparalleled Features And Value Plus Optional Remote Control

- 75 watt power input
- 6 Crystal-controlled transmit & receive channels
- Covers 2-5 MHz marine band and standard AM broadcast
- Remote Control capability with MWA-15-1
- Local-Distance switch
- 15-watt amplifier for deck hailing
- All-transistor receiver with R.F. stage for long range
- All-Transistor duty transistor power supply & modulator

WHAT TO LOOK FOR IN MODERN MARINE ELECTRONICS. Heath innovation has brought new compact size, more dependable solid-state circuitry, higher efficiency and lower current demands to marine electronic equipment. Heath "human engineering" has resulted in a design and layout of controls so that the MWW-14A is easy to operate...controls and the panel meter give you a true "feeling" of how the operation is going, the control knobs are "where-they-should-be" for maximum convenience and ease of operating. Plus stainless steel cabinet hardware is employed, the relays are covered for protection, and the circuitry is sprayed against moisture and corrosion. Add these technical benefits to the smart styling, and no doubt you'll agree...the MWW-14A is your best buy.

OWNER’S MANUAL IS COMPLETE....gives all the information you need, including installation hints and on-going helpful operating practices. Includes instructions for tune-up by FCC licensed technician. Compare—you’ll choose the Heath MWW-14A.

Assembled MWW-14A, 31 lbs., no money down, $26 mo. ... $279.95
Assembled MWW-14AR, 41 lbs. 75-watt Radiophone plus Remote Control...$38 dn., as low as $23 mo. ... $378.95
MWW-14A, 150 watts peak power input...

MWW-14A SPECIFICATIONS—RECEIVER:
Frequency range: Marine 2-5 MHz Broadcast: 540-1620 kHz Sensitivity: providing a 10 db Signal-to-Noise ratio...Marine: 2 microvolts; Broadcast: 10 microvolts. Audio output: 3 watts to internal speaker/provision for external speaker. Transistor complement: (1) 2N1526 R.F. Amplifier, (4) 2N1525 Marine Crystal Oscillator Mixer, 2nd I.F., & 3rd I.F.; (1) 11384 1st I.F.; (1) 2N1274 AGC Amplifier, 1st & 2nd Audio; (2) 2N6232 FM R.F. Amplifier, (2) 2N6231 Modulator—(2) Power Inverters; (2) Diodes. TRANSMITTER:
Frequency range: 2-5 MHz marine bands. RF Input: 75 watts. RF Output: 40 watts. Transmitter Tube complement: (1) 12B7 Colpitts oscillator; (1) 6Q5 Power Amplifier. Power requirements: 12 volts DC. Receiver only, 0.6 amp. Standby, 2.9 amp. Transmit 14 amp. Dimensions: 6 1/2" H x 11 1/4" W x 17 1/4" D.

Complete Remote Control For Heath-Built Radiophones MWW-15 & MWW-14A

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

HEATH-BUILT MWA-15-1 REMOTE UNIT...COMPACT...COMPLETE FACILITIES...PERFECT FOR FLYING BRIDGE INSTALLATIONS. Enjoy the convenience and added safety of Flying Bridge Remote Control. This compact unit provides "on-off" control, volume, & squelch, and full selection of marine channels. Order MWW-15R or MWW-14AR for the Radiotelephone and Remote with all channel switching provisions factory installed...both units ready to place in your boat. If you already own a Heath MWW-14A or MWW-15 Radiophone order MWA-15-1...this includes the Remote, all necessary hardware (25' of cable with connectors assembled), plus drive motor for channel switching and instructions for installation in your Heath-Built radiotelephone.

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

Assembled MWA-15-1, 10 lbs., no money down, $10 mo. ... $59.00

18’ Radiophone Antenna

Husky, 2-section, fiberglass antenna. Bottom section 10' long, 1/2" diameter, contains loading coil. Top section is 8' whip. Chrome-plated brass studs. Complete with lay-down swivel base & high-impact plastic side mount, ready to install.

MDF-13, 12 lbs., Express or Motor Freight Only. No money down...

24’ Marine Antenna


MDF-74, 14 lbs., Express or Motor Freight Only. No money down...

$6 mo. ... $59.95

88 Heath Offers You Incomparable "Extra" Customer Service
Get Proven Solid-State Reliability With Heath-Built Deluxe Marine Radiotelephones

MODEL MWW-15
Price: $375.00

MODEL MWW-14A
Price: $279.95

MODEL MWW-15-1
Price: $99.00
Enjoy A Low Cost World Cruise...

Deluxe 5-Band Shortwave Receiver...Compared To Sets Costing $150...Includes FREE SWL Antenna

SHORTWAVE RECEPTION GUIDE

<table>
<thead>
<tr>
<th>BAND FREQUENCY</th>
<th>TIME</th>
<th>ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 M</td>
<td>3.5 MHz</td>
<td>All day, U.S. American, &amp; Marine</td>
</tr>
<tr>
<td>49 M</td>
<td>6 MHz</td>
<td>Evening, Latin America and Europe</td>
</tr>
<tr>
<td>40 M</td>
<td>7 MHz</td>
<td>Late afternoon, Europe</td>
</tr>
<tr>
<td>31 M</td>
<td>9 MHz</td>
<td>Morning, U.S. American</td>
</tr>
<tr>
<td>31 M</td>
<td>9 MHz</td>
<td>Afternoon, Asia and Australia</td>
</tr>
<tr>
<td>31 M</td>
<td>9 MHz</td>
<td>Evening, Europe and Africa</td>
</tr>
<tr>
<td>31 M</td>
<td>9 MHz</td>
<td>Evening, Latin America and Asia and Australia</td>
</tr>
<tr>
<td>25 M</td>
<td>11 MHz</td>
<td>Morning, Latin America</td>
</tr>
<tr>
<td>25 M</td>
<td>11 MHz</td>
<td>Morning, Latin America</td>
</tr>
<tr>
<td>20 M</td>
<td>14 MHz</td>
<td>Afternoon, U.S. &amp; Foreign, Amateur</td>
</tr>
<tr>
<td>19 M</td>
<td>15 MHz</td>
<td>Late morning, Europe and North America</td>
</tr>
<tr>
<td>19 M</td>
<td>15 MHz</td>
<td>Afternoon, North and Latin America</td>
</tr>
<tr>
<td>16 M</td>
<td>17 MHz</td>
<td>Afternoon, Europe</td>
</tr>
<tr>
<td>17 M</td>
<td>17 MHz</td>
<td>Afternoon, U.S.</td>
</tr>
<tr>
<td>17 M</td>
<td>17 MHz</td>
<td>Europe, South America</td>
</tr>
<tr>
<td>13 M</td>
<td>20 MHz</td>
<td>Afternoon, Europe</td>
</tr>
<tr>
<td>20 M</td>
<td>20 MHz</td>
<td>Morning, U.S.</td>
</tr>
<tr>
<td>20 M</td>
<td>20 MHz</td>
<td>Evening, South America</td>
</tr>
<tr>
<td>11 M</td>
<td>27 MHz</td>
<td>All day, Local Citizen's Band</td>
</tr>
<tr>
<td>10 M</td>
<td>28 MHz</td>
<td>All day, Central America &amp; U.S.</td>
</tr>
</tbody>
</table>

These reception conditions prevail in the spring and fall of the year. They are also subject to varying atmospheric conditions, sun spot activities, and to some extent, weather conditions. In the winter, reception generally will be better on the lower frequency bands. In summer, reception will be better on higher frequency bands.

SupereX Shortwave Headphones

For DX-ing, Private Listening! Use with all Heathkit shortwave (except GR-43) and amateur radio receivers. Features single lead, convenience, vinyl-clip headband (15/8" wide), dual coils, Alnico V magnets, 2000 ohm impedance. Not a kit.

GR-54 $84.95

GR-54 specifications—Frequency coverage: Band A 100 kHz to 250 kHz, Band B 250 kHz to 1500 kHz, Band C 2.5 kHz to 25 kHz, Band D 25 kHz to 250 kHz, Band E 250 kHz to 2500 kHz. Sensitivity: AM; Band A 1.6 v, Band B 8 v, Band C 1 v, Band D 1.2 v, Band E 6 v. SWR/Linear: 0.8. Transformer: 0.7. Power requirements: 120 volts, 60 Hz. Controls: Bandspread, RF Gain. Adjust. Modulation Switch. Band switch. Mute: A/C switch. AM/WM. Switch. Meter: Indicates signal strength. Antenna: Built-in 4" x 6" permanent magnet. Standard: AMC. 8 ohm ext. speaker, or headphones (50 ohm to 10 K ohm). Dimensions: 14x14x5/16" H x 10x15x1/2" D. $84.95

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

How Can We Offer This Unit At Such A Low Price? Typical Heath "do-it-yourself" savings plus low factory-to-you costs, of course. But we’ve gone a step further. With the GR-54 you build and align the "front-end" tuner...with or without instruments...and get factory-built results! Thanks to an unique band-switch assembly, you simply align the coils with the alignment tool provided, and use the signal strength meter for adjustment readings. Entire assembly time takes around 12 to 15 hours.

As for looks, judge for yourself. It would make a handsome addition to your den or living room.

Kit GR-54, 25 lbs...no money down, $9 mo...$84.95

Heathkit—Pioneer and World Leader in Electronic Kits
On A Heathkit® Shortwave Radio

Explore The Intrigue And Drama Of Shortwave With This 4-Band Receiver

- 4 bands—3 shortwave bands cover 1 MHz to 30 MHz, plus 550 kHz to 1620 kHz AM broadcast band • Built-in 5" permanent magnet speaker for a big, bold sound • Illuminated 7" slide-rule dial with extra logging scale • Easy to read lighted bandspread tuning dial for precise station selection • Relative signal strength indicator aids pin-point station tuning • 4-tube superhet circuit plus two silicon diode rectifiers • Variable BFO control for code & SSB transmissions • Built-in external antenna connections • Built-in AM rod antenna • Fast, simple circuit board construction assures stability • Handsome "low-boy" styling—charcoal gray cabinet, black front panel, and green & white band markings • Headphone jack for private listening

Widen Your Listening Horizons. Let your imagination roam with the intrigue of shortwave radio. Thrill to the somber tones of Big Ben in London ... or wonder at the machine-gun piece of a CW operator sending an urgent code message ... or enjoy live broadcasts from Japan, Australia, Peru, Holland, Brazil—hundreds of foreign countries. Pick up the Voice of America, Radio Moscow ... tune in ham operators, the buzzing drone of Coast Guard LORAN stations, ship-to-shore broadcasts and weather reports. Even get the exact time from government station WWV in Washington D.C. Then come home again, and enjoy local news, weather and sports on popular AM band. Hear it all ... and much more ... on this one, low cost receiver.

Advanced Features. A high voltage, transformer-operated power supply insures peak receiver efficiency. A BFO control "unscrambles" code and SSB transmissions. A "velvet-touch" 16 revolution tuning knob provides smooth, accurate station selection. And electrical bandspread tuning separates frequencies to pinpoint close-together stations. There's even a headphone jack for private listening. The back panel has terminals for an external antenna, a Q-multiplier input and a noise limiter on/off switch.

Modern "Low-Boy" Styling. Includes a charcoal gray metal cabinet with black front panel and green and white band markings ... makes a handsome addition to any room. And with easy circuit board assembly, construction takes about 8 to 10 hours.

Kit OR-64, 15 lbs.
No money down, $5 mo. .......... $37.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices.

GR-64 SPECIFICATIONS—Frequency range: 550 kHz to 30 MHz in four bands. Controls: General coverage tuning, Bandspread tuning, Bandswitch, Noise Limiter—ON/OFF, Phone—Station—CW switch, BFO control, Audio Gain, AC—ON/OFF, Headphone jack, Q-multiplier input. Power requirements: 105-125 V 50/60 Hz AC, 30 watts. Dimensions: 13½" W x 6" H x 9½" D.

SWL Station Guide
Latest World Radio TV Handbook! Lists AM, FM, TV and Shortwave stations ... includes call signs, frequencies, transmitter power, address for QSL cards, program details, broadcast times, etc. 300 pages.

GDP-315, 2 lbs. .................. $4.95

Long-Wire Shortwave Antenna
Includes 75' Long-Wire Antenna, 30' lead-in wire, porcelain insulators and grounding hardware with complete instructions. Use with any shortwave receiver. Included FREE with GR-54.

GRA-72, 2 lbs. .................. $1.45

GD-125, 3 lbs. .................. $14.95

Improve Shortwave Reception with a "Q" Multiplier!
Compact "Low-Boy" Styling! Attractive charcoal cabinet with gray front panel ... matches GR-64 SWL receiver (above). Ideal for use with GR-64 or similar receivers with IF circuits from 450 to 460 kHz. Creates extra-sharp selectivity through an effective "Q" of 4000, and provides a notch for adjacent signal attenuation. Includes built-in power supply.

Kit GD-125, 3 lbs. .................. $14.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices.

Save Up To 50% With Heath Do-It-Yourself Electronic Kits
Deluxe 10-Band AM/FM/Shortwave Transistor Portable...44 Factory-Built & Aligned RF Circuits

**Plus Separate AM & FM IF Sections To Assure You The Finest In Portable Listening**

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

Your Passport To Unsurpassed Global Listening is always ready when you take along this deluxe 10-band portable. "Visit" ships at sea, amateur radio operators and hundreds of foreign stations via the 7 shortwave bands. Or drop in on aircraft beacon and marine weather transmissions with 150-400 kHz longwave. And to keep posted on the latest local happenings, there's the 550-1600 kHz AM band...has a tuning sharpness that receives stations you've never heard before! For a unique and delightful experience in portable FM listening, we've incorporated the same FM tuner and IF strip that are used in Deluxe Heathkit FM hi-fi components.

16 Transistors, 6 Diodes, 44 Factory-Built & Aligned RF Circuits...your assurance of instant, heat-free operation; top performance; and easy 10-hour assembly. Two separate AM and FM tuners are factory-built, ready to mount into place...eliminates the need for alignment, insures best performance, and speeds assembly.

Two Built-In Antennas...a large ferrite rod neatly housed in the easy-carry handle for AM and Longwave, and a 5' telescoping whip that tilts for best FM and shortwave reception. Also has connectors for external antennas.

Versatile Controls Offer Convenience. A Battery-Saver switch reduces battery drain up to 35% for normal indoor listening, or provides a healthy 500 milliwatts for easy listening outdoors. A 10-position selector drives the rotating tuning dial...permits easy viewing of any band. There's even a logging scale to help relocate unknown frequencies.

In addition, there's Dial Light for nighttime use; AFC with on-off switch for drift-free FM; an 8½ revolution tuning knob easily separates stations; and a combination on-off switch and tone control for listening as you like it.

Large 4" x 6" PM Speaker...designed to match cabinet acoustics...provides "big-set" sound. Also includes an earphone that plugs into a built-in jack for private listening.

Inexpensive Flashlight Battery Power. 6 "D" batteries available anywhere power the radio, and 1 "C" battery operates the dial light (batteries not included). Also works on 117 v. AC as it "float" charges its batteries with an optional converter/charger (see below).

Deluxe Styling Matches Deluxe Performance. Jet black extruded aluminum front and back panels contrast beautifully with the chrome-plated, die-cast end pieces. Both panels are hinged...open and close easily thanks to special magnetic latches. The front panel can be removed to take less space when used at home. Includes "Listener's Guide" with frequencies of worldwide shortwave and U.S. FM stations...plus a special map for easy conversion of world time zones.

Kit GR-43, 19 lbs...no money down, $15 mo. $159.95
Model GRA-43-1, Converter/Charger for 117 v. AC, 1 lb. $6.95

GR-43 SPECIFICATIONS—AM SECTION: Tuning range: Long wave—150-400 kHz; Broadcast—530-1600 kHz; 5.5 MHz; 5.5 MHz; 4.9 MHz; 4.9 MHz; 31 MHz—9.2-10.2 MHz; 25 MHz—22.1 MHz; 19 MHz—16.5 MHz; 16 MHz—16.5 MHz; 15 MHz—20.2 MHz; 14.5 MHz; 14 MHz—14.5 MHz; 13 MHz—20.1 MHz; 12 MHz—20.1 MHz.

Intermediate frequency (IF): 455 kHz.


Optional Charger/Converter to operate on 117 v. AC. Plus into built-in jack to "float-charge" batteries while you enjoy good listening without battery drain. Priced at only $6.95.

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

Convenient! Both front & back panels are hinged...close and open easily thanks to special magnetic edges. In addition, the front cover can be completely removed to take less space when in use at home.
With A Heathkit® Shortwave Portable

Rugged And Ready To Go Anywhere... Deluxe Heathkit "Mohican"
5-Band Shortwave Portable

- Powerful 10 transistor, 6-diode circuit
- Tunes 550 kHz to 32 MHz in five bands
- Fixed-aligned ceramic IF "trans-filters" for best selectivity
- Completely self-contained for portability, yet can operate on 117 V. AC with XP-2 accessory below

Wherever You Go, The "Mohican" Is A Welcome Traveler! With its all-transistor circuit, self-contained flashlight battery power supply, handy carrying handle, and compact styling, the "Mohican" offers "fuss-free" portability at the beach, ball game, picnic, on a boat or camping expedition. Simply pull out its built-in 50-inch telescopic whip antenna, switch it on, and tune any of its five bands to find out the latest world happenings... keep abreast of traffic and weather conditions... pick up amateur radio operators... or be entertained with popular music.

Many Deluxe Operating Conveniences have been "Heath-Engineered" into this superb unit. For example, the fixed-aligned ceramic IF "Trans-filters"... primarily designed for military use, shape the IF bandpass for excellent stability and selectivity... the reliable 10-transistor, 6-diode circuit for instant operation and long trouble-free performance...

Zener diode voltage regulation... smooth, flywheel tuning... panel meter for pin-point tuning... built-in 4" x 6" speaker for crisp, bold sound... a headphone jack for private listening and "DX-ing"... and a large, slide-rule dial for easy station selection.

Complete Front Panel Controls... on/off volume control, BFO pitch with on/off switch, RF gain, antenna tuning, electrical bandwidth, ANL on/off, AVC on/off and band switch... offer finger-tip convenience. Operates on 8 "C" flashlight batteries (not included), or on household 117 v. AC with optional XP-2 power supply (see opposite).

Design Styling. Attractive 2-tone green metal cabinet makes a handsome companion... withstands rough handling. Takes around 30 hours to build... requires RF generator for final alignment. Also serves as a backup receiver for amateur radio operators. For all-around reception in a deluxe unit at an economy price, choose the "Mohican".

Kit GC-1A, 18 lbs., $89.50
Kit GC-1A, 117 v. AC plug-in power supply, 2 lbs., $9.95

GC-1A SPECIFICATIONS—
Frequency: 455 kHz, Frequency coverage: 320 kHz to 25 MHz in 5 bands with calibrated bandwidth scales (cassette/tuner) for 80, 40, 20, 15 and 10 MHz amateur bands and 11 meter citizens band. Sensitivity: 0.25 microvolts for 10 dB signal-to-noise ratio. Output: 400 milliwatts max. Battery life: Up to 400 hours normal intermittent service using 8 standard size "C" cells. Dimensions: 12 1/2" x 7 1/2" x 2 1/4" D.

BATTERY POWERED FOR PORTABILITY. Uses standard flashlight batteries to make it independent of power lines; use in anywhere... it works everywhere.

Our Lowest Cost Shortwave Radio. . . Ideal For "Beginner" Kit-Builders Or "Young" SWL's

- Covers 140 kHz to 18 MHz in 4 bands
- Transformer operated for safety
- Built-in speaker & headphone jack
- Easy to assemble... takes around 6 hours

What A Thrill You Get When You Tune The Vast Array of global broadcasts on this compact economy receiver! Covers 140 kHz to 18 MHz to bring you international shortwave stations... 160, 80, 40 and 20 meter amateur bands... low frequency marine and aircraft stations... weather and distress messages... government stations... popular AM stations! Its simple 3-tube sensitive regenerative circuit goes together in just 6 fun-filled hours, yet offers years of "around-the-globe" listening! And its low price makes it ideal for youngsters and novices with a yen to try shortwave listening.

Included In This Attractive Entertainer are provisions for long and short antennas, "shock-free" transformer operated power supply, built-in weatherproof speaker, "private" headphone jack, "fine-tune" front panel-mounted controls, and a sturdy green and beige metal cabinet.

Open New Horizons Of Listening Pleasure, by exploring the wide world of Shortwave Radio—without over-extending that hard-earned budget!

Kit GR-81, 12 lbs., $23.50

Look To Heath For The Newest, The Finest In Electronic Kits

93
Add Greater Convenience and Economy To Open And Close Your Garage Door From The Comfort and Safety of Your Car... With This "Radio-Controlled" Semi-Kit

Universal Mechanism
Motor and mechanism will operate overhead and most jamb or pivot type residential garage doors... sizes up to 8' high. Requires just 2 1/2" clearance above highest point of door travel.

"Pocket-Size" Portable VHF Transmitter
No wires, battery powered,... fits into purse or pocket, clips to sun visor. No permanent installation required... easy to move from car to car. Provides greater operating range... no CB interference.

Sensitive, Superregenerative VHF Receiver!
Takes just a few minutes to install in your garage... operates on 230 to 290 megacycles... requires no license. Selectable tone coding prevents interference with similar neighborhood units.

Manual Operating Switch
Supplied with your kit, can be connected inside your house in any convenient place to permit opening the garage door without the use of the radio transmitter in your car.

Kit Form Mechanism
Assembled Transmitter & Receiver

- New VHF portable "wireless" transmitter—so compact it fits in pocket & purse, or attach to car's sun visor. No car battery drain! No permanent under-hood installation! New VHF receiver installs in your garage in mere minutes! Operates at greater ranges—no CB interference! Easy one-man installation!
- Operates overhead track, and most jamb & pivot doors up to 8' high! Foolproof safety device automatically disengages door when obstructed! Automatically turns on garage light when door is opened! Just assemble mechanism—transmitter & receiver are completely assembled, ready to use! No FCC license required—complies with FCC regulations! 2-year warranty on receiver & transmitter! Operates well within new FCC radiation limits... won't interfere with aircraft radio frequencies!

Especially Convenient In Bad Weather Or Late At Night... especially convenient for Mom or older members of your household! Just a touch of the button on the "wireless" transmitter as you pull into your driveway, and your garage door opens and the light goes on. Another touch of the button once you're safely inside, and the garage door closes automatically, securely. No more straining and struggling with that heavy awkward door... no more groping around in the dark at night trying to find the garage light... no more dashing from your car to the garage and back when it's cold, raining or snowing.

A time delay on the mechanism-operated light allows you plenty of time to enter your house, or switch on the main lights...what could be more safe or simple.

Transmitter And Receiver Prebuilt... You Assemble Only The Mechanism! The "pocket-size" transmitter offers portable convenience... simply clip to car's sun visor, or store in the glove compartment, your pocket or purse. And since it's "wireless", there's no complicated or cumbersome permanent mounting under the hood or dash... makes it easy to use from car to car! Operates on self-contained battery power to eliminate any drain on car's battery.

And the sensitive superregenerative receiver with RF stage takes just a few minutes to install in your garage. No license is required... system is designed for use on 230 to 290 megacycles. And selectable tone coding prevents interference with similar neighborhood units.

Foolproof Safety Device! The Mechanism automatically disengages the door when obstructed... no chance of injury or damage to tiny tots or household articles. Release pressure is independently adjustable in both "up" and "down" directions. The mechanism is quick and easy to assemble... also may be purchased separately for push-button operation from house or garage. A spring-loaded connecting arm assures a tight weather seal... keeps out rain and snow. The automatic light feature may be extended to control driveway, patio, breezeway lights, etc.

Start enjoying the convenience and labor-saving ease of a Heathkit Garage Door Opener... order yours now!

GD-20A, 69 lbs. (REA Express or Motor Frt. only), mechanism, (1) transmitter, (1) receiver... no money down, $12.00... $124.90
GD-20B, 69 lbs. (REA Express or Motor Frt. only), mechanism, (2) transmitters, (1) receiver... no money down, $14.00... $144.90
Kit GDA-20-3, Heathkit mechanism, 61 lbs. (REA Express or Motor Frt. only)... no money down, $7.00... $85.95
GDA-20-4, (1) Transmitter, (1) Receiver... 8 lbs... $54.95
GDA-20-5, (2) Transmitters, (1) Receiver... 8 lbs... $74.95

Kits Mechanism Specifications—125" long x 9 1/2" high x 13" wide, 100# max. operating force. Operates overhead track and most jamb & pivot doors up to 8' high. 117 V, 60 C, 1/2 H.P. motor. Vacuum Tube Transmitter Specifications—Powered by two Eveready "F-81" alkaline batteries. Uses one of six modulation frequencies approx. 16 kHz, 18 kHz, 20 kHz, 22 kHz, 24 kHz, 26 kHz. CK 5367 RF osc. tube, 2N3706 audio osc. transistor, 5 3/4 x 3 1/4 x 1 1/2. D.

You Get Twice As Much For Your Budget With Heathkit
Your Driving With A Heathkit® Auto Accessory

Heathkit Auto Ignition Analyzer...Quick And Easy Way To Diagnose Ignition Troubles

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

Ideal For Car Enthusiasts, Service Stations. Helps keep your car running smoothly...identifies common faults like shorted spark plugs, bad points, defective wiring, worn distributor parts, incorrect dwell time, coil and condenser problems, plus many more engine defects. Use it in the shop with its own built-in power supply, or “on-the-road” with an external DC to AC inverter.

Select 4 Different Patterns Without Switching Leads. A special switching system provides instant selection of primary and secondary patterns in either parade or super-imposed displays without the bother of lead switching. Expand the views for detailed analysis...10 to 1 horizontally or 2 to 1 vertically. The trigger circuit provides the steady “locked-in” pattern display you need for convenience.

Easy To Build...Rugged Metal Housing. Goes together quickly, simply...no special skills or knowledge needed. And you enjoy the extra “do-it-yourself” savings. Features a corrosion-resistant aluminum case with brushed aluminum front panel, and easy-to-clean enamel finish. Compact too...measures 8” H x 9½” W x 16” D. Use on any internal combustion engine with a conventional, non-transistor ignition system. For fast, easy tune-up and ignition system troubleshooting, choose the IO-20.

Kit IO-20, 17 lbs...No money down, $9 mo...$89.95
Export model available for 115/230 VAC, 50-60 Hz; write for prices.


It's Easy To Tune-Up
And Repair Your Car's Engine With This
GILBERT-DAVIS 4-Unit Basic Tester Set

Famous Brand...Top Quality. Ideal for do-it-yourselfers and professionals! Includes a Model 34 Remote Starter Switch with push button and extra long, neoprene insulated lead wires...Model 36 Vacuum-Pump Tester that reads 0-300 lbs. on 5½” dial—features short stem with 15” offset to reach back cylinders...Model 36 Vacuum-Fuel Pump Tester with 5½” 3-color dial—calibrated 0-30 inches for vacuum and 0-7 lbs. pressure...Model 37 Engine Timing Light with molded plastic case, long leads, and rubber covered connectors. Order yours now.

GFP-83, 4 lbs...$11.95

Timing Light Kit...Accessory To Heathkit IO-20 Ignition Analyzer

Convenient...Easy To Use. Specially designed to assist your diagnosis. Simply plug into the IO-20 Ignition Analyzer (above). Produces an intense white light that shows timing marks on engine even in brightly-lighted areas. Features a speed range of 0-1250 flashes per minute (0-2500 rpm for 4-cycle engines of current conventional automobiles). The long-life, hard-rubber pistol-grip case comes complete with 10’ of cable. Measures 6” H x 7¾” L x 2” W.

Kit ID-11, 3 lbs...$14.95

Use "No Money Down" Heath Time Pay—See Order Blank For Details
Save Time, Steps And Your Voice . . . With A Heathkit Transistor “Wireless” Intercom

• No connecting wires between units . . . just plug into nearest AC or DC outlet, and you’re ready for instant communications
• All-transistor circuit—built-in AC power supply • Switch-selected choice of 2 operating frequencies • Compact—fits almost anywhere • Add as many units as you wish anytime • Economical—costs less than 3c a month to operate • Attractive 2-tone beige plastic cabinets . . . match any decor • Variable squelch to hush background noise

Use Any Number Of Units Anywhere . . . kitchen, bedroom, den, garage, basement . . . as long as they operate on the same power line. No need for batteries . . . operates from any 117 v, AC receptacle. Easy to use . . . just plug it in, push the large press-to-talk bar release to listen . . . that’s all there is to it. Provides instant two-way communications between you and other family members. Eliminates annoying shouting . . . saves valuable time and steps.

A Competent Baby-Sitter . . . Ideal For Dietation. The press-to-talk bar has a spring-return to listen, and a “dictate” hold position for keeping tabs on the baby, or for predominately one-way transmissions. Think of the precious steps and minutes you can save with a pair of these work-savers at the office.

A Host Of Operating Conveniences. Like the all-transistor circuit for instant operation and long, trouble-free life . . . a variable squelch to screen out background noises during standby periods . . . and two indicator lights, red for transmit, amber for receive. Easy to build with point-to-point wiring and simple step-by-step instructions. Modern plastic cabinets are styled in 2-tone beige to blend with any decor.

Kit GD-51-2 (pair), 10 lbs. . . . No money down, $5 mo......................$45.90
Kit GD-51A (one station), 5 lbs...............................$22.95

GD-51A SPECIFICATIONS—Power requirements: 105-125V, 50/60 Hz AC or DC. Standby power: 2.5 watts. Transmit frequency: 220 kHz & 180 kHz (switch selected). Size: 6½” x 8” x 7½” D.

Provides An Extra Measure Of Household Security . . . Transistor Indoor-Outdoor Intercom System

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

Now Identify Callers Before Opening The Door . . . with this versatile Indoor-Outdoor intercom system in your house. Simply converse with any visitor through the outdoor remote unit. Adds to your personal safety . . . especially late at night, or when you’re alone! And you can place up to 5 remote stations anywhere around the house to save time and steps.

Private Calls Or Paging. Master unit features selective and all-call switches for private inter-unit communications, or paging entire remote group. Also has all-transistor circuitry for instant operation without warm-up . . . built-in power supply . . . separate listen and talk volume controls . . . and attractive beige plastic cabinets.

Any Two Remotes Can Communicate . . . thanks to the inter-remote feature. In the “monitor” position, the remote can be switched by the master unit, so it can be heard by other remotes anywhere in the house. Ideal for babysitting! Each remote unit has a 3-position listen-talk-monitor switch, 50’ of 3-conductor wire, and matching beige plastic cabinet.

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

Kit GD-121 Master Station, 6 lbs . . . No money down, $5 mo..............$29.95
Kit GD-131 Indoor Remote, 4 lbs.............................................$8.95
Kit GD-141 Outdoor Remote, 2 bs.............................................$5.95

SPECIFICATIONS— Power requirements: 117 v ac 50/60 Hz 2.5 watts (sighing), 3.5 watts (full output). Transistors: four 2N1274. Dimensions: 6½” H x 8” W x 7¼” D (master), 5½” H x 8” W x 8” D (indoor remote), 5½” H x 4½” W x 4½” D (outdoor remote).

There’s A Heathkit For Every Interest, Every Purpose, Every Budget
**These Heathkit® Work-Savers!**

**Ideal For Any Room In The House . . . AM Table Radio**
- Vernier tuning for smooth easy station selection
- Safe transformer isolated power supply
- Handsomely styled in beige and ivory plastic
- Assemblies in just 4 to 6 hours

**Enjoy The Quiet Beauty Of FM . . . Low Cost Table Radio**
- Preassembled, prealigned FM tuning unit for easy assembly
- Vernier tuning for easy, accurate station selection
- Transformer isolated power supply for safety
- Decorator-design plastic cabinet in beige & ivory

**Tired Of The Usual Radio Fare?** Then enjoy the crystal-clear fidelity and good listening of FM with the GR-11. Its low price puts it easily within any budget, yet its quality compares to models costing far more. You'll like its compact styling and attractive looks, too.

Boasts a five tube circuit that performs like seven . . . smooth precise vernier tuning . . . built-in line cord antenna for local station pickup . . . separate terminals for an external FM antenna . . . neon-on-off indicator light . . . safe transformer-isolated power supply . . . and decorator-designed beige & ivory plastic cabinet. Takes only around 5 hours to build with simple step-by-step instructions and factory assembled and aligned tuning coils.

**Kit GR-11, 7 lbs. $23.50**

**Wake Up In A Happy Mood . . . Versatile AM Clock Radio**
- Timer outlet for household appliances
- Sleep switch—radio alarm—pillow speaker jack
- Transformer isolated power supply for safety
- Attractive modern cabinet styling

**Starts Your Day On The Bright Side.** Gently wakes you with music . . . no more rude buzzes or clangs. If you're a "heavy" sleeper, an alarm sounds 10 minutes later to insure "wake-up." Meanwhile the clock/timer automatically starts your morning coffee. Entertains you throughout the day, then lulls you to sleep again at night. Even has a pillow speaker jack for private listening.

Automatically turns itself off at any preset interval up to 8 hours. Features a built-in ferrite rod antenna for strong local reception; sweep-second hand on the clock/timer unit; handsome ivory and beige plastic cabinet. Assembles in 4 to 6 hours . . . no special skills, knowledge or tools needed.

**Kit GR-121, 8 lbs. . . no money down, $5 mo. $28.25**

**Tools For Kit Building**

**A** Add Longer Life To Drills, Bits And Blades With A Heathkit Motor Speed Control
- Silicon Controlled Rectifier with feedback circuit slows motor yet maintains high torque
- Use with drills, saws, motor mixers, lathes, etc.
- ... any power tool with a universal AC-DC motor up to 15 amps . . . twice the current handling capability of others
- Adjustable control dial desired motor speed
- ... built-in fuse protects the toughest steel or hardest wood without ruining a good blade or bit
- Handsome black & beige aluminum cabinet
- Assemblies in an hour or two
- Not for AC induction motors

**Kit GD-973A, 3 lbs. $17.50**

**B** "Little Dandy" Soldering Iron . . . Ideal For Kit-Building
- Perfectly balanced, lightweight, easy to handle
- Reaches working temperature in 2 minutes after plug-in
- ... 30-watt heating element ... iron-clad tip won't corrode, doesn't require frequent "tinning"

**Model GDP-105, 1 lb. $5.40**

**C** SPEEDEX Wire & Cable Stripper Model 766-1 . . . Save $4.06!
- Simple to use—insert wire into jaws, squeeze handle and insulation comes off instantly
- ... Graduated jaws accept No. 10, 12, 14, 16, and 22 wire

**Model GDP-663, 2 lbs. . . Mfrs. list $9.95. Only $5.89**

**D** New Deluxe Tool Set . . . Use For Kit-Building Or Any Fix-It Job!
- Combination wire stripper & diagonal sidecutter
- Midget nosegap pliers: 3 screwdrivers (3/32", 1/8", 3/16") . . . "Little Dandy" soldering iron (above)
- . . . 5/32", 3/8", 1/2")
- Nut starter, soldering aid, radio solder, and "Kit-Builder's Guide" with soldering instructions

**Model GD-25, 4 lbs. $16.95**

**E** Heathkit Soldering Iron Kit . . . Ideal For Kit-Building
- Lightweight, easy-to-handle . . . ideal for kit-building or any "light" soldering job . . . 6 volt, 25-watt GE midget iron with non-corroding tip that doesn't require frequent "tinning". Transformer-isolated power supply offers selection of 8 heat ranges . . . Excellent heat recovery time . . . Protective metal cage

**Kit GD-52, 5 lbs. $14.95**

**F** Vaco Hollow Shaft Nut Driver Set . . . Time Saver!
- Store in self supporting metal rack
- Tough, color-coded plastic handles

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

Heath Offers You Uncomparable "Extra" Customer Service
**A Basic Electricity Kit**

AN IDEAL INTRODUCTION TO ELECTRONICS ... teaches basic theory of voltage, current, resistance, series & parallel DC circuits, meter circuits, and Ohm's Law in an interesting fun-to-do manner.

KIT/TEXTBOOK COURSE ... begins with basic experiments with dry-cell batteries, then starts the assembly of a volt-ohm-milliammeter which is then used for further experiments. The profusely illustrated manual is written in a non-technical language to guide the reader through the experiments ... theory is fully grasped without a technical background. The final product is a handy volt-ohm-milliammeter which can be used for countless measurements ... plus a thorough basic knowledge of electronics for you.

Kit EK-1, 4 lbs. .................................................. $19.95

**B Basic Radio ... A 2-Part Course**

- Simplified radio theory • Textbook/kit combination • Teaches as you build • Requires V-O-M from EK-1 kit above or equivalent to complete all experiments

AN ABSORBING TWO-PART COURSE. Basic Radio Part I (EK-2A) teaches the basic components of a receiver and elementary radio theory while simultaneously starting the assembly of a simple crystal receiver. As you progress from chapter to chapter, improvements are made on this basic receiver circuit by adding additional tuned circuits and tubes until a regenerative receiver is built that will receive stations hundreds of miles away.

Basic Radio Part II continues with additional components and text to extend knowledge to more complex circuits and terminology. Final result is a refined 2-band Superheterodyne receiver that will receive broadcast, amateur radio, marine and international stations (550-1600 kHz & 3-10 MHz).

Kit EK-2A, Basic Radio Part I, 7 lbs. ......................... $18.75
Kit EK-2B, Basic Radio Part II, 5 lbs. ..................... $16.95
AK-8, Accessory Cabinet for completed receiver, 3 lbs. $3.95

**C Basic Transistors**

AN EXCELLENT INTRODUCTION TO THE "HOW" AND "WHY" OF TRANSISTORS. Here in simple, easy-to-understand language is explained the wonder of the age ... the tiny transistor and its associated circuitry. Some of the circuits assembled include a two-transistor radio, wireless broadcaster, audio amplifier, and an audio test oscillator. All parts are included for the final experiment ... the complete assembly of a highly useful two-station intercommunications system. The basic transistor theory gained in this course will simplify servicing and trouble-shooting transistorized circuitry and equipment.

EK-3 is an ideal course for the beginner, and an excellent refresher course for the service technician.

Kit EK-3, 4 lbs. .................................................. $16.95

**D Heathkit Electronic Workshop “19”**

- Contains all materials & instructions for building 19 different electronic items • Includes code flasher, public address system, 5 different transistor radios, electronic timer, burglar alarm, electric eye, TV silencer, metronome, voice and capacity operated relays, and more • Fast, solderless, spring-type connectors • Operates on safe, economical flashlight batteries (not included)

MOST POPULAR BASIC ELECTRICITY KIT. The Heathkit Electronic Workshop is the basic educational kit you've asked for most. It is absolutely safe from electrical shock hazards, since power is provided by four flashlight cells (not included) ... perfect for the junior scientist of your family. He can explore the exciting world of electronics through kits that are truly practical, that "really work," and that can be re-built over and over again.

Kit SK-50, 4 lbs. .................................................. $12.95
Why Waste Paper To Get A Perfect Print?  
Get The RIGHT Exposure The FIRST Time  
With The Fotoval® Computer

- Accurately & scientifically indicates correct exposure times & photographic paper grades  
- Cuts darkroom time, reduces paper costs, speeds your enlarging  
- Quickly produces correctly exposed prints every time  
- Gimbal mounting bracket allows installation in any position  
- Completely safe lighted to permit easy darkroom reading of meter indications  
- Simple to assemble and operate

Eliminates Costly Makeovers ... Saves You Time, Paper And Money. The Heath/Mitchell Fotoval Darkroom Computer analyzes any black and white negative, and automatically provides correct exposure time... computes negative contrast... tells you what paper grade to use. The guessed through accurate measurement... you produce uniformly correct enlargements every time. No more long hours wasted in the darkroom. No more guessing which paper grade to use, or how long to expose each print.

Monitors Darkroom Variables ... Leaves You Free For Creative Work. With a unique 35 mm Test Negative, you predetermine correct exposure for each type of paper stock or variable contrast filter you use. Once correct time is established, there's no need for test strips of wasted paper. Choose the desired paper grade & texture and insert the corresponding computer scale into the Fotoval. Place the negative you wish to print on the enlarger.

With the Fotoval light-sensitive probe positioned on the desired, selected black, adjust the meter to full scale using the enlarging lens diaphragm. Then meter the most desirable highlight, and read the exposure time and paper grade (or filter) directly from the computer. Expose for the indicated time and develop. That's all there is to it.

Even Lets You Print Now, Develop Later! Since all darkroom variables are held constant, you can store your prints for developing later. Or you can keep on making prints, while someone else, regardless of experience, does the developing.

Ideal For The Novice As Well As The Professional. The easy operation of the Fotoval makes it simple for the beginner to experience remarkable results even if he's never attempted enlarging before. As easy to build as it is to use. FREE descriptive brochure available.

Kit PM-14, 6 lbs ... No money dn, $9 mう..................$9.00
PMA-14-1, 4"x5" Test Negative . Shipped postpaid... $15.00

Calibration Negative
Helps you determine correct exposure time for each contrast grade of paper, and best choice for every negative. Once calibrations are made, they are used for all future printing as long as the developing process stays the same.

Light-Sensitive Probe
Incorporates all important switching. Measures extremely small light areas when scanning negatives for desired shadows & highlights. Fits easily in your hand & easel corners. Magnetized base assures adhesion when placed on working surface.

Control Exposures To A 10th Of A Second With The Heathkit Photo Timer

- Controls exposure time of all printing operations—contact or enlarging  
- Two switch-selected ranges ... up to 99 seconds in 1 second steps or 9.9 seconds in 0.1 second steps ... permits accurate resetting of any interval  
- Repeatability accurate to within 2% on all settings  
- Two AC outlets ... enlarger & safelight  
- All-electronic circuitry ... no gear drive mechanisms to wear out as with "clock-motor" devices  
- Enlarger may be turned on or off manually with Time-Focus rocker switch  
- Install on wall, place upright or face up on working surface  
- Styled to match Heath/Mitchell Fotoval® Computer  
- Easy to assemble and use

Quick & Simple To Use! Just set the desired exposure time and push the "start" button. The PT-15 Photo Timer turns the enlarger on and the safelight off. At the end of the preselected interval, it automatically turns the enlarger off, and the safelight on. To quickly expose more than 1 print, just push the "start" button to repeat the cycle: ... every exposure will be accurate within 2% of the first interval. A spring-return "stop" switch halts exposure process, if you decide the time interval is incorrect.

Kit PT-15, 4 lbs ... No money dn, $5 mう..................$24.95

PT-15 SPECIFICATIONS—Timed cycle: x.0: Range: 1 to 99 seconds in 1-second steps  
x.0: 1 Range: 0.1 to 9.9 seconds in 0.1-second steps  
AC outlets: Enlarger and safelight  
Time: 0.1 to 99.9 seconds in 0.1-second steps  
All parts: 105-125 v. AC @ 350 watts  
AC @ 350 watts  
AC @ 90 volts DC  
All parts: 105-125 v. AC, 50/60 Hz, 6 watts  
Dimensions: 6½" 7 x 6½" x 5½" H overall.
NEW! Transistor Portable Phonograph

- Automatic monophonic play of 16, 33 1/3, 45 & 78 rpm records
- All solid-state circuitry for cool, instant operation
- Ceramic cartridge with dual Sapphire stylus for LP's or 78's
- Compact size, light weight and easy-grip handle for portable convenience
- Separate volume & tone controls
- Operates on any 117 v. AC household source
- Includes 4" x 6" speaker, 45 rpm adapter spindle, and preassembled pressed wood cabinet covered with attractive, durable olive and ivory polyethylene
- Easily assembled in just 1 to 2 hours

ESPECIALLY IDEAL FOR THE TEEN-AGER IN YOUR FAMILY... its low cost, portability and playing versatility make the new GD-16 Transistor Portable Phonograph a perfect graduation, birthday or Christmas gift for any youngster. They will appreciate having their very own phonograph to play their favorite records. Its modern designer styling makes an attractive addition to any room. And its compact shape, light 18 lb. weight and easy-grip handle carries like a small suitcase whenever and wherever the gang gets together for parties, dancing, etc.

And since the GD-16 takes only an hour or two to assemble, it's a wonderful way to introduce youngsters to the fun of kit-building. (And it will save wear and tear on your expensive stereo system). You'll probably want one yourself to add recorded music to a bedroom, family room, on a porch or patio.

DEPENDABLE SOLID-STATE CIRCUITRY... a total of 4 transistors and 1 diode. Provides cool, instant operation. no warm-up, or tubes to deteriorate. Provides years of dependable, trouble-free service.

VERSATILE AUTOMATIC RECORD CHANGER. Plays all four speeds... 16, 33, 45, and 78. Handles stacks of 6 records of the same size. Has separate record size and speed selectors, plus an on/off/reject switch. The long life ceramic cartridge has a dual turnover Sapphire stylus... one for LP's, the other for 78's. And there's an adapter spindle for 45 rpm's. Operation is simple... just flip the on/off/rej. switch to play... automatically shuts itself off after the last record. And for listening as you like it, there are separate volume and tone controls.

A BREEZE TO ASSEMBLE. Just one small circuit board to wire, mount the 4" x 6" speaker, and plug in two connectors to the preassembled changer... takes only about 2 hours.

ATTRACTIVE OLIVE AND IVORY CABINET... made of pressed wood with a polyethylene covering to stand up under rugged wear. The changer folds up into a neat, compact case that's easy to carry from room to room, or house to house. You can even store around twenty 45 rpm records in a special compartment under the changer. Completely self-contained... all you add are records... no extras to buy.

**Kit GD-16**... 23 lbs. no money down, $5 mo. ...$39.95.

**GD-16 SPECIFICATIONS—Changer speeds:** 16, 33 1/3, 45 and 78. Cartridge type: Ceramic stylus, Dual turnover, 0.7 mil Sapphire and 3 mil Sapphire. Frequency response: 50 db from 100 Hz to 20 kHz with RIAA equalization. Power output: 2 watt music power. Cabinet dimensions: 14" H x 7 1/8" W x 20½" D. Speaker: 4" x 6". 25 ohm voice coil. Transistors & diode complement: 4 transistors, 1 diode. Controls: Volume and Tone. Power requirements: 120 v. AC, 60 Hz, 15 watts.

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4-Speed Automatic Changer... plays mono 16, 33, 45 & 78 rpm records. Handles stacks up to 6 records of same size. Separate record size and speed selectors. Automatic shut-off after last record.

Just One Small Circuit Board to wire... mount the speaker and plug in the preassembled changer. Entire construction time 1 to 2 hours.

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Shop The Easy Heathkit Way—Select Your Kits In The Comfort Of Your Home, Mail Your Order, & Get Direct-To-Your-Door Delivery
"Big-Set" Sound . . .
Longer Battery Life . . .
Super Sensitive Reception . . .
Modern Styling . . .
Deluxe 6-Transistor AM Portable

• 6 silicon transistor, 2 diode circuit gives 8 transistor performance • Uses standard "D" size flashlight batteries . . . only 1/10 the operating cost of typical pocket-size portables • Large 4" x 6" permanent magnet oval speaker for "big-set" sound • Easy-to-read slide-rule dial • "Thumb-touch" controls • Vernier tuning • Tuned RF stage & double-tuned I.F. stage for greater selectivity . . . Big 1/2" diameter built-in rod antenna for distant station reception • Handsome black simulated leather case • Fast, simple circuit board construction

IDEAL FOR OUTDOOR LISTENING . . .
take the GR-24 camping, boating, picnicking—anywhere you go. Its husky audio output stage puts out a healthy 250 milliwatts for a crisp, bold sound . . . even when battery voltage finally runs low. Easily keeps you in earshot of the latest news, weather, ball scores and pop music. Its big 1/2" diameter ferrite rod antenna picks up stations miniatures can't get . . . with pulling power that rivals hi-fi receivers. Has a tuned RF stage and double-tuned IF stage for extra sensitivity and selectivity. Carries easily too . . . with its compact shape, light weight and easy-grip handle.

COST 1/10TH AS MUCH AS MINIATURES TO OPERATE! Uses 6 long-lasting, inexpensive size "D" flashlight batteries (not included) . . . protected against corrosion by a plastic holder.

MODERN DESIGNER STYLING. Makes a handsome companion with its black simulated leather case, chrome-finish frame and anodized aluminum grille. You'll find station tuning quick and easy too . . . with the two "thumb-touch" controls and slide-rule dial. Takes only around 4 to 6 hours to build with fast circuit board construction . . . a perfect way to discover the fun of kit-building!

Kit GR-24, 5 lbs. . . . no money dn., $5 mo. $28.25

GR-24 SPECIFICATIONS—Tuning range: 555-1620 kHz. IF frequency: 455 kHz. Sensitivity: 50 uV/m for 10 dB signal-to-noise ratio at 50 mw output. Audio output: 250 mw @ 10% distortion. Speaker: 4" x 6" oval permanent magnet type. Battery: 6 "D" flashlight cells. Current drain: No signals: 11 ma, 50 mw audio output, 41 ma. Dimensions: 3 1/2" D x 8 1/2" W x 7 1/2" (overall).

Large 4"x6" PM Oval Speaker . . . provides a "big-set" sound that can't be matched by miniatures.

A Concerto At The Beach? It's Easy When You Bring Along This Deluxe 10-Transistor FM Portable

• 10 transistor, 2-diode circuit for instant operation, long-trouble-free life • Large 4" x 6" PM speaker for hi-fi sound • Automatic Frequency Control for locked-in reception • Treble-cut tone control assures crisp, clear tone • Accurate vernier tuning • 34" telescopic antenna—headphone jack • Simple circuit board construction • Smart tan simulated leather case with curved beige plastic grille

TIRED OF THE USUAL RADIO FAKE? Then take along the quiet relaxing beauty of FM with this compact "go anywhere" Heathkit portable. Enjoy classical or standard favorites at the beach, on a camping trip, at the ballpark . . . anywhere your travels take you.

DELUXE FEATURES FOR HI-FI PERFORMANCE! A 10-transistor, 2 diode circuit with 3 I.F. stages deliver full fidelity and complete quieting . . . a push-pull output stage drives the 4" x 6" oval PM speaker for low distortion and "console" sound . . . automatic frequency control for ease of tuning. There are even connectors for an external antenna, and a headphone jack for private listening or connection to your hi-fi system.

BUILD IT IN A COUPLE OF EVENINGS! A preassembled "front-end," prealigned I.F. transformers and simple circuit board construction assure fast, easy assembly. Runs on 6 inexpensive size "C" Flashlight batteries (not included).

Kit GR-61, 6 lbs. . . . no money dn., $5 mo. $44.95


Runs On 6 Inexpensive Size "D" Flashlight Batteries • only 1/10 the operating cost of pocket-size portables. Plastic battery holder protects against corrosion.

Wide, Open Chassis Layout . . . and simple circuit board construction assure fast, easy assembly. Takes around 4 to 6 hours.
Save 5% On Orders Of Two Or More

**CITIZEN'S BAND**

OPERATES "FIXED"... with accessory AC power supply GWA-14-1. AC power switching is accomplished through the On-Off-Vol-ume control on the transceiver front panel. The GWA-14-1 serves as a handy desk-top base for the GW-14 transceiver, and provides all necessary power... requires only one plug-in connection.

**Kit GWA-14-1, AC power supply**
- 5 lbs. .......................................................... $14.95

**6 To 12 Volt Converter**
For Mobile Transistor CB!

Converts 6 volts to 12 for "mobile" operation of GW-14... or any other transistor device whose power requirement does not exceed 750 ma regulated (1 amp unregulated) @ 13 v. DC. Measures only 2½" H x 7½" X 3½" D... fits neatly on the firewall of a VW, Porsche, any car with 6 v. DC neg. gnd. system. Includes power cables.

**Kit GWA-14-4, 1amps** .................................. $14.95

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**23-Channel Solid-State 5-Watt CB Transceiver...**

Clean, Crystal-Controlled Signals, Compact Size, Low Battery Drain

- 14 transistor, 6 diode circuitry for cool, instant operation, long trouble-free life, and low battery drain
- 23-channel crystal set available
- Full 5 watt performance... a minimum of 3 watts RF output, plus 3 watts audio modulating power... Only 2½" H x 7½" X 3½" D... ideal for car, boat, any mobile installation
- Front panel "S" meter indicates signal strength & relative power output... also aids in alignment
- Adjustable squelch control... eliminates all speaker hiss during standby
- Automatic noise limiter... minimizes noise from ignition systems, etc.
- Built-in PM speaker mounts on the left side to disperse sound to driver
- ½ uv sensitivity for 10 db signal plus noise ratio
- Easy to build circuit board construction
- Gimbal mounting bracket for versatility of installation
- Attractive Turner Ceramic PTT Mike
- Handsome die-cast, chromo-plated front panel with rust-resistant aluminum charcoal gray cabinet

FULL CB PERFORMANCE WITH MODERN SOLID-STATE DEPENDABILITY! Transmit and receive on all 23 CB channels... with crystal-controlled reliability... on this versatile transistORIZED transceiver. Just flip to any desired channel on the lighted channel selector, and you're set for instant 2-way communications. Its 14 transistor, 6 diode circuit keeps the GW-14 running cool and collected... no component deterioration as with tube types. Draws only 0.75 amps when transmitting, 0.12 amps on receive.

IDEAL FOR CRAMPED QUARTERS... measures only 2½" H, 7" W, 10½" D... fits snugly under the dash of your car, boat, jeep, truck, etc. Mounts in any position, too... thanks to gimbal mounting bracket.

FULL POWER FOR MAXIMUM DISTANCE! A minimum of 3 watts RF output by means of a "twin pi" matching network which increases efficiency and minimizes harmonic distortion... assures dependable communication over maximum range. Relay switching insures complete circuit isolation between transmitter and receiver sections... eliminates interaction problems.

ONLY 3 SIMPLE CONTROLS TO OPERATE. Off/On/Volume control, Adjustable Squelch and lighted Channel Selector. An automatic noise limiter minimizes ignition system and motor noise.

GOES TOGETHER QUICKLY AND EASILY! Takes only around 9 hours. All parts mount on a single circuit board... reduces chance for wiring errors. And to aid servicing and trouble-shooting, the foil circuit pattern is screened on the board top... allows quick circuit tracing. Includes a sma R ty fed TURNER ceramic microphone, DC power cables and crystals for one channel (specify no.). For 12 v. neg ground only... operates on AC with accessory power supply, GWA-14-1 @ $14.95, or on 6 v. sources with optional 6 to 12 v. converter, GWA-14-4 @ $14.95. Use must comply with Part 95 FCC regulations.

**Kit GW-14, 8 lbs., no money dn., $9 mo.** .......................................................... $89.95

**Assembled GW-14, 8 lbs., no money dn., $12 mo.** ........................................ $124.95

**Kit GW-14-1, AC Power Supply, 5 lbs.** ........................................ $14.95

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

**Kit GW-14-4, 6 to 12 v. DC converter, 3 lbs.** ........................................ $14.95

**GW-14 SPECIFICATIONS--RECEIVER SECTION: General description: 5-transistor superhetodyne circuit with RF amplifier, squelch, noise limiter, 23-channel crystal controlled tuning with tuning and relative signal strength indicator. Intermediate frequency: 455 kHz. Sensitivity: ½ uv or less for a 10 db signal plus noise ratio. Selectivity: Adjacent channel attenuation is down 30 db. Audio Power output: 3 watts minimum. TRANSMITTER SECTION: Nominal power input to final RF amplifier: 5 watts. Frequency control: 3rd overtone quartz crystal as selected by the 23-position channel selector switch. Frequency control effectiveness: Operating frequency will be within .005% of nominal crystal frequency over an ambient temperature range of -20 to +13 degrees F. Modulation: High level AM limited to less than 100% Output impedance: 50 ohms nominal. Output circuit: Twin "PI" matching network. Power output: 3 watts minimum into 50 ohms load. GENERAL--Controls: Squelch, off/on volume, channel selector. Tuning meter: For receiving. $9 corresponds to approximately 100 uv signal input. For transmitting, the meter indicates the presence of power output and modulation peaks. Power requirements: Positive 12 volt system (13.5 volts), receiver current drain, standby—150 ma; transmitter current drain—750 ma. Dimensions: 2½" H x 7½" X 10½" D.

Complete 23-Channel CB Crystal Pack... Only $79.95!

A regular $135.70 value! Includes transmit and receive crystals for all 23 channels for complete GW-14 operation... a total of 46 crystals. For maximum versatility, this package is your best dollar value.

GW-14-2, 1 lb., no money dn., $8 mo. .......................................................... $79.95

**Crystals Only $1.99 Each With Any Transceiver Order!**

If you need more than 1 channel, order the extra crystals along with the GW-14 or any Heathkit transceiver for only $1.99... a 96¢ savings... regularly $2.95 when ordered separately. Remember you need two crystals for each channel... one each for transmit and receive functions.

---

Save 5% When You Buy 2 Or More 5-Watt Transceivers; Just Deduct 5% From Order Blank.
5-Watt Heathkit® CB Transceivers

Deluxe 5-Channel “Fixed Or Mobile” 5-Watt CB Transceiver

IDEAL FOR BOAT, CAR AND HOME. With its compact size, 3-way power supply (117 v. AC, 6 or 12-v. DC) and gimbal mounting bracket, the MW-34 installs virtually anywhere you wish to set up CB communications. Its rust-resistant black & white aluminum cabinet matches Heathkit marine gear... provides additional boating communications in many areas.

DELUXE OPERATING CONVENIENCE. Superhet receiver with RF stage permits tuning of all 23 channels with lighted dial and accurate vernier tuning. With the front panel crystal socket you can quickly change one transmit channel without removing the cabinet... transmit on any CB channel. Also has adjustable squelch, automatic noise limiter, and built-in speaker.

SIMPLE TO BUILD 2 color, step-by-step instructions speed assembly. Includes PTT microphone, AC and DC power cables, crystals for 1 channel (specify channel no.) and FCC license pack. Use must comply with Part 95 FCC regulations. Order a pair... one for fixed, one for mobile... and save 5%!

Kit MW-34, 18 lbs...no money dn, $9 mo..........................$4.95

MW-34 GENERAL DESCRIPTION: RECEIVER: 5-tube superheterodyne circuit with RF stage, squelch & automatic noise limiter. Variable receiver tuning: Any one of 23 Citizen's Band channels selected by front panel variable tuning dial (frequencies 26.665 to 27.255 MHz). Crystal-controlled receiver tuning: Any five of 23 Citizen's Band channels determined by particular crystals installed in unit. Sensitivity: 1 1/2 kv for 10 db signal-to-noise ratio. Selectivity: 5 kHz @ 6 db down from peak response. Input impedance: 50 to 70 ohms.

TRANSMITTER SECTION: Nominal power input to final RF amplifier: 5 watts. Output impedance: 50 ohms. GENERAL SPECIFICATIONS—Metal chassis, 29 scale indication corresponds to approximately 30 microvolts signal input. Power requirements: 100 watts maximum, 50-60 Hz., AC, 12 v. DC, 4.5 ampere, 6 volts DC, 0.6 ampere. Dimensions: Overall: 4 3/4" H x 8 5/8" W x 11" D.

Heathkit 5-Channel 5-Watt Transceiver... High In Performance, Low In Cost

Compare the variety of operating conveniences. There are 5 crystal-controlled transmit and receive channels... just flip to the desired frequency and you're ready for communications. For increased sensitivity, there's the superfet receiver with RF stage. And with the built-in squelch and noise limiter, you're assured of interference-free communications.

In addition, there are external connectors for adding an extra speaker (one is already built in) if desired, highly efficient push-to-talk circuitry and a rugged two-tone brown metal cabinet. Includes push-to-talk microphone, power cable and crystals for one channel (specify frequency no.). Choose the AC model for "fixed", and DC version for "mobile" operation. Pick a pair and deduct the 5% savings! Use must comply with Part 95 FCC regulations.

Kit GW-22A (117 v. AC), 13 lbs...no money dn, $5 mo. up to $47.95

Kit GW-22D (6 or 12 v. DC), 13 lbs...no money dn, $5 mo. up to $49.95

GENERAL DESCRIPTION—Receiver: 5-tube superheterodyne circuit, controlled, on up to 5 of the 23 channels as determined by the particular crystal(s) installed. Sensitivity: 1 kv microvolt for 10 db signal-to-noise ratio. Transmitter: Power input to final RF amplifier, nominal 5 watts. Nominal power requirements: GW-22A—117 volts, 50/60 Hz AC, 50 watts; GW-22D—6 volts DC, 0.6 amperes; 12 volts DC, 4.5 amperes. Dimensions: 9 1/4" H x 6" W x 3 1/2" D.

VERSATILITY AT AN EASY-ON-THE BUDGET PRICE. Here's a handy Citizen's Band transceiver with features and performance that fill virtually any communication need. Use it anywhere... farm, home, car, business... and enjoy years of dependable, trouble-free performance whenever and wherever you need it. And since you do the quick and easy assembly yourself, you enjoy the additional savings.

Ideal Where Only One Channel Is Desired... Low-Cost 5-Watt CB Transceiver

IDEAL FOR MOBILE FLEETS... truck lines, cabs, delivery services, etc.,... where only one channel is needed. No missed calls or unnecessary usage. And think of the time and effort you can save with a home and car installation... savings that will pay for the GW-12 many times over.

VERSATILE FEATURES Automatic noise limiter and adjustable squelch for crisp, clear communications at all times... built-in AC power supply with plug-in connection for a DC power supply for 6 or 12v. mobile operation... PTT mike... 2-tone brown metal cabinet (specify channel no.). Use must comply with Part 95, FCC regulations. Order two or more and save 5%!

Kit GW-12A (AC only), 10 lbs...no money down, $5 mo. up to $34.95

Kit GW-12D (AC & DC), 13 lbs...no money down, $5 mo. up to $39.95

GW-12 GENERAL DESCRIPTION—Receiver section: 4-tube superheterodyne circuit with built-in squelch and noise limiter function. Sensitivity: 1.5 µv at 6 kHz frequency. Selectivity: 7.5 kHz at 6 db down from peak response. Transmit section: Power input to final RF amplifier, nominal 5 watts. Power requirements: 117 v. AC operation, 50 watts; 6 v. DC, 8 amperes; 12 v. DC, 4 amperes. Dimensions: 5 7/8" H x 8 1/2" W x 5 7/8" D.

GW-12A $34.95

GW-12D $39.95

Heathkit Performance Specifications Are Guaranteed
Keep In Touch With a

Ideal For Boy Scouts, Campers, Etc... 4-Transistor, 100 Milliwatt Walkie-Talkie... No License Required
- Crystal-controlled transmitter--superregenerative receiver - Operates up to 70 hours on built-in battery - No license, forms, tests, or age limit - Small, compact size--fits easily in pocket - Fast, stable circuit board construction - Sturdy steel case

OPERATES 1/4 MILE OR MORE! Ideal for hunters, fishermen, farmers... dozens of time and labor-saving uses. Smaller than a canteen... easy to hold in your hand, fits neatly in a pocket or purse. And it's easy to use... flip it on, push to talk, release to listen. No license, tests, forms or age limit required... anyone from Mom to the Boy Scout in your family can use it. Runs up to 70 hours on a 9-v battery. Assembles in an evening. And its steel cabinet is attractively finished with a 2-tone green and chrome, easy cleaning. Includes crystals (specify channel no.). Less battery. Choose a pair for added savings.

Kit GW-31A, 2 lbs. ........................................ $19.95
Kit GW-31-2 (pair), 4 lbs. ... No money down, $5 mo. ........................................ $35.00
GWA-30, Battery Set (2) ... 1 lb. ........................................ $2.95


Deluxe 9-Transistor, 100 Milliwatt Walkie-Talkie... Hundreds Of Uses In Business, On The Farm, Or For Leisure
- Anyone can use it--no license required - Hundreds of uses in business or leisure - Crystal-controlled transmitter & heterodyne receiver - Built-in squelch & automatic noise limiter - Portable--batteries or AC-powered - 1 to 2 mile range under good radio propagation... greater distances with Class "D" CB units - Rust-resistant aluminum case

FULFILLS A VARIETY OF COMMUNICATION NEEDS! Use for boat to shore communication, in-plant communication between loaders, handles, etc., communication on a small farm, a roving microphone on convention floors, camping expeditions, hunting and fishing trips, construction jobs, surveyors... anywhere portable 2-way communications are needed.

OPERATES UP TO A MILE BETWEEN UNITS... even greater distances with a 5-Watt CB Transceiver or external antenna. Easy to operate... just set volume and squelch controls to desired level, push a button to talk, release to listen.

ANTONE CAN USE IT! No license is required for operation over the 26.97 MHz to 27.27 MHz frequency range when used in the manner prescribed in the FCC regulations, Part 15. However, the GW-21A may be used as a licensed CB unit as described in FCC Part 95. Includes 2-tone rust-proof aluminum case, shoulder strap, crystals (specify channel no.), earphone for private listening. Simple circuit board assembly. Less battery. Choose a pair for extra savings.

Kit GW-21A, 3 lbs. ... No money down, $5 mo. ........................................ $39.95
Kit GW-21-2 (pair), 6 lbs. ... No money down, $8 mo. ........................................ $74.95
GWA-30, Battery Set (2) ... 1 lb. ........................................ $2.95


For Improved CB Performance, Choose From These Special Accessories

CLASS D CITIZENS BAND CHANNELS AND FREQUENCIES

<table>
<thead>
<tr>
<th>No.</th>
<th>Channel</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>26.975 MHz</td>
<td>27.000 MHz</td>
</tr>
<tr>
<td>2</td>
<td>27.200 MHz</td>
<td>27.225 MHz</td>
</tr>
<tr>
<td>3</td>
<td>27.400 MHz</td>
<td>27.425 MHz</td>
</tr>
<tr>
<td>4</td>
<td>27.600 MHz</td>
<td>27.625 MHz</td>
</tr>
<tr>
<td>5</td>
<td>27.800 MHz</td>
<td>27.825 MHz</td>
</tr>
<tr>
<td>6</td>
<td>28.000 MHz</td>
<td>28.025 MHz</td>
</tr>
<tr>
<td>7</td>
<td>28.200 MHz</td>
<td>28.225 MHz</td>
</tr>
<tr>
<td>8</td>
<td>28.400 MHz</td>
<td>28.425 MHz</td>
</tr>
<tr>
<td>9</td>
<td>28.600 MHz</td>
<td>28.625 MHz</td>
</tr>
</tbody>
</table>

CLASS D CITIZENS BAND CHANNELS AND FREQUENCIES

Coax Cables: Ideal for use with any Citizen's Band or Amateur radio communications systems. Also ideal for GPD-265, GPD-306, and GPD-273 CB Base Station Accessory Kit. Each kit contains 2 coax plugs & 1 phone plus instructions. RGBV type.

Kit GD-275, 50 ft, 2 lbs. ........................................ $3.75
Kit GD-305, 100 ft, 4 lbs. ........................................ $5.50

Hy-Gain Beef Top Mobile CB Antenna, The Famous "Rooftopper," Overall height 21", Coax 16, 1/4 wave length effective radiated power from a 5-watt rig with this roof-top vertical-element antenna!

Hy-Gain AM/AM Mobile CB Antenna, Telescoping "Duo-Topper," 28" min--50" extended, Includes coax, coax connector, rf coupler, & AM radio plug... all assembled!

Hy-Gain Trunk Mount Mobile CB Antenna, "Hijiffy-Topper," Overall height 22"!

Hy-Gain Dual Beam CB Base Antenna, Duo-Beam 4 model 114DB, 42 watts effective radiated power from a 5-watt rig with this roof-top vertical-element antenna!

Colinear CB Base Antenna, Ground plane type antenna, Overall height of radiator 19"0"--length of radiials 9", Provides the most efficient omni-directional base station antenna.

GPD-275, 51/2 lbs, $5.95

GPD-285, 5 lbs, $29.95

GPD-285, 8 lbs, no money down, $5.95

Hy-Gain 12-Microphone, 2 lbs, $6.95

Model GD-12 Microphone, 2 lbs

Transmit & Receive crystals, Only $1.99 each with any Heathkit transceiver order; otherwise, $2.95 each. Specify base/mobile or handheld transceiver, 1 lb.

Special 23-Channel CB Package

Transmit & Receive crystals for all CB channels... 11 channels... all for a regular $12.95 value!

GWA-14-2, 1 lb, $8.00

New Antenna Specialists Model M-14 Co-Ax Omni Base Station Antenna, Visual RF output, Built-in lightning protector, $5.95

Model M-14, 7 lbs, REA or motor fn., no money down, $8.00

GW-31A, 2 lbs, $29.95

Save Up To 50% With Heath Do-It-Yourself Electronic Kits
Heathkit® Walkie-Talkie!

New! Heath 2-Watt Walkie-Talkie ... Completely Assembled, Ready To Use ... Up To 6 Mile Range ... Even Works In Steel Buildings!

- 9 silicon transistor, 2 diode circuit for dependable operation over a wide temperature range. Includes $20 rechargeable battery. Crystal-controlled transmit and receive. Superhet receiver with RF stage. Adjustable squelch and automatic noise limiter.
- DOT approved. Rustproof heavy-gauge aluminum case styled in handsome 2-tone green. Ideal for construction crews, factory & office, personal communications, and wide range of sports such as hunting, fishing, boating. Assembled & factory tested.

COMPARE THESE FEATURES AGAINST OTHER, MORE COSTLY MODELS! Features like the all silicon transistors for cool, instant performance over a wide temperature range ... tested operating at -30° F and +130° F. 2 watts of power for up to 6 mile inter-unit range ... up to 10 miles when used with a 5-watt CB base station; a $20 rechargeable battery for 8-hour use per charge ... total life up to 5000 hours; adjustable squelch and automatic noise limiter to eliminate atmospheric noise, or ignition and electrical interference; a 36" telescopic whip antenna, plus external antenna connectors; and superhet receiver with RF stage to pull in weak stations with ease.

COMPACT, EASY-TO-HANDLE! Its slim, trim size and light 2½ lb. weight make for easy handling ... includes leather shoulder strap, elastic hand strap, and rust-proof metal cabinet. Optional 117 v. AC battery charger and car cigarette lighter charger cord for recharging while you operate from car's 12 v. battery system are also available. Requires two crystals ... only $1.99 each when ordered with your GRS-65A (specify channel no.). Completely assembled, not a kit. Use must comply with Part 95 FCC Regulations.

Assembled GRS-65A, less crystals and battery charger, 3 lbs ... No money down, $10 mo. Expected Shipping Oct. 7 ... $99.95
GSA-65-2, 117 v. AC battery charger plus cigarette lighter charging cord, 2 lbs. Expected Shipping Oct. 7 ... $9.95

GRS-65A SPECIFICATIONS—Receiver: single channel crystal controlled superheterodyne. Sensitivity: 1 mw for 1 db signal-to-noise ratio. Selectivity: 5 kHz at 6 db. Audio power output: 400 uv. Input to final stage: 2 watts. Transmitter frequency: crystal controlled. Battery: 2200 mah rechargeable nickel cadmium. 8 hours use per charge. Battery life: 5000 hours normal use, 1500 minimum. Standby receiver drain: Dimensions: 8" x 3¼" x 1½".

Rugged Lifetime Cabinet ... Simple To Build! Fast circuit board construction speeds assembly. Includes attractive 2-tone green rustproof metal case, 35" telescopic whip antenna, shoulder and elastic hand straps, power cords, earphone, FCC license pack and crystals (specify channel no.). Use must comply with Part 95 FCC regulations. Order a pair for extra savings.

Kit G-52-2A, 4 lbs ... No money down, $7 mo. ... $69.95
Kit G-52-2B, 8 lbs ... No money down, $12 mo. ... $129.95


Save 5% When You Buy 2 On More 5-Watt Transceivers; Just Deduct 5% From Order Blank. New Lower Prices On All Units!
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### ORDERING & SHIPPING INSTRUCTIONS

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### The Story Of Heath

When Edward Bayard Heath founded the Heath Aeroplane Company during the early 1900's, little did he realize what would eventually evolve from his small "airplane trading post" as it was commonly called. Before he died, Mr. Heath was able to see the fruition of his early dreams. In 1926, he produced an airplane in kit form—the famous Heath "Parasol." For years this light aircraft was a favorite in the flying fraternity. Mr. Heath was killed during a test flight in 1931, marking a tragic end to a brilliant career. From that point through World War II, the Heath Company remained in the aircraft and replacement part busines.

But it wasn’t until shortly after World War II that the character of the Heath Company changed. It was then that an ambitious engineer named Howard Anthony, who had purchased the Heath Company in 1935, took a calculated gamble. The ingenious Mr. Anthony bought a large stock of surplus wartime electronic parts, designed and "mail order marketed" an oscilloscope for $39.50.

Mr. Anthony based the success of his idea on the premise that anyone, regardless of technical knowledge or skills could assemble a kit himself, and save up to 50% over comparable factory-built models. All that would be required were a few simple hand tools and some spare time.

Orders poured in for the oscilloscope kit, and the foundation for the Heath Company as it exists today was established. Mr. Anthony expanded his test instrument line and soon added amateur radio and hi-fi component kits.

The key to the kit-builder’s, and consequently Mr. Anthony’s, success was the instruction manual. Its contents still guide the Heath Company today. It contains simple, non-technical instructions and large “exploded” diagrams that take the builder through each and every step... show him exactly what to do and how to do it. Proof that every Heathkit is designed to be “beginner-built” can be found in the cards and letters Heath receives daily from people of all ages and from all walks of life expressing their delight and satisfaction.

Tragedy struck again in 1954 when Howard Anthony was also killed in an airplane crash. Daystrom, Inc. then acquired the Heath Company. In 1962 Daystrom, Inc. was purchased by Schlumberger Limited, a leader in the development of electronic techniques for oil exploration. Since 1954, more kit products have been added until at present Heath boasts 11 different product lines, consisting of over 250 kits... the world’s largest selection. Whatever your interest, you’ll find a kit to match it in this 108 pg. catalog... color TV sets; all-transistor electronic organs; AM, FM, and shortwave portable and table model radios; home & office intercoms; automatic garage door openers; educational home study kits covering basic electronics; amateur radio gear; stereo/hifi components; citizen’s band units; marine and automotive accessories; test and lab instruments. In addition, Heath has recently entered the educational and research/development fields with a line of factory assembled instruments.

In order to produce the vast array of Heathkit equipment, a modern 205,000 sq. ft. plant (shown above) was constructed in 1958 on the shores of Lake Michigan in St. Joseph, Mich. If you are planning a visit to Michigan, we invite you to stop in and pay us a visit. We’re located on Hilltop Rd. just off Business route I-94, south of St. Joseph.
Famous Heathkit® Firsts

★ First Electronic Guitar Kits
★ First to offer kits with all required parts included.
★ First Citizen's Band Transceiver Kit
★ First High Performance, Self-Aligning Amateur Radio Receiver Kit
★ First Marine Depth Sounder Kit
★ First All-Transistor Shortwave Receiver Kit
★ First All-Transistor AM/FM/FM Stereo Receiver Kit
★ First Linear Tuning, 1 kc Calibration Line of Amateur Radio Gear Kits (Deluxe SB Series)
★ First Successful Color TV Kit
★ First Ignition Analyzer Kit
★ First Tunnel Diode Kit for Amateur Radio Gear
★ First Crystal Filter Kit for Amateur Radio Gear
★ First And Only HV Regulated and Solid-State Regulated LV Power Supply Kits
★ First And Only Impedance Bridge and Q-Meter Test Instrument Kits
★ First Analog Computer Kit
★ First Vacuum Tube Voltmeter, Oscilloscope, & Lab Instrument Kits
★ First Automatically Sequenced Fog Horn Kit
★ First Color Bar & Dot Generator Kit
★ First Transistor Portable Radio Kit
★ First Williamson Hi-Fi Amplifier Kit
★ First Transistor Stereo Amplifier and Tuner Kits
★ First Alignment Generator with Electronic Sweep Circuit
★ First Photographic Aid Kits (PM-14 & PT-15 Photo-Timer)
★ First Tape Recorder Kit
★ First manufacturer in the high fidelity industry with Amplifier Rating Standards.
★ First to extensively use circuit boards in amateur radio kits.
★ First to produce electronic kits overseas.

★ First Electronic Kit Manufacturer to build a pre-tuned FCC type accepted Radiophone for outboard installation.
★ First Electronic Kit Manufacturer to furnish a complete marine communications system...radiophone, antenna & ground system.
★ First Electronic Kit Manufacturer to utilize voltage sensing for fuel vapor detectors.
★ First Electronic Kit Manufacturer to use “Check-By-Step” instructions in assembly manual.
★ First Electronic Kit Manufacturer to provide calibration and adjustment procedures.
★ First Electronic Kit Manufacturer to develop highly specialized products for college educational programs.
★ First Electronic Kit Manufacturer to use fold-out pictorials in assembly manuals.
★ First Electronic Kit Manufacturer to incorporate soldering instructions that use the “(S-1)” double-check system in assembly manual.
★ First Electronic Kit Manufacturer to provide single adjustment of a multi-band signal generator.
★ First Electronic Kit Manufacturer to screen values and part locations on kit circuit boards.
★ First Electronic Kit Manufacturer to include adequate calibration in voltmeters.
★ First Electronic Kit Manufacturer to provide oscilloscope input attenuator adjustment capability without need of extra equipment.
★ First Electronic Kit Manufacturer to supply precision components where useful.
★ First Electronic Kit Manufacturer to offer a tube checker that provides constant current power supply for tube filaments.
★ First Electronic Kit Manufacturer to offer a graduate level electronic teaching system (EU-100A) for chemists, M.D.'s, etc.
★ First Electronic Kit Manufacturer to own patents on new circuits (e.g., scope sweep circuit).

A KIT FOR EVERY INTEREST!

STEREO / HI-FI

GARRARD STEREO CHANGERS

AMATEUR RADIO

MARINE ELECTRONICS

EDUCATIONAL

LAB & TEST INSTRUMENTS

HOME & HOBBY ITEMS

CITIZEN'S BAND RADIO

107
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Wherever You Are In The Free World, Heathkit Equipment Is Available Nearby:

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Cooksville, Ontario, Canada
Schlumberger Svenska A.B.
Vesslevagen 2-4
Lidingo 1 Sweden.

Daystrom Ltd.
Bristol Road
Gloucester, England
Schlumberger Overseas G.m.b.H.
Tivoligasse 74
Vienna, Austria
Schlumberger Instrumentation S.A.
8 Avenue de Frontenex
Geneva, Switzerland
Schlumberger Instrumentation A.G.
Badenerstrasse 333
Zurich, Switzerland
Heathkit-Geräte G.m.b.H.
P.O. Box 220
6079 Spendenlingen,
West Germany

For the names of authorized distributors elsewhere, contact:
Heath Company International Division
Benton Harbor, Michigan

All prices quoted are Net F.O.B. Benton Harbor, Michigan and apply to United States and Possessions only.
Prices and Special Offers herein effective August 15, 1966. All prices and specifications subject to change without notice. Dealers and export prices slightly higher.

HEATH COMPANY
Benton Harbor, Michigan 49022 / Plant Location: St. Joseph, Michigan