HEATHKIT® 1966

CATALOG-810/60A

STEREO / HI-FI

COLOR TELEVISION

SHORT HAVING RADIO

CITIZEN'S BAND

TEST EQUIPMENT

ARFATURE RADIO

MARINE ELECTRONICS

over

250

electronic kits—

world’s largest selection

COPYRIGHT 1965, HEATH COMPANY
Dear Friends:

It is a pleasure to send you this copy of the new 1966 Heathkit catalog. It contains a full selection of kits for stereo/hi-fi, marine, amateur radio and test equipment, and those of general interest such as portable radios, color television sets and electronic organs...all designed to be built at home, with a minimum of effort and a maximum of savings and enjoyment. Included also are many factory assembled units such as the new polarography module for chemists.

Every page of the Heathkit catalog reflects the high standards set by Heath...first in the industry for all types of electronic equipment in easy-to-build kit form. I'm sure you will find several items you want. For example, there is the new Heathkit 25" Color TV on pages 14 and 15, a kit the entire family will enjoy. For the CB enthusiasts there is the new Heathkit 23-channel all-transistor transceiver on page 101, a new high in CB performance.

A break-through in the price barrier of transistor stereo components has been achieved by our engineers—concrete evidence of this is the new low-cost FM Stereo Tuner shown on page 26. You stereo/hi-fi fans will note that our deluxe transistor components are now available less cabinets to facilitate custom installation. We've tried to include something for everyone in the new product presentation—for busy engineers, technician and radio-TV servicemen we now offer many of our test instruments factory assembled.

As always, we are interested in your comments and suggestions on any aspect of our products and service. Just write or phone our Correspondence Department or, if you prefer, write directly to me.

Sincerely,

Charles M. Kirkland
President

P.S. We would be happy to send your friends copies of the new Heathkit catalog — just jot their names and addresses on the back of the order envelope.
Why Do Millions Build Heathkit® Electronics?

**An Exciting, Rewarding Hobby!**
Building your own Heathkit provides that rare sense of self-satisfaction and accomplishment that comes from watching your own creation take shape. Makes those spare-time hours more fun and worthwhile. Helps you to unwind, relax . . . ease daily tensions. Give it a try—you'll discover why millions of people, from all walks of life, enjoy this space-age hobby.

**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 All-Transistor Organ, pg. 10, you can "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.

**Advanced Engineering, Finest Quality!**
Over 300 years of accumulated kit engineering experience are brought to bear on kit design problems in all Heathkit product areas. Each product group has its own staff of specially-trained engineers and technicians 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."
As an extra measure to insure your kit-building success, each new kit is proof-built by persons who've had nominal surcharge for freight and handling) from Heathkit Gerate GmbH, 6079 Sprendlingen bei, Frankfurt/Main, Germany.

**Safe, Economical Packaging!**
All Heathkit parts come to you in simple paper bags and cartons surrounded by sturdy protective containers. No elaborate, expensive packaging to add to the cost. Yet, when you receive your kit, it's as safe and sound as when it left the factory. To you this represents another saving, since the difference in cost is passed on to you in lower prices.

**New Liberal Credit Terms!**
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 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.

**Heathkit Electronic Centers**
Now open to serve you with a complete local stock of Heathkit electronics, comprehensive service and parts facilities, and famous-name accessories. Prices are slightly higher at stores to cover shipping charges and cost of local facilities.

**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. We suggest you use their fast, factory-quality facilities.
Here's 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 Heathkit 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. FARMEN, 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. MANCINELLI, 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. DAVID CANNON, WACO, TEXAS: “From a financial standpoint I can’t think of a better investment for my money. The construction of the unit (Heathkit AA-100 Amplifier) was greatly facilitated by easy-to-understand, step-by-step instructions and descriptive diagrams. But the thing that really sold me on Heathkits is performance. It is really excellent.”

MR. BILL PINKENSON, K3WPH, PHILA., PENNA.: “For the first time 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, WASEGG, 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.”

POPULAR ELECTRONICS MAGAZINE: “The GR-53A is not a skimping receiver in which corners have been cut to keep costs down and still provide color TV. Instead, the GR-53A (on a comparison shopping basis) has the same color and sound fidelity, flexibility and ease of handling as those manufactured sets which sell for over $600.”

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 JULIAN 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-134 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. DAVID MESSNER, NEW CASTLE, PA.: “Just a note to express my thanks for the terrific and thorough service that I recently received on my walkie-talkies. I have tried them over a fairly long range and they perform very well. It is good to know that a company can stand behind their equipment the way you do.”

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. LENDENBER, 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. RICHARD A. CRAWFORD, LA HABRA, CALIF.: “It has been a pleasure to have had the opportunity to find out first-hand just how nice people like yourselves can be, when a person comes to them with a complaint. Your kindness, consideration, and patience with me was certainly proof to me that the Heath Company and its employees will do everything within reason to try to satisfy a customer.”

MR. T. H. MACKIEGAN, 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. JOSPEH GESSWEIN, 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. 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!”

MR. EDWARD PAPCZYNSKI, SOUTH BEND, IND.: “I received my kit (GR-151 AM Portable) yesterday and eagerly began to read your very thorough instructions. The kit went together very easily and having never done this before, was very amazed at the ease of construction. I finished the kit and per instructions, tuned it, and to and behold it worked perfectly.”

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.”

MR. DR. W. COPELAND, WAYNESBORO, VA.: “This was my first experience in kit building and the ease with which this kit (GC-1A 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, PHILADELPHIA, PENNA.: “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®

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!”

MR. EDWARD PAPCZYNSKI, SOUTH BEND, IND.: “I received my kit (GR-151 AM Portable) yesterday and eagerly began to read your very thorough instructions. The kit went together very easily and having never done this before, was very amazed at the ease of construction. I finished the kit and per instructions, tuned it, and lo and behold it worked perfectly.”

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.”

READ WHY YOU CAN BUILD ANY HEATHKIT!
The Key To Your Success ... Famous

The World-Renowned Heathkit Construction Manuals Contain The Following Special Features To Help You Build Your Heathkit®

1. "Tips" On Kit-Building
   Detailed descriptions and illustrations show you how to solder properly—it's easy for anyone to do after just a few minutes of practice.

2. Detailed Parts List
   Describes and illustrates each and every part for ready identification once you start building your kit.

3. Simple Step-By-Step Procedure
   Takes you through each and every assembly step. Tells you exactly what to do, what part to use, and how to do it. Covers kit assembly, alignment, & installation...nothing is left to chance! Written in non-technical, everyday language...so simple a child can understand!

4. Large "Exploded" Diagrams
   "King-size" illustrations and fold-outs show precisely where each component goes. In addition many detailed diagrams are sprinkled among the instructions to illustrate how various assemblies go together...greatly reduces the chance for errors!
Order A Manual and Convince Yourself!

Most manuals cost just 50c ppd. Because of their large size, manuals for the Heathkit GR-25, GD-232B, GD-983, GR-53A, & “Ham” SB series cost $2 ppd. Manuals for EK educational and EF applications series $5.00 ppd. each. Simply list the model no., and state “Manual only” on the catalog order blank.
Recommended Beginner Kits!

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 Pg. 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. 94) 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!

---

Shortwave Listener's Radio

- Covers 550 kc to 30 mc—includes broadcast & 3 shortwave bands
- 5" round PM speaker
- 4-tube superhet circuit plus two rectifiers
- Easy-to-read & lighted bandspread tuning dial, & relative signal strength indicator
- 7" slide-rule dial
- "Low-boy" cabinet styling

This versatile receiver takes only around 8 to 10 hours to build with its fast circuit board assembly, clean open chassis layout, and pre-built "front-end". If you've never heard Short Wave Broadcasts, you have a treat in store for you. Check pg. 91 for details.

NEW! 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 one simple-to-wire circuit board. Leaves only a minimum of easy point-to-point wiring! If you already have a stereo amplifier, this is a good point to begin your kit-building career. See pg. 26 for full details.

4-Transistor Walkie-Talkie!

- Operates ¼ mile or more between similar units
- Built-in battery power
- No license, forms, tests or age limit
- Crystal-controlled transmitter—superradiative receiver
- Compact ... fits easily in pocket, purse
- Sturdy steel case

You'll be finished with this compact, 2-way transceiver in one evening! Only one simple circuit board to wire before installing in case. Includes crystals (specify channel no.) and alignment tool for quick, simple peaking of receiver. These are fun at any outing, but useful in dozens of practical ways too. Check pg. 104 for details.

---

Heathkit Step-By-Step Instructions And Big Fold-Out Pictorials Are Famous For Clarity And Simplicity
"Beginners" All-Transistor AM Portable!

Curious About Kit Building?
Here's A Low Cost Way To Prove To Yourself How Easy It Is! This Handsome "Go-Anywhere" Portable Includes A FREE Tool Kit & Battery... Everything You Need To Build & Play It!

Why Do Thousands Build Heathkit Electronics?
A desire for better quality. And pride! Not just the pride of owning something new, but a special kind that comes from building it yourself. From watching it grow and take shape. From creating a sophisticated piece of electronics equipment with your own hands.

True, it takes a little time and effort. Anything worthwhile usually does. But it's a labor of love. The large "exploded" diagrams and simple, step-by-step instructions make it easy—and a lot of fun. No special skills or knowledge are needed!

And when you finish and turn it on, you'll glow with pride and self-satisfaction. You will have joined the millions of people, from 79-year old grandfathers to 11 year old children, who build Heathkits. People like you!

Why not give it a try? Start with this attractive all-transistor AM Portable. It has everything you need to build it and provides you with countless hours of good listening.

Takes No Special Skills Or Knowledge To Build... Goes Together In Just 4 To 6 Hours With Simple Circuit Board Assembly!

- 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 & 9 V. battery

HERE'S AN IDEAL WAY TO DISCOVER THE FUN & EASE OF KIT-BUILDING! If you've never tried your hand at building a kit, then here's the perfect kit for you. Once you start, you'll soon 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 AM portable that you can take to the beach, ballpark, on picnics... anywhere! Provides countless hours of good listening, and long reliable service.

Everything is provided to make it as easy & fun to build as it is to use. All parts mount on a clearly marked circuit board. Makes wiring fast and simple. And assures high circuit stability. The non-technical step-by-step instructions assure you success. Even adds to your understanding of how a radio works.

COMPARE IT TO PORTABLES COSTING MUCH MORE! Features a 4" x 6" permanent magnet speaker for a crisp, clear sound. The kind you can't get from miniatures. A 6 transistor, 3 diode circuit provides extra power & range... a built-in ferrite rod antenna insures distant station pickup... and a smart, simulated tan leather case that will withstand rugged wear. Also makes an ideal gift for any occasion... if you can bear to part with it.

Kit GR-151A,radio, tool kit & battery...
5 lbs. ........................................ $20.65

Shop The Easy Heathkit Way—Select Your Kits In The Comfort Of Your Home. Mail Your Order. & Get Direct-To-Your-Door Delivery.
World's Best Buy In Music…
Heathkit®/Thomas BL-3 “Coronado”
Deluxe All-Transistor Organ!

$799.00
(Including bench)
Only $125 down, as low as $27 mo.

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. Replace-
ment upon prepaid return of un-
damaged board to the Heath
Company.
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 ones. The assembly was a delight—I was almost swayed 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 me to have a dream of lifetime to come true—all 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 wonderful instrument I have ever owned 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 keyboard and other controls—gentle, yet positive—suggests, as one player put it, 'the fine breeding of this instrument.' As to its sound, 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-featured, deep-throated, authentic-sounding organ that should interest the musician as well as the hobbyist and amateur. Experienced kit-builders who have worked at this project are 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 kit."
World's Lowest-Cost 2-Keyboard Transistor Organ...The Heathkit/Thomas "Artiste" ART-1...Priced To Save You Up To 30%

Acclaimed By Thousands For Its Professional Features And Ease Of Assembly!
- All genuine Thomas factory-fabricated components
- 10 true organ voices
- Variable repeat percussion...produces banjo, mandolin, balalaika effects
- 2 overhanging 37-note keyboards, range C thru C
- 50 watt EIA peak music power amplifier
- 12" speaker
- Transistorized plug-in tone generators
- builders version 5 YEAR WARRANTY ON TRANSISTORIZED, PLUG-IN TONE GENERATORS! The heart of the organ! Assure clear, undistorted tone, long life, and virtually eliminate service and tuning problems. Heathkit organ owner George J. Agamemnon, Burlington, N.C. summed up the GD-232B's performance when he wrote: "I am most pleased with the final product. It plays beautifully and my family is enjoying it immeasurably. It is a credit to your engineering staff. In addition, the assembly instructions are very clear and easy to follow, which makes the assembly task enjoyable and simple."

Assuredly an ideal organ for...Your complete guide to musical knowledge. "Musical" is not the only word that describes this organ. It's also beautiful, livening, relaxing. Helps you relax after a hard day. And teens will love the rhythm and bounce of its many musical effects. Ten true organ voices in all. Trombone,reed, flute, oboe, coronet, violin, saxophone, horn, viola, and diapason. All at the simple touch of a tab. Features include repeat percussion to create additional banjo and mandolin effects; 13-note heel and toe bass pedals; variable expression pedal to change the volume; two levels of vibrato intensity; variable bass pedal volume; plus many more professional features as outlined in the diagram at right.

Acclaimed By Thousands For Its Professional Features And Ease Of Assembly!
- All genuine Thomas factory-fabricated components
- 10 true organ voices
- Variable repeat percussion...produces banjo, mandolin, balalaika effects
- 2 overhanging 37-note keyboards, range C thru C
- 50 watt EIA peak music power amplifier
- 12" speaker
- Transistorized plug-in tone generators
- builders version 5 YEAR WARRANTY ON TRANSISTORIZED, PLUG-IN TONE GENERATORS! The heart of the organ! Assure clear, undistorted tone, long life, and virtually eliminate service and tuning problems. Heathkit organ owner George J. Agamemnon, Burlington, N.C. summed up the GD-232B's performance when he wrote: "I am most pleased with the final product. It plays beautifully and my family is enjoying it immeasurably. It is a credit to your engineering staff. In addition, the assembly instructions are very clear and easy to follow, which makes the assembly task enjoyable and simple."

It's easy. With the Heathkit GD-232B. Easy to build...easy to play. It's like getting two hobbies for the price of one. And think of the fun of playing this beautiful instrument in your home! Great for livening up parties...song fests...background music...dancing. Helps you relax after a hard day. And teens will love the rhythm and bounce of its many musical effects. Ten true organ voices in all. Trombone,reed, flute, oboe, coronet, violin, saxophone, horn, viola, and diapason. All at the simple touch of a tab. Features include repeat percussion to create additional banjo and mandolin effects; 13-note heel and toe bass pedals; variable expression pedal to change the volume; two levels of vibrato intensity; variable bass pedal volume; plus many more professional features as outlined in the diagram at right.

Acclaimed By Thousands For Its Professional Features And Ease Of Assembly!
- All genuine Thomas factory-fabricated components
- 10 true organ voices
- Variable repeat percussion...produces banjo, mandolin, balalaika effects
- 2 overhanging 37-note keyboards, range C thru C
- 50 watt EIA peak music power amplifier
- 12" speaker
- Transistorized plug-in tone generators
- builders version 5 YEAR WARRANTY ON TRANSISTORIZED, PLUG-IN TONE GENERATORS! The heart of the organ! Assure clear, undistorted tone, long life, and virtually eliminate service and tuning problems. Heathkit organ owner George J. Agamemnon, Burlington, N.C. summed up the GD-232B's performance when he wrote: "I am most pleased with the final product. It plays beautifully and my family is enjoying it immeasurably. It is a credit to your engineering staff. In addition, the assembly instructions are very clear and easy to follow, which makes the assembly task enjoyable and simple."

IT'S EASY TO LEARN HOW TO PLAY, TOO! In fact, the organ is one of the easiest instruments to play. Excellent for giving both youngsters and grownups a knowledge and appreciation of music. A complete set of self-teacher records is available at a $30 savings.

NO SPECIAL SKILLS OR KNOWLEDGE ARE NEEDED TO BUILD IT! Probably more inexperienced kit builders have assembled this low cost Heathkit/Thomas organ than any other kit we produce. Includes simple, step-by-step instructions...genuine Thomas factory-fabricated components...factory assembled, hand-rubbed walnut cabinet that's ready for the sub-assemblies as you complete them (measures a compact 41¾" H x 39¾" W x 21½" D)...diagrammed, easy-to-wire circuit boards. You even tune the organ with the pre-tuned tone generators...no "musical" ear needed. About 50 hours are required to assemble the entire organ...makes an ideal family project.

Selection Of Thomas Organ Music Books—See pg. 11

Compare These Professional Features!
1. 10 true organ voices, trombone,reed, flute, oboe, cornet, violin, saxophone, horn, viola, diapason
2. Variable Repeat Percussion...produces banjo, marimba, mandolin, and balalaika effects
3. Variable Bass Pedal Volume Control
4. Manual Balance Control
THINKING ABOUT REPLACING THAT OLD TV SET? Then consider the GR-22A Heathkit All-Channel 23" 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 among dealers only to find that the GR-22A far surpasses all commercial TV's, even the well-known name brands on the market." And now you can enjoy this same praise-winning set at a new low price... only $169.00!

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 & controls, wire a non-critical circuit board, connect 2 pre-cut, cabled 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 & tubes and the handsome custom wall mask (GRA-22-5 opposite) for installation in either a custom cabinet or wall unit. Required mounting dimensions: 19 1/4" x 29 1/4" W x 17 1/2" 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 diagrams and a "Servicing Hints" section. Add to this the familiarity you gain while building this set, and you're able to make repairs or adjustments yourself should it ever become necessary. No more costly TV service repair bills!

ENJOY HIGH FIDELITY TV . . . CHOOSE THE GR-22A! Top quality, heavy-duty parts; advanced circuitry; and famous "Heath-Engineering" have made this superb performance possible. Again quoting High Fidelity magazine: "In view of its performance, ease of construction, adaptability for installation, and cost, we regard the GR-22 as a significant development in electronic kits, one of which Heath may well be proud." Kit GR-22A, chassis & tubes, 77 lbs... no money down, 16 mo. $169.00

Covers All Channels To Provide Needle-Sharp High Fidelity Picture & Sound

...Ideal For Custom Or Cabinet Installation!

GR-22A SPECIFICATIONS—Picture size: 23" overall diagonal, approximately 282 sq. in. Deflection: Magnetics, 90°. Focus: Electrostatic. Antenna Input Impedance: 300 ohm balanced. Tuning ranges: VHF TV Channels 2-13 & UHF Channels 14-83. Picture IF carrier frequency 45.75 mc. Sound IF carrier frequency 41.25 mc. Sound IF: 4.5 mc. Video response to 3.2 mc. Tube complement: 6DB4 Nuvisor IF Amp; 6CG8A Osc. & converter, transistor UHF tuner; 6826 1st IF; 6686 2rd IF; 6686 3rd IF; 6N5 Video amp & sound IF; 6CQ5 Sound detector & 1st audio; 6BQ5B sound output & cathode follower; 6MS7 sync & AGC, 6F57 vertical osc. & output; 6F27 horizontal osc.; 6C66 horizontal output; 6C64 demodulator; 183/103 high volt. rect.; 5U4GB low volt. rect.; 5U4GB low volt. rect.; 283WP4 picture tube. Diodes: (2) IN205 video detector & DC restorer; Dual selenium horizontal AFC; IN82A-UHF Mixer. Sound cathode follower: Output impedance, 2 k ohm. Frequency response, ±2 db 50-15,000 cps. Harmonic distortion, less than 1%. Power requirements: 110 V for 120 V, 60 cycles AC. 210 watts. Size required for mounting: 19" H x 29 1/4" W x 17 1/2" D.

Deluxe TV Cabinet!

Completely assembled and handsomely styled in rich modern walnut to match Heathkit Hi-Fi cabinets, pg. 42. Includes mask, chassis mounting board, and 6" x 9" hi-fi speaker... ready for chassis installation. Measures 36" W x 32 1/2" H x 20 1/2" D.

GR-22-A, Walnut TV cabinet, 65 lbs... no money down, $9 mo... $84.95

GR-52-A, TV set & walnut cabinet, 142 lbs... Save $8.95, no money down, $23 mo... $245.00

Custom TV Wall Mount Mask!

Unfinished, ready for the finish of your choice. Includes 3/4" chassis mounting board. Cut & drilled to accept GR-22A chassis & tube. Size: 20 1/4" H x 30 1/4" W x 11 1/4" D. Required mounting space dimensions: 19" H x 17 1/4" W x 28 1/4" W.

GR-22-5, TV wall mount, 13 lbs... no money down, $23.50

GR-62B, TV set with wall mount, 90 lbs... Save $7.50, no money down, $18 mo... $185.00

Use "No Money Down" Heath Time Pay—See Order Blank For Details
NEW! Deluxe Heathkit® 25" Color TV...$469.95!

The Only 25" Color TV You Can Install Any One Of 3 Ways!

1. In A Wall
2. In Your Own Custom Cabinet
3. In Heath Factory-Built Cabinet

Economy Cabinet... $59.95
Low in price, high in quality! Constructed of fine walnut veneers & solids with an oil-rubbed walnut finish. GR-25 speaker & convergence panel mounts behind tilt-out grille cloth on right side of cabinet front. Measures a slim 19” D x 31” H x 32” W. A terrific buy at its low $59.95 price!

Assembled GRA-25... 35 lbs...
no money down, $6 mo... $59.95

Heathkit Stan. Re-Stan Instructions And Bin Fold-Out Pictorials Are Famous For Clarity And Simplicity
Here's The 25" Color TV You Asked For! Has All The Features Of Famous Heathkit® 21" Color Set, Plus New 25" Rectangular Tube And Many Innovations To Provide The Finest Color TV At Any Price! Compare... Price—Features—Performance—Quality!

- Hi-fi 90° rectangular 25" color tube with anti-glare safety glass and "rare earth" phosphor for better "reds", brighter pictures.
- 27-tube, 10-diode circuit; 25,000 volt regulated picture power.
- Automatic degaussing & mobile degaussing coils.
- Exclusive Heath "Magnag-shield" covers entire tube for improved color purity.
- Built-in servicing facilities to adjust & maintain set.
- Extra B-4 boost for improved picture definition.
- Dynamic pincushioning correction circuit eliminates picture edge distortion.
- Deluxe VHF turret tuner with "memory fine tuning" and 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 chassis for easier servicing & installation.
- 3-way installation! 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.

New Rectangular 25" Color TV Takes Up Less Space, Yet Provides More Picture!
Here it is... in answer to your many letters... the new Heathkit 25" Color TV with a full 295 square inches of viewing area. And yet it requires less space for wall or cabinet installation, thanks to its rectangular tube design & 90° deflection.

Many New High Performance Features!
You'll find many innovations in this new set, as well as all the self-maintenance convenience features of the Heathkit GR-53A. Compare it with any other commercial set on the market. It's your best color TV buy—bar none!

HI-FI 90° RECTANGULAR 25" COLOR管!
In addition to its larger viewing area and smaller space needs, it has a "rare earth" phosphor for more realistic red tones and brighter pictures. Plus anti-glare safety glass to protect its face.

AUTOMATIC DEGAUSSING CIRCUIT!
Demanetizes and "clears" the picture everytime you turn the set on from a "cold" start. Also eliminates any manual degaussing when you move the set. A "mobile degaussing coil" is included for initial set-up and adjustments.

EXCLUSIVE HEATH MAGNA-SHIELD!
Shields the entire tube from external magnetic fields, thus improving color purity.

EXTRA B-4 BOOST!
Accelerates the electronic beams for a smaller spot size. Result? Higher resolution, improved definition and brighter pictures.

DYNAMIC PINCUSHIONING CORRECTION CIRCUIT!
Keeps the edges straight for a full picture with no distortion.

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

DELUXE VHF TURRET TUNER!
With "memory" fine tuning that remembers so you don't have to readjust when returning to a channel. Also features long-life nickel silver contacts for positive switch action.

NEW 3-STAGE IF STRIP!
Reduces interference and improves reception.

NEW VERTICAL SWING-OUT CHASSIS!
Hinged to make it more accessible for easier construction, care and installation. (See illusr. right.)

TWO VHF ANTENNA INPUTS!
Choice of either a 300 ohm balanced, or a 75 ohm coax input to reduce color interference in metropolitan and CATV areas.

FRONT-PANEL TILT-OUT CONVERSION CONTROLS!
Lower right speaker grille in cabinet tilts out to make dynamic convergence easier. No more reaching around the set or mirrors to set up.

MAIN CONTROL PANEL!
All tuning controls mount on universal panel for truly versatile custom installation... mounts above, below or to the right of the picture tube... wherever you prefer.

HI-FI SOUND OUTPUTS!
Accommodates the standard limited-field 6" x 9" speaker. Also has a cathode follower output to drive a hi-fi system.

AUTOMATIC COLOR CONTROL CIRCUIT!
Reduces color fading... you always have the best possible picture.

GATED AUTOMATIC GAIN CONTROL!
Provides steady, flutter-free pictures even under adverse interference such as nearby airplane traffic.

BUILT-IN SERVICING FACILITIES!
An exclusive Heath feature! Includes dot generator and mobile degaussing coil for initial set up, and to converge and maintain the set at any time. Manual includes full-color illustrations that show you exactly what to look for, and how to achieve it quickly and easily. Eliminates costly color TV service calls for simple picture adjustments.

In addition you enjoy features like lighted channel indicators: 25,000 volt picture power for a clear, sharp picture; transformer-operated 27-tube, 10-diode circuit; and circuit breaker protection.

Assembles Easily In Just 25 Hours!
All critical circuits... VHF & UHF tuners, IF strip and high voltage sections... are preassembled and tested. You simply wire 3 circuit boards, assemble the parts on the chassis, connect the units together with a wiring harness, and adjust the picture.

3-Way Installation!
You can install the GR-25 in a wall or custom cabinet. Required dimensions: 20" x 21" x 26" W. Or choose the factory-assembled and finished Heath cabinet (see opposite pg.).

Kit GR-25, all parts including chassis, tubes, mask, UHF & VHF tuners, mounting kit and special extended-range 6" x 9" speaker, 115 lbs...

$47.41, as low as $29.90...

Assembled GRA-25, low cost walnut cabinet, 35 lbs... no money down...

$6.90...

$59.95...

GR-25 SPECIFICATIONS—Picture size: 25" rectangular, approx. 295 sq. inches.

Exclusive Heath Magna-Shield!
keeps out external magnetic fields and improves color purity by covering entire tube.

Vertical Swing-Out Chassis!
Makes chassis more accessible for servicing and installation.

Convergence Control Panel!
Front-panel mounted under "tilt-out" UHF det. circuit for easier, faster picture convergence.

Universal Main Control Panel!
Contains all main controls for more flexible custom installation... top, bottom or right side.

Shop The Easy Heathkit Way—Select Your Kit in The Comfort Of Your Home! Ask Your Dealer. Get Direct To Your Door Delivery.

15
Regardless Of What You Pay For Another 21" Color TV, It Can't Perform As Well As This One... The Heathkit®-GR-53A Has Exclusive High Performance Features... Assembles In 25 Hours... And Saves Up To 30%!

- Built-in Service Center to adjust & maintain set - 26-tube, 8-diode circuit - Deluxe Standard-Kollmans 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-built & aligned...

You Can't Buy A Better 21" Color TV!

No matter how many of your hard-earned dollars you pay for another 21" color TV, none can equal the performance of the Heathkit All-Channel, High Fidelity Color TV! Why? All color sets require minor periodic adjustments to maintain peak picture performance. The Heathkit GR-53A is the only 21" color set with a "built-in service center" that provides facilities for perfect picture adjustments. Heath's 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? Beautiful, true-to-life pictures day in and day out. And no costly color TV service calls for simple picture adjustment.

Compare These Features With Any Other 21" Color TV!

BUILT-IN DOT GENERATOR! Allows you to adjust set yourself. Just flip the service switch for the "dot" pattern, and adjust controls for a sharp, clear picture.

CONVERGENCE CONTROL CENTER! Use in conjunction with the "dot" generator to keep the set perfectly converged for the finest picture at all times. No more color fringing or overlap. No service calls every time you move the set.

EXCLUSIVE MAGNETIC Degauss! Just connect the degaussing coil to the terminal on the back of the set, and degauss wherever you decide color purity needs it. This simple device is movable... functions in any area of the picture or chassis to "clean" the picture.

DELUXE TUNERS! Turret-type with Nuvisor front-end for low noise, and push-to-fine-tune that "remembers"... no need to readjust each time you return to a channel. Gold contacts are used for positive switch action and long life.

BONDED FACE, ETCHED SAFETY GLASS! Insures your safety, provides glare-proof, reflection-free pictures. Adds convenience, too... no dust-catcher flat glass.

TONE CONTROL & TWO HI-FI SOUND OUTPUTS! One output to drive set's speaker, and the other to stereo hi-fi amplifier if you wish. Features wideband FM circuits that deliver full fidelity with virtually no distortion.

WORLD'S MOST ELABORATE CONSTRUCTION MANUAL! 138 pages that make an expert. (See Popular Science editor Hubert Luckett's comments opposite.) As one GR-53A owner put it "the manual is worth a lifetime of warranties on ordinary sets."

JFD Log-Periodic LPV-11 VHF TV Antenna
Receives color, B & W TV Channels 2 thru 13, FM Stereo up to 121 miles away! Patent pending antenna for higher forward gain, sharper directivity, lower VSWR—down to 1.2 to 1, a front-to-back ratio of 35 dB. Gold Bond Anodized finish. 11 V-V elements.

New Alliance Tenna-Rotor... 

Good Save $16.00

New patented 3-wire bridge type circuit... unaffected by motor current, cable length or line voltage variations. Expanded meter scale. Rotates 360 either direction... instantly reversible. Magnetic brake. Lubricated for life. Moisture sealed. 115V AC, 60 cycle.

Go Together Quickly, Easily!

Both tuners, horizontal output & high voltage circuits, I.F. amplifiers, and sound detector are factory assembled & tested to give you a "head start"! You simply build 3 circuit boards, mount the parts, connect the color-coded wiring harness, and adjust the picture. From parts to picture in just 25 hours.

Acclaimed By Experts!

POPULAR ELECTRONICS: "The GR-53A is not a skinny receiver in which corners have been cut to keep costs down and still provide color TV. Every available circuit board, X-ray views of circuit boards, and even 32 full-color pictures. Only 28 pages of the 138-page manual are devoted to the usual step-by-step procedures. The rest covers the theory of operation, detailed descriptions of each circuit, trouble-shooting, service information, adjustments, and operation."

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

Acclaimed by Owners!

TV SERVICEMAN, E. C. VAN DYKE, BALTIMORE, MD.: "After constructing Kit #GR-53A, I can truthfully say I have never seen a color TV look so good."

MR. HENRY OLESKI, TRUMBULL, CONN.: "Prior to purchasing your kit I scouted around the local dealers, TV establishments, comparing known sets, rating & prices. You have my word I have not seen one unit under the $700 bracket... compares to all around styling, performance and simplicity of operation."

MRS. JOSEPH GESSWEIN, BETHESDA, MD.: "If a housewife with 3 children under 4 years old can successfully build it in her few spare moments, it has to be good."

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

Kit GR-53A, all parts including chassis, tubes, mask, UHF & VHF tuners, mounting kit and specially shielded, extended range 6"-9" speaker. 125 lbs. $350.00, as low as $222.00...$375.00 Assembled GR-53A, walnut wood cabinet, 82 lbs. No money down, $11.00 a month...$108.00 Assembled GRA-53-6, walnut finished hardboard cabinet, 51 lbs. No money down, $5.00 a month...$46.50


Performance-Proven Transistorized Blodner-Tongue FM/TV Booster (IT-4) For Fringe Areas
Dependable, trouble-free signal booster. Accepts up to four FM and TV sets simultaneously. 300 ohm input & output. Easy to install. 1 1/4" x 2 1/2" x 4 1/2".

Taco 4-Bay Model 3044 TV Bow-Tie UHF Antenna
Popular open vee type with pivot mount for rigid locking to existing mast; heavy mesh screen reflector of galvanized 12 gauge steel with 1/2" squares for max. stability and long life.

GDP-233, 5 lbs. $18.75

Shop The Easy Heathkit Way—Select Your Kits In The Comfort Of Your Home—Mail Your Order—Get Direct To Your Door Delivered...
Deluxe 21" Color TV...With High Fidelity Picture & Sound!

Your Best
21" Color TV Buy!
GR-53A
Saves On Maintenance
Performs With
The Finest
$375
(less optional cabinets)

Install Any Of 3 Ways!
1. In A Wall
2. In Your Own Custom Cabinet
3. In Either Heath Factory-Built Cabinet

Deluxe Cabinet . . . $108.00
Finest ir TV furniture! Matches Heath contemporary hi-fi cabinets, pg. 42. Fits within 3" of wall. Quality crafted of 3/4" walnut solids and veneers with a hand-rubbed finish. Includes special hi-fi 6.8 oz. mag. 6" x 9" speaker to give you 2-speaker performance with GR-53A chassis (speakers mount behind grille cloth). Size: 44" W x 32¾" H x 23½" D (26⅛" D. including tube rear cover).
Assembled GRA-53-7, 82 lbs. . No money down, $11 mo. . . . $108.00

Economy Cabinet . . . $46.50
Handsome, yet low in cost. Constructed of walnut-finished wood and hardboard; tubular wood legs with brass finish ferrules and glides. Speaker included with GR-53A mounts behind grille cloth on left side of cabinet. Cabinet size: 37¾" W x 33¾" H x 26½" D.
Assembled GRA-53-6, 51 lbs. . No money down, $5 mo. . . . $46.50
Deluxe All-Transistor Stereo Twins... For the Audio

Everything Sounds "Naturally" Better On This
Transistor AM/FM/FM 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 outputs for direct, heat-free recording • Separate AM & FM tuning meters • Stereo phase control for maximum separation, minimum distortion • Automatic Gain Control for even, steady volume • Versatile installation - choose unit without a cabinet, or with either walnut wood cabinet or tan vinyl-clad steel cabinet.

REALISTIC SOUND AT A REALISTIC PRICE! That's the Heathkit AJ-43D. It offers the clean, natural sound and instant, heat-free operation of solid-state circuitry; complete operating features; versatility of installation; plus a price that's far below comparable quality models. But don't take our word for it. Take the word of AJ-43D owners like Mr. Frank Burris, Yucaipa, Calif.: "...I am more pleased with its general performance than any other transistor (or tube) tuner which I have seen on the American market, kit or factory assembled." Or respected hi-fi editors like Julian D. Hirsch, who in Hi Fi/Stereo Review wrote: "The AJ-43 is an excellent tuner, and holds its own with any other tuner of comparable ratings. I appreciated being able to stack the AJ-43 on top of the AA-21 amplifier, and run them for hours without either one becoming perceptibly warm."

NOW COMPARE ITS HIGH PERFORMANCE FEATURES! In addition to those listed above, there's automatic switching to stereo. Automatic stereo indicator light. And an Automatic Frequency Control to assure positive tuning - emitter-follower output stages that eliminate high frequency cable losses... lighted slide-rule dial plus heavy flywheels for easy, accurate tuning... transformer-operated power supply with silicon diode rectifiers for long life, dependability and freedom from heat... and a unique "push-push" switch to turn the unit on or off.

SIMPLE TO BUILD, TOO! With the factory-built and aligned front-end and 4-stage FM I.F. circuit board, plus fast circuit board construction. Takes no special skills or knowledge.

Kit AJ-43D, 15 lbs... less cab. for custom mtg. $109.00
Model AE-11, 8 lbs... Luxurious walnut wood cab. $12.95
Model AE-15, 8 lbs... Tan vinyl-clad steel cab. $6.95

Concealed Controls. Secondary controls on both AJ-43D tuner & 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 (Monaural Only): Tuning range: 88 to 108 mc. Intermediate frequency: 10.7 mc. Antenna: 300 ohms balanced, internal line antenna provided. Quiescent sensitivity: (600 cps, 100% mod.) 1.5 uv for 20 db of quieting; 2 uv for 30 db of quieting. 3 uv for full quieting, 40 db. Image rejection: 35 db. IF rejection: 75 db. Capture ratio: 3 db. AM suppression: 35 db. Bandwidth (Complete Tuner): 225 kc at 6 db down, 1000 uv input. Detector bandwidth (Peak-to-Peak): 600 kc. Nominal distortion: Less than 1%. Harmonic distortion: Less than 2%. Noise: Complete tuner 55 db below full quieting (INF). Output impedance: (Emitter Follower) Variable to 3000 ohms. Output voltage: 1 V. @ 1000 uv, 400 cps 100% mod. FM STEREO CONVERTER SECTION: Converter bandwidth: 50 cps to 52,000 cps. Channel separation: 40 db @ 50 cps to 2,000 cps, 30 db @ 15,000 cps, 20 db @ 15,000 cps. 19 kc suppression: 55 db down. 38 kc suppression: 45 db down. SCA rejection: 30 db min. 64 kc to 70 kc. Num & noise: 55 db down. Output voltage: 1 V. @ 100 uv input, 400 cps, 100% mod. Output impedance: (Emitter Follower) Variable to 3000 ohms each channel. AM SECTION: Tuning range: 535 to 1620 kc. Intermediate frequency (IF): 455 kc. Sensitivity: 600 kc, 7 uv for 10 db S/N. 1000 kc, 4 uv for 10 db S/N. 1400 kc, 3 uv for 10 db S/N. Antenna: Built-in rod with provisions for external straight wire. Image rejection: 50 db at 600 kc, 70 db at 1400 kc. IF rejection: 55 db at 500 kc, 65 db at 1400 kc. 10 kc rejection: 40 db. Harmonic distortion: Less than 2%. Num & noise: 30 db below 30% mod. Output impedance: (Normal) Variable to 3000 ohms. (Alx.) Variable to 4000 ohms. Output voltage: 1 volt nominal. Dimensions: 15½" W x 5½" H x 14½" D.

Choice Of Cabinets For Installation Versatility! Less cabinet. Ideal for wall or custom mounting. Kit AJ-43D... $109.00
Luxurious walnut wood cabinet (illust. above) for AJ-43D. Ideal for open component installation on bookshelf or hi-fi cabinetry. Model AE-11... $12.95
Tan vinyl-clad steel cabinet (illust. opposite) with polished aluminum trim for AJ-43D. Model AE-15... $6.95

With Metal Cabinet
While With An Eye As Discriminating As His Ear!

Matching Deluxe 100-Watt Transistor Stereo Amplifier...

Easily Handles Any Program Source, Easily Drives Any Speaker!

$137.00
AA-21D

(less cabinet)

- 26-transistor, 10-diode circuitry for smooth, uncompromising power response...
- 13 to 25,000 cps ± 1 db at 35 watts rms per channel (50 watts IHF music power)...
- Concert hall realism, cool instant operation, complete freedom from microphonics...
- Encapsulated, epoxy-covered modules for fast, simple assembly...
- Versatile installation... choose unit without a cabinet, or with either a walnut wood or tan vinyl-clad steel cabinet...

AA-21D SPECIFICATIONS—Power output per channel: (Heath Rating) 35 watts/8 ohm load, 20 watts/16 ohm load, 15 watts/4 ohm load; (IHF music power output) 50 watts/8 ohm load, 34 watts/16 ohm load, 25 watts/4 ohm load; @ 0.7% THD, 1 kc. Frequency response: ± 1 db from 13 cps to 25 kc @ rated output; ± 3 db from 8 cps to 40 kc @ rated output. Harmonic distortion (At rated output): Less than 1% @ 20 cps, 0.7% @ 1 kc, 2.0% @ 20 kc. Intermodulation distortion (At rated output): Less than 1%. 60 & 6,000 cps input mixed 4:1. Hum & noise: Tapehead, 40 db below rated output; Mag. phono, 45 db below rated output; Aux. inputs, 60 db below rated output; Tape monitor, 70 db below rated output. Channel separation: 40 db min. @ 20 kc, 35 db min. @ 1 kc, 50 db min. @ 20 cps. Input sensitivity: (For 35 watts output per channel, 8 ohm load) Tapehead, 2 mv; Mag. phono, 3 mv; Tuner, 250 mv; FM Stereo, 250 mv; Aux., 250 mv; Tape Monitor; 0.6 V. Input impedance: Tapehead, 60 k ohm; Mag. phono, 30 k ohm; Tuner, 100 k ohm; FM Stereo, 100 k ohm; Aux., 100 k ohm; Tape monitor, 47 k ohm. Outputs: 4, 9, 16 ohms and low impedance tape recorder outputs. Controls: 5-pos. Selector (dual-concentric), 5-pos. Mode switch, dual-concentric Volume, Bass & Treble controls, Tape monitor sw., Loudness sw., Phase sw., Input level controls (8 inputs except Tape Head & Tape Monitor inputs), Push-Push on/off switch. Sensormatic complement: 26 Transistors, 10 diodes. Power requirements: 105-125 volts, 50-60 cycles AC. 35 watts idling, no signal; 200 watts, full power out. @ 120 volts with no load on AC receptacles. Power outlets: 2 AC receptacles, 1 switched, 1 unswitched. Dimensions: 19 5/8" W x 5 1/4" H x 14 1/2" D.

Choice Of Cabinets For Installation Versatility!

Less cabinet for custom mounting in a wall or panel. Kit AA-21D...

$173.00
AA-21D

Luxurious walnut wood cabinet (illustr. above) for AA-21D. Ideal for open component installation on bookshelf or hi-fi cabinetry.

Model AE-11...

$12.95

Tan vinyl-clad steel cabinet (illustr. opposite) with polished aluminum trim for AA-21D.

Model AE-15...

$6.95

Sneaker: Deduct 5% On Your Heathkit Stereo Hi-Fi System—Order Any Program Source, Amplifier, And Speaker! Deduct 5% On Order Blank.
World's Best Transistor Stereo Receiver Buy  
...The Heathkit® AR-13A  
...Just Add 2 Speakers And Enjoy!

AR-13A  
$184.00

All Controls Front-Panel Mounted...Easy To Reach!  

"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"

RADIO-TV EXPERIMENTER MAGAZINE

The Latest "Solid-State" Circuitry & Features!
1. Pre-assembled pre-aligned AM-FM I.F. strip
2. Gold anodized extruded aluminum front panel.

The Beauty of Tuning Sound! Crisp, clean sound with a sharp instant response that never falters. Fully reproduces the impact of a kettle drum... each chord struck fortissimo on a piano... or the swelling sonorities of an entire orchestra. You hear each note... each voice... each instrument just as if you were right there at the recording session. Pure, natural and transparent. That's transistor sound. That's the sound of the Heathkit AR-13A All-Transistor Stereo Receiver.

But Transistors Give You More! Like cool, instant performance that's free from heat. And long, dependable life, since transistors don't deteriorate. And more economical operation since they consume less power. Characteristics unobtainable in tube-types.

Plenty of Power for Any Music System! 66 watts of pure, uncompromising music power, 40 watts continuous at ± 1 db from 15 to 30,000 cps. And the transformer power supply insures full power at each frequency.

Advanced Features for Operating Convenience! Automatically switches to stereo, and a stereo indicator automatically 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. 3 stereo inputs—mag. phono & two auxiliary. A separate control for balancing both channels. The AM tuner features a high gain RF stage & High-Q rod antenna. And the FM tuner has a built-in line Cord antenna for strong signal pickup. A local-distance switch prevents overloading in strong signal areas. An automatic frequency control assures positive tuning. And a flywheel tuning meter, and lighted AM & FM slide-rule dials permit accurate tuning. Also has external antenna connections.

Concealed Secondary Controls! Conveniently placed & protected under the hinged lower front panel to prevent accidental system setting changes. And the sleek walnut cabinet with extruded gold-anodized aluminum front panel harmonizes with any surroundings.

Kit AR-13A, 35 lbs.
No money down, $18 mo.
$184.00 Export model available for 115/230 VAC, 50-60 cps; write for prices.

 Heath Has The World’s Largest Selection Of Electronic Kits 21
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. 19, 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 component not eligible for discount is the AR-13A stereo receiver, pg. 20.

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 Correspondence: 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 $14.41!

Heathkit AJ-32 AM/FM Stereo Tuner, pg. 28, $84.95

Heathkit AA-151 32-Watt Stereo Amplifier, pg. 26, $59.95

Heathkit AS-51W 2-Way Speaker Systems in walnut cabinets, pg. 38, $46.95 each

Complete System
Kit HFS-74
Reg. $288.26
Save 5% $14.41
You Pay Only $273.85

Save $8.82 On This Low-Cost Stereo System!

ADP-124 Garrard Model 50 Stereo Record Changer with choice of 1c cartridge, pg. 36, $44.51 plus ADA-53W walnut base, $4.95

Heathkit AJ-13 FM/FM Stereo Tuner, pg. 30, $47.00

Heathkit AA-32 20-Watt Stereo Amplifier, pg. 30, $29.95

Heathkit AS-81W Hi-Fi Speaker Systems, in walnut cabinets, pg. 38, $19.95 each

Complete System
Kit HFS-11
Reg. $176.31
Save 5% $8.82
You Pay Only $167.49

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.

<table>
<thead>
<tr>
<th>RECORD PLAYERS</th>
<th>TUNERS AND AMPLIFIERS</th>
<th>SPEAKER SYSTEMS OR SPEAKERS² (ORDER 2 FOR STEREO)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOP OF THE LINE STEREO</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AJ-43D AM, FM STEREO TUNER</td>
<td>AA-21D AMPLIFIER</td>
<td>AS-21 or AS-2A or AS-2 or AS-173</td>
</tr>
<tr>
<td>ADP-24</td>
<td></td>
<td>AS-21 or AS-10</td>
</tr>
<tr>
<td>ADP-25</td>
<td></td>
<td>AS-21 or AS-2A or AS-2 or AS-173</td>
</tr>
<tr>
<td>ADP-94</td>
<td></td>
<td>AS-21 or AS-10</td>
</tr>
<tr>
<td>ADP-104</td>
<td></td>
<td>AS-21 or AS-2A or AS-2 or AS-173</td>
</tr>
<tr>
<td>AR-13A AM, FM STEREO RECEIVER</td>
<td></td>
<td>AS-21 or AS-10</td>
</tr>
<tr>
<td>AJ-41 AM, FM STEREO TUNER</td>
<td>AA-100 AMPLIFIER</td>
<td>AS-21 or AS-10</td>
</tr>
</tbody>
</table>

| **MEDIUM PRICED STEREO** | | |
| ADP-114 | | AS-10 or AS-163 |
| ADP-124 | | AS-163 or AS-153 |
| ADP-104 | | AS-10 or AS-163 |
| or AJ-32 AM, FM, FM STEREO | | AS-163 or AS-153 |

| **LOW COST STEREO** | | |
| ADP-114 | | AS-51 or AS-153 |
| ADP-124 | | AS-51 or AS-133 |
| AJ-13 FM, FM STEREO TUNER | AA-32 AMPLIFIER | or AS-41 |

| **MONO SYSTEMS** | | |
| ADP-124 or ADP-114 | | AS-10 or AS-173 |
| AJ-53 AM TUNER | AA-23 HIGH POWER AMP | or AS-163 or AS-153 |
| and/or AJ-63 FM TUNER | AA-13 MEDIUM POWER AMP | or AS-163 or AS-153 |

| ADP-124 Changer | | BEGINNER'S AA-191 HI-FI MONO AMPLIFIER |
| AS-81 or AS-41 or AS-193 | AS-133 or AS-123 |

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.

Use "No Money Down" Heath Time Pay—See Order Blank For Details
Praise Winner! Matching All-Transistor 66-Watt Stereo Amplifier!

WHAT HAVE AUDIO EXPERTS LIKE JULIAN D. HIRSCH LEARNT ABOUT THE HEATHKIT AA-22? In a recent issue of HI-FI/STEREO REVIEW, Mr. Hirsch said: "The AA-22 is almost unique among amplifiers at or near its price, since it delivers more than its rated power over the entire range from 20 to 20,000 cps. 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. Intermodulation distortion was about 0.5% up to 10 watts, and only 1% at 38 watts per channel with both channels driven. The hum and noise of the amplifier were inaudible," What prompted such enthusiasm? A quick check of the AA-22's characteristics below will tell you.

FIRST, PLENTY OF UNMODIFIED "TRANSISTOR POWER": A full 40 watts continuous (20 watts per channel), 66 watts IHF music power at each frequency throughout the entire 15 to 30,000 cps range at ±1 db. Satisfies the requirements of practically all home stereo systems. And there are output taps for 4, 8 and 16 ohm speakers, plus filtered outputs for direct stereo recording.

SECOND, THE ABILITY TO HANDLE ANY PROGRAM SOURCE! 5 pairs of stereo inputs accommodate stereo magnetic phono, stereo-mono monaural, stereo tape recorders and two other auxiliary inputs (stereo or mono).

NEXT, VERSATILE CONTROLS FOR COMPLETE COMMAND! Major front panel controls include a 5-position source selector switch, a 3-position "mode" selector 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.

AND DON'T FORGET THE RICH, MODERN STYLING! Low-silhouette styling with a beautiful, factory-assembled walnut cabinet, extruded aluminum, brushed-gold front panel and matching brown knobs with spun-gold inlays. Matches the AA-33A tuner. A handsome pair, that will "fit-in" just about anywhere. They look and sound great...especially in your living room.

Kit AA-22, 22 lbs. . . . no money down, $10 mo .................. $99.95

Export model available for 115V/230V, 50-60 cps; write for prices.

Low Cost All-Transistor AM/FM/FM Stereo Tuner...

Modern Styling and Sound, Old Fashioned Value!

Includes LUXURIOUS WALNUT CABINET! Match this with the extruded brushed-gold anodized aluminum front panel, and you have a stereo component that enhances any stereo system setting. Mate it with the AA-22 Amplifier below for modern styling and performance. Kit AA-33A, 16 lbs. . . . no money down, $10 mo .......... $95.40

P.S. Don't forget to think about the "adventures that are just waiting for you" in the exciting world of your Healthkit Stereo Hi-Fi System! Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank.

Economy With Excellence... Low-Cost
Heathkit® All-Transistor Stereo!

- 20 transistor, 10 diode circuit
- Delivers full 66 watts IHF music power, 40 watts continuous at ±1 db from 15 to 30,000 cps
- Less than 1½% 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 overdrive 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."

MR. JAMES E. SKIBO, BETHLEHEM, PA., AJ-33A Owner: "...I find that I can receive AM for a five-hundred mile radius and FM for a hundred mile radius! Stereo too! Now that is what I call a tuner!"

AJ-33A Owner Mr. D. W. Welsh, Clinton, N. C.: "My AJ-33A Heathkit AM-FM-FM Stereo tuner is performing beyond my fondest dreams with excellent channel separation."

AA-22 $99.95

RADIO-ELECTRONICS Magazine

ON THE AJ-33A: "...it will get any station that can possibly be pulled in"
FM Stereo Tuner Performs Like A Million...

- 14-transistor, 4-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 keep errors from "front-end" tuner & one-circuit board for fast, simple assembly
- Install any of 3 ways...wall, custom or either Heath cabinet

AMERICA'S BEST TRANSISTOR STEREO TUNER BUY! That's the new Heathkit AJ-14 FM stereo tuner. The full, natural beauty of transistor sound in a cool, compact unit for only $49.95. Proof that quality need not be expensive. Compare the AJ-14's features!

START WITH THE 14-TRANSISTOR, 4-DIODE CIRCUITRY. Delivers a solid, natural sound...runs cool—no tubes...non-microphonic...elegant and functional...all the transistor traits that are causing the rapid surge to solid-state stereo. There are filtered outputs to insure clear recording of all your favorites. Combine this with the prebuilt & aligned 3-transistor front-end containing an RF amplifier & separate local oscillator, add a 4-stage IF section and you have FM sensitivity & selectivity comparable to much more expensive tuners.

BUILD IT IN 6 HOURS OR LESS! World's easiest stereo/hi-fi kit to assemble. All parts mount on one simple circuit board...leaves a minimum of point-to-point wiring.

4 FRONT-PANEL CONTROLS FOR SIMPLE OPERATION! An Off-On switch.

GLOSSARY OF

HUM & NOISE: The amount of extraneous hum and noise voltage in comparison to the signal output voltage. Usually expressed as "X dB Below" a power output in watts. The higher the value of X, the better the amplifier.

TOTAL HARMONIC DISTORTION: The percentage of all harmonics contained in a given signal. The lower this figure, the better the sound reproduction.

POWER RESPONSE: Frequency range over which an amplifier will deliver its full rated RMS power. No frequency should measure more than 3 decibels (db) below the reference frequency (usually 1 kc).

FREQUENCY RESPONSE: A measurement of variation in voltage gain as a function of frequency. It's desirable for voltage gain to remain constant regardless of frequency.

INPUT SENSITIVITY: The input voltage level required to develop a specified voltage or power output.

AUTOMATIC FREQUENCY CONTROL (AFC): The circuitry of a tuner which automatically keeps the tuner adjusted to the proper frequency, thus preventing off-station drift.

AUTOMATIC GAIN CONTROL (AGC): Circuitry designed to keep output constant regardless of incoming signal strength. Prevents "blasting" and "fading" of sound output.

INTERMEDIATE FREQUENCY (I.F.): Frequency to which an incoming signal is changed by superheterodyne reception.

RUMBLE: Extremely low frequency component of program material usually resulting from mechanical vibration of phonographic equipment.

Costs Just $49.95... Assembles In 6 Hours

Tuning knob. A Mono-Stereo switch. And a stereo phase control to insure maximum stereo separation from any stereo station. You'll like the convenience of the automatic stereo indicator, too. Lights whenever stereo is broadcast. Specially designed filters remove SCA interference.

DELUXE FEATURES! Like the edge-lighted slide-rule dial...flywheel tuning...the transformer-operated power supply with silicon rectifier...and attractive extruded aluminum front panel. Custom mount in a wall or cabinet. Or choose either the Heath modern walnut veneer or metal cabinet for only a few dollars more.

Kit AJ-14, 6 lbs. (less cabinet)...no money down, $5 mo...

Model AE-35, 3 lbs., beige metal cabinet (12" W x 9 1/2" D x 3 1/4" H)...

Model AE-25, 2 lbs., genuine walnut veneer cabinet (12" W x 9 1/4" D x 3 1/2" H)...


HARMONIC DISTORTION: Less than 1% for 1000 input, 100% mod. 98 mc.

Image ratio: 40 db for 30 db of usable sensitivity, 400 cps, 100% mod., 98 mc. Capture ratio: 2 db for 1000 input, 400 cps, 100% mod., 98 mc. AFC correction: 136 kc for non-linear device. This type of distortion appears as the sum and difference of the two frequencies involved, and is considered more displeasing to the ear than harmonic distortion.

LOWEST IMPEDANCE: Stereo to in-station, 40 db below rated output. SCA rejection: 40 db min. Transformer complement: (1) 11 k ohm, (1) 77 mc, (1) 2N554 IF amp. 5 limiter; (1) 2N7212 multiple amp. 19 kc amp. emitter follower, 38 kc osc. switching detectors, stereo indicator amps. Front panel controls: Off-on switch, mono-stereo switch, stereo phase control & tuning. Dimensions: 12" W x 3 1/2" H x 9 1/4" D overall.

AUDIOMATIC TERMS

WOW: An audible change in pitch of a sustained note caused by slow variations in speed of a record turntable or tape transport.

FLUTTER: Similar to WOW except that it occurs at a faster rate.

INTERMODULATION DISTORTION: Distortion created by passing two signals of different frequency and amplitude thru a non-linear device. This type of distortion appears as the sum and difference of the two frequencies involved, and is considered more displeasing to the ear than harmonic distortion.

WOOFER: Any speaker especially designed for reproducing the low audio frequencies.

TWEETER: Any speaker especially designed for reproducing the high audio frequencies.

SEPARATION: The ability of one stereo channel to reject interference from the opposite channel.

DAMPING FACTOR: A figure expressing the ratio of rated load impedance to internal impedance of a power amplifier as it appears at the output terminal.

IMPEDANCE: The total opposition to the flow of alternating current in a circuit. Since it opposes the flow of current it has the same unit of measure (ohms) as resistance.

POWER OUTPUT: The electrical power, expressed in watts, that is supplied by an amplifier to a given load.

CROSS-OVER FREQUENCY: The single frequency at which the outputs of both the low frequency and high frequency filters are identical in amplitude.

Save 5% On Your Heathkit Stereo Hi-Fi System—Order Any Program Source, Amplifier, And Speaker: Deduct 5% On Order Blank.
Deluxe "Tube-Type" Stereo/Hi-Fi!

60 Watts Of Stereo Power For Only $84.95...
Deluxe Tube-Type Stereo Amplifier!

- HF 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

PLENTY OF POWER FOR ANY STERE0 TASK! 50 "Heath-Rated" watts continuous, 60 watts IHF music power at ±1 dB from 30 to 15,000 cps.

PLENTY OF VERSATILITY FOR COMPLETE STEREO PERFORMANCE! Features five stereo inputs—stereo magnetic phono input, a pair of tuner inputs for both FM and AM, a pair of tape recorder inputs, plus two pairs of auxiliary source inputs! In addition the tape playback heads can be connected directly without external preamplification or equalization.

PLENTY OF VERSATILE SPEAKER PERFORMANCE! Three different speaker impedances—4, 8, and 16 ohms, plus a "mixed-channel" speaker output for stereo center "fill-in" or for monophonic sound to other rooms. And the cathode follower outputs to minimize hum and high frequency losses.

PLENTY OF VERSATILE "FINGERTIP" CONTROLS! Includes preamplifier input level controls...power amplifier input level controls...hum controls...mode selector, speaker phase reversal switch, balance and separation controls...ganged volume controls...and separate concentric bass and treble tone controls.

SMART, DESIGNER STYLING! Attractive luggage tan vinyl-clad steel cabinet with polished aluminum trim and soft refracted lighting bar matches the AJ-41 Tuner (opposite) matches any decor!

Kit AA-100, 34 lbs. ...no money down, $9 mo. ...$84.95
Export model available for 115-230 VAC, 50-60 cps; write for prices.

AA-100 SPECIFICATIONS—Channels: 2. Power output: 50 watts (25 w. per channel) Heath Hi-Fi Rating: 60 watts (30 w. per channel) IHF Music Power Output (±0.7% THD 1 kc) Power response: ±1 dB from 30 cps to 15 kc at 25 watts output per channel. Harmonic distortion: Less than 0.5% at 25 watts, 1 kc. Less than 2% at 25 watts, 30,000 cps (each channel). Intermodulation distortion: Less than 1% at 25 watts, 60 and 6,000 cps signals mixed 4:1 (each channel). Hum and noise: Mag phono, 55 db below 25 watts output at 6 m. 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 kc. Input sensitivity: For 25 watts output per channel; mono mag. phono, 1.5 mv; stereo mag. phono, 1.5 mv; tape head, 1.5 mv; tuner, 0.2 mv; aux., 1 & 2, 0.2 mv. Input impedance: Mag phono, 47 k ohms (may be changed); tape head, 470 k ohms; tuner & aux., 250 k ohms each. Outputs: 4, 8 and 16 ohms. Cathode follower-tape recorder outputs. Damping factor: 15. Controls: Function switch (4-position), selector switch (4-position), balance control (total range, 16 db); separation control; ganged level controls; dual-concentric bass & treble controls, phase and power switch. Power requirements: 105-125 volts, 50-60 cycles, 150 watts. Power outlets: 2 AC receptacles, 1 switched, 1 unswitched. Dimensions: 5 1/2" H x 13 1/4" W x 13 1/2" D. (allow 1" for cables at rear).

Look To Heath for The Newest. The Finest In Electronic Kits

--

All-Around Value, All-Around Performer...
Deluxe Tube-Type AM/FM Stereo Tuner!

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

COMPLETE LISTENING AT YOUR COMMAND! Maximum fidelity AM...the quiet beauty of FM...the concert hall realism of FM Stereo.

ENJOY "FRONT-ROW CENTER" PERFORMANCE WITH DELUXE FEATURES! Features like the automatic stereo indicator that gently signals when stereo is broadcast...the built-in stereo adapter...adjustable automatic frequency control that locks-in stations for drift-free reception...adjustable stereo phase control that maximizes stereo separation and minimizes distortion...individual AM and FM tuning meters for precision station tuning...FM squelch control to eliminate between-station noise...cathode follower outputs that minimize hum and high frequency cable losses...and the output stages that "tie" together so the same information is fed to both channels when AM or FM mono is played.

FOR ADDED CONVENIENCE, there's smooth, effortless flywheel tuning; a glare-free lighted slide-rule dial; a fidelity switch for normal or maximum AM fidelity; built-in antennas; and external antenna terminals.

STURDY STEEL CABINET HANDSOMELY CLAD IN LUXURIOUS LUGGAGE-TAN vinyl with polished trim lends a touch of modern elegance to any decor! Matches the AA-100 60-watt Amplifier opposite!

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

Circuit Board Assembly Assures fast, easy assembly and high stability... minimizes errors! Includes built-in FM multiplex converter!

Stereo Indicator Light Automatically signals when a stereo program is broadcast.

Unmatched Performance & Savings...

For Complete Listening Satisfaction At Lower Cost, Choose This Versatile AM/FM/FM Stereo Tuner!

ALL-MODE LISTENING AT THE FLICK OF A SWITCH! Keep up to the minute with the latest news, sports & music of AM; or relax with the quiet beauty of FM or FM stereo. It's all at your fingertips with the versatile AJ-32.

SAME FINE FEATURES AS THE AJ-12 ABOVE! In addition the AJ-32 has an AM section with AM fidelity switch that selects desired bandwidth for maximum selectivity or highest fidelity. Also features built-in AM & FM antennas, plus external antenna terminals. Circuit board construction and prealigned, preassembled tuning unit assures quick, easy assembly.

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

AJ-32 SPECIFICATIONS—AM Section: Tuning range: 550 kc-1600 kc. Usable sensitivity (normal position): 1400 kc-10 microvolts (20 db of quieting); 1000 kc-15 microvolts (20 db of quieting); 600 kc-40 microvolts (20 db of quieting). Output voltage (750 microvolts-95% mod.): 1 volt. Harmonic distortion: (750 microvolts-95% mod.): Less than 1%. Hum and noise: (5000 microvolts, 30% mod.): 30 db.

FM Section: Tuning range: 88 mc-108 mc. Antenna: Balanced input for external 300 ohm antenna. Internal line antenna. Output voltage (30 microvolts-100% mod.): 1 volt. Harmonic distortion (25 microvolts-100% mod.): Less than 1%. IF rejection (98 mc): 45 db. FM audio response (20-20,000 cps): ±1 db. AM suppression: —7 db. Hum and noise (25 microvolts, 30% mod.): —48 db. Declining sensitivity: 20 db—2%, 50 db—3%, 100 db—30% microvolts; 48 db—30 microvolts (max. quieting). FM Stereo Converter Section: Audio frequency response: ±2 db from 50 to 18,000 cps. Subcarrier bandwidth: ±3 db from 23,000 to 53,000 cps. Channel separation: 50 db or more at 1 kc; 25 db or more at 10 kc. Hum and noise: —55 db relative to 1 volt rms output. Output impedance (cathode follower): Variable to 4000 ohm, each channel. Size: 5 3/4” H x 15 3/4” W x 11” D.

For the Complete Listening Satisfaction At Lower Cost, Choose This Versatile AM/FM/FM Stereo Tuner!
Attractive In Styling, Attractive In Price . . . FM Stereo Tuner!

- Built-in FM stereo adapter
- FM stereo indicator light
- Stereo phase control for maximum station separation, minimum distortion
- Adjustable AFC for drift-free reception
- Bar-type "Eye" tuning indicator
- Filtered stereo outputs
- Fast, simple circuit board construction
- Handsome designer styling . . . matches AA-151 amplifier below

"I Believe That Its Quality Could Never Be Exceeded In Its Own Price Range." That comment came to us in a letter from AJ-12 owner Mr. James Totten, Lincoln Park, Mich. Mr. Totten went on to say: "...I'm listening to it right now through the model AA-151 (amplifier, see below) and its sound is unsurpassed." The reason for this performance? Famous Heath "Ergi-muity" that incorporates features found only on units selling for far more.

COMPARE THESE FEATURES! Features like the FM multiplex circuit that's built-in an integral part of the tuner . . . the Stereo Indicator that lights when you've tuned a stereo broadcast . . . the Stereo Phase Control that maximizes stereo separation, thus assuring minimum distortion . . . the Automatic Frequency Control that locks-in stations for clear, drift-free reception. And you can record your favorite stereo programs without any extraneous noise, thanks to your filtered stereo outputs.

For pin-point station selection, there's a bar-type "eye" tuning indicator, large, edge-lighted slide-rule dial and flywheel!

FAST, SIMPLE ASSEMBLY . . . DESIGNER STYLING! A pre-aligned, preassembled "front-end" coupled with quick, easy circuit board construction takes all the do-it-yourself work out of stereo time evenings. And the sturdy steel cabinet is beautifully clad in luggage-tan vinyl with a charcoal gray front panel and polished anodized aluminum trim. Enriches any decor. Matches the AA-151 stereo amplifier (below).
Budget-Saver Stereo/Hi-Fi

**Decorated Styled FM/FM Stereo Tuner . . .**

**Maximum Performance Features . . .**

- **Built-in FM stereo circuitry**
- **FM stereo indicator light**
- **Automatic Frequency Control snaps-in stations**
- **3/4" tuning control**
- **Mocha brown, beige & black color styling**
- **matches AA-32 amplifier opposite**

**CONSIDERING A GOOD LOW-COST STEREO SYSTEM? One that won't hurt your budget? Then consider the AJ-13 tuner and matching AA-32 amplifier (opposite). Together they give you complete stereo electronics, as well as performance and operating conveniences found only on more expensive units. All for less than $90! Just add 2 speakers and enjoy!**

**WITH THE AJ-13, YOU ENJOY MAXIMUM PERFORMANCE with minimum adjustments. Just 3 controls to operate . . . On/Off FM Stereo Selector, a tuning control, and AFC On-Off Switch. What could be simpler? And yet, you enjoy features like the Automatic Frequency Control that locks in stations for clean, drift-free reception. A Stereo Indicator that lights when stereo is broadcast. An edge-lighted Slide-Rule Dial for quick, easy station selection. A Flywheel Dial for smooth, accurate tuning. Point-to-point wiring plus a factory assembled and aligned "front-end" for fast, simple construction . . . takes only a few evenings.**

**YOU'LL LIKE THE MODERN COLOR STYLING, TOO! Rich mocha brown, all-steel cabinet with a neutral beige front panel and black trim. Blends with any decor . . . traditional or modern. Or custom install it in a wall, if you wish, by following the recommendations in the manual.**

**SETLE BACK, RELAX & LISTEN! The sound's superb . . . the styling stunning . . . the savings great!**

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

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

**AA-13 SPECIFICATIONS—Tuning range: 88 to 108 mc, Intermediate frequency: 10.7 mc, Quieting sensitivity: 2 1/2 uv for 20 db of quieting, 3 1/2 uv for 30 db of quieting. Audio frequency response: Mono—±1 db from 20 to 20,000 cps. Stereo—±2 db from 50 to 15,000 cps. Antenna: Balanced input for external 300 ohm ant. Channel separation: 25 db or more at 1000 cps. Front panel controls: Tuning selector switch, power off/FM, stereo, AFC switch, off-on. Dimensions: Overall: 13 1/2" W x 4 1/4" H x 9 1/2" D.**

**Matching 20-Watt Stereo Amplifier . . .**

**Full Controls . . . Operates With Magnetic & 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 just a few evenings

**PROOF THAT QUALITY NEED NOT BE EXPENSIVE! With the Heathkit AA-32 Stereo Hi-Fi Amplifier you can install a full-performance unit in the living room, den, rec room, etc., for only $39.95! And both the AA-32 & matching AJ-13 FM Steroe Tuner (opposite) are compact . . . ideal for limited-space installations or shelf-mounting. You can even panel mount them in a wall by following the recommendations in the manual.**

**PLENTY OF CLEAN, UNDISTORTED POWER! A full 16 watts continuous, 20 watts IHF music power at ±1 db from 30 to 30,000 cps. Plenty of versatility! Four switch-selected stereo inputs on each channel handle magnetic & ceramic phono cartridges, tuner, and auxiliary sources.**

**COMPLETE CONTROLS PUT YOU IN FULL COMMAND! The dual-concentric volume control allows adjustment of both channels individually or simultaneously. A mode selector lets you dial the desired program source. And a pair of push-pull tone controls are ganged to permit simultaneous bass and treble adjustment on both channels. A separate power switch turns the AA-32 on & off without disturbing the volume or tone control settings.**

**A 7-TUBE AMPLIFYING CIRCUIT boasts two push-pull power output stages, plus 24-stage preamps. And the transformer-operated power supply features a full-wave doubler silicon diode circuit.**

**GOES FROM PARTS TO POWER in just a few evenings with simple step-by-step instructions, and easy point-to-point wiring.**

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

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

**AA-32 SPECIFICATIONS—Recommended System Mates: Speakers: AS-193, AS-81, pg. 38, AS-163, AS-133, AS-123, pg. 41. Speaker Systems: AA-22, AS-51, AS-81, pg. 38. All transformers & preamps, pggs. 34 & 35. Simultaneous power output per channel: 8 watts (16 watts total); IHF Music Power Output (per channel): 10 watts (20 watts total). Frequency response: ±1 db from 30 cps to 30,000 cps at rated output. Harmonic distortion: (at rated output) 2% @ 30 cps, 0.7% @ 1000 cps, 2% @ 15,000 cps. Intermodulation Distortion: (at rated output) Less than 2% using 60 and 6000 cps mixed 4:1. Dimensions: 13 1/2" W x 4 1/4" H x 9 1/2" D.**

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

Heathkit Low-Cost Preampifier...

An Ideal Control Center

For Any Stereo System!
- 4 inputs for each channel
- 6-position function selector for stereo or mono
- Cathode follower outputs for low line loss, less distortion
- Built-in power supply permits use with any basic power amplifier
- Baxandall-type tone controls for true, natural sound
- Frequency response ±1 db from 20 to 20,000 cps
- Low impedance outputs for stereo tape recording

VERSATILITY COUPLED WITH ITS LOW PRICE make the AA-141A an unbeatable value! Compare. Features a built-in power supply to work with any basic stereo power amp like the AA-121 opposite... low impedance cathode follower outputs to assure installation flexibility in any system...4 inputs per channel—mag, phono, crystal phono & 2 auxiliaries—handles virtually any stereo or mono source...a 4-position input selector for simple switch selection of any input...6-position function selector to hear either channel through its own speaker, either channel through both speakers, normal stereo or stereo reverse...concentric volume controls for individual or simultaneous adjustment of each channel and Baxandall-tone controls for complete command of bass & treble...

EASY TO BUILD...LUXURIOUS STYLING! Goes together quickly, easily...no special skills or knowledge needed. The sturdy, all-steel cabinet clad with luggage-tan vinyl is gracefully accented by the charcoal gray front panel and polished trim...matches the AJ-12 & AJ-32 tuners, pg. 28.

Kit AA-141A, 11 lbs. $34.95

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

AA-141A SPECIFICATIONS—Channels: 2. Inputs: 4 (each channel): Mag Phono, Xtal Phono, Aux 1, Aux 2. Outputs: 1 (each channel): Power amplifier, tape recorder. Frequency response: (with the volume control at maximum and the Bass and Treble controls set approximately to the mid position) ±1 db from 20 to 20,000 cps. Harmonic distortion: (at 2.5 volts rms output, using AUX 1 or 2 inputs) 1% or less. Channel separation: 45 db or better to 20,000 cps. Hum and noise (below 2.5 volts RMS): Mag Phono, 55 db (or better); Xtal Phono, 65 db (or better). Aux 1 and 2, 65 db (or better). Tube complement: 6-61/E7 tubes. Controls and switches: Source Selector Switch, Bass controls, Treble controls, Volume controls, Mode selector switch (left mono, right mono, mono left source, mono right source, stereo norm, stereo rev.), Power off-on, filament balance (left channel and right channel), AC receptacles: 1-switched, 117 V AC, 375 watts maximum. Intermodulation distortion: 1.5% or less, 20-10,000 cps, at 40 watts output per channel. Intermodulation distortion: 0.3% or less at 40 watts output per channel. Hum: 0.005% (at 1 kHz). Noise (at 1 kHz): 0.005% (at 1 kHz). Power supply requirements: 117 V, 30-60 cycles, 180-200 watts. Power outputs: 2 AC outlets, 1 switched, 1 unswitched. Built-in AC line filter, 120-240 volts, 50-60 Hz, built-in AC line filter, 120-240 volts, 50-60 Hz. Dimensions: 7 1/4" H x 15 1/4" W x 11 1/8" D (overall).

98-Watt Ultra-Linear®
Stereo Power Amplifier...

Less Than A Dollar A Watt!

- Furnishes 98 watts IHF music power, or 80 watts RMS power at ±1/2 db from 20 to 20,000 cps
- Heath patented Ultra-Linear® output circuit
- "Bias-Ball" output balancing circuit
- Mixed-channel center speaker output
- Individual amplifier gain controls
- Ideal for use with AA-141A preamplifier

VERSATILE FEATURES FOR CONVENIENCE, OPTIMUM PERFORMANCE! Like the patented Ultra-Linear® output circuit for superb fidelity..."Bias-Ball" output balancing circuit for low distortion...mixed-channel output for stereo fill-in or mono play to other rooms...individual input level controls...speaker phase reversal switch...on/off switch...and line voltage-surge protection to insure long-life. Each channel delivers up to 49 watts to the most elaborate speaker systems. Or you can channel all 98 watts to a mono speaker with the handy "stereo-mono" switch & terminal connection changes.

Kit AA-121, 39 lbs. $79.95

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

AA-121 SPECIFICATIONS—RECOMMENDED SYSTEM MATES: Speakers: AS-2A, AS-10, AS-2, pg. 37, AS-21, pg. 39. Channels: 2. Power output: 80 watts (40 w. per channel) IHF Music Power Output (0.7%, THD, 1 kc). Power response: ±0.5, db, 20-20,000 cps, at 40 watts output per channel. Harmonic distortion: 1.5%, or less, 20-20,000 cps, at 40 watts output per channel. Intermodulation distortion: 0.3% or less at 40 watts output per channel. 60 and 6,000 cps mixed. Hum and noise: 85 db below 40 watts output. Channel separation: 70 db or better at 1 kc. Input sensitivity: 0.95 volts rms for 40 watts output per channel. Outputs: 4, 8, 16, and 32 ohms per channel; center speaker terminals can be used with 4, 8 or 16 ohm speakers. Damping factor: 16, 16, and 16 ohm taps. Controls: A Channel: bias balance, bias voltage, level. B Channel: bias balance, bias voltage, level. Function selector; phase and power switches. Tube complement: 2-6A8, 4-EL34, 4 silicon diode rectifiers, 1 selenium bias rectifier. Power requirements: 117 V, 50-60 cycles, 180-320 watts. Power outputs: 2 AC outlets, 1 switched, 1 unswitched. Color and finish: metallic bronze, expanded metal dust cover, black chassis with ivory lower front panel. Dimensions: 7 1/2" H x 15" W x 11" 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.
For The Budget-Minded Music Lover...

Heathkit FM Tuner . . .
Modern Styling . . .
Converts To Stereo With
AC-11 Multiplex Converter


COMPARSE 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, 11 lbs., no money dn., $5 mo. $37.50
Export model available for 115/230 V. AC, 50-60 cps; write for prices.

Heathkit AM Tuner . . . A New Dimension In AM Hi-Fi
Listening!

- Sensitive superhet circuit with tuned RF stage—Fidelity switch to choose normal or maximum bandwidth—Built-in transformer operated power supply with silicon rectifier for safety and long life—10 kc whistle filter—Voltage doubler detector for lowest distortion—Mocha brown, beige & black styling matches AA-13 & AA-23 amplifiers, pg. 33

FEATURES A SPECIAL FIDELITY SWITCH for unusually high selectivity with normal bandwidth or optimum high fidelity with maximum bandwidth. A full-wave voltage doubler detector assures lowest distortion. Two outputs are provided—one is a "variable" cathode follower for direct driving of power amplifiers, the other is "fixed" for use with preamplifiers.

DECORATIVE & HIGH PERFORMANCE FEATURES include a built-in fan to gain ferrite antenna, plus terminals for an outside antenna . . . heavy, die-cast flywheel tuning for accurate station selection . . . easy-to-read, lighted slide-rule dial . . . and point-to-point wiring for fast, simple assembly.

Kit AJ-53, 10 lbs., no money dn., $5 mo. $26.50
Export model available for 115/230 VAC, 50-60 cps; write for prices.

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

- Use with most FM tuners having a multiplex output—Compact . . . fits anywhere—Stylish 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 or AJ-11 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

Low-Cost Heathkit® Hi-Fi!

Ideal For “Starter” Or “Second” Music System...

Heathkit 3-Watt Mono Amplifier!
- Built-in preamplifier
- Two switch-selected inputs
- Separate bass, treble & volume controls
- 3-watt output, ±1 db from 60 to 15,000 cps
- Less than 3% distortion at rated output
- Satin black & ivory color styling
- Simple to build & operate

SMALL SIZE, BIG PERFORMANCE! That's the compact AA-191 that fits anywhere, yet delivers 3 watts of power. Perfect for the hi-fi beginner, or the heart of a low-cost second system. Costs just $19.95.

VERSATILE, TOO! Boosts a built-in preamplifier that features switch-selection of two inputs... crystal or ceramic phono, tuner, etc. Has volume, bass and treble tone controls plus output taps 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 needs.

QUICK & EASY TO BUILD! Finish in an evening. Ideal for bookshelf, end-table, or other limited space installations. Attractive black & ivory color styling.

Kit AA-191, 7 lbs. $15.95

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

Heathkit 16-Watt Mono Combination Amplifier-Preamplifier... A Real Value At $29.95!
- Patented Heath Ultra-Linear® circuit
- Music Power rated at 16 watts to 30 watts output
- Separate bass & treble controls
- 3 inputs for any program source
- Easy to build... Mocha brown & beige color styling with black trim... matches AJ-63 & AJ-53 tuners, pg. 32

COMPARE THESE ADDITIONAL FEATURES! The patented Ultra-Linear® output circuit assures full-range sound with low distortion and noise. Has EL-84 output transformer and specially-designed output transformers with taps for 4, 8, and 16 ohm speakers. And a filament balance control virtually eliminates AC hum even at low volume levels.

EASY TO OPERATE & BUILD! Just switch to desired program source, set the volume and tone controls. Assemblies 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 cps; write for prices.

Heathkit 30-Watt Mono Amplifier... Plenty Of Power & Versatility For Hi-Fi & Public Address Applications!
- 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 cps
- Separate bass & treble controls
- Ideal for limited-space installations
- Mocha brown & beige color styling with black trim... matches AJ-63 & AJ-53 tuners, pg. 32

IDEAL FOR CUSTOM HIGH FIDELITY INSTALLATIONS! Houses preamp, amplifier, and power supply in one compact “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 STYLING! Mocha brown metal cabinet with beige front panel & 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 cps; write for prices.

Save 5% On Your Heathkit Stereo! Hi-Fi System—Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank.
Complete Your Stereo System
With a Professional Turntable
From These Famous Names...

GARRARD

DUAL

REK-O-KUT

ADP-94 (with cartridge) $99.51

ADP-104 (with cartridge) $84.51

ADP-24 (with cartridge) $99.51

ADP-25 $144.90 (less base)

Shop The Easy Heathkit Way—Select Your Kits In The Comfort Of Your Home. Mail Your Order, & Get Direct-To-Your-Door Delivery
Garrard's Finest...Lab 80 Stereo Automatic Transcription Turntable...Insures Professional Reproduction Without Compromise!

- Insures professional reproduction of 33 1/3 & 45 rpm records
- Dynamically balanced "Afromosia wood" tone arm with integral manual cueing device and adjustable tracking force
- Adjustable bias compensator to track the lightest & most compliant cartridges accurately & without distortion
- New isolated motor suspension
- New anti-static turntable mat
- New precision spindle handles up to 10 records of any size
- Anti-skate protection

MORE THAN JUST AN AUTOMATIC TURNTABLE! The Garrard Lab 80 was created expressly for those who previously have not been willing to accept any automatic unit. It combines new standards of precision, performance & operating convenience not available before in either single play or automatic units.

COMPARE THESE ADDITIONAL FEATURES! A Delrin® trip assembly allows the Lab 80 to trip reliably at virtually zero force; a 12" turntable that's statically and dynamically balanced to eliminate wow or rumble; completely isolated 4-pole shaded motor; a 5-point foam-damped spring suspension system which isolates unit from feedback & external jarring, and finger-tip tab controls for complete command. Walnut base extra. Choose a special cartridge, pg. 36, for only 1c more, or the new Shure M55E Elliptical Stylus cartridge ($35.50 value) for only $10 more!

ADP-94, 25 lbs., turntable only...no money dn., $10 mo...$99.50
ADP-96, 25 lbs., turntable and choice of 1c offer cartridge
PG. 36 (specify by model no.)...no money dn., $10 mo...$99.51
ADA-94-1, 1 lb., Garrard LRS9 45 rpm spindle...$3.80
ADA-94W, 5 lbs., walnut, base, 16"-1/2" w x 13 11/16" d x 3" h...$27.50
ADA-94P, 10% coupon...


Garrard Type A70 Automatic Turntable...The Ultimate Expression Of Garrard's Famous Pusher-Platform Automatic Record Changing Principle!

- Completely new dynamically balanced tone arm for improved tracking capability & resistance to external shock
- New adjustable stylus pressure and tracking force
- Full-size heavy-balanced cast "sandwich" turntable
- New adjustable bias compensator
- New lightweight shell
- New ultra-sensitive Delrin® trip assembly
- Exclusive pusher platform
- Double shielded 4-pole shaded motor

LUXURIOUS STYLING, ADVANCED FEATURES, SUPERB PERFORMANCE! With the Garrard Type A70 you enjoy a host of superlative features to handle modern high compliance cartridges, plus a beautiful iridescent charcoal gray color styling that will enhance any hi-fi system. The Type A70 features a special dynamically balanced tone arm with an adjustable counterbalanced weight at the rear to assure accurate tracking and resist external jarring and vibrations. In addition, there are audible/visible check settings on the stylus pressure gauge, plus special needle pivots set into miniature ball bearings that make vertical motion of the tone arm virtually frictionless. Type A70 also boasts a foam rubber spring cushion and stereo wired Amplok plug. Completely assembled. Walnut base optional. Choose a special cartridge, pg. 36 for only 1c more, or the new Shure M55E Elliptical Stylus cartridge ($35.50 value) for only $10 more!

ADP-104, 23 lbs., turntable...no money dn., $9 mo...$45.40
ADP-104, 24 lbs., turntable with choice of 1c offer cartridge
PG. 36 (specify by model no.)...no money dn., $9 mo...$46.51
ADA-61-1, 1 lb. Garrard LRS9 45 rpm spindle...$3.80
ADA-63-3, 4 lbs., walnut-base, 16"-1/2" W x 13 11/16" D x 3" H...$5.50


Dual 1009 Auto/Professional Turntable...Tracks & Trips At One-Half Gram!

- Automatic tone-arm tracks below 1/2 gram, yet trips at zero
- Permits almost 90% sound without flattening
- Anti-skate record protection
- Automatically shuts off amplifier after play
- Plays up to 10 records with less than 2/10 gram stylus force increase from first to last record
- Can also be started manually when record is rolling or at a standstill
- 7/16 lb. dynamically-balanced platter

NOW! A DRAMATIC NEW ACHIEVEMENT that matches or surpasses standards of performances associated with the costliest professional turntables and separate tone arms...the Dual 1009 Auto/Professional Turntable!

ADVANCED PERFORMANCE FEATURES! A true dynamically balanced automatic tone arm that not only tracks below 1/2 gram, but trips at zero with a mere breath of air! A tone resistance that's barely measurable at 6 or 7 cycles. New utterly silent Dual Continuous Pole® motor that maintains speed accuracy within 0.1% when line voltage varies even beyond 10%. A feather touch slide switch that permits soft-spring footing to isolate chassis from shock & acoustic feedback. In addition, the Dual 1009 has a tone arm resistance below 8 cps; anti-skating compensation for 1 gram tracking & below; and a tracking error below 0.4/1000. The vertical tracking angle increases less than variations from cartridge to cartridge. The Dual 1009 plays all 4 speeds, and has a 7 1/4 lb. non-ferrous turntable. Walnut base optional. Choose a special cartridge, pg. 36, for only 1c more, or the new Shure M55E Elliptical Stylus cartridge ($35.50 value) for only $10 more!

ADP-24, 10" only, 22 lbs. no money dn., $10 mo...$99.50
ADP-24, changer & choice of any 1c offer cartridge PG. 36 (specify by model no.) 22 lbs. no money dn., $10 mo...$99.51
ADA-24W, oiled solid walnut base, 3 lbs...$11.95
ADA-24A-1, 45 rpm spindle, 2 lbs...$4.80

ADP-24 SPECIFICATIONS—Speeds: 165, 33 1/2, 45 and 78 rpm. Tracking speed: All 4 speeds accurate within 0.5% with one to ten records. Motor type: 4-pole induction, shock & vibration shielded. Type of drive: Friction. Tracking force variations: Less than 0.2 grams from 1st to 10th record. Record capacity: Up to 10 records. Record sizes: 2 1/4", 7", 12". Central functions: Manual Start/Stop/Return. Power requirements: 117 VAC, 60 cps.

New! Rek-O-Kut Professional Model B-12GH Turntable And Model S-320 Microiope® Tone Arm For The Dedicated Audiophile!

New! Rek-O-Kut Professional Model B-12GH Turntable
- 3 speeds...33 1/3, 45, & 78 rpm rim-driven
- Ideal for broadcasting studies, professional musicians and audiophiles
- Precision-built, totally synchronous motor...
- Lifetime lubricated
- Includes famous Rek-O-Kut S-320 stereo tonearm with exclusive Omni-Balance

A FAVORITE OF MUSICIANS, AUDIOPHILES & AUDIO ENGINEERS EVERYWHERE! Features a heavy-duty, hermetically sealed, hysteresis synchronous motor for locked-in accuracy of rotational speed regardless of power line fluctuation and load; unique self-lubricating, ball-bearing suspension of the micro-finished turntable shaft—its closest approach to friction-free motion; a precision-machined turntable of special aluminum alloys with resonance-inhibiting properties. Model S-320 Microiope®

STEREO TONE-ARM FEATURES EXCLUSIVE Omni-Balance for perfect static and dynamic balance with any cartridge, has tubular aluminum arm with die-cast cartridge shell.

Model: ADP-25, turntable & tonearm, 22 lbs...no money dn., $14 mo...$144.90
Model ADA-25W, walnut base, 10 lbs...$18.95


Save 5% On Your Heathkit Stereo/Hi-Fi System—Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank.
More “Best-Buy” Turntables!

Garrard AT60 Automatic Turntable...Features Efficient
Tubular Tone Arm & Oversize Die-Cast Turntable!

- New automatic bias compensator to track the lightest & most compliant cartridges accurately & without distortion
- New counterweight adjusted, dynamically balanced tone arm
- Built-in stylus pressure gauge legible from top
- Automatic intermix record operation when desired
- Heavy cast, oversize turntable
- Lightweight cut-away shell accepts all cartridges including high-compliance models

HOSTS FEATURES FOUND ONLY ON MORE EXPENSIVE UNITS! Like the heavy, cast, oversize turntable that's dynamically balanced and non-magnetic.

And you'll like the new Garrard iridescent charcoal gray color styling too. Besides the features shown above, the new AT60 has a double shielded 4-pole shaded motor, new tone arm safety catch, new tubular oversize, stereo wired Amplok plug, new super-sensitive Delrin® trip mechanism, and new control panel styling. Choose a cartridge for only $1c more!

APD-114, 15 lbs., turntable...no money dn., $6 mo. . . . ...$59.50
APD-114, 15 lbs., turntable and choice of any 1c offer cartridge below (specify by model no.)...no money dn., $6 mo. . . . ...$59.51
ADA-114-1, 1 lb...Garrard LRS10 45 rpm spindle. . . . ...$3.80
ADA-53W, 3 lbs...walnut finished base. . . . ...$4.95


Shure M55E 15° Stereo Dynetic Cartridge With Elliptical Stylus!

Elliptical diamond stylus and new 15° vertical tracking provide near perfect freedom from distortion, resulting in unmatched purity of sound. Low mass. Scratch-proof. Will track at forces of 3/4 to 1 1/2 grams. Only $10 when you order with a Garrard Lab 80, Type A70, or Dual 1009 Turntable on pg. 34. Model AD-95R, 1 lb.

ADP-124, changer only, 10 lbs...no money dn., $5 mo. . . . ...$44.50
ADP-124, with choice of any 1c offer cartridge below (specify by model no.), 10 lbs...no money dn., $5 mo. . . . ...$44.51
ADA-114-1, Garrard LRS10 45 rpm spindle, 1 lb. . . . ...$3.80
ADA-5S, Garrard matching base (walnut), 3 lbs...14°/12° D x 3° H... ...$4.95

Garrard Model 50...An Exceptionally Compact Turntable

At The Price Of An Ordinary Record Changer!

- Plays all four speeds automatically & mixes records of different sizes & same speed
- New oversize turntable and handsome mat cover for better record support
- Compact...fits “any” cabinet
- New counterbalanced tonearm...tracks high quality cartridges & DuPont Delrin® “frictionless” trip mechanism

ADVANCED FEATURES & MODERN STYLING AT A MODEST PRICE! Advanced features like its counterbalanced cast aluminum tone arm with a super-sensitive Delrin® trip mechanism to off-set friction and track high compliance cartridges at minimal tracking force...a 4-pole shaded motor with a dynamically balanced rotor for constant speed without hum or vibration...an oversize turntable with an attractive mat treatment...a simple “finger-rewind” stylus adjustment...new Amplok plug...new control panel styling...a lightweight cut-away-type cartridge shell that can be removed from the arm to instantly change cartridge or service stylus...and a compact size that fits virtually any cabinet. Includes line cord, 2 audio cables, & plug-in shell. Handsome, iridescent charcoal gray color styling. Choose a cartridge (below) for only 1c more!

APD-124, changer only, 10 lbs...no money dn., $5 mo. . . . ...$44.50
APD-124, with choice of any 1c offer cartridge below (specify by model no.), 10 lbs...no money dn., $5 mo. . . . ...$44.51
ADA-114-1, Garrard LRS10 45 rpm spindle, 1 lb. . . . ...$3.80
ADA-5S, Garrard matching base (walnut), 3 lbs...14°/12° D x 3° H... ...$4.95

Special 1c Offer Cartridges With Turntable Offers! specify by model no.

New! Shure M44-7 15° Dynetic

Shure M44-7 15° Dynetic

Elliptical diamond stylus and new 15° vertical tracking provide near perfect freedom from distortion, resulting in unmatched purity of sound. Low mass. Scratch-proof. Will track at forces of 3/4 to 1 1/2 grams. Only $10 when you order with a Garrard Lab 80, Type A70, or Dual 1009 Turntable on pg. 34. Model AD-95R, 1 lb.

ADP-85R MANUFACTURER’S SPECIFICATIONS—Frequency response: 20 to 20,000 cps Output: 11 mv per channel. Separation: More than 25 db at 1 kc. Load impedance: 47,000 ohms per channel. Stylus: 0.18 mm diamond. Compliance: 20 x 10^-4 cm/dyne. Tracking force: 1/2 lb, to 3/4 lbs. Model AD-85B, 1 lb. . . . ...$19.95

ADP-15K MANUFACTURER’S SPECIFICATIONS—Frequency response: 20 to 20,000 cps Output: 20 volt. Separation: 30 db. Load impedance: 1 to 5 megohms. Stylus: 0.7 mil diamond. 3 mil supple. Compliance: 15 x 10^-4 cm/dyne. Tracking force: 1 1/2 to 3 grams for professional arms; 3 to 4 grams for others. Model AD-15K, 1 lb. . . . ...$7.26

Certified for optimum performance with 15” RIAA Ver! Tracking Standards.

ADP-255 MANUFACTURER’S SPECIFICATIONS—Frequency response: 20 to 20,000 cps Output: 8.5 mv/channel. Separation: 30 db. Load impedance: 1 to 5 megohms. Stylus: 0.7 mil diamond. Compliance: 10 x 10^-4 cm/dyne. Tracking force: 1/4 to 1/2 grams. Model AD-125G, 1 lb. . . . ...$19.95

ADP-155 MANUFACTURER’S SPECIFICATIONS—Frequency response: 20 to 20,000 cps Output: 6.9 mv per cm/sec of recorded level. Load resistance: 47,000 ohms. Stylus: 1/2 mil diamond. Tracking force: 1 to 4 grams. Vertical tracking angle: 15°. Model AD-105J, 1 lb. . . . ...$19.95

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

An Acoustic Suspension Speaker System That’s Easy To Afford!

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

Consider Acoustic Suspension Systems Too Costly? 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 have made acoustic suspension systems a favorite of audiophiles the world over. And it’s yours to enjoy in a space-saving enclosure that costs as little as $59.95.

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

**Top Performance Features!** Covers 30 to 15,000 cps, and includes high frequency control and L-C crossover network. Requires only 10 watts to drive, yet handles up to 40 watts. Takes less than an evening to assemble.

**AS-10U**
- **$59.95**
- **Kit AS-10U**, unfinished, 43 lbs
- **$59.95**
- **No money down, $6 mo.**

**AS-10 SPECIFICATIONS**

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

Versatile Acoustic Suspension System With Components Manufactured By Acoustic Research Inc.

- **10"** acoustic suspension woofer, two 5" cross-fired tweeters manufactured by Acoustic Research, Inc. • Wide-range sound with compact speaker versatility • Easy to build with preassembled cabinet.

**Distortion-Free Acoustic Suspension in a Compact Enclosure!** The AS-2U space-saving cabinet fits just about anywhere, and its famous Acoustic Research, Inc. components provide exceptionally clean tonal quality and wide range response. A 10" acoustic suspension woofer delivers extended bass response with extremely low distortion. And the combination of a 2000 cps L-C crossover network plus specially treated and equalized 5" cross-fired tweeters provide unusually clear high frequency distribution.

Easy to build . . . you enjoy the savings! Simply install the speakers in the preassembled cabinet & connect the leads. Cabinet is unfinished so you can apply the finish of your choice. Choose a pair for stereo.

**AS-2AU**
- **$89.95**
- **Kit AS-2AU** (finished walnut), 51 lbs.
- **$96.50**
- **No money down, $10 mo.**

**AS-2A SPECIFICATIONS**

**Top Value Acoustic Suspension System . . . Added Super Tweeter for Extended Frequency Response!**

- Added super tweeter for extended high frequencies • Space-saving 10" super tweeter • Built-in crossover networks • High frequency level controls • 10" suspension woofer, two 5" cross-fired tweeters, plus 1½" dome-type super tweeter—all genuine Acoustic Research, Inc. manufactured units • Preassembled cabinets—unfinished or walnut.

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

**Clean, Clear Bass Response With Low Harmonic Distortion.** Made possible by the acoustic suspension principle where the woofer cone rides in a cushion of air. This “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 controlled individually by separate level controls. Easy to assemble . . . just mount speakers in preassembled cabinet, wire the crossover network, and fill cabinet with the fiberglass furnished. Choose two for stereo.

**Kit AS-2AU**
- **$96.50**
- **Kit AS-2AU** (unfinished, white hardboard), 51 lbs.
- **$96.50**
- **No money down, $9 mo.**

**AS-2A SPECIFICATIONS**

Save Up To 50% With Heath Do-It-Yourself Electronic Kits
Get Full Sound From Your Stereo/Hi-Fi...

**Slim, Trim. Installs Anywhere...**

**Profile** 3-Way Hi-Fi Speaker System!
- 3 specially-designed speakers—10", 6", 3½" • 5½" slim... ideal for floor, shelf, or wall installation • Factory assembled, tubed-tuned baffle cabinet, available unfinished or walnut finish

**HAVE A SPEAKER INSTALLATION PROBLEM?** Then consider the Heathkit "Profile." Its slim, compact size lets you set it on the floor, suspend on a wall, or tuck horizontally or vertically in bookcases or on shelves. As for sound, it features a special in-built 10" woofer with 1 lb. Alnico magnet to produce frequencies up to the 2250 cps crossover point... a 6" closed-back speaker with a 2 oz. magnet to capably handle the mid-ranges... and a 3½" closed-back tweeter with a 2 oz. magnet to recreate the "highs." The closed-back construction prevents woofer back pressure from causing distortion at the mid-range & high frequencies.

**ASSEMBLE EASILY IN AN HOUR!** Simply mount the individual speakers inside the cabinet, and connect the leads. You enjoy the "do-it-yourself" savings! Both cabinets include felt feet & wall hangers. Choose a pair for the realism of stereo.

Kit AS-22U, unfinished, 35 lbs... $49.95
Kit AS-22W, walnut, 35 lbs... $54.95

**Low Cost Two-Way Hi-Fi Speaker System...**

A Favorite Of Thousands!
- Specially designed tweeter... 8" woofer & compression-type tweeter with flared horn • Built-in 1600 cps crossover network • Tweeter level control • Cabinets available unfinished or in walnut finish

**COMPARE THESE HIGH PERFORMANCE FEATURES!** Covers the 50 to 12,000 cps range at ± 5 db with two specially-designed speakers... an 8" woofer and true compression-type tweeter with exponential horn. A 1600 cps crossover network is built-in, and a control is provided to adjust tweeter power level. Speaker impedance is 16 ohms, and the power rating is 25 watts. Can be used with amplifiers having as little as 3 watts power! A special tweeter mounting board may be rotated for wide angle dispersion in either vertical or horizontal positions. The "Heath-Designed" bass-reflex cabinet comes preassembled either in a walnut veneer or unfinished white hardwood. Assembly takes just an evening... simply mount speakers and wire the crossover network—everything else is prebuilt.

Choose a pair for stereo.

Kit AS-51U, unfinished, 28 lbs... $39.95
Kit AS-51W, walnut, 28 lbs... $46.95

---

**Compact 2-Way, 3-Speaker System!**
- 5½" woofer & 2 3" tweeters • Ideal for wall, shelf or table installations • Covers 65-14,000 cps • Factory assembled cabinet, unfinished or walnut finish

**IDEAL FOR SMALL SPACES!** Yet produces a "big-set" sound with a specially-designed 5½" woofer & two 3" tweeters.

**SIMPLE TO BUILD!** Just mount the speakers in the factory-assembled cabinet. Choose a pair for stereo.

Kit AS-193UL, unfinished, 12 lbs... $22.50
Kit AS-193W, walnut, 12 lbs... $24.95

---

**Miniature Hi-Fi 2-Speaker System!**
- 6" woofer & 3" tweeter • Quick easy assembly • Pre-assembled cabinets unfinished or walnut finish

**COMPACT SIZE, WIDE-RANGE SOUND!** High performance type 6" woofer features a mass-loaded cone that's matched to the enclosure for unusually good bass response. Closed-back 3" tweeter prevents speaker interaction. Simple to assemble... just install speakers, crossover network & voice coil leads.

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

---

**Low Cost Hi-Fi Speaker System!**
- 6" x 9" extended range dual-cone speaker • Compact, easy to assemble & install • Covers 70-16,000 cps • Preassembled cabinets, unfinished or walnut finish

**READY TO SERVE YOUR HI-FI SYSTEM IN A VARIETY OF WAYS!** Use as a low cost speaker in an extra room... an extension speaker to other rooms... or as a center fill in for a stereo system.

Kit AS-41U, unfinished, 9 lbs... $10.95
Kit AS-41W, walnut, 9 lbs... $12.95

---

**SPECIFICATIONS—Recommended amplifiers:** AA-32, pg. 30; AA-13, AA-191, pg. 33; AA-151, pg. 28; AA-13 & AA-191, pg. 33. **Frequency response:** from 70 to 14,000 cps. **Crossover frequency:** 4000 cps. **Recommended amplifier power:** 6 watts. **Nominal impedance:** 8 ohms. **Cabinet:** Type: Infinite. **Dimensions:** 15½" H x 11½" W x 8½" D.

---

Save 5% On Your Heathkit Stereo/Hi-Fi System—Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank.
"Legato Compact"... For The Audiophile Who Demands The Finest In Music Reproduction!

- Speakers cover 30-22,000 cps • 800 cps crossover network—completely assembled • Can be driven by as little as 3 watts, handles up to 30 watts • Preassembled walnut-finished cabinet, ready for simple speaker installation • Styling matches AE-20 hi-fi equipment cabinet, pg. 42

MASTERPIECE OF PERFORMANCE, STYLING & QUALITY! Known by audiophiles everywhere for its acoustical excellence... known by audio engineers as an achievement in sound technology. How did the famous Legato Compact obtain this excellent reputation? Your ears will tell you once you hear its superb performance.

WHAT MAKES THIS PERFORMANCE POSSIBLE? To start with, the AS-21 uses two Altec Lansing “high compliance” low-frequency speakers that cover the 30 to 800 cps range with a rich, full-bodied tone. Next, a specially-designed Altec Lansing exponential horn and high frequency driver combination is incorporated that recreates the 800 to 22,000 cps frequency range with complete fidelity and brilliance. The special 800 cps crossover network is factory assembled, ready for installation in the carefully crafted, acoustically correct cabinet.

EFFICIENT & ATTRACTIVE! The Legato Compact easily allows you to use amplifiers with a power output as low as 3 watts... yet is capable of handling program material of 30 watts. And the handsome factory-assembled walnut-finished cabinet is sturdily constructed of 3/4” furniture grade plywood... makes a luxurious addition to any room. Its modern styling matches the AE-20 hi-fi equipment cabinet on pg. 42.

If you want the finest in a hi-fi speaker system, then the Legato Compact is your choice!

Kit AS-21W, walnut, 142 lbs., no money down, $22 mo. $239.95
Kit AS-31, everything except cabinet, 54 lbs..., no money down, $18 mo. $184.95


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 muffets shut out “unwanted” outside noises... helps develop excellent bass response and wide frequency range! Comfortable, lightweight! Easy-to-clean stainless steel headband and yoke. Order yours now!

Model ADP-92, 2 lbs $23.92


Stereo Headphone Control Box

Enjoy the convenience of simply switching from speaker to private headphone listening without leaving the comfort of your favorite chair with the new AC-13 control box. It’s versatile... connects to any amplifier regardless of power and has standard jacks to accommodate any impedance stereo headset! Allows separate control of 2 headphone sets, plus individual adjustment for each ear! Includes 15’ of cable and assemblies easily in 1½ hours. Compact size... 3” W x 5” D x 3¼” H... fits anywhere! For more relaxed "private" listening, order yours now!

Kit AC-13, 3 lbs $9.95

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

Choose A Heathkit® Speaker System!
Need Speakers For a Custom Installation

There’s A Quality Speaker To Fit Your Particular Music System Needs In This Exclusive Heath Series!

- Specially designed to rigid Heath specifications
- Massive die-cast metal frames for extra strength
- Special ceramic annular-ring magnets for superior performance
- Polared speaker terminals for proper phasing
- Attractive 2-tone cinnamon and tan color styling
- All speakers include cabinet recommendations
- Full 1-year guarantee on all models

A CUSTOM SPEAKER FOR ANY SYSTEM NEED! Is your present set of speakers capable of efficiently reproducing the improved sound of today’s advanced stereo hi-fi components? With this exclusive Heathkit speaker series you choose from a versatile selection of speakers that are specially designed to handle the improved characteristics of modern stereo equipment.

Whatever your particular speaker needs... from a TV or radio speaker replacement to an up-to-date professional speaker... there’s a Heathkit model to fill it. Each speaker is carefully designed to do particular jobs. Each speaker is engineered to perform at peak efficiency for many years to come. Each speaker is completely assembled, ready to install immediately. Each speaker is priced to offer you the most for your money. Compare their features and specifications with others! Then choose wisely... choose a Heathkit custom speaker!

**AS-183**

Finest Materials, Special Design

The AS-183 is a special high compliance, edge-damped 12” speaker that provides extended bass response... down to 20 cps. Has special ceramic annular-ring magnet for extra power handling capability. Sturdy high frequency unit is the reflexed horn type. Its massive die-cast metal frame adds extra rigidity insuring precise alignment of speaker elements.


**Price—**$49.95 ($95.00 pair)

**Ready For The Best? Choose This Deluxe 12” Two-Way High Compliance, Edge-Damped Hi-Fi Speaker... Extended Bass Response!**

**EVERY ADVANCED FEATURE, PLUS THE FINEST MATERIALS** available have been incorporated into this superb speaker to insure fine sound reproduction... a lifetime of “concert-hall” performance. A smooth 20-15,000 cps response is assured with a high compliance edge-damped woofer cone, low crossover frequency, and reflexed horn high frequency unit... provides astounding realism!

YEARS AND YEARS OF FLAWLESS REPRODUCTION are assured with the heavy die-cast frame for precision alignment of all elements, high efficiency 1½ lb. ceramic ring magnet, and highest quality materials. Additional features include 1½” & 1” voice coils, separate high frequency level control, and polarized speaker terminals for proper phasing. Beautiful 2-tone cinnamon and tan color styling... attractive enough to mount out in the open! Includes a full 1-year guarantee and cabinet recommendations! For a sound that will delight the most critical ear, choose this masterfully-crafted speaker now!

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

**Model AS-183-2, 30 lbs...no money dn., $10 mo. ...$95.00**

**Special pair price... ...$199.00**


**AS-173**

**12” Deluxe Three-Way High Compliance, Edge-Damped Hi-Fi Speaker... Handles Up To 25 Watts**

EVERYTHING YOU COULD ASK FOR IN A SPEAKER AND MORE! Superb reproduction throughout the entire frequency range of 35 to 15,000 cps a high compliance edge-damped woofer cone for rich, deep bass... a high frequency cone for mid-range realism and presence... a special Heath designed tweeter for clear-as-a-bell highs... polarized speaker terminals for proper phasing!

**HANDLES UP TO 25 WATTS PROGRAM MATERIAL with a 1½ lb. ceramic annular-ring magnet. The crossover networks are built-in, and a separate high frequency level control permits adjustment to suit room acoustics. Features heavy die-cast metal frame for years of faithful service, 1½” & 1” voice coils and finest materials throughout! Hand-crafted styed in 2-tone cinnamon and light tan. Includes cabinet recommendations and 1-year guarantee. This speaker will fill every hi-fi listening need and provide thrilling full-range sound reproduction... all at a small price! Choose a pair for extra savings!**

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

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

**Special pair price... ...$159.95**


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

12" Deluxe Three-Way Coaxial Hi-Fi Speaker . . .
Fills A Host of Hi-Fi Applications!
SUPERBLY ENGINEERED TO REPRODUCE 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. In addition, mechanical and electrical crossover networks provide smooth sound transition. Polarized and color-dot coded speaker terminals assure proper phasing with your system.

ATTRACTIONFLY STYLED IN CINNAMON AND LIGHT TAN! Handsome enough to mount out in the open. Has a separate high frequency level control for the horn-type tweeter. Includes cabinet recommendations. Not a kit. 1-year guarantee. Choose 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..................... Special Pair Price $57.00


12" Two-Way Coaxial Hi-Fi Speaker . . .
A Budget Stretcher Bargain!
HOW TO SAVE ON A QUALITY-BUILT 2-WAY COAXIAL SPEAKER! Choose the AS-153. The AS-153's true coaxial design features a separate woofer and tweeter with a built-in capacitive crossover network. A separate high frequency level control permits balancing of "highs" and "lows" to fit room acoustics. And the rigid die-cast frame maintains accurate alignment of all speaker elements.

HANDLES UP TO 15 WATTS AND COVERS 50 TO 15,000 CPS! And the polarized binding posts are color coded for proper phasing and easy connection to your amplifying system. Beautiful cinnamon and light tan color styling make an attractive addition to any room. Includes recommended cabinet dimensions, 1-year guarantee. Not a kit. Purchase a pair for stereo.

Model AS-153, 10 lbs...No money down, $5 mo. ..................... $19.95
Model AS-153-2, 20 lbs...No money down, $5 mo. ................. Special Pair Price $38.00


8" Two-Way Coaxial High Fidelity Speaker . . .
Ideal For Small Space Enclosures!
TOP VALUE IN AN 8" SPEAKER! The AS-133 features a separate woofer and tweeter for true coaxial performance, plus a built-in capacitive crossover network. Also has a separate high frequency level control for balancing the "highs" and "lows". Boasts a 10 oz. annular-ring ceramic magnet for extra power handling ability, and a die-cast frame for a lifetime of dependable performance. In addition, there are color-dot coded binding post terminals for easy phasing, and handsome cinnamon and tan color styling.

MEASURES ONLY 3 3/4" DEEP! Ideal for small-space enclosures. Handles up to 12 watts of program material, and covers 50 to 14,000 cps. Complete with multi-speaker connection instructions and recommended cabinet dimensions. Guaranteed for 1 full year. Choose a pair for stereo, and enjoy extra savings! Not a kit.

Model AS-133, 6 lbs...No money down, $5 mo. ...................... $14.95
Model AS-133-2, 12 lbs...No money down, $5 mo. ............... Special Pair Price $28.50


8" Dual-Cone Hi-Fi Speaker . . . Space Saver!
HERE'S AN EXCELLENT SPEAKER FOR LIMITED-SPACE APPLICATIONS. The AS-123 features a husky, die-cast frame for extra rigidity of speaker elements, plus a dual-cone design for wide frequency range . . . 50 to 12,000 cps. In addition, there are color-coded binding post terminals to insure proper phasing; and a 10-ounce annular-ring magnet to handle up to 12 watts of program material.

SLIM 3 3/4" DEPTH IDEAL FOR IN-WALL MOUNTING! Or any other small enclosures such as shallow cabinets, etc. Cinnamon and light tan color. Comes complete with cabinet recommendations, multi-speaker connection instructions, and 1-year guarantee. Not a kit. Enjoy extra savings by ordering two for stereo.

Model AS-123, 5 lbs... ........................................ $9.95
Model AS-123-2, 10 lbs... ........................................ Special Pair Price $18.00


You Get Twice As Much For Your Budget With Heathkit
Deluxe Heath Stereo/Hi-Fi Cabinetry

...Styled To Complement
Modern Furnishings!

- 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 CLEAN, FLOWING LINES..."SCULPTURED" ACCENTS! This skillfully crafted AE-20 equipment cabinet is a masterpiece of sumptuous furniture you'll be proud to place in your home. It is solidly constructed of fine furniture woods which are accented with clean, eye-arresting relief touches. Slim, curved brass door handles highlight the "sculptured" effect. And the modern walnut finish adds a richness that reflects your good taste. Comes completely assembled, ready to accommodate your stereo/hi-fi components.

Model AE-20W (walnut), 82 lbs...no money dn., $10 mo....$99.50.

AE-20 EQUIPMENT ACCOMMODATIONS AND SIZES—Cabinet, overall: 36" W x 32½" H x 19" D. Changer compartment: 17" W x 15¼" D, mounting board is uncut and can be adjusted in height to accept all record changers sold by Heath; lid has adjustable friction-loaded support. Record-tape recorder compartment: 14½" H x 17½" W x 17½" D, for record storage; space is convertible with accessory sliding drawers below to accommodate tape recorder. Shelf compartment: (2) each 17" W x 6½" H x 17½" D (inside shelf 14½" deep); either shelf accepts any Heath Stereo or Mono tuner, Stereo or Mono preamplifier or stereo or mono combination amplifier. Power amplifier compartments: 8½" H x 17½" W x 15¼" D inside, accepts any Heathkit stereo or mono amplifier.

Matching Tape Recorder Drawer!
Designed to fit the AE-20 equipment cabinet above. Dimensions: 7½'' H x 16'' W x 16¼" D, wood ¾" thick.
Model AEA-12-4, walnut uncut recorder drawer, 15 lbs. .............. $19.95.

Matching Deluxe Speaker Cabinet!
MACHES THE AE-20 IN STYLING, BEAUTY! 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 3½" x 10¾" slot for a horn tweeter.

AND YOU CAN MATCH THE AE-40 WITH ANY 12" OR 15" SPEAKER FOR BEST TONE! You achieve a perfect cabinet-to-speaker match thanks to the AE-40's tube-vened design. A 12" fiberboard tube and instruction sheet are included to make this operation a simple one. For example, using the AS-183 speaker, 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 cps, so the tube length reading is 6". You then cut the pre-installed tube to 6" (see above illustration). That's all there's to it! you have a perfect speaker-to-cabinet match!

PREASSEMBLED, READY FOR SPEAKER INSTALLATION! Overall dimensions: 18½" W x 19" D x 32½" H. Order a pair for stereo now!
Model AE-40W (walnut), 58 lbs...no money dn., $5 mo...each $44.95.

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-94 Garrard Lab 80 Automatic Stereo Turntable with choice of 1c cartridge, pg. 34, $99.51.

Heathkit AJ-33A Transistor AM/FM/FM Stereo Tuner, pg. 24, $94.50.


Heathkit AS-173-2 Stereo Speakers, pg. 46, $76.00.

Complete System
Kit HFS-75
Reg. .................. $559.36
Save 5% ................ $27.97
You Pay Only .......... $531.39.

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

...For A Touch Of Our Proud Heritage!

- 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.

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...SPECIALY-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-135, 77 lbs...no money down, $11 mo. .......... $115.00

AE-135 EQUIPMENT ACCOMMODATIONS AND SIZES: Cabinet, overall: 28 1/4" H x 36" W x 18 3/4" D. Changer compartment: 17 1/2" H x 16 3/4" W x 5 1/8" D. Mounting board is uncut and can be adjusted in height to accept all record changers sold by Heath; list has adjustable friction-loaded support. Record-tape recorder compartment: 14 3/4" H x 17" W x 17 3/4" D for record storage; space is convertible with accessory sliding drawers to accommodate tape recorder. Shelf compartments: Top shelf: 6 1/2" H x 17" W x 15" D. Middle shelf: 6" H x 17" W x 15 3/4" D. Bottom shelf: 9" H x 17" W x 17" D. Shelves accept any Heath stereo or mono tuner, stereo or mono preamplifier, or stereo or mono combination amplifier.

Matching Tape Recorder Drawer!
Designed to fit and match the AE-135 Early American equipment center above. Uneut. Dimensions: 7" H x 16 1/4" W x 16 1/2" D., wood 1/2" thick. Model AEA-13-1, uncut recorder drawer, 16 lbs. .......... $20.00

Save $34.57 On Deluxe Transistor Stereo System!
Includes AE-135 Equipment Cabinet (above), $115.00, plus pair of AE-23s Speaker Cabinets (above), $55.00 each.

ADP-24 Dual 1009 Automatic Stereo Turntable with choice of 1c cartridge, pg. 34, $99.51

Heathkit AE-210 100-Watt Transistor Stereo Amplifier, pg. 19, $137.00 with AE-11 walnut cabinet, $12.95

Heathkit AS-183-2 Stereo Speakers, pg. 40, $95.00

There's A Heathkit For Every Interest, Every Purpose, Every Budget
New Sony Model 200-B Portable Stereocorder...Compact Size, King-Size Performance!

- 4-track stereo & mono record & playback at 7 1/2 & 3 1/2 ips
- Full-range stereo speaker system
- Sound-on-sound recording capability
- Dynamically balanced capstan flywheel
- Two V.U. meters
- Automatic Tape Lifter
- Pause control and digital tape counter
- Full 7 1/2 reel capacity
- FM stereo inputs
- Built-in Stereo preamplifiers & power amplifiers

DEIGNED FOR HOME OR PORTABLE USE! That's the new Sony 200-B Stereocorder with detachable speakers that can be placed up to 15 ft. apart...achieves stereo reproduction in all its grandeur.

COMPARE ITS FEATURES! Boasts 4-track stereo and mono record and playback for complete operating versatility...Full range 2-speaker stereo system that combines to form carrying case lid...Sound-on-sound individual push button selection of channel 1 or 2 enables inter-channel transfer for multiple track or special effects recording...Dynamically balanced capstan flywheel with advanced "rim drive" principle—no belts to stretch or wear out...Two V.U. meters to assure accurate indication of recording level...Automatic tape lifter to protect heads from wear during fast forward & rewind operation...Pause control & digital tape counter for precise cueing, editing & tape indexing...Full 7 1/2 reel capacity...FM stereo inputs to record "off-the-air" from your FM stereo tuner...and built-in stereo preamplifiers & power amplifiers that can be used with external sound systems or as a public address system. Complete with portable carrying case & 2 Sony F-96 dynamic microphones. Not a kit.

Model GDP-184B, 53 lbs. No money down, $17 mo. $179.00

GDP-1848 SPECIFICATIONS—Power requirements: 70 watts 117 volts, 60 cycles (50 cycles optional). Tape speeds: 7 1/2 and 3 1/2 ips. Frequency response: 50,000 cps @ 7 1/2 ips; 50,000 cps @ 3 1/2 ips. Flutter & wow: Less than 0.25% at 7 1/2 ips, less than 0.3% at 3 1/2 ips. Signal-to-noise ratio: Better than 70 db. Level indication: 2 VU meters. Input provision: 2 microphone. 2 high level. Output provision: Preamp. Two 600 ohm high level; Power amp. Two 8 ohm external speakers & stereo headsets. Transistor & tube complement: (2) 25064, (1) 6267, (3) 3045, (5) diodes. Dimensions: 15" W x 16" D x 9" H.

New Sony 250-A All-Transistor Stereocorder...Instant Operation, Long Life, Low Cost!

- 4 track stereo & mono record & playback at 7 1/2 & 3 3/4 ips
- All-transistor for instant operation, compact size
- Operates in both vertical & horizontal positions
- Two V.U. meters
- Automatically shuts itself off at end of reel
- Dynamically balanced capstan flywheel
- Automatic tape lifter
- Simple single-knob operation for all functions
- Attractive walnut cabinet-base

NOW FOR LESS THAN THE COST OF A GOOD RECORD CHANGER, you can enjoy an exciting new dimension in home entertainment...the quality performance of Sony 4-track stereo & mono tape recording & playback. And besides reproducing already-recorded music with greater authenticity, you'll soon recoup your investment by recording your own stereo collection directly from your FM stereo tuner and favorite records.

ADVANCED FEATURES FOR COMPLETE OPERATING VERSATILITY! This new 4-track stereo & mono tape deck features both record & playback preamplifier; all transistor circuit for cool, instant operation, single knob for control of all functions; both vertical & horizontal operation; automatic tape lifter that protects heads from wear during fast record & rewind; and dynamically balanced capstan flywheel...no belts to stretch or wear out. The recording control microphone inputs, and record interlock are recessed under a hinged panel for a modern, professional appearance. Walnut cabinet base included. Not a kit.

Model GDP-174A, 17 lbs. No money down, $12 mo. $129.00

GDP-174A SPECIFICATIONS—Power requirements: 115 volts, 60 cycles (100 cycles optional). Tape speeds: 7 1/2 and 3 3/4 ips. Frequency response: 50,000 cps @ 7 1/2 ips; 50,000 cps @ 3 3/4 ips. Signal-to-noise ratio: 70 db. Level indication: 2 VU meters. Input provision: Microphone and line per channel. Outputs: High level line per channel. Dimensions: 14 1/4" W x 6 1/2" D x 9" H.

Save 5% On Your Heathkit Stereo/Hi-Fi System—Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank.
VHF FM Monitoradios!
For an exciting new listening experience, choose one of these
Regency Monitoradios... famous for professional quality and performance!

A Regency Aircraft Flight Monitoradio!
- Covers 108 to 136 mc.
- 3-gang condenser with nuvistor RF amplifier for 1
  uv sensitivity.
- Adjustable squelch for full quieting.
- Built-in 5" speaker.
- Full tuned RF stage for better image rejection.
- Illuminated slide-rule dial.
- External speaker provision.
- Power transformer.
- Vinyl laminated leather-grained scratch and marproof metal cabinet.
- Not a kit.
FOR THE SERIOUS AVIATION ENTHUSIAST! Hear aircraft, control towers, approach control, radar approach, ILS, Unicorn, Omni-range... the whole exciting panorama of America in flight. Outperforms "commercial grade" aircraft receivers. Provides increased sensitivity... a stronger, clearer signal... improved signal-to-noise ratio... reduced oscillator radiation. Measures 12" W x 6¼" H x 6¼" D.
Model GRP-45, 14 lbs., No money down, $8 mo. $79.95

Sensitivity: 1 uv for 10 db S/N at 30% modulation.
Squelch range: Adjustable from 3 uv to 100 uv.
Power output: 1 watt.

B Regency Model MR-33B FM Monitoradio!
- Covers 30 to 50 mc.
- Full tuned RF stage insures better image rejection.
- Built-in 5" speaker.
- 3-gang condenser.
- 7 tube circuit with rectifier.
- Built-in adjustable squelch for complete quieting.
- Provision for external speaker or headphones.
- Illuminated slide-rule dial for quick, easy station tuning.
- Power transformer.
- UL approved.
- Not a kit.
WIDEN YOUR LISTENING HORIZONS! With this quality engineered special-purpose radio, you keep posted on the latest happenings on power utility, industrial, highway maintenance, forestry, private mobile telephone and radio paging frequencies as well as fire and police calls. Completely assembled. Measures 7¼" x 11¼" x 6¼".
Model GRP-55, 14 lbs., No money down, $8 mo. $79.95

GRP-55 SPECIFICATIONS: Frequency: 30-50 mc.
Sensitivity: 4.0 uv or better for 20 db quieting. Squelch: 2.0 uv (adjustable). Power output: 0.8 watt @ 10% distortion.

C Regency Model MR-108 FM Monitoradio!
- Covers 152-174 mc.
- 7 tube circuit with rectifier.
- Full tuned RF stage for better image rejection.
- 3-gang condenser.
- Built-in 5" speaker.
- Reliable built-in, all-electronic squelch.
- Provision for external speaker or headphones.
- Illuminated slide-rule dial for nighttime operation.
- Power transformer.
- Listed by Underwriters' Laboratories.
- Not a kit.
A NEW WORLD OF INTRIGUING LISTENING! Just look at the exciting array of broadcasts you can hear with this superb receiver... civil defense, police and fire department calls, U.S. Weather Bureau broadcasts, railroads, taxis, private mobile telephone, power utilities, forestry and other emergency services! Comes completely assembled. Just plug into any AC receptacle to enjoy its informative and entertaining coverage. Measures 7¼" x 11¼" x 6¼".
Model GRP-75, 14 lbs., No money down, $8 mo. $79.95

GRP-75 SPECIFICATIONS: Frequency: 152-174 mc.
Sensitivity: 4.0 uv or better for 20 db quieting. Squelch: 2.0 uv (adjustable). Power output: 0.8 watt @ 10% distortion.

HY-GAIN GP-150 ¼ WAVELENGTH UNITY GAIN GROUND PLANE ANTENNA! Ideal for both GRP-45 & GRP-75 Monitoradios. Frequency adjustable from 108 thru 500 mc. Withstands winds up to 100 mph. Iridite treated bracket & hardware.
Model GDP-205, 3 lbs. $5.40

Use Heath's Technical Consultant Service—Just Drop Them A Line On Any Kit Subject
Heathkit® VTVM'S... For High Accuracy and Versatility For More Than A Decade

- Single AC/Ohms/DC probe for all measurements • 7 AC, 7 DC & 7 Ohms ranges • Easy to read 4½" 200 UA meter • 1% precision resistors for extremely accurate readings • Extended low frequency response ±1 db from 25 cps to 1 mc • Simple to build & operate.

CHART THE COURSE OF THE HEATHKIT VTVM THROUGHOUT THE PAST 16 YEARS! You'll discover a price difference of only 45¢. Yet you'll discover a big difference in performance ... an up-to-date performance that meets the servicing needs of the modern technician.

For example, the meter movement has changed from 500 ua to 200 ua to improve sensitivity ... the minimum voltage range was lowered from 3 volts to 1.5 volts ... there are now 7 AC/DC/Ohms ranges instead of 6 ... the meter has been enlarged to 4½" for easier reading ... a voltage doubler rectifier replaced the half-wave rectifier for peak-to-peak response ... a single test probe instead of two for all readings simplifies operation ... and circuit board construction now provides greater stability, easier assembly.

Although the basic compact shape & size has changed very little, the color styling has been modernized for a more attractive appearance. And we have kept the same shatterproof meter cover. Many refinements ... all for only 45¢ more than the 1949 price! Just another example of the constantly improving value you expect from Heath.

NOW 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.

And the slim, all-purpose test probe permits switch-selection of AC-Ohms or DC functions, and is equipped with a miniature "hook" which permits clipping the probe to the component leads for "hands-free" operation.

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 VTVM!

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 cps; 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: 0.4, 14, 40, 140, 400, 1400, 4000. Resistance: 10 ohm center scale x 1, x 10, x 100, x 1000, x 10,000, x 100,000. Measures: 1 ohm to 1000 megohms with internal battery. Meter: 4½" 200 ua movement. Multipliers: 1%, precision type. Input resistance DC: 11 megohms (1 megohm in probe) on all ranges. Circuit: Balanced bridge (push-pull) using twin triode. Accuracy: DC ±3%, AC ±5% of full scale. Frequency response: ±1 db from 25 cps to 1 mc (600 ohm source). Tubes: 12AU7, 6AL5. Battery requirements: 1.5 volt, size "C" flashlight cell. Power requirements: 105-125 volt 50/60 cycle AC, 10 watts. Dimensions: 7½" H x 4-1/16" W x 4½" D.

Etched Circuit RF Probe Kit

This handy RF probe may be used with any 11 megohm VTVM for RF measurements up to 250 megacycles. 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

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

This kit's voltage divider networks use precision (1%) resistors to provide high instrument accuracy.

30,000 Volt DC High Voltage Probe Kit

Invaluable for TV service work or any other application where extremely high DC voltages are measured. Provides a multiplication factor of 100 on the DC ranges of any 11 megohm VTVM. Two-color sleek plastic probe body provides plenty of insulation for safety.

Kit 336, 1 lb. .................. $4.50
Assembled 336W, 1 lb. .............. $5.50
Where More Performance Means More Income To You

...Outfit With The Deluxe Service-Bench VTVM

- 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 tilts 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

NEED A VACUUM TUBE VOLTOMETER FOR SHOP SERVICING? Then consider the Heathkit IM-13! It's engineered right, shaped right, priced right for your "in-shop" servicing needs. Its compact cabinet is attractively and practically shaped to fit under, over, on-top-of, or just about 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 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, 8 lbs. . . . . . . . . . . . . $49.95
Export model available for 115/230 VAC, 50-60 cps; 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 & 5 volt AC ranges read on separate scales; Ohmmeter: 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: 1 megohms Input impedance: 1 megohms shunted by 40 uuf (measured at input terminals); Circuit: Balanced bridge (push-pull) using twin triodes. Accuracy: DC ±5%, AC ±5% of full scale; Frequency response: ±10 db 25 cps to 1 mc (600 ohm source); Tubes: 12AU7, 5AL5. Battery: 1.5 volt size "C" flashlight cell (not supplied). Power requirements: 105-125 volts 50/60 cycle AC 10 watts. Dimensions: 7.5" H x 7.1/8" W x 4 1/2" D.

You Get Twice As Much For Your Budget With Heathkit
Precision Test Equipment

Heathkit Laboratory AC VTVM...

For Precision AC Measurements

- 10 voltage ranges—0.01 to 300 volts RMS full scale
- Extended frequency response, ±1 dB from 10 cps to 500 kc
- 10 megohm input impedance for high accuracy
- Calibrated dB scale for audio measurements

PLUS FEATURES FOR PRECISION AC MEASUREMENTS! That's what you get with the Heathkit IM-21 AC Vacuum Tube Voltmeter! A precision voltage divider provides 10 AC ranges, 10 millivolts to 300 volts RMS full scale... ideal for audio design and development work, laboratory use, or general servicing. Features cathode follower stage on all ranges to provide a 10 megohm input impedance to measure voltages in sensitive circuits without appreciable loading... provides greater accuracy! Has a two-stage amplifier with approximately 19 dB of negative feedback for high output stability and linearity. And the meter features VU-type ballistic damping... ideal for monitoring audio signals in such applications as tape recording and audio system measurements! The power supply consists of a half-wave rectifier circuit, containing a modern silicon rectifier. In order to minimize hum, the filament winding of power transformer is balanced to ground.

ATTRACTION PRACTICAL STYLING! The IM-21 is attractively styled in a rugged all-steel cabinet with a handy carrying handle. With its compact shape and light weight, it’s ideal for taking with you anywhere your service work calls you. Inside you’ll find the highest quality components which have been chosen to give you years of reliable, trouble-free service, excellent stability, and precision accuracy. And you’ll like the way the chassis is laid out... clean, open, easy-to-get-at when assembling.

SAVE EITHER WAY... KIT OR FACTORY ASSEMBLED! The IM-21 is available in ready-to-use assembled form, or as an easy-to-build kit for extra savings. Regardless of which version you choose, you still enjoy big savings over comparable models. Choose your IM-21 now!

Kit IM-21, 5 lbs...
No money dn., $5.00 ......... $33.95
Assembled IMW-21, 5 lbs...
No money dn., $6.00 ......... $52.95
Export model available for 115/230 VAC, 50-60 cps; write for prices.

IM-21 SPECIFICATIONS—Frequency response: ±1 dB 10 cps to 500 kc; ±2 dB 10 cps to 1 mc, all ranges. Ranges: Ten ranges from 0.01 to 300 volts RMS full scale. Decibels: Total-range — 52 to +52 dB, meter scale —12 to +2 db (0 db=1 mw in 600 ohms), ten switch selected ranges from —40 db to +50 db in 1 db steps. Input impedance: 10 megohms shunted by 12 uuf on ranges 10 to 300 volts, 10 megohms shunted by 22 uuf on ranges .01 to 3 volts. Tube complement: (1) 6AW8, (1) 6E37/EF-134. Accuracy: Within 3% of full scale. Power requirements: 105–125 volts AC, 50-60 cycles, 10 watts. Dimensions: 7½" H x 4⅛/16" W x 4⅝" D.

Heathkit VOM... Dependable Components,
Accurate 20,000 Ohm/Volt Circuit

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

COVERS HUNDREDS OF SERVICE APPLICATIONS IN OR AWAY FROM SHOP OR LAB! If your service work takes you in and out of your shop, you'll find this compact MM-1 an ideal companion. Provides wide voltage, current, resistance and db ranges to cover practically any service requirement. Completely self-contained, the MM-1 uses easy-to-replace standard flashlight battery power... ideal for "on-the-spot" field checks and testing permanently installed or "awkward-to-move" equipment!

1% PRECISION RESISTORS ASSURE MAXIMUM ACCURACY! 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 will produce a meter deflection of 2½"!

A polarity reversing switch eliminates transferring test leads when alternately measuring positive and negative voltages, and the test jacks are recessed to minimize shock hazard. The meter comes preassembled to the panel to keep out dust and protect internal components.

SIMPLE MONEY-SAVING ASSEMBLY! The Heathkit VOM is easy to build... all components attach directly to the front panel. The batteries snap in or out in a matter of seconds... and the resistor "rings" eliminate excessive handling of switch contacts during construction and provide rugged mountings for precision components. Black bakelite case with soft, pliable plastic carrying handle. Complete with test leads, batteries not included.

Be ready to handle that next "out-shop" call with a Heathkit VOM! Order yours now!

Kit MM-1, 5 lbs...
No money dn., $5.00 ............ $29.95

MM-1 SPECIFICATIONS—Sensitivity: 20,000 ohms/volt DC, 5,000 ohms/volt AC. Ranges AC & DC volts: Full scale, 1.5, 5, 50, 150, 500, 1,500, 5,000. Direct current, 150 microampères, 15, 150, 500 milliamperes, 15 amperes. Ohms: 0.2 ohms to 20 megohms in three ranges. Decibels: —10 to +65 db. Resistors: 1% precision type. Accuracy: ±3% of full scale. Controls: Range switch, Output, AC, DC, Reverse DC switch, Ohms adjust control. Batteries: 1 type "C" cell, 4 penlight cells. Dimensions: 7½" x 5½" x 4½".
At Savings Up To 50%!

Heathkit Deluxe Transistor Tester . . .
Performs Laboratory-Level Transistor Analysis

- Unmatched in quality, performance and price! • Ideal for servicing, design work, incoming inspection, production testing, etc. • Provides complete DC analysis of PNP & NPN transistors • DC gain (Beta, Alpha) read direct on calibrated scales • 15 ua basic range for leakage (Icbo, Iclo) tests • Four level switches for fast, easy test selection

**IM-30**

$54.88

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 tester socket.

**SPECIFICATIONS—**Checks: Transistors up to 15 amps and diodes up to 1.5 amps. Tests: Shorts, DC Gain (Beta 0-300), Leakage (Iclo, Icbo), Diode Forward and Reverse Current. Meter: Current Ranges: 15ua, 150ua, 1.5 ma, 15 ma, 150 ma, 1.5 A, 15 A. Voltage Ranges: 1 V, 5 V, 10 V, 50 V, 150 V (100 K ohm/volt). Power supply: Internal, seven 1.5 volt size D batteries provide 1.5, 3, 4.5, 6, 7.5, 9, 15 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: Provides collector current from 10 ma to 100 ma for gain tests. Gain control: 3% wired wound potentiometer calibrated to scale of DC bias and DC alpha directly when meter is at null. Lever switch: Four spring return levers will individually select the following tests: Base Current, Gain, Collector Voltage, Collector Current, Leakage Voltage, Short Test. Iclo and Icbo currents. Two voltage selector switches: Collector and Leakage Test Voltages can 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, Leakage and Bias supplies.

**WIDE RANGE OF TESTS AVAILABLE.** Tests provided by the Heathkit IM-30 include: Base current, Gain, Collector current, Collector voltage, Leakage voltage, Short test, Diode or Collector-to-Emitter leakage (Iclo), and Collector-to-Base leakage (Icbo).

**DESIGNED FOR COMPLETE, THOROUGH TESTING.** Superbly engineered circuitry and many unique design features are combined in the Deluxe Heathkit IM-30 to bring you precision lab-type facilities at unheard-of savings! Complete and thorough tests of all transistor types can be made with high accuracy in addition to precise checks of diode characteristics. Ideal for use in servicing and industry where fast, easy testing, high accuracy and versatility are prime factors to be considered.

**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 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.

Heathkit Transistor/Diode Checker . . .
A “Must” For The Up-To-Date Service Technician

- Tests low and high power transistors • Tests forward and reverse current of diodes • Operates on two standard size “C” flashlight batteries • Easy to assemble, easy to use

A HANDY UNIT FOR ANY TEST BENCH. The tremendous advances in transistor technology and the great number of transistorized units on the market today call for a simple, reliable tester that will help speed servicing and testing operations. The compact size and versatile operation of the IT-10 make it an ideal instrument for use on the test bench or on service calls... fits easily into tool box, glove compartment of car or truck, etc., and is ready to serve in an instant. No external power required... operates on two standard size 1.5 volt “C” flashlight batteries for complete portability.

**VERSATILE OPERATION.** The Heathkit IT-10 checks transistors and diodes, and serves as a handy continuity tester. Tests for low and high-power transistors include: short, leakage, open element and current gain. Versatile switching accommodates PNP or NPN type transistors and eliminates transferring of test leads for diode testing. Removable test leads are provided for checking transistors which do not fit tester socket. Put this handy handful to work for you now... Only $6.95! Less batteries.

**IT-10 SPECIFICATIONS—**Transistor test: leakage, short, open and current gain. Diode test: forward and reverse current. Also serves as a continuity checker. Switches: Forward-Reverse/PNP-NPN, Diode/Hi-Lo, Leakage-Gain. Power supply: self-contained, two 1.5 volt size “C” flashlight cells. Dimensions: 3½" x 3½" x 4¼" D.
Heathkit Deluxe Capacitor Checker...A Direct-Reading Bridge
- Tests all capacitor types - Low bridge voltage for safe testing of miniature electronics - 16 leakage testing voltages - Direct reading scales - no involved calculations - Measures resistance from 5 ohms to 50 megohms - Measures capacitance from 10 ufd to 1,000 mfd - Comparator circuit - measures "L", "C", or "R" with external standard - Calibrated power factor control - "Eye" tube null & leakage indicator ELIMINATES DOUBT & GUESWORK IN SERVICING AND DESIGN WORK. Unknown or suspected capacitors and resistors encountered in daily servicing and design work can be tested quickly and efficiently with this superbly designed instrument. Many advanced-design features have been incorporated to assure high accuracy and "safe" testing of all capacitor types - even miniature electrolytics that are easily damaged through ordinary testing procedures. 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 ufd to 1,000 mfd 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, $5 mo...$29.95
Assembled ITW-11, 9 lbs...No money down, $5 mo...$49.95
Export model available for 115/230 VAC, 50-60 cps; write for prices.

**Heathkit Visual-Aural Signal Tracer...Ideal Trouble-Shooter For Solid-State AM Circuits**
- Traces RF, IF and audio signals - Locates noisy and intermittent components - Convenient audio-RF probe with switch - Doubles as a utility amplifier or test speaker - Ideal for "safe" testing of transistor circuits QUICKLY ISOLATES DEFECTIVE STAGE IN DEVICE UNDER TEST. The Heathkit IT-12 Signal Tracer provides a fast, effective means of tracing signals through RF, IF and audio stages to quickly isolate a defective stage. Signals are traced "visually" with the "electron-eye" tube indicator or audibly with the built-in speaker. Audio and RF inputs are handled by one convenient probe with switch-selection of either input.

PROVIDES SAFE TESTING OF TRANSISTOR EQUIPMENT. Sensitive transistor circuits, easily damaged through ordinary testing procedures, can be tested safely, since no voltage is applied to the circuit under test. Minute signals are amplified by the IT-12 through a high-gain amplifier with an adjustable level control.

DOUBLES AS A UTILITY AMPLIFIER OR TEST SPEAKER. Highly versatile, the IT-12 is ideal for use in checking record changers, tuners, microphones, musical instrument pickups, etc. Speaker and output transformer are also available for substitution tests. A unique noise-locator circuit helps pinpoint noisy and intermittent components. The many features and uses of the IT-12 at 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 cps; write for prices.

**Heathkit "Capaci-Tester" Makes Short Work Of Capacitor Checks!**
- Spots open, shorted or intermittent capacitors without removing from 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 mcmf up, not shunted by an excessively low resistance value and "shorted" capacitors up to 20 mfd, 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 cps signal for "short" tests and a 19 mc signal for "open" tests...EASY TO USE. A single 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 cps; write for prices.

**Heathkit—Pioneer And World Leader In Electronic Kits**
A NATIONWIDE FAVORITE! The many fine features incorporated in the Heathkit IG-52 at low cost have made this instrument a favorite among TV technicians nationwide! Used with an oscilloscope, such as the Heathkit IO-12, the IG-52 provides all the essential facilities you need for fast, easy alignment of FM and VHF TV receivers.

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 fundamentals (3.6 to 220 mc) 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 mc (depending upon center frequency).

HIGH RF OUTPUT. Well over .1 volt RF output is available to allow “cold” alignment of tuned circuits, filters, traps, etc. Fixed-step and variable attenuators give smooth control of RF output to allow alignment of high-gain stages without danger of overloading.

CRYSTAL AND VARIABLE MARKER OSCILLATORS ARE BUILT-IN. A 4.5 mc crystal (included with kit) provides an output at 4.5 mc 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!

Heathkit TV Sweep Alignment Generator...
All Essential Facilities For FM & TV Alignment...A Record Of Service Proves Its Dependability

- Stable, all-electronic sweep circuit • FM & TV coverage—3.6 to 220 mc • Built-in crystal and variable marker oscillators

IG-52

$67.95

Heathkit Color Bar & Dot Generator...
Unmatched In The Industry For Performance And Price

- Ideal for color or B&W TV servicing • Produces six different patterns for picture adjustment • 10 vertical color bars • Special shading bar pattern • Crystal-controlled for accuracy & stability

IG-62

$64.95

YOUR BEST BUY IN A COLOR TV SERVICE INSTRUMENT! No other service instrument on the market today offers such an array of features, performance, and quality at so low a price! The Heathkit IG-62 provides all the features necessary for color, convergence, linearity and other picture adjustments on both color and black & white TV sets.

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 offset 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 at 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.

ORDER YOURS TODAY! The many fine features of this superbly designed instrument offer performance and versatility that will be appreciated for years to come. Complete with crystals, test leads and comprehensive operational instructions.

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

Export model available for 115/230 VAC, 50-60 cps; write for prices.
Heathkit FM Stereo Generator ... Provides All Signals For FM Stereo Alignment

- 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 kc ±2 cps pilot signal, adjustable in level from 0 to 10% for checking of tuner lock-in range
- Switch selection of 400 cps, 1000 cps, 5000 cps, 19 kc, 65 kc & 67 kc SCA signals for complete alignment capability
- 100 mc sweep signal (adjustable ±2 mc) for overall RF & IF alignment on clear portion of FM band
- Built-in marker oscillator for I.F. and front-panel viewing
- Phase test for accuracy of subcarrier transformers
- No balance adjustment required for equal right and left channel modulation levels

A COMPLETE FM SERVICE CENTER! Here in a completely self-contained, easy-to-use instrument are provided all the signal facilities you need for fast, easy alignment and trouble-shooting of all stereo and mono FM tuners, receivers, and multiplex stereo adapters.

AN EXCITING ARRAY OF FEATURES. Signals produced by the Heathkit IG-112 include an audio or composite stereo signal for multiplex adapter adjustments ... an RF carrier modulated by these same signals for tuner and receiver adjustments ... a "phase test" function for accurate adjustment of subcarrier transformers ... a variable level crystal-controlled 19 kc (±2 cps) pilot signal to check the lock-in range of stereo receivers, and built-in sweep and marker signals for overall RF & IF alignment. Carrier signal is adjustable up to 2 megacycles above or below its nominal 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 level. Switch selected frequencies for either direct or RF modulation use include 400 cps, 1000 cps, 5000 cps, 19 kc, 38 kc, and two special SCA (subscription service) frequencies (65 kc or 67 kc), 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 impedence or balance required. A three-step (20 db per step) RF attenuator prevents overloading of tuner input.

EASY TO BUILD. Average assembly time is 14 hours. Clean, open circuit layout provides easy access to all components for ease of assembly. Complete with test leads and detailed stereo alignment instructions. Order your Heathkit FM Stereo Generator now for faster, easier servicing and extra profits in this vastly growing field!

Kit IG-112, 11 lbs...

$99.00

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

Heathkit Impedance Bridge Kit

VERSATILE TESTING FACILITIES WITH LAB ACCURACY. Four precision measuring bridge circuits, a Wheatstone bridge for resistance, a Capacity Comparison bridge for capacitance, a Maxwell bridge for low Q inductance, and a Hay bridge for high Q inductance, are combined in this compact, easy-to-use instrument.

DESIGNED FOR RAPID, ACCURATE TESTING. Clearly identified panel controls show units, fractions of units, and multipliers. Single function switch eliminates confusion.

BATTERY-TYPE TUBES. Minimize changes in operating characteristics due to thermal effects... ready to go at a flick of the switch.

EASY-ON-THE-BUDGET PRICE! The low cost of the IB-2A puts lab testing facilities within easy reach of the service technician, radio amateur, or home experimenter.

Kit IB-24, 11 lbs. No money down...

$68.95

Export model available for 115/230 VAC, 50-60 cps; 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 microamperes meter. AC Measurements: Built-in oscillator, 1000 cycle generator. Terminals on panel for external generator or other frequencies. Built-in silicon tube detector and amplifier, using built-in meter. Terminals provided for external detector. Resolutions: ±0.1 ohm, ±0.1% of reading. Capacitance: 100 nuf to 100 mfd. Inductance: 0.1 mho to 100 mfd. Dissipation factor: 0.001% to 0.05%. Power supply: 120 VAC, 60 cycles AC, 10 watts. Dimensions: 8 1/4" H x 8 1/4" W x 13 1/2" D.
The Service Bench & Laboratory

Heathkit RF Signal Generator . . . Fulfills Virtually All Laboratory And Service Requirements

- Covers 100 kc to 220 mc in six bands
- Large, accurately calibrated dial scales
- Prewired, pre-aligned coil/bandswitch assembly
- Modulated or unmodulated RF output
- 400 cps signal for audio tests

A VALUABLE ADDITION TO ANY TEST BENCH!

This popular low-cost Heathkit RF signal generator provides wide frequency coverage, excellent accuracy and high reliability for countless applications in radio and TV service work. Quality and performance is unmatched at this low price.

OUTSTANDING 2% CALIBRATION ACCURACY!

Carefully designed circuitry and accurately calibrated dial scales permit precise frequency settings on all bands. Frequency coverage provides 100 kc to 110 mc on fundamentals . . . . 100 mc to 220 mc on calibrated harmonics in six overlapping bands. Frequency is read on three large, easy-to-read dial scales.

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 cps, and provision is made for external modulation at other frequencies. The 400 cps signal with 10 volt output is available separately for audio tests.

EASY TO BUY . . . EASY TO BUILD . . . EASY TO USE!

Order one for your test bench now for faster, easier servicing and alignment!

Kit IG-102, 6 lbs. No money dn., $5 mo. $27.95
Assembled IGW-102, 6 lbs.
No money dn., $6 mo. . . . . . . . $54.95
Export model available for 115/230 VAC, 50-60 cps, write for prices.

IG-102 SPECIFICATIONS— Frequency range: Band A, 100 kc to 300 kc; Band B, 310 kc to 1.1 mc; Band C, 1 mc to 3.2 mc; Band D, 3.1 mc to 11 mc; Band E, 10 mc to 32 mc; Band F, 32 mc to 110 mc. Calibrated harmonics: 100 mc to 220 mc. Accuracy: ±2%. Output: Impedance, 50 ohms; Voltage, 100,000 uv. Modulation: Internal, 400 cps, 30% depth; External, approx. 3 V across 50 k ohms for 30%. Audio output: Approx. 10 V open circuit. Tube complement: (1) 12AT7, (1) 6AN8. Power requirements: 105-125 V 50/60 cycles AC, 15 watts. Dimensions: 6½ x 9 x 8½ H x 5 D.

Heathkit Switch-Selected Audio Generator . . . When A Near-Perfect Sine Wave Is Required

- Switch-selected output frequencies—10 cps to 100 kc
- Less than 0.1 of 1% distortion—20 to 20,000 cps
- Panel metered output is calibrated in volts & db
- Output level and frequency accurate to within ±5%

AN IDEAL AUDIO SERVICE INSTRUMENT. Thanks to the unique circuitry of this superbly designed instrument you can forget about input variations and distortion when working with audio equipment. The Heathkit IG-72 provides convenient switch-selection of the audio frequency with less than 0.1 of 1% distortion between 20 & 20,000 cps for outstanding results in every application.

SWITCH-SELECTED AUDIO FREQUENCIES. Three rotary switches select two significant figures and a multiplier to determine frequency. Frequency can be varied in one-cycle steps from 10 to 100 cps, and a four-position multiplier increases this range in multiples of 10 for an overall range of 10 cps to 100 kc. Accuracy is well within ±5% and retestability is excellent . . . ideal for testing different components under identical conditions.

PRECISION COMPONENTS

200 ua meter plus precision resistors in "cycle" switches contribute to the high accuracy of the completed instrument.

METERED OUTPUT VOLTAGE. Generator output is indicated on a large 1½" 200 ua meter calibrated in volts and decibels for exact settings to test conditions. Output attenuator operates in steps of 10 db and is calibrated in 8 full-scale meter ranges. A variable output attenuator provides "fine" adjustment on each range, and a slide-switch selects either built-in or external 600 ohm load. Order one of these fine units for your test bench now.

OUTSTANDING 2% CALIBRATION ACCURACY!

Carefully designed circuitry and accurately calibrated dial scales permit precise frequency settings on all bands. Frequency coverage provides 100 kc to 110 mc on fundamentals . . . . 100 mc to 220 mc on calibrated harmonics in six overlapping bands. Frequency is read on three large, easy-to-read dial scales.

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 cps, and provision is made for external modulation at other frequencies. The 400 cps signal with 10 volt output is available separately for audio tests.

EASY TO BUY . . . EASY TO BUILD . . . EASY TO USE!

Order one for your test bench now for faster, easier servicing and alignment!

Kit IG-72, 6 lbs. No money dn., $5 mo. $27.95
Assembled IGW-72, 6 lbs.
No money dn., $6 mo. . . . . . . . $54.95
Export model available for 115/230 VAC, 50-60 cps, write for prices.

IG-72 SPECIFICATIONS—Frequency range: Band A, 100 kc to 300 kc; Band B, 310 kc to 1.1 mc; Band C, 1 mc to 3.2 mc; Band D, 3.1 mc to 11 mc; Band E, 10 mc to 32 mc; Band F, 32 mc to 110 mc. Calibrated harmonics: 100 mc to 220 mc. Accuracy: ±2%. Output: Impedance, 50 ohms; Voltage, 100,000 uv. Modulation: Internal, 400 cps, 30% depth; External, approx. 3 V across 50 k ohms for 30%. Audio output: Approx. 10 V open circuit. Tube complement: (1) 12AT7, (1) 6AN8. Power requirements: 105-125 V 50/60 cycles AC, 15 watts. Dimensions: 6½ x 9 x 8½ H x 5 D.

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

Three Ways To Order From The World's Largest Selection Of Electronic Kits

1. By Mail: Make your selections from the full line of Heathkits and accessory items offered in this catalog. You'll find the descriptions and detailed specifications to help you decide which Heathkits best suit your needs.

To Order: Fill out the Heath order blank—including the reverse side if you wish to use our liberal Time Payment Plan. Enclose your check or money order to cover the type of payment plan you’ve chosen, plus shipping charges if required.

2. By Telephone: Days: 8 a.m.—4:30 p.m. EST Call area 616, 983-3961 for personal service. Nights: 4:30 p.m.—8 a.m. EST Call area 616, 983-3921 for our Electronic Secretary. However, if the Electronic Secretary does not hear your instructions within twelve seconds the line will be disconnected ... so be prompt, yet speak slowly, clearly, and as near an average level.

Helpful Tips. You can call Heath after 8 p.m. from anywhere in the U.S. for $0.10 or less. When calling at night, spell out your name, street address and city, and any unfamiliar words; give the kit model number and price, indicate your preference for shipping method (parcel post, express, motor freight); and give your phone number. All phone orders are shipped C.O.D. III. D. If you are remitting for C.O.D. service. We also request your name and address of Heathkit. The name and address will be added to your order on the reverse side. We also request your name and address of Heathkit. The name and address will be added to your order on the reverse side.

Especially for New Customers—To Order By Mail . . .

The numbered instructions below are keyed to the numbers on the order blank opposite. They'll make it easy to fill out your first order correctly.

1. Print Name In Full. Always use the same name when ordering; for example, do not use Robert E. Jones one time and R. E. Jones another. This keeps your name on our mailing list for new catalogs—and your order will be handled faster.

2. Print Your Complete Address. Give all information: street address, route, box number, post office, state, and zip code.

3. To Ship To Another Address. Be sure to give complete information.

4. Select The Shipping Method. You want us to use and mark the appropriate square. The Shipping Information page includes rates and other details. This, with your own knowledge of delivery conditions in your community, will help you make the best selection.

5. If You Have Ordered Incorrectly. Be sure to fill out the town and state if your express delivery point is different from your own address.

NOTE: We will change routings to the cheapest way if a delay condition forces us to ship more than once to complete your order.

6. If We Have Moved Since Your Last Order. Fill in your former address in this space.

7. To Help Us In Our Development Of New Heathkits you would like to see, please fill in this portion.

If You Can Handle Your Order Most Promptly if we know whether this is your first order. Please check the correct square.

Open Your Heath Time-Pay Account & Enjoy No Money Down On Orders Up To $300.00 . . . Easy Monthly Payments

If your order is $300 or more, only 10% down opens your Heath Time-Pay Account. When your Heath account is established, you have made at least three payments, you can “add-on” purchases of $25.00 or more. To Make “Add-On” Purchases, merely fill out the order blank as usual, being sure to show your present account number; check the “add-on” box, sign the Time Payment Agreement; then send your order and payment book to us. Make no further payments until your new payment book is sent to you. The chart below will assist you in “adding-on” and planning your Heath-Time-Pay Account.

EASY PAYMENT CHART

<table>
<thead>
<tr>
<th>Unpaid Balance</th>
<th>Carrying Charge</th>
<th>Monthly Payment</th>
<th>Total Time</th>
<th>Total for 12 Monthly Payments</th>
<th>*All monthly payment amounts are for the odd amount shown; final payment is for the even amount due.</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.00—$50.00</td>
<td>$2.00</td>
<td>$5.00</td>
<td>$50.00</td>
<td>$50.00</td>
<td></td>
</tr>
<tr>
<td>$50.01—$100.00</td>
<td>$2.04</td>
<td>$25.00</td>
<td>31 months</td>
<td>$310.00</td>
<td></td>
</tr>
<tr>
<td>$100.01—$150.00</td>
<td>$2.08</td>
<td>$29.00</td>
<td>36 months</td>
<td>$354.00</td>
<td></td>
</tr>
<tr>
<td>$150.01—$200.00</td>
<td>$2.12</td>
<td>$33.00</td>
<td>48 months</td>
<td>$444.00</td>
<td></td>
</tr>
<tr>
<td>$200.01—$250.00</td>
<td>$2.16</td>
<td>$37.00</td>
<td>60 months</td>
<td>$500.00</td>
<td></td>
</tr>
<tr>
<td>$250.01—$300.00</td>
<td>$2.20</td>
<td>$41.00</td>
<td>72 months</td>
<td>$576.00</td>
<td></td>
</tr>
<tr>
<td>$300.01—$350.00</td>
<td>$2.24</td>
<td>$45.00</td>
<td>84 months</td>
<td>$648.00</td>
<td></td>
</tr>
<tr>
<td>$350.01—$400.00</td>
<td>$2.28</td>
<td>$49.00</td>
<td>96 months</td>
<td>$720.00</td>
<td></td>
</tr>
<tr>
<td>$400.01—$450.00</td>
<td>$2.32</td>
<td>$53.00</td>
<td>108 months</td>
<td>$792.00</td>
<td></td>
</tr>
<tr>
<td>$450.01—$500.00</td>
<td>$2.36</td>
<td>$57.00</td>
<td>120 months</td>
<td>$858.00</td>
<td></td>
</tr>
</tbody>
</table>

Health Accounts For Government, Business And Educational Institutions

We offer 30 day terms to governmental agencies and established commercial firms. For firms which have not purchased from us, either an acceptable Dun and Bradstreet rating or names and addresses of five firms with whom you are presently doing business are required. Please submit your order blank with your request.

So We May Serve You Best

When you are moving, please send us your former name and address as we have it now, and your new address, including all information: Street Address, Route, Box Number, Post Office, State, and Zip Code. This will keep catalogs, correspondence and your shipments coming without interruption.

Heathkit Overseas

Many Heathkits are available in special export versions. Look for the "Export model available" note at the bottom of the price lines. Heathkits can be shipped direct from the Heath factory to most overseas countries, in addition to those with Heathkit affiliated companies. For details on international orders and shipments, write to Mr. Joseph Solari, International Division, Heath Company, Benton Harbor, Michigan 49023.

Attention: Heathkit Fans In Puerto Rico And Other U.S. Possessions! A special time payment plan is available. Write us for details.

54
How To Figure Shipping Costs

The Map And Tables Below Will Help You Choose The Best Way For Shipping Your New Heathkit

Find Parcel Post Zone On Map... Then Refer To Rate Table Below

Parcel Post Rates

Weight Limitations
Shipments are limited to 20 pounds to zones 3 to 8 and to 40 pounds to zones 1 and 2. Exception: Shipments up to 70 pounds can be made to RFD and most APO and FPO addresses.

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.

PARCEL POST RATE TABLE

<table>
<thead>
<tr>
<th>Weight</th>
<th>1 &amp; 2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>Over 1,800</th>
<th>Over 1,400</th>
<th>Over 1,000</th>
<th>Over 600</th>
<th>Over 300</th>
<th>Over 150</th>
<th>Up to 150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 150</td>
<td>$0.33</td>
<td>$0.35</td>
<td>$0.39</td>
<td>$0.45</td>
<td>$0.51</td>
<td>$0.58</td>
<td>$0.64</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150 to 300</td>
<td>$0.35</td>
<td>$0.37</td>
<td>$0.42</td>
<td>$0.49</td>
<td>$0.56</td>
<td>$0.63</td>
<td>$0.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>300 to 600</td>
<td>$0.37</td>
<td>$0.4</td>
<td>$0.47</td>
<td>$0.55</td>
<td>$0.64</td>
<td>$0.72</td>
<td>$0.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>600 to 1,000</td>
<td>$0.39</td>
<td>$0.42</td>
<td>$0.49</td>
<td>$0.57</td>
<td>$0.66</td>
<td>$0.74</td>
<td>$0.82</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,000 to 1,400</td>
<td>$0.41</td>
<td>$0.45</td>
<td>$0.53</td>
<td>$0.61</td>
<td>$0.7</td>
<td>$0.78</td>
<td>$0.86</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,400 to 1,800</td>
<td>$0.43</td>
<td>$0.47</td>
<td>$0.55</td>
<td>$0.64</td>
<td>$0.72</td>
<td>$0.8</td>
<td>$0.88</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,800 to 2,500</td>
<td>$0.45</td>
<td>$0.5</td>
<td>$0.58</td>
<td>$0.67</td>
<td>$0.76</td>
<td>$0.84</td>
<td>$0.92</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,500 to 3,000</td>
<td>$0.47</td>
<td>$0.52</td>
<td>$0.6</td>
<td>$0.69</td>
<td>$0.78</td>
<td>$0.86</td>
<td>$0.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3,000 to 4,000</td>
<td>$0.49</td>
<td>$0.54</td>
<td>$0.62</td>
<td>$0.71</td>
<td>$0.8</td>
<td>$0.88</td>
<td>$0.96</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4,000 to 5,000</td>
<td>$0.51</td>
<td>$0.56</td>
<td>$0.64</td>
<td>$0.73</td>
<td>$0.82</td>
<td>$0.9</td>
<td>$0.98</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5,000 to 7,500</td>
<td>$0.53</td>
<td>$0.59</td>
<td>$0.67</td>
<td>$0.76</td>
<td>$0.85</td>
<td>$0.93</td>
<td>$1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7,500 to 10,000</td>
<td>$0.55</td>
<td>$0.61</td>
<td>$0.69</td>
<td>$0.78</td>
<td>$0.87</td>
<td>$0.95</td>
<td>$1.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10,000 to 15,000</td>
<td>$0.57</td>
<td>$0.64</td>
<td>$0.72</td>
<td>$0.81</td>
<td>$0.9</td>
<td>$0.98</td>
<td>$1.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15,000 to 20,000</td>
<td>$0.59</td>
<td>$0.66</td>
<td>$0.74</td>
<td>$0.83</td>
<td>$0.92</td>
<td>$1</td>
<td>$1.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20,000 to 30,000</td>
<td>$0.61</td>
<td>$0.68</td>
<td>$0.76</td>
<td>$0.85</td>
<td>$0.94</td>
<td>$1.02</td>
<td>$1.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30,000 to 40,000</td>
<td>$0.63</td>
<td>$0.7</td>
<td>$0.78</td>
<td>$0.87</td>
<td>$0.96</td>
<td>$1.04</td>
<td>$1.12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40,000 to 50,000</td>
<td>$0.65</td>
<td>$0.72</td>
<td>$0.8</td>
<td>$0.89</td>
<td>$0.98</td>
<td>$1.06</td>
<td>$1.14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over 50,000</td>
<td>$0.67</td>
<td>$0.74</td>
<td>$0.82</td>
<td>$0.91</td>
<td>$1</td>
<td>$1.08</td>
<td>$1.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C.O.D. Fees In Addition To Postage
up to $5.00: 40 cents
$5.01 to $10.00: 50 cents
$10.01 to $25.00: 60 cents
$25.01 to $50.00: 70 cents
$50.01 to $100.00: 80 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.

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.

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.

IMPORTANT: Parcel Post rate changes enacted April, 1964 are reflected in this table.
Save Up To 50% on Your Instruments

Heathkit Sine-Square Wave Generator A General Purpose Instrument That Produces Research-Quality Sine & Square Wave Signals

- Covers 20 cps to 1 mc 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

USEFUL IN AUDIO, TV, HIGH-FIDELITY AND GENERAL LAB TESTING! Because of its ability to produce a wide range sine and square wave signals, the compact IG-82 can be used for virtually any application in any of these testing areas. There’s plenty of quality performance and versatility, too. Both sine and square wave outputs may be used separately or simultaneously ... without affecting either waveform. And 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 600 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, $5 mo..........................$51.95
Assembled model EUW-27, p. 70, 14 lbs...No money down, $10 mo...$94.00
Export model available for 115/230 VAC, 50-60 cps; write for prices.

IG-82 SPECIFICATIONS—SINE WAVE: Frequency range: 20 cycles to 1 mc. Output volts (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%) 10 volt range, 0 to 3.5 k ohms, 1V, 1V and 0V range, 600 ohm. Distortion: Less than .25%. 20 to 20,000 cycles. Frequency response: ±3 db/20 cycles to 1 megacycle.

SQUARE WAVE: Frequency range: 20 cycles to 1 mc. Output volts: (P. to P.) ±5%, 0 to 10 volt, 0 to 1 volt, or 0 to .1 volt, into a high impedance load. Source impedance: (±10%) 10 volt range, 0 to 200 ohms; 1V and 1V ranges, 52 ohm. Rise time: less than 15 microsecond. GENERAL: Frequency accuracy, ±1%. Power requirements: 105-125V AC, 50/60 cycles, 55 watts. Dimensions: 13" W. x 8½" H. x 7½" D.

Heathkit Laboratory RF Generator Provides Precision-Attenuated RF Signals

- Metered output voltage and % modulation • Operates on fundamentals — 100 kc to 30 mc in five bands • Double shielding of all oscillator circuits • Easy to build with point-to-point wiring

SPECIALY DESIGNED FOR PROFESSIONAL SERVICE SHOP OR LABORATORY! That’s the Heathkit IG-42 Laboratory RF Generator ... an invaluable instrument for design and development work. Covers a frequency range of 100 kc to 30 mc ... all on fundamentals in five easy-to-read bands. The accurately calibrated 200 microampere panel meter indicates output in microvolts or percent modulation as selected by a panel switch.

100,000 MICROVOLT MAXIMUM METERED OUTPUT! And it is controlled by both fixed step and continuously variable output attenuators. Modulation is variable from 0 to 50% at 400 cycles internally or externally between 60 cps and 10,000 cps.

FEATURES EXTENSIVE SHIELDING! The compartmentalized chassis is copper-plate shielded, and with the line cord filter, isolates critical stages and prevents spurious RF radiation. The well-designed power supply is transformer operated for safety and high efficiency ... features generous filter design and voltage regulation for smooth stable plate voltage. The generator output impedance is 50 ohms. The terminating resistor, located in a plastic pod on the end of the coaxial cable, is easily changed for specific impedances.

Your IG-42 is engineered to go together quickly, easily ... to provide you with the versatility and performance you need to carry out efficient and effective 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 cps; write for prices.

IG-42 SPECIFICATIONS—Frequency ranges: Band A, 100 to 290 kc; Band B, 280 to 1000 kc; Band C, 0.95 to 3.1 mc; Band D, 2.9 to 9.5 mc; Band E, 9 to 31 mc. RF output: Impedance, 50 ohms—voltage, 100,000 microvolts max. Attenuation: Course, 10-1 per step, 5 steps—Fine, 10-1 continuous, indicated on meter. Amplitude modulation: CW internal 400 cycles or external audio frequencies. Modulation depth: 0 to 50%, variable, indicated on meter. Tube complement: 6AF4, 6AV5, 12A7F, OB2. Power requirements: 105-125 V. 50/60 cycles. Dimensions: 13" W. x 8½" H. x 7½" 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 Electronics

- Measures distortion from 20 to 20,000 cps
- Meter scales calibrated in volts RMS, % distortion & db
- Measures noise levels down to -60 dbm
- Quality components for precision measurements
- Easy to operate and assemble

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 generator such as the Heathkit IG-72 or IG-82, this superb unit will accurately measure harmonic distortion at any frequency between 20 and 20,000 cps. 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. Order yours now!

Kit IM-12, 13 lbs...No money down, $5 mo. $54.95
Export model available for 115/230 VAC, 50-60 cps; write for prices.

IM-12 SPECIFICATIONS—Frequency: 20 cps to 20,000 cps in three ranges: Distortion: 1, 3, 10, 30, 100%, full scale. Voltmeter: 0, 1, 3, 10, 30 volts full scale. Input resistance: 300 k ohm. Minimum input voltage for distortion measurements: 0.3 volts. Output voltage for monitoring: 2.5 volts at full scale. Maximum distortion: 10% of full scale. Tube complements: OA2, 6X4, 5879, 12AT7, 12AX7, 12B97. Power requirements: 105-125 V, 50/60 cycles AC, 30 watts. Dimensions: 15" W x 8½" H x 7" D.

Heathkit Audio Analyzer...3 Audio Test Instruments In One...Performs Complete Intermodulation Checkout

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

COMPACT, EASY-TO-USE, VERSATILE! The Heathkit IM-22 audio analyzer provides all the facilities you need for complete and thorough IM analysis of stereo high fidelity equipment. Performs all basic functions with only two sets of test leads. A unique built-in switching system allows use of any portion of the instrument separately or combines functions internally for simple operation...no clutter of test instruments...no more confusing mass of 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 6kc and 60 cps 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 cps; write for prices.

IM-22 SPECIFICATIONS—Frequency response—AC VTVM: 10 cycles to 100 kc ± 1 db. Wattmeter: 10 cycles to 50 kc ± 1 db; I.M. Analyzer high pass filter: 2000 cps to 12,000 cps. I.M. Analyzer low pass filter: 10 cps to 600 cps. Range AC VTVM: 01, 03, 01, 1, 3, 10, 30, 100, 300 volts RMS full scale. DRM: -60 to -50, -40, -30, -20, -10, 0, +10, +20, +30, +40, +50. Reads from 00 to +52 dbm. Wattmeter: 0.15 mw, 1 mw, 15 mw, 150 mw, 1.5 w, 15 w, 150 w, full scale. Maximum power: 25 watts, intermittent power to 50 watts. I.M. Analyzer: 1.5, 3%, 10%, 15%, 20%, 30%, 50% full scale. Input impedance—AC VTVM: 1 megohm or 4, 8, 16 or 600 ohm switch selected. I.M. Analyzer: 1 megohm or 4, 8, 16 or 600 ohm switch selected. Wattmeter: 4, 8, 16 or 600 ohm internal load, 10,000 ohm across external load. Output impedance—low and high frequency output: 3000 ohm (600 ohm when shunted with 750 ohm resistor). Internal generator frequencies—low frequency, 60 cycles; high frequency, approximately 6 kc. 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 cycles 20 watts. Dimensions: 13" W x 8½" H x 7" D.
Heathkit Classic... features reliable, proven, time-tested circuitry. The dual series-regulators operate well within their ratings.

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

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

Heath Offers You Incomparable "Extra" Customer Service
Engineering, Research, and Servicing

Heathkit Variable-Voltage Regulated Power Supply Provides
A Wide Range Of Voltages 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

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 accidentally 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 cps; 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. Output variation less than 1% ±0 V. change at 117 VAC input. Ripple: Less than 10 millivolts RMS, ripple, jitter and noise. Output impedance: Less than 0.050 ohms, DC to 20 ma. 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" Regulated Power Supply Excellent For Testing Or Servicing—Features An Adjustable Current Limiter

- All-transistor solid-state circuitry • Relay protected against short circuit & overload • Four current ranges, 50 MA, 150 MA, 500 MA & 1.5 A • Adjustable current limiter, 30 to 1000% 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 an all-transistor 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 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.

Finned "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. ... $114.95
Export model available for 115/230 VAC, 50-60 cps; write for prices.

IP-20 Specifications: Output: 0-150 volts DC ±0.5 volts full load at 2 ma. ±2 volts full load at 0.5 ma. Output range: 0-100 volts DC at 2 ma or 1 ma maximum. Ripple & noise: Lower than 25 microvolts ripple and noise. Transition response: Less than 25 microseconds. Output impedance: Less than 0.050 ohms DC to 20 ma. Overload protection: Current limiter & relay. Meters: 0-150 volts ±1%, 0-5 ma ±2%. Current ranges: 50 ma, 150 ma, 500 ma, 1.5 amp. Voltage ranges: 5 V, 15 V, 50 V. Front panel controls: On/Off, coarse voltage switch, fine voltage adjust, current range switch, current limit adjust, meter switch, DC regulation, reset toggle switch. Output terminals: (3), plus (+), minus (−), chassis ground. Dimensions: 7½" L x 6½" W x 11½" D.

Heathkit Battery Eliminator ... Low AC Ripple Makes This A Remarkably Versatile Low-Voltage Supply

- Convenient switch-selection of 6 or 12 volt DC power • Special ripple filter circuit holds AC ripple to less than .3%. Panel metered output voltage & current • Doubles as a convenient battery charger • Heavy-duty well-rated components throughout • Dependable silicon diode rectifier circuit provides increased efficiency

An Instant Source of 6 Or 12 Volt DC Power! This modern battery eliminator provides a ready, reliable source of 6 or 12 volt DC power for servicing all types of transistor and hybrid radio equipment ... no stock of batteries to keep on hand or messy storage batteries to worry about.

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 Include! 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
Assembled IPW-12, 17 lbs. ... No money down, $6 mo. ... $59.95
Export model available for 115/230 VAC, 50-60 cps; 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, 3 amp continuous, less than .3% ripple. Power requirements: 105-125 volts 50/60 cycles AC at 200 watts. Dimensions: 13" W x 9½" H x 7½" D.

Look To Heath For The Newest, The Finest In Electronic Kits

59
3-Decade Condenser Kit

This precision laboratory-type capacitance decade provides convenient switch-selected capacitor values from 100 uf to 0.111 uf in 100 uf steps. Ideal for use in substitution tests, and many more applications where extremely high accuracy is desired. Shows effects of different capacitance to determine proper value...often faster than involved calculations! High quality ceramic wafer switches have positive detent action.

Kit IN-21, 3 lbs. .......................................................... $17.95

IN-21 SPECIFICATIONS—Range: 100 uf to 0.111 uf in increments of 100 uf. Voltage rating: 350 v. DC continuous. 500 v. DC intermittent. 1000 v. DC instantaneous test. Accuracy of incremental capacity: ±1%.

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 at terminals with all sw. set at zero. Dimensions: 7½" W x 5½" D.

Resistance Substitution Box Kit

Radio and TV service technicians find this kit valuable for restoring proper circuit characteristics when replacing 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 5¾" L x 3½" W x 3" H.

Kit IN-12, 2 lbs. .................................................................. $5.95

Condenser Substitution Box Kit

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 uf to 0.22 uf. All capacitors are rated at 600 volts except the smallest three and the two largest which are 300 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 5¾" L x 3½" W x 3" H.

Kit IN-22, 2 lbs. .................................................................. $5.50

Heathkit FM Alignment Generator

• Variable 10.7 mc sweep, 200 kc to over 1 mc • Switch-selected 90, 100 & 107 mc signals • 100 kc bandwidth markers for checking bandpass

FAST, EASY FM ALIGNMENT! Provides all essentials for tuning RF and IF circuits. Sweep center marker is crystal controlled. A 400 cps signal is available to modulate RF for audio checks. Complete with test leads.

Kit FM0-1, 5 lbs. ... No money down, $5 mo. ........................................ $34.95

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

FM0-1 SPECIFICATIONS—RF alignment output: 90, 100 and 107 mc, switch-selected. Modulation: 400 cycle incidental FM. For IF and detector alignment: 10.7 mc, sweep. Sweep width: 200 kc to over 1 mc. Markers: 10.7 mc (crystal), 100 kc submarkers. Modulation: 400 cycle AM. Other outputs: 10.0 mc (crystal) and harmonics, 100 kc and 400 cycle audio. Tube complement: (1) 6UB. Power supply: Transformer, selenium rectifier. Power requirements: 105-125 V, 50/60 cycle, 12 watts. Cabinet size: 7½" H x 4½" W x 4½" D.

Heathkit Laboratory "Q" Meter

• Tests components at operating frequency—150 kc to 18 mc
• Measures Q, L, and distributed capacity of coils • Large 4½" 50 uh meter—easy-to-read dial scales • Special test coil furnished for calibration • Oscillator output metered for constant injection

A PRACTICAL TOOL FOR ENGINEERING AND DESIGN...tests components under actual working conditions. Measures unknown capacitors (fixed & variable), distributed capacity, and "Q" of coils. No involved calculations necessary, since the meter shows "Q" values directly.

Kit QM-1, 13 lbs. ... No money down, $6 mo. .................................. $54.95

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

QM-1 SPECIFICATIONS—Frequency: 150 kc to 18 mc in four bands. Inductance: 1 microhenry to 10 millihenrys. "Q": 250 full scale x1 or x2. Capacitance: Actual, 40 uf to 450 uf; Effective, 40 uf to 400 uf; Vemler ±3 uf. Tubes: (1) 12AU7, (1) 6AL5, (1) 12AU7, (1) 6SK, (1) OJJ/5105. Power requirements: 105-125 volts, 50/60 cycles AC, 30 watts. Dimensions: 8" H x 17½" W x 6¼" D.
Equipment...Up To 50% Savings

Heathkit Tube Checker...Fills All Daily Service Requirements

- Latest design features and professional styling
- 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

With this modern up-to-date tube checker on your test bench you can test tubes encountered in everyday radio and TV servicing. Saves valuable time by eliminating doubt and guesswork as tube quality before further circuit investigations are made.

VERSATILE. 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 or 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 obsolescence. Thirteen 3-position switch 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

Heathkit Mutual-Conductance Tube Tester...Tests Dynamic Transconductance For Highest Quality Tube Check

- No finer tube tester in kit form anywhere!
- Indicates Gm to 24,000 microhms
- Ultra-sensitive grid current test
- Direct-reading ohmmeter leakage test
- Constant current heater supplies
- Built-in switch-operated calibration circuit for high accuracy
- Built-in adapter for testing Compactron, Nuovistor, Novar & 10-pin miniature tube types

Professionals involved in critical service and design work choose the Heathkit TT-1A. It offers sophisticated, thorough tube testing facilities at low acquisition cost.

AN OUTSTANDING ARRAY OF FEATURES. Versatile switching facilities accommodate all tube types, regardless of base-pin connections, to protect against obsolescence. 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 obsolescence 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 buss," "Plate buss," and "Grid buss," switches allow testing both sections of a twin 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, voltmeters or other instruments required. Other service-designed features include an illuminated chart, which offers a wide range of tube characteristics on both tubes and a 110 volt AC outlet for other equipment. Handsomely styled in a rich, black leatherette portable case the TT-1A is ideal for tests "on" or "away from" the test bench. Order yours today!

Kit TT-1A, 34 lbs...No money down, $14 mo...$149.95

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

IT-21


TT-1A

Heathkit "Space-Saver" 3" DC Oscilloscope
For DC, AC, and Low Frequency AC Applications

VERSATILE. This beautifully designed instrument takes only a fraction of the space occupied 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 SLOPE RATES. The recurrent sweep generator employed in IO-10 covers 5 cps to 50 kc 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 "read-out" 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 assures 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, $9 mo. ................. $89.95
Export model available for 115/230 VAC, 50-60 cps; write for prices.


Heathkit "General Purpose" 3" Oscilloscope
Compact ... Lightweight ... Surprisingly Versatile ... An Ideal Scope For Home Or Classroom Electronics

• Push-pull vertical and horizontal amplifiers • Wide-range sweep generator—20 to 100,000 cps • Automatic sync–retrace blanking • Clean, open circuit layout for easy assembly

AN AMAZING VALUE! This handy oscilloscope fills hundreds of the daily requirements in servicing, the home workshop, 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 tubes 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, $5 mo. .................. $54.95
Export model available for 115/230 VAC, 50-60 cps; write for prices. See page 65 for comb. offer with EF-2 Applications Course. .......... $62.95

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

**Heathkit 5" Wide-Band Laboratory Oscilloscope**

- 5 mc bandwidth
- Heath patented sweep circuit—10 cps to 500 kc
- 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

**FEATURES**

- VALUES
  - Satisfy most test bench purposes
  - Invaluable in general investigations
  - Versatile
  - Suitable for a wide range of applications
  - Ideal for a variety of circuits
  - Easy to use

**APPLICATION**

- Satisfaction
  - Satisfaction guaranteed
  - Economical
  - Reliable

**RANGES**

- **HORIZONTAL**
  - 10 mc to 500 kc
- **VERTICAL**
  - 0.5 volts RMS

**SPECIFICATIONS**

- **Horizontal Sweep**
  - 10 mV/cm to 50 Volt/cm
- **Vertical Output**
  - 2.5 volts RMS

**OUTSTANDING FEATURES**

- **DEFINITE**
  - Controls
  - Connections
  - Controls

**OPTIONS**

- **Variable Sweep**
- **Touch Control**
- **Linear Control**

**COMPATIBILITY**

- **Accessories**
  - Probe Kits
  - Additional Amplifiers
  - Oscilloscope Leads

**ATTACHMENTS**

- **Low Frequency**
  - 10 mV to 500 mV
- **High Frequency**
  - 100 mV to 5000 mV

**ACCESSORIES**

- **Oscilloscope Accessories**
  - Kit Form or Factory Assembled

**ADDENDUM**

- **Ordering Information**
  - Kits
  - Options
  - Accessories

**HEATHKIT—PIONEER AND WORLD LEADER IN ELECTRONIC KITS**

---

**Oscilloscope Accessories**

**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.

- **Kit 337-C**: $3.50
- **Assembled 337W-C**: $4.50

**Low Capacitance Scope Probe Kit**

This probe is an essential aid in high frequency circuit investigations, minimizing 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.

- **Kit PK-1**: $4.95

**Heathkit Electronic Switch**

- All-electronic switching
- Separate gain controls for each channel
- Four switching rates—150, 500, 1500, and 5000 cps
- Sync output to control scope sweep

**LET'S 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. Measures 9½" W x 6½" H x 5" D.

- **ID-22**: $23.95

---

**HEATHKIT—PIONEER AND WORLD LEADER IN ELECTRONIC KITS**
IMPScopes Achieved Immediate Success In High School Biology Classes...

IMPscope Lets Students “See” Physiological Phenomena

WHAT IT DOES
IMPscope With Accessories... 1. Clearly Demonstrates EKG • Shows Human EKG • Shows Frog Sciatic Nerve Impulse • Shows Frog EKG • Shows Plethysmographic Pulse Pressure Display • Plus Many More Lab And Classroom Uses

Included With IMPscope
• Input termination and calibrator
• Human EKG electrodes • EKG paste • Connecting leads

Kits

IMPScopes

EVA-3-1 $35.00
Accessory Package
• Plethysmograph • Nerve chamber
• EKG vector dolly • Frog EKG electrodes

EVA-3-1, Accessory Package: Includes nerve chamber, vector dolly, plethysmograph, frog electrodes & manual of instructions. 3 lbs. $35.00

Students can find it easy to assemble, it’s a complete set of NSF and package.

Highly suitable for teaching science.

New Insight into the Life Sciences

To the student... IMPscoope... 1. Clearly Demonstrates EKG...the student can take a closer look at physiological phenomena.

Impscoop is a complete teaching tool consisting of a high-gain oscilloscope with built-in stimulator, laboratory sourcebook, and many accessories.

Brings the recent physiological instrumentation techniques to the student in the classroom... The EVA-3-1 has many features that can be used in a classroom environment.

It has also been used in many college physiology courses.

Kits

IMPScopes

EVA-3-1 $35.00
Accessory Package
• Plethysmograph • Nerve chamber
• EKG vector dolly • Frog EKG electrodes

EVA-3-1, Accessory Package: Includes nerve chamber, vector dolly, plethysmograph, frog electrodes & manual of instructions. 3 lbs. $35.00

Heathkit Educational Analog Computer...Lowest Cost Computer Of Its Quality On The Market

The entire range of analog computer electronics is within easy reach of anyone. The EC-1 can be used to illustrate and solve a multitude of complex mechanical and mathematical problems.

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.

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.

The EC-1 is easy to assemble and operate. Complete instructions are supplied.

Kits

EC-1, 49 lbs. $189.95
Export model available for 115/230 VAC, 50-60 cps; write for prices.

Use Heath's Technical Consultant Service—Just Drop Them A Line On Any Kit Subject
Your Classroom...Within Your Budget

“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 VTVM...discusses the VTVM 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 VTVM's!

Kit EF-1, Text and special power supply (for VTVM owners), 4 lbs. $8.95
Kit EF-1-3, includes EF-1 and IM-11 VTVM, p. 46, 9 lbs.
No money down, $5 mo. $32.50
Kit EF-1-4, includes EF-1 and IM-13 VTVM, p. 47, 11 lbs.
No money down, $5 mo. $38.95
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
- Solderless spring-clip connectors permit fast, simple circuit changes during experiments
- Big 169-page textbook remains a valuable reference source
- Ideal for beginners and professionals

COMPLETE AND THOROUGH SUBJECT COVERAGE! Well-organized and informative textbook is of maximum help to beginners...provides a fresh, new approach to the basic theory and application of the oscilloscope to professionals! Besides the 169-page text, which is written in plain, simple-to-understand language, the EF-2 includes a special test chassis for performing interesting and educational experiments...clarifies material by dramatically illustrating various points outlined in the text.

In addition you learn the general principles of electronics, and maintenance, service, and special applications of the scope. “Solderless” spring clip connectors allow fast, easy circuit changes and permit using parts again and again, once initial soldering is done. Order with either the IO-21 or IO-12 oscilloscopes, and enjoy the extra savings!

Kit EF-2, Text and special chassis & parts, 4 lbs. $9.95
Kit EF-2-3, includes EF-2 and IO-21 Oscilloscope, page 62,
16 lbs. No money down, $7 mo. $62.95
Kit EF-2-4 includes EF-2 and IO-12 Oscilloscope, page 58.
28 lbs. No money down, $9 mo. $84.95
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

IDEAL FOR CLASSROOM, FOR SELF-TEACHING, OR AS REFERENCE FOR PROFESSIONALS. The EF-3 Technical Applications course shows the proper use, and provides an understanding of signal generators in servicing and alignment. That informative text, written in plain everyday language covers theory, function and use of RF and Audio frequency generators. Student performs interesting experiments, using the special test chassis furnished, to illustrate & clarify text material. Special “solderless” spring-clip connectors make circuit changes quick & easy after initial soldering is done. Textbook contains a wealth of information that serves as a handy reference for years to come. Buy in combination with IG-102 or IG-82 generators for extra savings!

Kit EF-3, Text and special test chassis, 4 lbs. $11.95
Kit EF-3-2, includes EF-3 and IG-102 Signal Generator, pg. 53
10 lbs. No money down, $5 mo. $37.95
Kit EF-3-3, includes EF-3 and IG-82, pg. 56, Sine-Square Generator, 17 lbs. No money down, $7 mo. $61.95
Manuals only for EF-3 (single copy) $5.00
(10 or more copies) $3.00 each.

Heathkit Step-By-Step Instructions And Big Fold-Out Pictorials Are Famous For Clarity And Simplicity
Heath Berkeley Physics Laboratory

- Complete 2-student college physics lab stations
- Same Heath educational and professional test instruments as used in the development of the Berkeley Physics Laboratory
- Available in assembled or kit form to fit budget requirements
- Instruments may be purchased separately or as complete lab stations
- Instruments can be used for an unlimited spectrum of laboratory work—course is not bound to an inflexible list of predetermined experiments and exercises
- Standard components provide replacement parts for test chassis

HEATH, MANUFACTURER OF TEST INSTRUMENTS & MATERIALS AS USED AT BERKELEY...now provides complete instrumentation facilities for outfitting Berkeley-type college physics laboratories. One basic Heath Berkeley Physics Laboratory station includes all the instruments needed by two student groups to perform all of the experiments of the Berkeley course. Special component groups for Parts A, B, C, & D of the course can be supplied separately as they continue to become available. Order components for Part A along with the instrumentation for initial outfitting.

A MODERN AND COMPLETE LAB SYSTEM...The Heath Berkeley Physics Laboratory Part A consists of six high quality test instruments and two laboratory component sets plus battery set. Each instrument is rated for professional research and testing and will provide classroom experience comparable to the modern electronics or research laboratory. The component sets, test chassis and cathode ray tube with deflection coils, are up to date in every respect, and reflect the leadership in electronics and instrumentation gained by Heath. All units meet the instrumentation and power requirements for the Berkeley Physics Laboratory.

A NEW IDEA...a test chassis that makes breadboarding practical—provides positive contact through soldless connections, plus low stray inductance and capacitance, assuring accurate experimental results. The use of standard components permits "open-ended" experiments at very low cost. Component shells of the cathode ray tube and deflection coil set are transparent allowing students to make complete visual inspections.

COMPLETE SPECIFICATIONS ON EACH INSTRUMENT...are shown in this Heathkit catalog on the indicated pages. The Berkeley Physics Laboratory Manual is available from McGraw-Hill Book Co. and Heath Co. And only Heath offers a complete instrumentation manual (The Heath Berkeley Physics Instrumentation Manual), showing both schematic and pictorial wiring diagrams for Berkeley Laboratory experimental setups, as well as complete descriptions of each instrument...write for this valuable manual! Order No. 595-764....$2.00

PLACE YOUR ORDER NOW!...to assure delivery in time to meet your class program.

Heathkit Performance Specifications Are Guaranteed
Malmstadt-Enke Instrumentation Lab by Heath...A Coordinated System
Of Instruments, Accessories & Text For Education And Research Purposes

- A complete electronics lab for scientists & engineers
- All equipment factory wired & tested
- Ideal for teaching electronics to both graduate and undergraduate scientists
- Perfect for every day use in research labs
- "Solderless" spring-clip connectors in experimental parts groups allow fast, easy circuit changes
- An authoritative Malmstadt-Enke textbook "Electronics For Scientists"
- Multi-purpose units with features not matched at any price

COMPLETE, COORDINATED ELECTRONICS LABORATORY! Consists of special experimental chassis and parts, factory-assembled test & lab instruments, and an informative textbook...fills countless requirements in scientific, educational and research applications. The EU-100A "Malmstadt-Enke Instrumentation Lab" was engineered by Heath in association with Dr. Howard Malmstadt, University of Illinois, and Dr. Christie Enke, Princeton University...originators of the system and authors of the widely acclaimed text, "Electronics For Scientists." IDEAL FOR ALL SCIENCES! Provides chemists, physicists, engineers, medical scientists, biologists, students and research workers with a firm working knowledge of circuits and modern instrumentation that will prove invaluable in their work.

WIDELY ACCEPTED IN ACADEMIC AND INDUSTRIAL LABS! Used by colleges, universities and industrial institutions at all levels...technician, undergraduate, graduate and post-doctoral.

SPECIAL-PURPOSE INSTRUMENTS! Many units within the EU-100A station serve multi-purpose applications. For example, the EUW-20A Servo-Chart Recorder is useful in learning about servo systems and null-point recorders...recording pressure, speed, temperature, strain, light radiation, etc. in research or development labs when used with suitable transducers...and can be modified with a simple plug-in adapter to provide a sensitive and accurate pH meter for research & control labs.

NEW! ALL-STEEL DESK-TOP CABINET... (illustrated above) holds all EU-100A components and instruments. Everything is in line-of-sight and at fingertip control. 10 labeled instrument power outlets are controlled by a single on/off switch. Sturdy brackets keep tools, leads, and all other parts within easy reach. Requires 30" x 60" desk or bench space. Entire system can be set up and operating within a few hours after delivery.

PURCHASE AS A GROUP OR SEPARATELY! All components are available as a complete system may be purchased separately in select groups, or as individual units for specific applications.

SPECIAL BOOK COMBINATION OFFER! Discover the many practical uses of the famous Malmstadt-Enke Lab Series. Order both the EUA-11 manual and EUP-11 text, "Electronics For Scientists," and get the manual FREE! It's a regular $14 value for only $11.50. Order No. EUP-22A (EUA-11 manual available separately at $2.50).

FREE FOLDER!
Gives full descriptions of entire Malmstadt-Enke Lab System and components. Complete with specifications and prices. Write for your free copy today.

EU-SERIES INSTRUMENTATION BEGINS WITH BASIC ELECTRONICS...ENDS WITH SOPHISTICATED INSTRUMENTS FOR TEACHING OR RESEARCH. Experiment chassis and small parts can be used in conjunction with the "Electronics For Scientists" text as educational laboratory apparatus, or as components for "trial-circuitry" in research and development. EU-Serie instruments are applicable for research...Heath now supplies plug-in modular chassis for precision pH measurement and for polarographic techniques in chemistry. Heath will offer additional modular electronics...the Malmstadt-Enke Laboratory series will continue to grow!

Basic circuits can be constructed, tested, and modified in a fraction of the time required for conventional soldered circuits.

Polarography module is fully described on page 72.

Buy The Complete M-E Station And Save!

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUA-11</td>
<td>$ 2.50</td>
</tr>
<tr>
<td>EUP-11</td>
<td>$11.50</td>
</tr>
<tr>
<td>EU-13A Universal Experimental Chassis &amp; Parts</td>
<td>$ 177.00</td>
</tr>
<tr>
<td>EU-14A Special Experimental Chassis &amp; Parts</td>
<td>$ 64.00</td>
</tr>
<tr>
<td>EUW-15 Assembled Universal Power Supply</td>
<td>$ 75.00</td>
</tr>
<tr>
<td>EUW-16 Assembled Voltage Reference Source</td>
<td>$ 65.00</td>
</tr>
<tr>
<td>EUW-17 Assembled Transistorized Power Supply</td>
<td>$ 20.00</td>
</tr>
<tr>
<td>EUW-18 Assembled Lab Meter With Shunts</td>
<td>$ 22.00</td>
</tr>
<tr>
<td>EUW-19A Assembled Operational Amplifier System</td>
<td>$ 135.00</td>
</tr>
<tr>
<td>EUW-20A Assembled Servo Chart-Recorder</td>
<td>$ 199.00</td>
</tr>
<tr>
<td>EUW-24 Assembled VTVM</td>
<td>$ 62.00</td>
</tr>
<tr>
<td>EUW-25 Assembled DC Oscilloscope</td>
<td>$ 163.00</td>
</tr>
<tr>
<td>EUP-26 Assembled Weston 980 VOM</td>
<td>$ 55.00</td>
</tr>
<tr>
<td>EUW-27 Assembled Sine &amp; Square Wave Generator</td>
<td>$ 94.00</td>
</tr>
<tr>
<td>EUW-28 Assembled Resistance Substitution Box</td>
<td>$ 16.00</td>
</tr>
<tr>
<td>EUW-29 Assembled Capacitance Substitution Box</td>
<td>$ 14.00</td>
</tr>
<tr>
<td>EUW-30 Assembled Decade Resistance</td>
<td>$ 34.00</td>
</tr>
<tr>
<td>GH-25 Deluxe Tool Set</td>
<td>$ 16.95</td>
</tr>
<tr>
<td>Total</td>
<td>$1225.95</td>
</tr>
</tbody>
</table>

EU-100A Special Group Price (Includes all items above) $1100.00
(Educational institutions qualify for additional group discount)

Export models available for 115/230 VAC, 50-60 cps; write for prices.

EUP-22A, All-steel desk top cabinet $130.00
Heath-Built Servo-Chart Recorder

**EUW-20A**

$199.00

All Operating Controls Are On One Panel, Providing A Simple And Yet Complete Control Center.

---

**EUW-20A SPECIFICATIONS**

- Chart Paper: Grid width, 10'.
- Length, 120 foot roll Markings: 0-100, right to left. Chart Speed: 2 inches per minute (standard). Chart Span: Five fixed ranges: 10, 25, 50, 100, and 250 mv. Plus a sensitivity control to permit adjustment for any value from 10 to 250 mv. Also external position available for special plug-in ranges. Pens: Standard fountain pen, cartridge-type. Balancing Time: 0.1 second per inch. 1 second full scale (10'). Error (includes dead zone): Less than 1% of full scale for all ranges, 10 to 250 mv. Repeatability: 0.1%. Maximum Source Resistance: 50 K ohm. Reference System: Mercury cell. Reference Cell Life: 300 hours (approx.). Power Requirements: 105-125 volts, 60 cps AC, 50 watts. Dimensions: 13 1/2" W x 9 1/4" H x 13 1/2" D.

---

**PRECISION RECORDING FACILITIES AT LOW COST!** The Heath model EUW-20A is a precision laboratory-type self-balancing potentiometric recorder that offers many unique operational features at tremendous dollar savings. High quality is emphasized throughout the design of the EUW-20A to provide chemists, physicists, medical researchers, engineers, and other scientists with an accurate, dependable recorder that will fill a multitude of research and control applications. It can be used to record pressure...speed...temperature...strain...pH...light radiation and many other phenomena when used with suitable transducers.

**PLUG-IN ADAPTER CHASSIS AVAILABLE.** A blank adapter chassis (EUW-20) 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-20A to a versatile and highly sensitive direct-reading and/or recording pH/MV electrometer (see page 73). Additional factory-assembled modules are forthcoming. However, 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 Wheatstone bridge, an integrating recorder, a recording microamperemeter, and other devices with servo-chart recorder readout.

**FULL-FEATURED PERFORMANCE.** Uses standard, easily-obtained cartridge-type 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 operation of limited-life components, such as the mercury reference cell and chopper. The impedance reduction damping feature of the recorder makes it possible to introduce damping into the servo system without appreciably increasing the dead zone. Optional chart-speed motors are also available at low cost for specific laboratory functions. Easy access to motor mounts permits fast, easy change to other speeds.

**ORDER THE HEATH SERVO-CHART RECORDER** for outstanding versatility and accuracy, for the ultimate in functional design—all at the lowest cost. Price includes complete EUW-20A instruction manual.

- EUW-20A, 20 lbs. .................. $199.00
- EUW-20A-1, Blank plug-in adapter chassis, 3 lbs. $9.00

---

**EUW-20 CHART PAPER PRICES**

(Part 445-8)

<table>
<thead>
<tr>
<th>Quat</th>
<th>Price ea</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-9 rolls</td>
<td>$4.50</td>
</tr>
<tr>
<td>10-24 rolls</td>
<td>$4.00</td>
</tr>
<tr>
<td>25-99 rolls</td>
<td>$3.50</td>
</tr>
<tr>
<td>100-199 rolls</td>
<td>$3.00</td>
</tr>
<tr>
<td>200-500 rolls</td>
<td>$2.50</td>
</tr>
<tr>
<td>Write for prices on orders exceeding 500 rolls.</td>
<td></td>
</tr>
</tbody>
</table>

---

Heathkit Performance Specifications Are Guaranteed
Heath-Built Malmstadt/Enke Laboratory Instruments

EUW-19A Operational Amplifier
- Four high-gain operational amplifiers plus booster amplifier
- Standard 5-pin amplifier terminals accessible on front panel
- Complately self-contained with built-in power supplies
- Amplifier balance controls on front panel
- Fully assembled and tested

FEATURES HIGH GAIN, LOW DRIFT, RAPID RESPONSE, AND WIDE FLEXIBILITY. This operational amplifier system represents an outstanding value in lab facilities. It can be connected as a constant current source, a controlled potential source, a linear sweep generator, or as a servo-system simulator. Addition, subtraction, integration and differentiation problems can also be programmed for countless applications in measurement, computation and control work.

SOLVES A GREAT RANGE OF PRECISION ELECTRICAL MEASUREMENT AND CONTROL PROBLEMS. See chapter eight of the Malmstadt/Enke text, "Electronics for Scientists," EUW-11, for a full description of the capabilities of operational amplifiers.

COMPLETE INSTRUMENT MANUAL INCLUDED. Discusses the circuitry, theory and operation of the EUW-19A in detail.

EUW-19A, 22 lbs. . . . no money down . . . $135.00
EUA-19-1, Single 5-Amplifier Adapter Chassis, 3 lbs. . . . $9.00
EUA-19-3, 5 Individual Adapter Chassis, 4 lbs. . . . $10.00

EUW-24 Vacuum Tube Voltmeter
- Single AC/Ohms/DC probe
- 7 AC, 7 DC, & 7 Ohms ranges
- Easy to read 4½" meter
- 1% precision resistors
- Factory assembled and tested
- Front panel Servo Recorder connections

The Heath EUW-24 VTM Is Especially Designed For Laboratory Use . . . and features maximum VTM functions and versatility. All calibration and zero-set controls are available at the front panel, and the meter output is accessible through panel-mounted banana jacks for connection to a recorder such as the EUW-20A for permanent records of necessary measurements or for application to experimental setups. Gimbal mounting bracket is included for under-shelf installation. Single-probe and test lead provided.

EUW-24, 6 lbs . . . no money down . . . $62.00

EUW-25 3" DC Oscilloscope
- Identical vertical & horizontal AC or DC coupled amplifiers
- DC to 400 kc bandwidth
- Rise time, less than 1.5 microseconds
- Recurrent sweep generator, 5cps to 50 kc in four ranges
- External capacity binding posts for slower sweep rates
- Factory assembled and tested
- Terminals for Z-axis modulation and direct connection to deflection plates

The identical DC coupled vertical and horizontal amplifiers make this scope a versatile x-y plotter. This oscilloscope is ideal for application to distortion detection, phase angle measurement, hysteresis observation, analog computer readout, and biological and physiological instrumentation techniques requiring conventional to very slow sweep rates.

EUW-25, 18 lbs . . . no money down . . . $163.00


Heath Offers You Incomparable "Extra" Customer Service

Heath-Built Malmstadt/Enke Laboratory Instruments
EUW-15 Universal Lab Power Supply

- Functions as a full-wave, half-wave, bridge or voltage doubler power supply
- Less than 10 millivolts ripple, jitter & noise
- Regulated B+, 200 to 350 volts DC @ 0 to 100 ma
- Unregulated output, 100 to 500 volts DC in five ranges
- Separate power & high voltage on/off switches
- Fully assembled & tested

A MULTI-PURPOSE LAB POWER SUPPLY. Spring-clip connectors on jumper wires permit fast, simple circuit changes—voltages and filtering, etc. Partial schematic diagrams are screened inside the chassis for handy reference. Compare these features and specifications to your requirements.

EUW-15, 15 lbs...no money dn., $8 mo.......................... $75.00

The following specifications are for the EUW-15 Power Supply when it is wired for voltage-doubler operation.

EUW-15 SPECIFICATIONS: B+ voltage output: 200 to 350 volts DC regulated, at 0 to 100 milliamperes continuous. Filament voltage output: 6.3 volts AC at 3 amperes. B+ regulation: Output variation less than 1% from no load to full load at 300 volts. Output regulation less than ±1 volt for ±10 volt variation in the AC line input. B+ ripple: less than 10 millivolts rms; ripple, jitter, and noise. B+ impedance: max. 10 ohms from 5-100,000 cps. Divider voltage (unregulated): Approximately 500 volts, 400 volts, 200 volts, 100 volts, 50 volts, 25 volts divider; internal, using five 1500 ohm 10 watt resistors plus DC, also as a variable internal load. Power requirements: 105-125 volts AC, 50/60 cps, 85 watts. Dimensions: 8½" W x 6½" H x 12½" D.

EUW-16A Voltage Reference Source

- 0-100 volts DC output—Zener stabilized
- Accuracy 1% or 0.1 mv whichever is larger
- Direct reading—potentiometer type operation
- Polarity reversal & push-button zero switches
- Signal input position—Fully assembled & tested

A VALUABLE LABORATORY INSTRUMENT. The voltage is accurately adjustable from 0 to 100 volts DC for calibration purposes, for bias or zero suppress voltages or for other applications where current drain is low. Accurate potentiometric voltage measurements can be made with this instrument. Excellent for meter or recorder calibration.

EUW-16A, 6 lbs...no money dn., $7 mo.......................... $65.00

EUW-16A SPECIFICATIONS—Output voltage: 0-100 volts DC. Resolution: 1 mv on X1 range; 1 mv on X10 range; 10 mv on X100 range; 100 mv on X1000 range. Accuracy: ±1% for coarse switch setting and ±2% for fine control setting. Readout: Directly on three dials; Coarse Voltage, Fine Voltage, Range. Power requirements: 25 watts, 117 v AC, 50/60 cps. Dimensions: 5½" W x 8½" H x 8" D.

EUP-26 20.000 Ohm/Volt VOM

- Large 50-microampere meter, Diode Protected & Weston model 980 Mark II Analyzer
- Battery powered for portable convenience
- Completely factory assembled & tested

A HIGHLY-SENSITIVE, PRECISION VOM. A favorite instrument of thousands of physics and electronic technicians and teachers, the Weston model 980 Mark II Analyzer is complete with special switch-selected damping to reduce the effects of vibration during transportation and handling in your lab. Meter is diode protected against overload.

EUP-26, 4 lbs...no money dn., $6 mo.......................... $55.00

EUP-26 SPECIFICATIONS—Sensitivity: 20,000 ohm/volt DC, 1000 ohm/volt AC. Range: DC Volt; 1.6-8-40-160-400-800-4000. AC Volt; 1.6-8-40-160-400-1600. DC Current, 50 microamperes, 1.6-8-40-160-400-800-4000. Centermeter; 8 x1, 8 x10, 8 x100, 8 x1000, 8 x10,000. Decibels (DB): -15 to -6; -1 to +20; +33 to +46; +33 to +46. Accuracy: ±2%, full scale on 1.6 to 800 V DC ranges; ±3%, full scale on 4000 V DC range; ±3% on all AC ranges. 2.2 divisions, as read on the 0-16 scale, on all ohms ranges. Front Panel Controls: Function Switch, Ohms/Adjust Control, Meter Movement: 50 microamperes, 125 ohm; diode-protected. Batteries: 1 type D cell, 1.5 volts. 1 "B-C" battery, 15 volts (Everyday $4.11). Dimensions: 6½" W x 7½" H x 3½" deep (overall). Net weight: 3 lbs. 1 oz. Shipping Weight: 4 lbs.

EUW-27 Sine-Square Generator

- Less than .25% sine wave distortion
- Less than .1 microsecond square wave rise time
- Sine and square wave output available simultaneously
- 20 cps to 1 mc in 5 bands
- Factory assembled and tested

VERSATILE LABORATORY-TYPE SINE-SQUARE WAVE SOURCE. Separate output attenuators provide steps of 10, 1, and 0.1 volts for both sine and square wave outputs with an extra 0.01 volt step for the sine wave signal. Dial calibration and tracking are excellent.

EUW-27, 14 lbs...no money dn., $10 mo.......................... $94.00

EUW-27 SPECIFICATIONS—Sine wave: Frequency range: 20 cycles to 1 mc. Output volts (RMS): 0 to 10 volts, 0 to 0.01 volt, 0 to .001 volt, or 0 to 0.001 volt when working into a high impedance load. Source impedance: ±19.5%, 10 volt range, 0 to 5 k ohm, 1V, 10V, or .01V range. 400 ohm. Distortion: Less than ±25%, 20 to 20,000 cycles. Frequency response: ±1% to 200 cycles to 5 megacycles. Square wave frequency range: 20 cycles to 1 mc. Output volts: (P to F) ±5%, 0 to 10 volt, 0 to 0.01 volt, 0 to .001 volt, into a high impedance load. Source impedance: ±19.5%, 10 volt range, 0 to 220 volts, 1V and 1V range, 52 ohm. Rise time: less than ±15 microseconds. General: Frequency accuracy: ±5%. Power requirements: 105-125 V AC, 50/60 cycles, 55 watts. Dimensions: 13" W x 8½" H x 7½" D.
Separate As A Complete Lab

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 • 6-way binding posts for easy connection • Fully assembled and tested
A GENERAL PURPOSE LABORATORY METER. The Heath EUW-18 is plug-in terminals for ¾" dual banana plugs (four plugs are included). Shunt wire and two precision resistors are included. Dimensions: 4¾" H x 4¾" W x 4¾" D.
EUW-18 $22.00

EUW-17 Transistorized Power Supply
- Output voltage variable from 0-35 volts DC • Current output to 200 ma • Solid-state circuitry and electronic filtering • Dependable silicon rectifiers • Fully assembled & tested
COMPACT, DEPENDABLE . . . the all solid-state EUW-17 measures only 4¾" H x 4¾” W x 4½" D. A pilot light provides insurance against leaving equipment “on” after class time. Binding posts accept ¾” dual banana plugs. Ideal for laboratory or classroom.
EUW-17 $20.00

EUW-28 Resistance Substitution Box
- Selects each of 36 resistors, 15 ohms to 10 megohms • Resistors E.I.A. standard 10% – 1 watt • Two-position switch for high and low range • Terminals space for ¾" dual banana plug
IDEAL FOR OUTFITTING PHYSICS OR ELECTRONICS LABORATORIES . . . Although the EUW-28 is primarily intended as a component of the Malmstadt-Enke Station, its compact size (4½" L x 4¼” W x 5" H), and wide selection of resistance values make it well suited for general purpose use.
EUW-28 $16.00

EUW-29 Capacitance Substitution Box
- Selects each of 18 capacitors, 0.0001 mfd to 0.22 mfd • Matches dual banana plug with ¾" 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 $14.00

EUW-13A Universal Experimental Chassis & Components
- Four separate chassis • Small parts including potentiometers, resistors, capacitors, tube sockets, and many other typical components • 73 test leads
EUW-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.
EUW-13A Universal Experimental Parts, 10 lbs . . . no money down, $17 mo . . . $177.00
EUW-30 Six-Decade Resistance Box
- Selects values from 1 ohm to 999,999 ohms in 1 ohm increments • ½ of 1% accuracy • Make before break switches
PROVIDES EXCELLENT RESISTANCE ARM FOR DC OR AC BRIDGES. Precision resistors assure accuracy to 0.5%. ¾” terminal spacing for dual banana plugs. 7½" L x 5” W x 6½” H.
EUW-30 $34.00

Heath Offers You Incomparable "Extra" Customer Service
The Heath Polarography System Features
- Provides controlled potential for conventional 3-electrode, or high resistance polarography
- Includes an electronic sweep generator with 6 calibrated sweep rates
- Measures electrode currents from 0.5 to 1000 microamperes full scale
- 5 degrees of damping for recording d.m.e. currents
- Provides continuously variable initial potential
- Adjustable electrode current suppression
- Linear charging current compensator
- Includes very high input impedance follower amplifier for use with any reference electrode
- Low impedance outputs for recording both current and voltage
- Internal panel meter reads electrode current or voltage for manual polarography and amperometric titrations
- Includes fast-response potential control section with external control inputs for use with AC, oscillographic, harmonic, phase, and other special polarography
- Provides remote control of sweep start and reset
- All zener diode references—no batteries or frequent calibration required

The Heath Polarography System Capabilities
- Conventional polarography (two-electrode, dropping mercury electrode, and recorder readout)
- 3-electrode or non-aqueous polarography (with dropping mercury electrode and recorder readout)
- Manual polarography
- Amperometric titrations
- Coulometry (with external coulometer and 2- or 3-electrode cell)
- Cyclic polarography (with triangle generator and X-Y recorder readout)
- AC polarography (with sine wave generator, AC amplifier, and recorder readout)
- Oscillographic polarography (with triangle or sine wave generator and oscilloscope readout)

INNOVATIONS FROM HEATH: The Malmstadt-Enke Instrumentation Laboratory continues to grow in scope of application, providing basic electronics for education; the tools, instruments, and components for research and testing in electronics; and now a new and sophisticated instrument for research and education in chemistry. The Heath Polarography System enables educational institutions to investigate polarographic measurements where previously the cost would have been prohibitive. Its broad versatility opens up a new scope of potential research projects.

ELECTRONICALLY PRODUCED CONTROLLED POTENTIAL POLAROGRAPHY:
- The Heath Polarography Module, in conjunction with the EUW-19A Operational Amplifier, produces a controlled electronic sweep voltage accurate to 1%. For three electrode polarography, the control function maintains a uniformly varying electrode potential, as detected with the reference cell. The result is a linearly changing electrode potential which is independent of the potential between the solution and the counter (current supplying) electrode. The resulting fluctuations in the ion current appear as readout.

EUA-19-2 SPECIFICATIONS:
- Potential control: Max. output voltage: ±50 v.; current: ±1 ma.
- Stability: ±0.10 mv. after warm-up. Noise: 1 mv p-p or less at electrode potential output jack. Input resistance: approx. 100M ohms at reference electrode input. Electrode potential meter range: ±3 v. Electrode potential output resistance: 22 ohms. Initial potential source: Range: ±0.6 v. Accuracy: ±0.1%. Repeatability of adjustment: ±0.5 mv. Extract control source: Range: ±0.5 v. Frequency response: down 3 db at 10 k, 30 microsecond rise time. Switch generator: Calibrated sweep rate: 0.005, 0.01, 0.02, 0.03, 0.04, 1.0, 10 volt/sec., plus or minus. Accuracy: ±1%, individually calibrateable to ±0.1%. Linearity: better than 1% for 1 volt sweep, Range: ±2 v. Hold: will hold at any potential ±5 v for 1 min. or more. Current measurement: Calibrated ranges: 0.5, 1.0, 2.0, 3.0, 10, 20, 30, 50, 100, 1000 microamperes. Outputs: 10 v full scale and 100 mv full scale. Accuracy: ±1% at output jacks, ±2% on meter. Damping time constants: 1.0, 0.1, 0.03, 0.01, 0.1, 1, 3, 5 sec. on 100 mv output only. Current suppression: up to ±90 microamperes in 2 ranges. Charging current suppression: up to 1 microampere/volt of sweep.

EUA-19-2 POLAROGRAPHY MODULE
- 9 lbs.............................................. $185.00
EUA-19A OPERATIONAL AMPLIFIER
- 22 lbs............................................ $135.00
EUA-20A CHART RECORDER
- 23 lbs............................................. $199.00
EUA-401 COMPLETE POLAROGRAPHY SYSTEM (CONSISTS OF EUA-19-2, EUA-19A, EUA-20A), 54 lbs........................................ $498.00

Further educational discounts available.
Note: The EUA-401 and EUA-19-2 will be available for shipment in September 1965. Place your order now.

With suitable electrodes, function generators, and readout devices, the new Heath Polarography System will perform all the functions described.
Malmstadt-Enke Laboratory

Recording pH Meter/Recording Electrometer

The Heath EUW-301 pH Recording Electrometer can be used as a general-purpose laboratory pH meter or as a research instrument that can provide exacting pH and millivolt measurements. On all scales and at all times the electrometer operates as a true null-point instrument. This feature enables pH and millivolt measurement from very high to very low impedance transducers . . . acid-base titration curves, reaction-rate curves, oxidation-reduction titration curves, and stability curves can be readily obtained.

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. 6.000-8.000 pH, etc.).
- **VERSATILE RECORDING SPEEDS!** Chart with 10" grid on 120" roll moves at selected rates. Standard rate of 2"/min.; other chart speeds as low as 2/"min. and as high as 12/"min. are available with interchangeable motors.
- **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.).
- **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, 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 2000 megohms.
- **ADAPTS TO PLUGS OR MODULES!** Easily added because of the modular design and connector arrangement provided.

**EUA-20-17 Buffer Assortment...** $0.00
Buffer solutions by Mallinkrodt. Includes one pint each of pH 4.01, 7.00, and 10.00 buffers; 150 ml bottle of saturated KCl solution for retaining reference electrodes in unbreakable plastic bottles.

**EUA-20-23 Combination pH Electrode...** $3.00
Sargent 29-300-10 includes both pH electrode and reference electrode in single miniature glass envelope. 0.14 pH. 0.80°C.

**EUA-20-12 pH Test Box...** $2.00
Provides quick pH meter check-out independent of cell or buffers through switch-selected output calibrated in pH units, 1% component accuracy. Checks linearity of pH meter from pH 0 to 14. Tests temperature compensation of reference electrodes, and for leakage currents in input circuitry of meter. Provides voltages for setting recording electrometers. Provides zero suppression voltages for use with potentiometric recording circuits. Test box simulates voltages from pH electrodes with 0 volts as-symmetry potential.

**EUA-20-19 Reference Electrode...** $20.00
Beckman #39170, filtering junction calomel electrode. Lead length 30".

**EUA-20-16 Temperature Probe...** $18.00
Provides automatic temperature compensation of the EUW-301 Recording pH Electrometer. Simple plug-in connection.

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 EUW-20A Servo Chart Recorder coupled with a special pH module, EUA-20-11. It may be purchased as a complete unit, or those who already own an EUW-20A 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, EUA-301-1, is also available for converting the EUW-301 to a conventional Servo Chart Recorder.

PRECISION MODULAR ELECTRONICS PROVIDES 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 coefficients, 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 circuitry is connected for simple modifications by plug-in adapters. One plug-in adapter can convert the pH recording electrometer into a precision recording photometer for use in spectrophotometry, or an ionization detector readout for gas chromatography. The pH Recording Electrometer can be easily adapted for control of automatic burettes and for pH Stat.

**EUW-301, pH Recording Electrometer, 26 lbs. (pH electrodes not included)...no money dn., $28 mo. $300.00**

**EUA-20-11, pH Module only, 8 lbs. (converts Heath EUW-20A Servo Recorder to pH Recording Electrometer) no money dn., $12 mo. $125.00**

**EUA-301-1, Parts Kit (chopper, three 5-prong plugs and back cover) to convert recorder in EUW-301 to standard EUW-20A chart recorder. $20.00**

Heath Offers You Incomparable “Extra” Customer Service
Unsurpassed Value In Amateur Radio Equipment...

Explore The Exciting World Of Amateur Radio With The Heathkit HR-10

- Amateur band coverage only for maximum stability & accuracy
- Tunes SSB, AM & CW signals on 80 through 10 meter bands
- Prebuilt, prealigned tuning unit for fast, simple assembly
- Lattice-type crystal filter for high selectivity
- Superheterodyne receiver with RF stage for extra sensitivity
- Complete controls for full operating convenience
- Attractive low-silhouette styling with green-gray color combination

STARTER, STAND-BY, OR FULL-TIME PERFORMER... build the HR-10! It's an exceptionally fine receiver any amateur would be proud to own. Covers the amateur bands 80 through 10 meters with each separately calibrated on the accurate, easy-to-read slide-rule type dial. This 7-tube superheterodyne receiver features an RF stage for high sensitivity, and a half-lattice crystal filter for sharp selectivity. Plus, there's a specially-designed detector circuit and beat oscillator for receiving AM, CW, and SSB signals.

THE PERFORMANCE FEATURES YOU FIND IN EXPENSIVE RECEIVERS. There's a built-in "S" meter to indicate signal strength, and provisions for a plug-in 100 kc crystal calibrator. A standby/receive switch enables the HR-10 to "mate" with most transmitters. Even experienced amateurs choose the HR-10 for a stand-by receiver... separate AF and RF gain controls, and an AVC on/off switch mean big set versatility. Choose the HR-10 for your starter, stand-by, or full-time performer... you'll experience years of dependable performance.

Kit HR-10, 20 lbs... No money down, $8 mo. .............. $75.00
Kit HRA-10-1 Plug-in 100 kc crystal calibrator, 1 lb. ........ $8.95

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


Heath Has The World's Largest Selection Of Electronic Kits
Through Heath Engineering And Design

**Heathkit DX-60A Phone & CW Transmitter**
- 90 watts phone or CW-80 through 10 meters
- Neutralized 6146 final amplifier
- Built-in low pass filter
- Grid block keying
- Easy access to crystal sockets
- May be run at reduced power for novice operation
- Transmitter mate of the HR-10

**NOVICE OR OLD-TIMER, CHOOSE THE DX-60A!** 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 HG-10 VFO page 76, an excellent VFO for the DX-60A.) No transmitter in this price range will offer you more.

**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 cabled wiring harness make the entire satisfying project a matter of a few evenings.

**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 band switching and pi-network for complete operating convenience. Less crystals. Compare!... you'll choose the Heathkit DX-60A.

Kit DX-60A, 25 lbs... No money down, $8 mo. $79.95 Export model available for 115/230 VAC, 50-60 cps; write for prices.

**DX-60A SPECIFICATIONS**
- Power input: 90 watts peak, controlled carrier, phone, or CW
- Output impedance: 50-75 ohm (coaxial)
- Output coupling: Pi-network
- Operation: CW or AM phone—crystal or VFO control
- Bond coverage: Through 10 meters
- Power requirements: 105-125 V.; 50-60 cps, 225 watts
- Dimensions: 13'/4" W x 11'/4" D x 6'/1/2" H.

---

**Heathkit VHF Transceivers**

The Popular "Benton Harbor Lunch Boxes"

- Neat, compact design—low in cost—versatile
- Ideal for local net & emergency communications
- Crystal-controlled transmitters—5-watt input
- Tunable super-regenerative receivers with RF stage
- Ideal for MARS, and CAP use
- HW-30 2-meter model capable of operation on the new United States Coast Guard Auxiliary frequency, 143.28

**LOW-COST—PLUS NEAT, COMPACT DESIGN...** have made the Heathkit "Sixer" and "Tweer" the fastest selling units on the market today.

**IDEAL FOR LOCAL "NET" OR EMERGENCY OPERATIONS...** 5-watt, crystal-controlled transmitters and the receivers with 1 microvolt sensitivity are more than adequate for local net operations. Communications under "skip" conditions is unlimited.

**OPERATE "MOBILE" OR "FIXED."** 117 volt AC power supply is built-in for fixed-station operation and conversion to mobile use is easily accomplished with the Heathkit GP-11 vibrator power supply shown on this page. "Benton Harbor Lunch Boxes" include ceramic element microphone. Less crystal.

Kit HW-29A (6 meter), 9 lbs... No money down, $5 mo. $44.95
Kit HW-30 (2 meter), 9 lbs... No money down, $5 mo. $44.95

---

**Heathkit Mobile Vibrator**

**Power Supply**

GP-11

- Ideal for use with the "Sixer" and "Tweer"
- Operates from 6 or 12 volt DC source
- Silicon diode rectifiers
- Small, compact—easy to install
- Provides remote on/off switching
- Heathkit green color

Kit GP-11, 6 lbs. $16.88

**GP-11 SPECIFICATIONS**
- Power requirements: 6 volt version, 6.3 VDC @ 6.5 amperes or 12.6 VDC @ 3 amperes for rated output
- Power output: 250 VDC @ 100 ma. ICAS
- Power rectifiers: Two silicon diodes in voltage doubler circuit
- Vibrator: Mollok type 7610 or equivalent. Vibrator frequency: Approximately 115 cps
- Overall dimensions: 4'/4" H x 6'/4" W x 4'/2" D.

Heathkit Performance Specifications Are Guaranteed
Here's the way to get your amateur radio operator's license

Learn the theory, pass the code test... through study at home in your spare time! Course includes 4 authentic American Radio Relay League handbooks: "How To Become A Radio Amateur", "Radio Amateurs' License Manual", "Learning The Radio-Telegraph Code", "Operating An Amateur Radio Station", and code oscillator kit. Plus, 3 records that teach code by the revolutionary "word-method." Begin at 13 words-per-minute, continue at the same rate increasing only word complexity. Develops high proficiency... then, pass your examinations and enjoy the exciting world of amateur radio!

HDP-22: 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... 2 lbs. $2.00
Kit CO-1, Oscillator plus Key only... 2 lbs. $7.95

Heathkit Transistorized Code Practice Oscillator

Here's the way to practice radio-telegraph code... assemble two CO-1's and practice with a friend—conversation in code improves both sending and receiving ability, and you can use your battery powered CO-1 anywhere. Authentic CW tone provides indoor practice — blinker light enables practice in reading Navy-type blinker communications at night. Switch selects speaker or light. Complete with standard telegraph key. Use 2 "C" cell batteries (not included).

Kit CO-1, 2 lbs. $7.95

Heathkit Variable Frequency Oscillator

Calibrated for amateur bands 80 through 2 meters! Provides 5 volts RMS signal—enough to drive most transmitters. HG-10 is the perfect VFO for the DX-60A, and what's more, it keys beautifully. Features 28-to-1 dial drive, plus "spot" switch for off-the-air tuning. Add this to your rig when you go from novice to general class!

Kit HG-10, 12 lbs... No money down, 3 mo... $34.95

HG-10 Specifications—Band coverage: 80 through 2 meters with output frequency in the 3.5 to 4 mc, 7 to 7.425 mc, and 9 to 9.9 mc ranges. Load impedance: 50,000 ohms or more. Output voltage: 5 volts RMS, open circuit. Output connector: Phono-type socket. Power requirements: 108 volts DC at 0.3 ma, or 6.3 VAC or DC at 0.75 ampere. (Power available directly from the DX-60A.) Dimensions: 91/4" W x 6 1/2" H x 9 1/4" D.

HG-10 $34.95
HD-20 $14.95

Heathkit Reflected Power Meter

Shows antenna/transmission line match for rating efficiency and output. Compares forward and reflected power to indicate SWR (standing wave ratio) from 1:1 to 3:1 and percent reflected power on the built-in meter. Handles up to 1 kw peak power on amateur bands 160 through 6 meters. Matches 50 ohm transmission lines, and may be left in line at all times.

Kit HM-11, 3 lbs... $15.95

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

Use Heath's Technical Consultant Service—Just Drop Them A Line On Any Kit Subject
**A Heathkit "Cantenna" Transmitter Dummy Load**

Test to a dummy load and avoid the chance of creating illegal interference! Heathkit "Cantenna" provides the 50 Ohm load you need for testing up to 1-kw transmitters. Standing Wave Ratio (SWR) is less than 1.5:1 for frequencies from 160 to 2 meters. Connect to transmitter through coax fitting... make relative power checks with any standard VTVM or VOM through phono jack provided. Oil coolant capacity, 1 gallon (oil not included).

Kit HN-31, 3 lbs. $9.95

**B Heathkit PM-2 Handy RF Power Meter**

Use it for RF check-out on Ham, Marine, Commercial, or CB transmitters. Indicates transmitter relative power output by sampling RF field near the transmitter antenna. Covers 100 kc to 250 mc, 0.3 volts RMS sensitivity at frequency meter for full-scale reading. Strong magnet holds PM-2 to any ferrous surface. No power connections or battery required.

Kit PM-2, 2 lbs. $12.95

**C Heathkit Hybrid Phone Patch**

Handle Emergency Traffic Fast! HD-19 transfers audio to 600 ohm telephone lines with separate transmit and receive gain controls to adapt to varying land line conditions. Compatible with VOX operated or PTT transmitters! Use with 3 to 16 ohm speakers and Hi-Z microphone input.

Kit HD-19, 4 lbs. No money down, $5 mo... $29.95

**D Heathkit Mobile Speaker**

Neat, compact, ideal for use with all Heathkit Mobile equipment. Rugged steel cabinet includes adjustable gimbals mounting bracket. 8 ohm, 4" x 6" oval, heavy-duty PM speaker produces excellent tone quality. Dimensions-6½" W x 4½" H x 2½" D.

Kit HS-24, 4 lbs. $7.00

**E Heathkit Solid-State Mobile Power Supply For SSB Rigs**

Especially designed for Heathkit mobile SSB transceivers... provisions included for remote operation. Primary and filament lines are circuit breaker protected. Husky ratings also enable broad general purpose use.

Kit HP-13 DC Power Supply... 7 lbs., No money down, $5 mo... $39.95

**F Heathkit AC Power Supply For SSB Rigs**

Recommended AC power source for Heathkit SSB transceivers! HP-23 was especially designed to power a wide variety of SSB rigs, and features excellent dynamic regulation to provide solid SSB signals—includes silicon diode rectifiers and provisions for remote switching of primary circuits. The useful range of output voltages also makes this a versatile general purpose power supply... check it for your needs.

Kit HP-23 AC Power Supply... 19 lbs... No money down, $5 mo... $39.95

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

**G Special SSB "Ham" Microphone**

Ideal for use with SB-400 or ANY TRANSMITTER! Special response, 300 to 3,000 cps favors voice frequencies for clear, sharp SSB communications. Mike stand has grip to-talk switch with lock position. Hi-Z output Rugged die-cast zinc case. Complete with wiring diagrams for use with any rig. Cables included.

HDP-21, 4 lbs... No money down, $5 mo... $29.40

---

**Heathkit Solid-State "Tunnel Dipper"**

- Up-to-date, solid-state equivalent to the grid-dip meter
- Tuned diode oscillator-no tubes
- Covers frequency range of 3 to 260 mc
- Gear-driven tuning
- Durable epoxy-coated plug-in coils
- Coils color-matched to dial scales
- Built-in coil storage
- Battery operated, completely portable... all solid-state circuit functions as a grid-dip meter or absorption wave meter. One of the handiest instruments a ham can own. Easy to build. Less battery.

Kit HM-10A, 3 lbs... No money down, $5 mo... $34.95

HM-10A SPECIFICATIONS—Frequency range: 3-260 mc. Bandwidth: 1.0 kc. 10-db. reading: 30 kc. Sensitivity: 1 mV per grid dip exposure. 10-db. reading: 1.5 mV per grid dip exposure. Period: 100 ms. Power requirements: 1.5 volts (2) 1.5 volt. Dimensions: 5½" L x 2⅛" W x 4⅞" H (cover included).

Over 250 Heathkits To Choose From—World's Largest Selection
Heathkit “KW Kompact”... World’s Smallest Kilowatt SSB Linear Amplifier

- 1000 watts P.E.P. • Tunes 80 through 10 meters • ALC output to exitor • Built-in antenna change-over relay • Built-in SWR meter aids antenna adjustments on the road & monitors for maximum efficiency • Pretuned broad-band input circuit requires no tuning • Engineered with a pair of rugged tubes ideally suited to mobile operation (572-B’s or T-160-L’s) • Full provision for control of “remotely” located AC or DC power supply.

HERE’S A KILOWATT SSB LINEAR AMPLIFIER THAT SETS NEW STANDARDS FOR SIZE AND PRICE! It can be installed under the dash of nearly every model car with plenty of room to spare—room enough in most cars to allow it to be stacked 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 will swell your pride in owning the world’s smallest kW SSB linear. It measures just 3-3/16” x 12-3/16” x 10” D! And what’s more, the KW Kompact is only $99.95!

KW KOMPACT GIVES THE PERFORMANCE YOU EXPECT FROM HEATHKIT AMATEUR EQUIPMENT. A kilowatt in a car means real sock for mobile and emergency communications, and the KW Kompact’s full line of features makes it as versatile as linear types many times its size. A panel mounted SWR meter enables on-the-spot antenna checks and adjustments, allowing continuous peak performance over the entire range of tuning. The antenna changeover relay is built-in, and provides “barefoot” operation when the linear is off. Input circuitry is pre-tuned.

Put A Kilowatt In Your Car!
Heathkit HP-14 Mobile Power Supply

- All solid-state circuitry • Toroidal core transformer • 1500 cps switching frequency • Circuit breaker protection • Includes all interconnecting cables • Remote switching from KW Kompact front panel.

PROVIDES NECESSARY MOBILE POWER FOR KW KOMPACT SSB LINEAR ... including high voltage and bias. The HP-14 achieves the exceptionally high dynamic regulation ideal for SSB operation through use of a toroidal core transformer and solid-state circuitry operating at a switching frequency of 1500 cps.

INSTALL IT AND FORGET IT! ... No fuses to replace! ... Circuit breakers reset automatically. Operates quietly ... 1500 cps signal is only softly audible. HP-14 is recommended for operation only with 12v. alternator equipped, negative ground cars.

Kit HP-14, 10 lbs ... No money down, $9 mo. ... $89.95
HP-14 SPECIFICATIONS—Input voltage: 12 to 14.5 v. DC (negative ground). Input current: 25 amperes average, 50 peak (depends on input drive power to companion linear amplifier and voice characteristics). Allowable ambient temperature: -20° F to 122° F. High voltage output: 2300 v. DC at no load, 2000 v. DC at 500 ma peak (aprox. 170 ma average). Bias voltages: +30 v. DC on load, +110 v. DC @ 60 ma. Duty cycle: 50%, (normal voice modulation). Switching frequency: 1500 cps approx. Dimensions: 8¾” x 7¾” x 2½” D.

Heathkit HP-24 AC Power Supply
For Fixed 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 NECESSARY FIXED STATION POWER FOR THE KW KOMPACT SSB LINEAR ... with ripple voltage less than 1% at 500 ma (full peak power) output, and excellent dynamic regulation for the demands of SSB operation. HP-24 requires either 120 or 240 VAC. All connecting cables are included.

OPERATES FROM KW KOMPACT FRONT PANEL CONTROL ... The HP-24 can be hidden away for convenience, since all necessary controls are available at the front panel of the KW Kompact linear amplifier.

Kit HP-24, 21 lbs ... No money down, $5 mo. ... $49.95
HP-24 SPECIFICATIONS—High voltage: 2500 v. max. with no load; 2000 v. DC at 300 ma; 1500 v. DC min. at 500 ma. Effective output capacitance: 21 µfd. Ripple less than 1% @ 500 ma. Duty cycle: 50%, 500 ma: peak. normal voice operation. CW—35% @ 500 ma; normal telegraphy operation. Bias voltage: -180 v. DC with no load, -120 v. DC @ 60 ma. Duty cycle: Continuous @ 40 ma.

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

Look To Heath For The Finest
Amateur Radio Equipment

Heathkit "Single-Bander" Transceivers...

Choose 80, 40 or 20 Meter Models

- Operate SSB on either 80, 40, or 20 meters
- 200 watts P.E.P. input
- LSB on 80 & 40, USB on 20
- Crystal filter SSB generation
- Complete transceiver operation
- ALC, AVC, and 5-meter
- Built-in VOX & push-to-talk circuitry
- Stable low frequency VFO
- 2 kc dial calibration–6" bandspread–vernier tuning

COMPACT, LIGHTWEIGHT, UNCLUTTERED STYLING... make these units ideal for portable and mobile operation, or for that "corner of the living room" station. Gimbal mounting bracket permits easy installation and removal from auto for double duty in mobile or fixed-station modes of operation. The "Single-Bander" of your choice is a perfect driver for the KW Kompact linear amplifier, or provides effective "barefoot" operation.

FEATURES TO DELIGHT ANY AMATEUR! Features include a deluxe 14-tube heterodyne circuit... 200 watts peak-envelope-power input for long-range communications... a highly stable temperature-compensated 1.5-1.8 mc VFO... crystal-lattice filter for SSB generation... automatic level control for preventing flat-topping... built-in PTT and VOX circuits... provision for use with a linear amplifier. And what's more!... 1 uV receiver sensitivity, 2.7 kc selectivity and slow AVC action assure excellent SSB reception. Provision is made for simple plug-in connection of a 100 kc crystal calibrator for accurate band-edge markings.

DESIGNED FOR FAST, EASY ASSEMBLY. Average assembly time is only 15 hours. Over 90% of the components mount on a heavy-duty circuit board and the remainder of the circuit is connected with a pre-cut, cabled wiring harness. Alignment is easy with all critical stages pre-tuned! The only other equipment you need for immediate on-the-air operation is a PTT microphone, antenna, speaker and a power supply (see below and page 77). Choose one of these fine-performing units now for versatile all-around "Ham" communications at tremendous savings!

- Kit HW-12: 80-meter, 15 lbs. ...No money down, $11.00... $119.95
- Kit HW-22: 40-meter, 15 lbs. ...No money down, $11.00... $119.95
- Kit HW-32: 20-meter, 15 lbs. ...No money down, $11.00... $119.95
- GH-12, Push-to-talk and VOX microphone... 2 lbs.... $6.95
- Kit HRA-10-1, Plug-in 100 kc crystal calibrator... 1 lb.... $8.95

SPECIFICATIONS–RF input: 200 watts PEP. Sideband generation: Crystal lattice bandpass filter method. Stability: 200 cps per hour after warm-up. Carrier & unwanted sideband suppression: 45 db. Frequency coverage: HW-12: 3.8–4.0 mc; HW-22: 2–7.3 mc; HW-32: 1.8–2.2 mc. Receiver sensitivity: 1 uV for 15 db (S+N). R ratio. Receiver selectivity: 2.7 kc @ 8 db, 6.0 kc @ 50 db. Output: 50 ohm fixed (unbalanced). Operation: HW-12 & HW-22, LSB, HW-32, USB. Audio output: 1 watt @ 8 ohms. Mike input: Hi-Z. Panel controls: Frequency, final tune, function (OFF-PTT-VOX-TUNE), RF gain, AF gain (pull for crystal calibrator), VOX gain, meter. Front panel screw-driver adjust for 5-meter and VOX delay. Rear panel controls: Mike gain, tone level, final bias. Tube complement: Twenty-four tube heterodyne circuit. Power requirements: 800 VDC @ 250 MA peak. 250 VDC @ 100 MA. –130 VDC @ 5 MA. 12 VAC or VDC @ 3.75 amperes. Cabinet dimensions: 15 1/2" H x 12 1/2" W x 10 1/2" D.

Sturdy Design—Easy Circuit Board Assembly

Over 90% of the components in these units mount on a heavy-duty circuit board for fast, easy assembly and high circuit stability. All three units are compact, lightweight in design, yet sturdy-built to take plenty of hard use. Ideal for either portable or fixed-station operation.
Heathkit “Ham-Scan” Spectrum Monitor

- Adds "sight" to "sounds" of amateur operations
- Operates with virtually all receivers in use today
- Monitors up to 100 kc of band spectrum—50 kc on either side of the signal to which you are tuned
- Ideal for spotting band openings, checking carrier & sideband suppression, or identifying splattering received signals
- Identifies signals as to AM, CW or SSB types
- Easy to assemble!

CONTINUOUSLY MONITORS AMATEUR BAND ACTIVITY... showing up to 100 kc of band spectrum centered on the frequency to which you are tuned. Eliminates unnecessary "hunting-and-tuning" across the dial to find band openings or areas of maximum activity. All signals within the receiver bandpass and up to 50 kc above or below the frequency to which you are tuned are clearly displayed on the CRT screen as vertical pips. As the receiver is tuned, the display moves horizontally along the baseline with the signal you hear always appearing in the center of the screen.

OPERATES WITH NEARLY ALL RECEIVERS. The Heathkit "Ham-Scan" may be used with receivers with the IF frequencies listed below. Order a "Ham-Scan" for a new dimension in amateur operating.

KIT HO-13, 13 lbs. ... No money down, $8 mo. ... $79.00
Export model available for 115/230 VAC, 50-60 cps; write for prices.

HO-13 SPECIFICATIONS—Receiver IF: 455, 1600, 1681, 2075, 2213, 2445, 3000, 3055, 3395 kc. RF Amplifier—Response: -20.5 db at ±50 kc from middle. Sensitivity: Approx. 50 µv input for 1 db deflection at full gain setting. Horizontal Deflection—Sweep Generator: Linear sawtooth, recurrant type (internal). Frequency: 10 to 50 cps, variable. Sweep width: 30 kc or less, to 100 kc ±50%, continuously variable. (Approx. 15 kc to 100 kc for 455 kc IF). Resolution: 2 kc (frequency difference between two 1" pips whose adjacent 3 db points coincide). Measured at slowest sweep speed and 30 kc sweep width.

Power supply: Transformer operated, fused at 1/2 amp. Low voltage: Full wave voltage doubler circuit provides 250 volts @ 0.5 ma. & 580 volts @ 6 ma. Half wave circuit provides—1500 volts @ 1 ma for CRT. Power requirements: 120 volts AC, 50/60 cps. 40 watt. Tube complement: 3KR1 CRT (medium persistence green trace), 1V2V2V2 rectifier, 6AT6 detector, 6SW6 RF amplifier, 6106 sweep generator/horizontal amplifier, [2] 6E6 RF amplifier, 6E5B oscillator/mixer, [4] 750 ma silicon diode low voltage rectifiers, crystal diode. [1] 12AT7 voltage-variable attenuator. Controls: On-Off intensity, Focus, Horizontal gain, Sweep width, Pip center, Horizontal position, Pip gain, Vertical position, Sweep frequency/AGC, astigmatism. Dimensions: 19" H × 7 3/4" W × 11" D.

Heathkit HQ-10 Signal Monitor... Shows a Continuous Display Of Transmitted And Received Signals

- Shows actual quality of transmitted & received signals
- Displays envelope, AF and RF trapezoid patterns
- Specially designed for amateur radio use
- Automatic switching on transmitted & received envelope patterns
- Built-in two-tone test oscillator, 4-position RF level attenuator
- Handles power inputs from 5 watts to 1 kilowatt
- Simple to connect in antenna system feed line
- Attractive dark-green, perforated cabinet with light gray front panel and contrasting dark-green knobs & scope bezel

MAINTAIN A QUALITY SIGNAL!... HO-10 shows the quality of the signal you transmit or receive. Distortion, over-modulation, no modulation, non-linearity, and many more effects can be spotted immediately.

SWITCHING FROM TRANSMITTED TO RECEIVED ENVELOPE PATTERNS IS AUTOMATIC. On trapezoid patterns a clamping circuit is employed to pull the spot off-screen during "receive" to prevent burning of CRT screen phosphor. Switching to received pattern is manual.

INDEPENDENT OF FREQUENCY. The HO-10 requires no additional tuning when used with transmitters on all amateur bands from 160 through 6 meters, and it operates with all receivers having up to 500 kc IF's.

BUILT-IN TWO-TONE TEST OSCILLATOR. Simplifies transmitter adjustments and testing. When you add the HO-10 to your amateur rig, you will have the finest techniques for signal monitoring at your finger tips.

USABLE WITH CB TRANSCIEVERS, TOO! Manual contains special information on using the HO-10 for monitoring the performance of most CB transceivers.

KIT HO-10, 13 lbs. ... No money down, $6 mo. ... $59.95
Export model available for 115/230 VAC, 50-60 cps; write for prices.


Look To Heath For The Newest, The Finest In Electronic Kits
Kits For Nearly Two Decades

Now!... The SB-Series Moves Up To 6 Meters... With The Heathkit SB-110 6-Meter SSB Transceiver

- Full SSB-CW transceive operation on six meters • 180 watts PEP SSB-150 watts CW • Switch select for Upper Sideband/Lower Sideband/CW operation • Operates PTT and VOX; VOX operated CW with built-in sidetone • Separate offset CW Carrier crystal for clear, pure CW Note • ALC and ANL • Built-in 100 kc calibrator and antenna switching • Heath SB Series LMO (Linear Master Oscillator) — provides truly linear tuning • Covers 50-52 mc with crystals supplied—total coverage 49.5-54 mc • One kc dial calibrations — bandspread equal to 10 feet per megacycle • Crystal filter SSB generator • Fixed station or mobile operation with the Heathkit HP-23 or HP-13 power supplies and SBA-100-1 mobile mount

SB-110 PUTS THE FAMOUS HIGH-PERFORMANCE HEATHKIT SB-SERIES ON "6." Now you can operate 6 meters with VOX control... have single knob tuning... operate "Nets" with transmitter crystal controlled while receiver tuning is variable... put out a stable, solid CW signal on "6"... or work cross-mode during contests, etc. ... plus, have the sock of 180 watts PEP SSB!

IMPROVED MANUAL TECHNIQUES, CIRCUIT BOARDS, AND WIRING HARNESS SIMPLIFY ASSEMBLY!
Kit is divided and packaged in two parts (circuit boards and chassis) and each page of the simple step-by-step instructions is complete with its own two-color pictorial diagram. A VTVM, dummy load, and an AM broadcast receiver are all that is needed for alignment.

DISCOVER THE NEW "FEELING" OF TUNING 6 METERS WITH THE FAMOUS HEATHKIT SB SERIES LMO. That feeling is from the smooth dial mechanism and oscillator stability solid enough to satisfy the rigorous requirements of both CW and SSB operation; plus, truly linear 1 kc dial calibration. The Heath LMO on 6 meters means a maximum drift of less than 100 cps per hour after a 20-minute warmup time; it means dial readings accurate within 400 cps after calibration. Let these performance figures and the specifications below be your guide to choosing the best 6-meter rig available today... the SB-110!

Kit SB-110, 23 lbs... $32 dn., $27 mo. ...$320.00

SB-110 SPECIFICATIONS—RECEIVER SECTION: Noise Figure: 0 db or less. Sensitivity: 0.1 watts for 15 db signal plus noise-to-noise ratio. Selectivity: 2.1 kcs @ 6 dB down, 5 kc max. @ 50 db down. Image Rejection: 50 db or better. IP Rejection: 50 db or better. Antenna Input Impedance: 50 ohm nominal (unbalanced). Output Impedance: Speaker, 8 ohms. Headphones, 600 ohms or higher. Audio Output Power: 1 watt. AGC Characteristics: Audio input level varies less than 10 db for 50 db change of input signal level (0.5 watts to 150 watts). TRANSMITTER SECTION: DC Power Input: SSB, 180 watts PEP, CW, 150 watts PEP. RF Power Output: SSB, 180 watts PEP. CW, 150 watts PEP. RF Power Output: SSB, 100 watts PEP. CW, 90 watts PEP. RF Power Output. Unwanted Sideband Suppression: 55 db down from rated output @ 1000 cps & higher. Distortion Products: 30 db down from rated PEP output. Harmonic Radiations: 35 db below rated output. Hum & Noise: 40 db or better below rated carrier. Audio Input: 0.007 volts minimum for rated input. CW Sidetone: Internally switched to speaker with transmitter in CW mode & key depressed. Approx. 800 cps tone. Keying Characteristics: VOX operated from keyed tone using grid-block keying. GENERAL: Frequency Coverage: 49.5 to 54.0 mc in 500 kc segments (50.0 to 52.0 mc with crystals supplied). Frequency Selection: Built-in LMO or crystal control. Frequency Stability: Less than 1000 cps drift per hour after 20 minutes warmup under normal ambient conditions. Less than 100 cps drift for ±10% supply voltage variations. Modes of Operation: SSB, single sideband (suppressed carrier, with selectable upper or lower sideband). Tune, continuous wave. CW, keyed continuous wave (8000 cps offset crystal for cross-mode operation between USB and CW). Dial Accuracy: Electrical, within 400 cps on all band segments, after calibration at nearest 100 kc point. Visual, within 200 cps. Dial Backlash: No more than 50 cps. Calibration: Every 100 kc. Intermediate Frequencies: Receiver: First IF & Transmiter First IF, 3.905 to 8 cps; Second IF, 8.895 to 147.95 mc. Crystal frequency; Power Requirements: High volt age: +700 volts DC @ 250 ma with 1% max. ripple. Low voltage: +250 volts DC @ 100 ma with 0.5% max. ripple. Bias voltage: —115 volts DC @ 10 ma with 5% max. ripple. Filament voltage: 12.6 volts AC/DC @ 4.355 ma. Dimensions: 14½ "W X 6½ "H X 13½ "D.

NEW! Mobile Universal Mounting Bracket For SB-110

- Permits virtually any-angle mounting of SB-110 • Provides rugged support to handle stress and strain of mobile installation • Includes all necessary electrical connectors and associated wiring for quick-disconnect and plug-in type transceiver mounting

GO SIX-METER SSB MOBILE WITH THE SB-110! SBA-100-1 permits easy installation of SB-110 on transmission hump or under dash. Allows quick plug-in of entire SB-110 in car for easy change from fixed to mobile operation. Supporting rods are concealed behind mounting base when SB-110 is removed. Finish matches SB-110.

Kit SBA-100-1, 6 lbs. ...$14.95

Heath Offers You Incomparable "Extra" Customer Service
Heathkit® Deluxe SB-Series Sets The

Heathkit SB-300 Amateur-Band Receiver $250

- 80 through 10 meter amateur bands with all crystals furnished, plus provision for VHF converters • Crystal-controlled front-end for same rate tuning on all bands • 1 kc dial calibrations—100 kc per dial revolution • Bandspread equal to 10 feet per megacycle • Tuning dial to knob ratio approx. 4-to-1 • Provision for transceive operation with matching SB-400 Transmitter • Prebuilt Linear Master Oscillator (LMO), wiring harness and two heavy-duty circuit boards for fast, easy assembly

SB-300 GAINS STATURE TO LEAD AMONG THE FINEST! Experienced amateurs have quickly recognized the high standards to which this receiver is designed. When comparing their SB-300’s with other receivers, they describe the crystal-controlled “front-end” that produces optimum stability on all bands; the prebuilt Linear Master Oscillator (LMO) for linear tuning that surpasses nearly every other receiver on the market; the bandspread equivalent to 10 feet per megacycle; the good “solid feeling” of tuning the non-backlash vernier dial mechanism; plus, proven on-the-air performance.

MANY EXTRAS FOR VERSATILE OPERATION. Provision is made for VHF converters (power, antenna, & AGC leads) to permit VHF SSB operation. The SB-300 is also ideal for transceive operation with its matching counterpart the SB-400 Transmitter. Use of a common BFO crystal in transceive operation prevents even the most minute frequency difference between transmitter and receiver to assure that the transmitter is “dead-on” the frequency to which the receiver is tuned. Check and compare the specifications and features with those of any other SSB receiver, and see what an outstanding dollar-value the SB-300 represents!

ORDER YOUR SB-300 NOW! ...for unmatched savings, extra value, in a deluxe single-sideband amateur radio communications receiver!

Heath Linear Master Oscillator (LMO) is the heart of the SB-Series Tuner. Heath kit is factory assembled and sealed to assure years of dependable service.

Kit SB-300, less speaker, 23 lbs...No money down, $23 mo...$250.00
SBA-300-1 Optional AM crystal filter (3.75 kc), 1 lb...$19.95
SBA-300-2 Optional CW crystal filter (400 cps), 1 lb...$19.95
Export model available for 115/230 VAC, 50-60 cps; write for prices.

SB-300 SPECIFICATIONS—Frequency range (megacycles): 3.5 to 4, 7.0 to 7.5, 14.0 to 14.5, 21.0 to 21.5, 28.0 to 28.5, 28.5 to 29.0, 29.0 to 29.5, 29.5 to 30. Intermediate frequency: 3.395 megacycles. Frequency stability: Less than 100 cps per hour over 20 min. warmup under normal ambient conditions. Less than 100 cps @ ±10% line voltage variation. Visual dial accuracy: Within 200 cps on all bands. Electric dial accuracy: Within 400 cps on all bands after calibration at nearest 100 kc point. Backlash: No more than 50. Sensitivity: Less than 1 microvolt for 15 db signal plus noise-to-noise ratio for SSB operation. Modes of operation: Switch selected, LSB, USB, CW, AM. Selectivity: SSB: 2.1 kc at 6 db down, 5.0 kc at 60 db down (crystal filters supplied). AM: 3.75 kc at 6 db down, 10 kc at 60 db down (crystal filter available as accessory). CW: 400 cps at 9 db down, 2.5 kc at 60 db down (crystal filter supplied as accessory). Spurious response: Image and IF rejection better than 50 db. Internal spurious signals below equivalent antenna input of 1 microvolt. Audio response: SSB: 350 to 2450 cps nominal at 6 db. AM: 200 to 3500 cps nominal at 6 db. CW: 800 to 1200 cps nominal at 6 db. Audio output impedance: Unbalanced nominal 8 ohms speaker and high impedance headphone. Audio output power: 1 watt with less than 1% distortion. Antenna input impedance: 50 ohms nominal. Muting: Open external ground at Mute socket. Crystal calibrator: 100 kc crystal. Front panel controls: Main tuning dial; function switch, mode switch; AGC switch, band switch, AF gain control, RF gain control, preselector, phone jack. Rear panel connections: Accessory power plug, HF antenna, VS-11 antenna, VS-2 antenna, mute, spare, anti-clip, 500 ohm, 8 ohm speaker, line cord socket, heterodyne oscillator output, LMO output, BFO output, VHF converter switch, Tube complements: 6DJ8 cascode amplifier, 6EAB heterodyne mixer; 6AS11 driver, 6B4 Heterodyne Oscillator, Ag. 6A6 LMO osc.; 6AJ6 LMO mixer; 6AS11 AGC Amplifier. Tuning controls: 6BA6 Heterodyne oscillator; 6AS11 AGC Amplifier. Power requirements: 120 volts, AC, 50/60 cps, 50 watts. Dimensions: 14½ x 6½ x 13½. Net weight: 17 lbs.

6 & 2 Meter Plug-In Converters For SB-300

EXTEND OPERATION OF SB-300 TO VHF! 6-meter model extends coverage of SB-300 from 48 to 54 mc (50 to 52 mc with crystal supplied); 2-meter extends coverage from 142 to 150 mc (144 to 146 mc using crystal supplied). Uses 6DJ8 cascode amplifier for low noise factor & high sensitivity. Applied AGC provision allows strong signal handling capability. Easy to build and install. Use with any receiver providing appropriate voltages and 10-meter coverage.

SBA-300-3 (6 meter), 2 lbs...$19.95
SBA-300-4 (2 meter), 2 lbs...$19.95

SBA-300-3 SPECIFICATIONS—Sensitivity (signal plus noise-to-noise in db): AM, less than 0.1 uv for 6 db @ 3750 cps bandwidth, SSB, less than 0.1 uv for 10 db @ 2100 cps bandwidth. CW: less than 0.1 uv for 15 db @ 400 cps bandwidth. Noise figure: 5 db or less. Frequency: Input, 48 to 54 mc (50 to 52 mc with crystal supplied); Output, 28 to 30 mc. Bandpass: Essentially flat over any 2 mc segment from 48 to 54 mc. Image rejection: 50 db or better. IF rejection: 50 db or better. If drive: 28 mc. Crystal: 22 mc ±0.005%, 3rd overtone. Tube complements: 6DJ8 cascode RF Amplifier, 6EAB oscillator-mixer. Power requirements: 120 v, 12.5 milliamperes. Dimensions: Overall, 2½x 8½ x 5½. W x H x D.

SBA-300-4 SPECIFICATIONS—Sensitivity (signal plus noise-to-noise in db): AM, less than 0.2 uv for 6 db @ 3750 cps bandwidth, SSB, less than 0.2 uv for 12 db @ 2100 cps bandwidth. CW: less than 0.2 uv for 20 db @ 400 cps bandwidth. Noise figure: 7 db or less. Frequency: Input, 142 to 150 mc (144 to 146 mc with crystal supplied); Output, 28 to 30 mc. Bandpass: Essentially flat over any 2 mc segment from 142 to 150 mc. Image rejection: 80 db or better at 88 mc. IF rejection: 50 db or better at 29 mc. Crystal: 28.5 mc ±0.003%, 3rd overtone. Tube complements: 6DJ8 cascode IF Amplifier, 6EAB oscillator-tripler-mixer. Power requirements: 120 V, 6.3 v AC @ 12.5 milliamperes. Dimensions: Overall, 2½ x 8½ x 5½. W x H x D.

Use Heath's Technical Consultant Service—Just Drop Them A Line On Any Kit Subject
Standards For Amateur Radio

Heathkit SB-400 Transmitter . . . $325
- Built-in power supply
- Complete transceive capability with SB-300 Receiver
- Linear Master Oscillator frequency control
- Built-in antenna change-over relay
- All crystals supplied for complete 80-10 meter coverage
- Automatic level control for higher talk power, minimum distortion
- 180 watts PEP SSB, 170 watts CW crystal filter type SSB generation
- Operates SSB (upper or lower sideband) & CW
- VOX & PTT control in SSB operation
- VOX operated CW break-in
- Crystal controlled heterodyne oscillators
- 1 kc dial calibration
- 100 kc per dial revolution
- Dial bandspace equal to 10 feet per megacycle
- 500 kc coverage per bandswitch position
- Switched 120 V AC for external antenna relay
- Sturdy, lightweight, heavy-gauge aluminum construction throughout
- Neat, modern "Low-Boy" styling
- Variable loading

THE PERFECT "MATE" TO THE SB-300. The Heathkit SB-400 conforms to the same rigid specifications set by the SB-300. An identical LMO controls the stability and tuning rate of the SB-400 . . . it means you get the same outstanding characteristics . . . it means the SB-300 and SB-400 are completely compatible, allowing full transceive operation when they are "mated."

UNIQUE DESIGN FEATURES. The SB-400 employs compacton tubes for space-saving component layout, and heavy-duty circuit board construction plus correct wiring harnesses. Fast assembly, assures stable operating characteristics. Complete shielding and isolation of circuits provides a maximum of TVI protection.

BEAUTIFUL STYLING—STURDY CONSTRUCTION. Neat, modern low-profile styling makes the SB-400 an ideal desk-top transmitter. Cabinet is attractively finished in light gray-green and fully perforated for good ventilation. Cabinet top is hinged for easy access to all inside-top components. Front panel features green "textured" finish with dark green molded dial escutcheon and knobs with spun aluminum inserts. Heavy-gauge aluminum chassis construction provides extra strength without excessive weight for a sturdy, lightweight unit that can be used anywhere.

EASY TO ASSEMBLE TOO! Construction proceeds smoothly from start to finish with the complete illustrated instructions furnished. A prebuilt Linear Master Oscillator and crystal SSB filter eliminate critical alignment.

KIT SB-400, 34 lbs . . . $33 down, $28 mo ..................................... $325.00
Export model available for 115/230 VAC, 50-60 cps; write for prices.

HDP-21 (Special SSB "Ham" Microphone—see pg. 77 for details).

4 lbs . . . No money down, $5 mo ........................................... $29.40

SB-400 SPECIFICATIONS—Emission: SSB (upper or lower sideband) & CW. Power input: 170 watts CW, 180 watts PEP, SSB. Power output: 100 watts (80-15 meters), 80 watts (10 meters). Output impedance: 50 to 75 ohms—less than 2 SWR. Frequency range: [1 odd]. 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, 28.5 to 29.5, 29.0 to 29.5, 29.5 to 30.0. Frequency stability: Less than 1000 ppm per hour, after 20 min warmup. Carrier suppression: 55 db below peak output. Unwanted sideband suppression: 55 db @ 1 kc. Intermodulation distortion: 20 db below peak output (two-tone test). Keying characteristics: Break in CW provided by operating VOX from a keyed tone (Grid keying). CW sidetones: 1000 cps. ALC characteristics: 10 db or louder @ 0.2 ma final grid current. Noise level: 40 db below rated carrier. Visual dial accuracy: Within 200 cps (all bands). Electrical dial accuracy: Within 400 cps after calibrating at nearest 100 kc point (all bands). Backlash: Less than 50 cps. Oscillator feedthrough or mixer products: 55 db below rated output (except 39 kc crossover which is 45 db). Harmonic distortion: 35 db below rated output. Audio input: High impedance microphone or phone jack. Audio frequency response: 50 to 2500 cps ± 3 db. Power requirements: 80 watts STBY, 260 watts key down @ 120 V AC line. Dimensions: 14.5" W x 5.5" H x 13.5" D.

Heathkit SB-200 KW SSB Linear . . . $200
- 1200 watts P.E.P., input SSB-1000 watts CW . . 80 through 10 meter band coverage
- Built-in SWR meter
- Remote power supply
- High-duty-Solid-State Linear Master Oscillator (ALC)
- Shielded, fan-cooled amplifier compartment
- Pre-tuned cathode input circuit for maximum efficiency & low distortion
- Circuit-breaker power supply protection—no fuses
- Designed for 120/240 volt operation

TO COMPLETE YOUR SB-SERIES 80-10 METER AMATEUR STATION . . . here in a single compact unit is a completely self-contained desk-top linear amplifier that provides up to 1200 watts P.E.P. input SSB, 1000 watts CW in a high efficiency grounded-grid circuit for improved amateur communications.

LATEST DESIGN FEATURES. You'll find many advanced-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/T-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. Order yours today!

Kit SB-200 . . . 41 lbs . . . No money down, $19 mo ........................................... $200.00

SB-200 SPECIFICATIONS—Band coverage: 80, 40, 20, 15 & 10 meters. Maximum power input: 1200 watts P.E.P. SSB, 1000 watts CW. Driving power required: 100 watts. Drive style: SSB—continuous voice modulation, CW—peak hold (key-down time not to exceed 5 min). Third order distortion: 30 db or better at 1000 watts P.E.P. Output impedance: 50 to 75 ohms unbalanced, variable SWR to 2:1. Input impedance: 52 ohms unbalanced, broad-band pre-tuned input circuit requires no tuning. Meter functions: 0-100 ma grid current, 0-1000 ma plate current, 0-1000 volts DC, 0-2000 volts AC. Front panel controls: Load; Tune; Band; Relative Power; Balance; Band; Dual Meter; Input Impedance; Intermodulation; Third Order Distortion; IM Distortion; Carrier; VFO; P.S.W.R.; HF Power. Tube complement: Two 572B/T-160-L (in parallel). Power requirements: 120 volts AC @ 16 amperes (max), 240 volts AC @ 8 amperes (max). Cabinet size: 14.5" W x 6.5" H x 13.5" D. Net weight: 35 lbs.

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 18 months to pay on orders from $25 to $300 . . . 12% down and up to 18 months on orders from $300 to $500. See Order Blank for details.
Heath-Built Deluxe High-Performance

MW-15
$425.00
(tax included)

MW-14
$279.95
(tax included)
Marine Radiotelephones

Heath-Built 150 Watt Marine Radiophone

**Now With Full Remote Control Option**

- 150 watt power input
- 8 crystal-controlled transmit & receive channels
- Covers 2-3 and 4-5 mc marine bands
- Receives standard AM broadcast
- 15-watt amplifier for deck hailing
- All-transistor receiver with R.F. stage for extra sensitivity & long-range communication
- Heavy-duty solid-state power supply for added margin of dependability
- Solid-state modulator for full audio power
- FCC type accepted for complete remote control operation
- DO-IT-Yourself kit (see D.O.T. Approved)
- Completely assembled & tested

**Owner’s manual includes all information for installation & operation**

Here’s the Radiophone that sets new standards in marine electronics—$128.50. The MWW-15 with its 150 watt 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! Receiver monitoring requires only 0.6 ampere, yet this sensitive receiver provides complete communications facilities as well as AM broadcast reception. The Heath Radiotelephone is an ideal marine accessory. Your ‘phone is easy to install and will keep its picture in every respect.

When you choose a Heath Radiotelephone, your satisfaction is assured. The owner’s manual is complete in every respect. Installation is discussed completely and thoroughly. You can install this radiophone yourself! What’s more, all necessary FCC regulations, license information, and forms are included. Crystals for 2182 & 2638 are even included. All you must do is have the final tune-up made by a 1st or 2nd class licensed technician.

**Many models available.**

See page 85 for complete price list. The Heath Radiotelephone is built to Heath quality and is洫erviceable by a Heath dealer. It is covered by a 1-year warranty.ITS mobile value and quality make the Heath Radiotelephone your most reliable marine accessory.

University Deck Speaker

Ideal for use with the Heath-Built MWW-15 radiophone. Requires 75 volts. Husky, 2-section fiberglass. Includes push-to-talk microphone, crystals for 2182 & 2638 kc, and complete license information, installation and operating instructions, and FCC forms.

**USE “NO MONEY DOWN” HEATH TIME PAY—SEE ORDER BLANK FOR DETAILS**
More Safety & Fun Afloat...

Heath-Built 25-Watt Radiotelephone... Ideal For Sailboats And Inboard Or Outboard Power Craft
With Medium Cruising Range

Choose complete system for owner installation on outboards or separate unit for installation on any boat with technician checkout • 4 crystal-controlled transmit & receive channels • Covers 2-3 mc 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.

Operational Range up to 25 Miles! Features a powerful 25-watt transmitter, dependable 8-transistor receiver, heavy-duty power supply, 4 crystal-controlled channels, circuit breaker protection (no fuses to replace), and a handsome black and white rust-resistant aluminum cabinet.

Outboard Mariners... INSTALL IT YOURSELF FOR EXTRA SAVINGS! Choose the pretuned MWW-13AS system, and use the motor as the ground system... antenna and all accessories included! Inboard and sailboat owners can purchase the MWW-13A radiophone separately for use with any good ground such as the Heathkit MD-14 on page 88.

Both versions include 2182 and 2638 kc transmit and receive crystal (ship-to-shore and distress channels). Move out to greater cruising distances this season with the added safety, savings—including lower insurance rates—and convenience of a Heath-Built 25-watt radiophone!

Assembled MWW-13AS, Complete system for do-it-yourself installation on outboard powered boats, includes radiophone, antenna & instructions, 22 lbs... No money down, $18 mo... $189.95

Assembled MWW-13A, Radiophone for technician installation on any boat, 17 lbs... $164.95

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

MWW-13A SPECIFICATIONS—Frequency range: 2-3 mc; Broadcast: 550-1600 kc; Receiver sensitivity for 10 DB S/N ratio: Marine—3 microvolts; Broadcast—10 microvolts; Audio output: 3 watts to internal speaker; Transistor complement: (1) 2N1274 Audio Driver & Power Converter; (2) 2N1525 2nd & 3rd I.F.; (2) 2N301 Audio Output & Modulator; (2) diodes, A/C overload, Squelch, Noise Limiter & Detector; Transmitter RF input: 25 watts; RF Output: 13 RF watts; Transmitter tube complement: (1) 6AK5 Oscillator; (2) 6AQ5 amp. Power requirements: 12 V DC, receiver only, 350 amps.; standby, 1.2 amps.; transmit, 5 amps. Dimensions: 4 1/2" H x 8 1/4" W x 10 1/2" D.

Heathkit Fog Horn/Hailer/Boat Horn

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 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 Hailer!... projects your voice up to several hundred yards. Excellent for docking, fueling, and signaling other boats. Just use push-to-talk microphone.

Use it as a Boat Horn!... Just push the panel-mounted horn button to warn other craft, and signal for bridge openings.

Reliable Performance... Easy to Install!... powerful all-transistor circuitry assures dependable performance at all times. Runs cool with 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

MD-24 SPECIFICATIONS—Output power: 30 watts peak, 20 watts continuous. Fog horn sequence: 6 seconds on, 20 seconds off. Speaker furnished. 20" speaker cable. Power requirements: 12 volts DC, 4.0 amps. Max. output, less than 0.1 amp. no signal. Overall size: 4 1/2" H x 12 1/2" W x 6" D. Color styling: White, gray & black. Cabinet: Aluminum.

There's A Heathkit For Every Interest, Every Purpose, Every Budget
For Safe, Sure, All-Weather Navigation... Heathkit "Mariner" 3-Band Radio Direction Finder

• Covers Beacon/Consolan, AM, & Marine telephone bands • All-transistor circuitry for dependability, & long life • Independent built-in battery power supply • Simple to build... complete with factory built & aligned "front-end" tuner & prewired component package

CRUISE WITH SAFETY. Your "Mariner" is always ready to show you exactly where you are... provide you with weather bulletins... and double as a communication receiver in emergencies. Power is self-contained—dependent of boat's power plant for extra safety.

CRUISE RELAXED—NAVIGATE BY RADIO. Your "Mariner" and your compas are your two most valuable cruising aids. All the extra-sensitive bands of the MR-21A provide longer range, and better performance. The automatic gain control offers a deeper null for easier, more accurate bearings measurements. Position bearings are easily read on the 6½" compass rose located beneath the rotary loop antenna.

RESOLVE THE PROBLEM OF THE DOUBLE NULL. The "Mariner"'s"sensing circuitry gives true directions by resolving the problem of double null common in many other RDF's. Sensitivity control increases accuracy of the "tune-null" tuning meter... large slide-rule dial makes station selection easy, and for added convenience during nighttime use, dial and meter are lighted through spring-return switch.

ENJOY OFF-SHORE CRUISING. Your "Mariner:" will keep you in constant touch with the mainland via AM radio... entertain you and your crew on long voyages and at those isolated anchorages.

ADD THIS ATTRACTIVE UNIT TO YOUR BOAT. The rust-resistant metal cabinet is "marine" styled in black, white, gray... makes a handsome addition to any boat. Easy to build!... the "Mariner" goes together easily with a together component package and preassembled, prealigned tuner. Components lay out in real Bristol fashion for easy building. Order yours today!

Kit MR-21A, 14 lbs. No money down, $11 mo. $109.95

MR-21A SPECIFICATIONS—Beacon band: 188 to 410 kc. Broadcast band: 535 to 1620 kc. Marine band: 1650 to 3450 kc. Sensitivity for 0.8 db signal-to-noise ratio: BC signal, 40 uv/meter; Beacon signal, 170 uv/meter; Marine signal, 25 uv/meter. Normal bearing accuracy: ±3°. BFO: 655 kc, switch-selected; Speaker: 4" x 6" weatherproofed; Power requirements: 9 volts from standard size "D" flashlight batteries. Battery drain: 10 ma (380 ma max); output level: Battery life: 500-1000 hours. Dial light: Spring-return switch operated. Null & Tuning indicator: 0.1 ma meter. Transistors: (1) 2N409 Sense amplifier; (1) T76BG BF amp.; (1) 4JX-1D925 Oscillator; (1) 2N1526 mixer; (5) 2N1274 AGC amp., audio amp., audio output, & BFO oscillator; (2) TI364 1st & 2nd I.F.; (1) crystal diode detector. Dimensions: 10" H x 10" W x 8 1/2" D., including base and loop.

When You Can't Afford To Guess... Choose The Heathkit Depth Sounder

• Greater depth reaching ability—down to 200' on hard bottoms... Sensitive all-transistor circuit... instant operation, reliable performance... Self-contained or boat battery powered for added convenience... Simple, stable circuit board construction... External power connection & switch on rear panel for easy access.

PROTECTS YOUR BOAT. Often wondered about the depth of your sailing-water and worried about running aground? There's no need to if your boat is equipped with an all-transistor Heathkit Depth Sounder. It "senses" shoal depths with 5% accuracy on all readings! Probes down to 200' on hard sandy bottoms, 100' on soft muddy bottoms.

A VALUABLE AID. Locates schools of fish and indicates type of marine terrain by quality of return echo. Provides an extra navigational reference.

COMPARE THESE FEATURES WITH OTHER, MORE COSTLY UNITS! An all-transistor circuit puts your MI-11A in operation instantly... keeps it operating faithfully, accurately. Large black shaded dial with big white numerals reads easily. Attractive rustproof metal cabinet has nautical gray, white, black & blue color styling. A gimbal mounting bracket permits installation virtually anywhere!

2-WAY POWER SUPPLY OFFERS ADDED VERSATILITY! A new rear-panel mounted internal-external battery switch permits easy selection of either self-contained or boat battery operation. For simple connection to the boat's 12v battery, a new power plug is mounted on the rear panel... saves sounder's 9 standard "D" flashlight batteries (not included) for emergency use! Also included is a waterproof transducer that installs through the hull or outboard with accessory transducer mount (optional). Ignition interference is reduced with improved cable shielding.

ASSEMBLES IN JUST 4 TO 6 HOURS with stable, fiberglass circuit board construction... takes no special skills or knowledge. Order now!

Kit MI-11A, 8 lbs. No money down, $7 mo. $59.95

Accessory Transducer mount; Model MIA-11, 2 lbs. $8.95

MI-11A SPECIFICATIONS—Dial: 0-200 feet in one foot divisions. Range: 0-200 feet on hard bottoms, 0-100 feet on soft bottoms. Frequency: 1200 kc. Sounder rate: 1000 kc. Sensitivity: 100 ma. Accuracy: Within 5% of actual depth. Depth indication: Neon lamp flashing at 1 feet and again at indicated depth. Transducer: Barium titanate ceramic element encased in a waterproof housing with solid brass fittings; attached 15 foot length of 2 conductor shielded cable. May be mounted permanently to the hull or temporarily with a transom mount. Controls: Combined ON/OFF-Sensitivity. Power supply: 13.5 volts from nine self-contained size C flashlight cells, or external 12 volt battery. Flashlight cells are contained in three leakproof plastic housing. Battery drain: 100 milliamperes. Average battery life: Up to 25 hours intermittent operation. Dimensions: 7" L x 5 1/2" W x 7 1/2" D.

Heath Offers You Incomparable "Extra" Customer Service
**A. Fuel Vapor Detector...**

**A Safety "Must" On Any Power Craft!**
- Detects combustible gas fumes
- Provides visual warning or may be connected to operate any fire or ventilation system
- Transistorized for dependability—self-testing for foolproof safety
- Simple to build & install

**Better Than An Insurance Policy!** Protects against fire and explosion hazards due to undetected fumes in engine compartment. Multi-colored "Safe-Dangerous-Explosive" meter scale indicates condition before starter button is pressed. All-transistor circuit unaffected by drafts, temp. or volt. variations. Self-testing for "fail-safe" operation. Operates on 12 v. DC pos. or neg. ground.

Kit MI-41, 4 lbs... No money down, $5 mo. ........................................ $39.95


**B. Heathkit Power Converter...**

**Provides Shore-Side Power Afloat!**
- Converts 6 or 12 volt battery power to square wave 117 V. AC
- Delivers up to 175 watts for small electric devices
- All Transistor circuit
- Two AC receptacles

A CONVENIENT ACCESSORY FOR BOAT, TRAILER, CAR! Provides household power for incandescent lamps, electric shavers, etc., from 6 or 12 volt batteries. 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...8 lbs... No money down, $5 mo. ........................................ $28.95

Assembled MPW-10...8 lbs... No money down, $5 mo. ........................................ $39.95

**MP-10 SPECIFICATIONS**—Power source: 6 or 12 volt storage battery. Power output: Nominal 117 volt, 60 cycle AC, 12 volt operation, 175 watts continuous, 240 watts max., 6 volt operation, 120 watt continuous and max. Input current for continuous ratings: 6 volt operation, 25 amperes, 12 volt operation, 16.5 amperes.

**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

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-selected ranges, plus wiring option for 0-2000 and 0-8000 rpm. 2 transistors, Zener diode. Unaffected by normal voltage or temp. variation. Ball and socket mount. Pos. and neg. ground.

Kit MI-31A, 3 lbs... No money down, $5 mo. ........................................ $24.95

**D. Heathkit Marine Electrical Ground System!**
- Provides recommended grounding surface
- Simple, foolproof keel installation
- Simple thru-hull connection to ground system
- Ideal for single or dual engine equipped boats

MORE THAN ADEQUATE FOR MOST BOAT ELECTRICAL SYSTEMS! Two 8' heavy-gauge copper tubes, tapered at ends, minimize water resistance, require only bolting thru keel (min. length 9", max. thick. 5") and 1 thru-hull fitting. Does not affect balance, steering or maneuverability of craft. Corrosion-proof. Won't catch on rocks, logs, etc. Improves operating range of your radiotelephone.

Kit MD-14, 20 lbs. (Motor freight or Express only), No money down, $5 mo. .................. $29.95

**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.

---

**Over 250 Heathkits To Choose From—World's Largest Selection**
Top-Quality Shortwave Radios!

Enjoy Shortwave Listening Anywhere With A Deluxe "Mohican" Portable Receiver!

- Powerful 10 transistor, 6 diode circuit for instant, long dependable performance
- Tunes 550 kc to 32 mc in five bands-AM and SW
- Fixed alignment ceramic IF "transfilters®" for best selectivity
- Completely self-contained battery power supply for portability, yet can operate on 117 v. AC household current with XP-2 accessory @ $9.95 + 2-tone green metal cabinet

RUGGED, COMPACT, READY TO GO ANYWHERE! Beach, ball game, picnic, boating, camping... wherever your travels take you! Ready to circle the globe at the spin of a dial to bring you broadcasts from Spain, Germany, South America, countless foreign country shortwave stations... amateur radio operators... marine and weather stations... and popular AM radio!

DELUXE FEATURES INSURE HIGHEST PERFORMANCE! For example, the fixed-aligned ceramic IF "transfilters", developed for military use, shape the IF bandpass for excellent stability and selectivity... Zener diode voltage regulation... smooth, accurate, flywheel tuning... panel tuning meter and large, slide-rule dial for precision station selection... built-in 4" x 6" speaker for clear, crisp tone... and a headphone jack for private listening. Complete panel controls offer finger-tip operating convenience... on/off volume control, BFO pitch with on/off switch, RF gain, antenna tuning, electrical bandspread (oscillator tuning), ANL on/off, AVC on/off, and bandswitch.

ATTRACTIVE STYLING! One-piece 2-tone green metal cabinet... rugged enough to withstand rough handling. Also operates on house current with XP-2 Power Supply accessory (below). Assembles in around 30 hours. Batteries not included. Requires RF generator for final alignment.

Kit GC-1A, 18 lbs. No money down, $9 mo. ......................... $89.50
Kit XP-2... 117 v AC plug-in power supply, 2 lbs. .... $9.95

GC-1A SPECIFICATIONS-IF Frequency: 455 kc. Frequency coverage: 550 kc to 32 mc in 5 bands, with calibrated bandspread noise (oscillator tuning) for 80, 40, 20, 15 and 10 meter amateur bands and 11 meter citizens band. Selectivity: 3 kc wide at 6 db down Sensitivity: 10 kw broadcast band, 2 kw shortwave bands 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: 6⅜" H x 12" W x 10" D.

Heathkit "Beginner's" Shortwave Radio...

Simple To Build... Fun To Operate... Easy To Own!

- Covers 140 kc to 18 mc 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 performer! Covers 140 kc to 18 mc 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! Choose the GR-81!

Kit GR-81, 12 lbs. ...................................................... $23.50

There's A Heathkit For Every Interest. Every Purpose, Every Budget
The World At Your Fingertips...

Deluxe SWL Radio Compares To Sets Costing $150 & More... Costs 40% Less!

- 5 bands...3 shortwave bands cover 2 mc to 30 mc, plus 550 kc to 1550 kc AM broadcast band, & 180 kc to 420 kc aeronautical & radio navigation bands.
- Tuned RF stage for greater sensitivity.
- Half lattice crystal filter for sharp selectivity.
- Separate product detector for efficient SSB & CW reception.
- Switchable upper or lower sideband mode position.
- Built-in relative signal strength indicator.
- Electrical band-spread tuning.
- Tube-6 diode superhet circuit plus 2 silicon diode rectifiers.
- Built-in code practice monitor plus code key jack.
- Automatic noise limiter, automatic volume control & antenna trimmer control.
- "Velvet touch" 16 revolution main tuning.
- Built-in 4"x6" PM speaker.
- Built-in AM antenna plus external antenna terminals.
- Standard jack accepts headphones or external speaker.
- Safe transformer-operated power supply.
- Sleek low-boy styling.
- Charcoal gray metal cabinet.
- Antenna included.

DELUXE FEATURES USUALLY FOUND ONLY ON MORE EXPENSIVE UNITS! Like the tuned RF stage that provides added amplification and image rejection. And a half-lattice crystal filter for truly sharp selectivity, you won't find this feature on any unit selling for under $150! If you're a seasoned SWL, you'll appreciate the diode detector for AM, plus a separate product detector for efficient SSB & CW listening. You'll also like the convenience of the switchable BFO control. Simply switch to upper sideband (USB) or lower sideband (LSB) positions, and adjust the bandspread tuning control...eliminates "trial & error" SSB tuning. And for a new adventure in listening, try the aeronautical weather broadcasts on the extra 180 kc to 420 kc band.

If you have ambitions towards ham radio, you can develop your keying proficiency with the code practice monitor. Just connect your key to the terminals on the back, tune in a weak AM station, turn on the BFO, and hear your keying through the built-in 4"x6" speaker.

COMPLETE CONTROLS FOR FULL COMMAND OF ALL FUNCTIONS! There are separate level controls for audio volume & R.F. amplifier gain, an antenna trimmer for peak reception, band selector switch, bandspread tuning, mode selector, main tuning, automatic noise limiter, and an automatic volume control to eliminate blasting or fading while tuning.

HOW CAN WE OFFER THIS SUPERB UNIT AT AN UNMATCHED LOW PRICE? Typical Heath Engineering, of course. But we've gone a step further to add extra savings. With the GR-54, you build & align the front-end tuner...with or without instruments...and get factory-built results! Thanks to a unique printed circuit bandswitch assembly, you simply align the coils with the alignment tool provided, and use the signal strength meter for adjustment readings. The entire GR-54 construction time is around 12 to 15 hours.

For looks, judge for yourself. Wouldn't it make an attractive addition to your den or living room?

Kit GR-54, 24 lbs. No money down. $9 mo. $84.95.

GR-54 SPECIFICATIONS—Frequency coverage: Band A 180 kc to 420 kc; Band B 550 kc to 1550 kc; Band C 2 mc to 5 mc; Band D 5 mc to 12.5 mc; Band E 12.5 mc to 30 mc. Selectivity: Half lattice crystal filter; 3 kc minimum at 6 db; 8 kc maximum at 12 db. Intermediate frequency: 1682 kc. Antenna input impedance: 50 ohms nominal—phono connector. Power requirements: 120 volts. 50/60 cps AC, 45 watts. Tube & diode complement: 6816 6F amplifier, 66A oscillator & mixer; (2) 6816 IF amplifiers; 12AT7 BFO and product detector, (2) 4512 audio preamplifier and power amplifier; 2 semi-conductor diodes—AVC rectifier; 2 semi-conductor diodes—AM detector; 2 semi-conductor diodes—ANY; 2 semi-conductor diodes—power supply rectifiers. Controls: Bandspread, AF Gain, Off-on switch; RF Gain; Ant. trim, Mode switch, Band switch, Main tuning, AVC switch, ANL switch, OPR switch. Meter adjust. Audio output impedance: 8 ohms nominal. Meter: Indicates relative signal strength. Speaker: Built-in 4"x6" permanent magnet. Standard jack: Accepts 8 ohm ear, speaker, or headphones (50 ohm to 10 K ohms). Dimensions: 14¼" L x 6-5/16" H x 10-15/16" D.

FREE! GRA-72 SWL Antenna (described on opposite page) included!
**With A Heathkit® Shortwave Radio!**

**Venture Into The Exciting World Of Shortwave With This Low Cost Heathkit Receiver!**

- 4 bands—3 shortwave bands cover 1 mc to 30 mc, plus 550 kc to 1620 kc 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

**A ROUND THE WORLD AT THE TWIRL OF A DIAL!**

Imagine hearing a radio operator at a weather station in the Antarctic report: "It's 40° below zero this morning..." thrill to the somber tones of Big Ben from London... or wonder at the machine gun pace of a CW operator sending an urgent code message. This is just a fraction of the exciting listening that's yours with the GR-64. Hear live broadcasts from Japan, Australia, Peru, Holland, Brazil, the Congo, dozens 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, & weather reports. Even get the exact time from government station WWV in Washington, D.C. And, of course, enjoy your favorite programs on popular AM radio.

You hear it all... and much more... all on this single general coverage receiver!

**ADVANCED FEATURES INSURE SHARPER RECEPTION, GREATER OPERATING CONVENIENCE!** 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 provides maximum station separation. 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!** Its charcoal gray metal cabinet with black front panel and green & white band markings makes a handsome addition to any room. And with easy circuit board construction, assembly takes only about 8 fun-filled hours.

**Kit GR-64, 15 lbs. No money down, $5 mo. $37.95**

**GR-64 SPECIFICATIONS—Frequency range: 550 kc to 30 mc in four bands. Controls: General coverage tuning, Bandspread tuning, Bandswitch, Noise Limiter—ON/OFF, Phone-Standby-CW switch, BFO control, Audio Gain, AC-ON/OFF, Headphone jack, Q-multiplier input. Power requirements: 105-125 V, 50/60 cycles AC, 30 watts. Dimensions: 13 1/2" W x 6" H x 9" D.**

**New High Voltage, Transformer-Operated Power Supply. Provides peak receiver efficiency, safe "shock-free" operation.**

**New 7-Inch Tuning Dial. Covers 550 kc to 30 mc in four bands with Shortwave & Amateur Bands clearly marked plus an extra "logging" scale.**

**New Bandspread Tuning Bar. Lighted dial for easier, faster bandspread reading.**

**Shortwave Antenna Kit**

Consists of 75 ft. long-wire antenna, 30 ft. lead-in wire, porcelain insulators and grounding hardware with complete instructions. Ideal for use with Heathkit GR-34, GR-64 & GR-81 shortwave receivers. GRA-72, 2 lbs. $1.45

**Order "No Money Down" Heath Time Plan—See Order Blank For Details**
For Better Road Performance & Economy

Diagnose Ignition Troubles With This Easy-To-Use Heathkit® Analyzer!

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

BECOME AN IGNITION EXPERT! Whether you work with automobiles for a living or for relaxation, you'll find the IO-20 Ignition Analyzer a productive and fascinating accessory. With it, you can quickly identify 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 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, easily... 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. For fast, easy tune-ups and ignition system trouble-shooting, order your IO-20 now!

Kit IO-20, 17 lbs...No money down, $9 mo...$89.95
Export model available for 115/230 VAC, 50-60 cps; write for prices.


For Engine Tune-Up & Repair
Choose 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 35 Compression Tester that reads 0-300 lbs. on 2½" dial—features short stem with 15° offset to reach back cylinders... Model 36 Vacuum/Fuel Pump Tester with 2½" 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. Orders yours now!

GFP-83, 4 lbs. $11.95

Low-Cost Timing Light... 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 6½" H x 7½" L x 2½" W.

Kit ID-11, 3 lbs. $14.95

You Get Twice As Much For Your Budget With Heathkit

You Get Twice As Much For Your Budget With Heathkit
Choose Heathkit® Auto Accessories!

Heath Radio-Controlled Garage Door Opener
... Push Button Convenience Saves Time & Labor! Easy-to-Build 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 2½" 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...less CB interference. Transistorized for long life, reliable performance.

Sensitive, Superregenerative VHF Receiver
Takes just a few minutes to install in your garage!...operates on 230 to 290 megacycles...requires no license. Both transmitter & receiver are completely assembled, ready to install.

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.

NEW FACTORY ASSEMBLED VHF ELECTRONICS provide greater operating range, better performance. The new "pocket-size" transistorized transmitter offers portable convenience...simply clip to car's sun visor or slip into 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 move from car to car! Operates on self-contained battery power to eliminate any drain on car's battery.

And the new sensitive superregenerative receiver with RF stage takes just a few minutes to install in your garage. Both transmitter & receiver are completely assembled and pretested at the factory. And no license is required...system is designed for use on 230 to 290 megacycles...selectable tone coding prevents interference with nearby units.

A UNIQUE SAFETY DEVICE ON THE MECHANISM releases the door automatically when obstructed. Release pressure is adjustable from 0 to 100 lbs. in both "up" and "down" directions. The mechanism is quick and easy to assemble, and may also be purchased separately for operation from house or garage. A spring-loaded connecting arm assures a tight weather seal...keeps out rain & snow! The automatic light features 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. mechanism, (1) transmitter, (1) receiver...no money down...$12 mo. ...$124.90
GD-20B, 70 lbs. mechanism, (2) transmitters, (1) receiver...no money down...$14 mo. ...$144.90
GD-20A-3 Heathkit mechanism, 61 lbs...no money down, $7 mo. ...$68.95
GD-20-1, (1) Transmitter, (1) Receiver...8 lbs...no money down, $6 mo. ...$54.95
GD-20-5, (2) Transmitters, (1) Receiver...8 lbs...no money down, $8 mo. ...$74.95

There's a Heathkit For Every Interest—Every Purse—Every Need
Handy Heathkit® Tools for Workshop & Kit-Building

A Heathkit Soldering Iron Kit . . .
The Best For Kit-Building!

LIGHTWEIGHT . . . COMPACT . . . EASY-TO-HANDLE! Ideal for kit-building or any "tight" soldering job. The 8 volt, 25-watt General Electric midget-type industrial soldering iron features a long-life, iron-clad tip that won't corrode or require frequent "tinning." Connects to high or low voltage lines to effectively provide selection of 8 heat ranges. Heats ready to solder from "low heat" circuit board to "hot" heavy-duty chassis work! Excellent heat recovery time! Includes transformer-operated power supply and protective metal case. Order yours now!

Model GH-52, 5 lbs.........$14.95

C New Deluxe Tool Set

Model GH-25, 6 lbs.........$16.95

D VACO Hollow Shaft Nut Driver Set No. 5-700 . . . Time Saver! IDEAL FOR KIT-BUILDING AND A MULTITUDE OF "FIX-IT-YOURSELF" JOBS! All seven drivers feature special hollow-shaft design for nut installation on controls, switches, etc. All can be conveniently stored in its own handy self-supporting metal rack. The tough plastic handles are color coded for easy identification. And the shanks are made of a strong polished alloy steel. Seven popular, metric-sized sizes: 3/16", 1/4", 5/32", 11/32", 3/8", 7/16", and 1/2". Fix it faster, easier with this labor-saving set . . . choose yours now!

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

E SPEEDEX Wire & Cable Stripper
Model 766-1 . . . . Save $4.06! A TIME-SAVING ACCESSORY AT A MONEY-SAVING PRICE! Here is a precision tool every workshop should have in its tool rack. No special skill is required to operate it; just insert the wire into its jaws and squeeze the handle . . . insulation is off in a flash! This heavy-duty mechanism has graduated jaws to accept number 10, 12, 14, 16, and 22 wire. Manufactured by General Cement for rugged service.

GDP-663, 2 lbs. Mtrrs. list $9.95. Net $5.89

F NEW! "Little Dandy" Electric Soldering Iron! Recommended For Kit-Building!

A GENUINE AMERICAN BEAUTY FOR ONLY $5.40! Perfectly balanced, lightweight, easy to handle . . . ideal for general kit assembly, circuit boards, and a host of other soldering jobs. Heats quickly . . . reaches working temperature 2 minutes after plug-in! Stays hot, ready to solder! Features a long-life 30-watt heating element in stainless steel casing; 3/16" short screwdriver-type, iron-clad tip that won't corrode, and does not require frequent "tinning" . . . flexible, 2-wire neoprene cord for general use. Made from top-grade materials that impervious to grease, oil, perspiration (note "anti-roll" feature); acrated, finger-tip Tenite® grip that's unbelievably cool; and heat-deflecting baffle. Not a "throw-away" iron . . . all major parts replaceable with genuine American Beauty parts.

Model GDP-105, 1 lb........$5.40
Time & Step Saving Intercoms!

Heathkit Portable "Wireless" Intercom...
Plugs In Anywhere!

- 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

Enjoy Indoor-Outdoor Communications
With This Versatile Intercom System!

- Master unit handles up to 5 remote stations
- Ideal for home, offices, commercial institutions
- Weatherproof outdoor remote
- Powerful, one-watt output for crisp, clear communications
- Compact, designer-style cabinets

LIKE TO KNOW WHO'S CALLING BEFORE OPENING THE DOOR? You can...when you have a Heathkit Indoor-Outdoor Intercom System set up in your house. You simply converse with the caller through the out-door remote unit. Provides an added measure of household security...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, steps...and your voice!

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 plastic beige cabinets.

ANY TWO REMOTE UNITS CAN COMMUNICATE! Thanks to the inter-remote communications 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 features a 3-position listen-talk-monitor switch, 50' of 3-conductor wire, and matching beige plastic cabinet.

CONVENIENT OUTDOOR REMOTE features a rustproof aluminum grille, weatherproof seal, specially-coated speaker, a doorbell button, and 50' of 2-wire cable.

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

Kit GD-121 Master Station, 6 lbs...
$29.95

SPECIFICATIONS—Power requirements: 117 v ac or 50/60 cycles 2.5 watts (idling), 3.5 watts (full output). Transistors: four 2N1274. Dimensions: 2 3/4" H x 8" W x 7 3/4" D (master), 5 1/2" H x 8" W x 6" D (in-door remote), 5 1/4" x 4 3/4" panel size (out-door remote).

Have you read about the wonderful new Heathkit 25" Color TV on pages 14 & 15? Only a limited supply will be available in time for Christmas. You can reserve yours now—fill out the card on page 15.
Heathkit® “Table” Radios...Look and

- Monophonic FM table radio covers 88 to 108 mc • Receives FM stereo when used with matching GRA-21-1 Stereo Converter (opposite) • Large 6" x 9" dual-cone speaker • 7 tubes function like 11 • Handsome preassembled walnut cabinet

**START WITH THE FM TABLE RADIO!** You'll like the way it easily reproduces the vast array of FM programs. You'll like its simple, yet complete operating controls for full adjustment of the clean, robust sound. You'll like its compact size that fits virtually anywhere. You'll like its elegant styling that harmonizes with any decor. You'll like its easy-on-the-budget price... only $59.95.

**HERE'S WHY THIS KIT PERFORMS SO WELL!** First, there's the large 6" x 9" extended-range, dual-cone speaker with a 6.8 oz. magnet that provides true hi-fi reproduction. Then there's the transformer-operated power supply with silicon diode rectifiers for safe, efficient performance... the Automatic Frequency Control that's easily switched on for radiantly clean, drift-free reception... smooth flywheel tuning, large edge-lighted slide-rule dial, and guiding tuning "eye" for accurate station tuning... switched AC power socket for accessory power if desired... separate tone and volume controls... a built-in line cord antenna for strong local signal pickup... and external antenna terminals for crystal-clear, long-distance station reception. And the FM Multiplexer Output Jack and auxiliary audio input are designed to convert the GR-21 for FM stereo with the GRA-21-1 Multiplexer Converter (opposite)... makes a handsomely matched pair!

The ruggedly attractive, factory-assembled walnut cabinet with a speaker grille that's offset from the front makes the GR-21 a proud addition to any den, living room, rec room or college dorm... measures just 15" L x 8" H x 6" D. The electronics go together quickly and easily, too... with preassembled and aligned "front-end" tuner. Order yours now!

**Kit GR-21, FM Table Radio, 18 lbs... No money down, $6 mo... $56.95**

---

**Heathkit FM/FM Stereo Pair... Matched In Styling & Performance**

- FM Stereo Converter—completely self-contained, self-powered • Operates with GR-21 (opposite)... matching walnut cabinet styling • Can be operated up to 15' away from GR-21 radio • Quality components assure long, faithful service • Simple controls maximize stereo effect

**NOW ADD THE FM STEREO CONVERTER!** And sit back and listen to the enchanting realism of FM stereo... just like being at the orchestral hall! You can use the GRA-21-1 Converter with the GR-21 Table Radio for both stereo and monophonic listening! Or use the GR-21 Radio alone. Both units match in styling as well as performance!

**ENJOY BROAD CHANNEL SEPARATION FOR MAXIMUM STEREO EFFECT!** The GRA-21-1 can be operated as far as 15 ft. away from the Table Radio for optimum stereo listening. And a stable, synchronized local oscillator is key to the stereo "pilot" that's incorporated in the new FM multiplex transmissions... restores a strong subcarrier to assure low distortion! Carefully designed filter networks separate the stereo signal without degrading phase distortion.

**SIMPLE CONTROLS ASSURE OPERATING EASE, MAXIMUM PERFORMANCE!** Like the converter's master volume control that adjusts both channels... the receiver volume control that easily balances with the converter... the tone control that functions independently of the radio's... the function selector switch for choosing desired mode of operation, and turning off the AC power to the converter when not in use. The full-wave power supply uses modern silicon rectifiers and a power transformer for safe operation, low hum level, and long tube life with a minimum of heat.

**OTHER FEATURES MATCH THE GR-21!** Features the same 6" x 9" speaker, hi-fi audio circuitry, ease of assembly and beautiful walnut-finished cabinet with identical compact measurements! Choose both units now!

**Kit GRA-21-1, Stereo Converter, 18 lbs... No money down, $5 mo. $47.00**

---

**How It Works**

Block diagram shows the simple connections which make these two units a complete FM Stereo Multiplex system.

- FM or TV Antenna
- GRA-21-1 Stereo Adapter
- LEFT CHANNEL SOUND
- MX Signal to Adapter
- Right CH Audio Signal
- TO AC Power
- GR-21 FM Radio
- RIGHT CHANNEL SOUND

**Heathkit Step-By-Step Instructions And Big Fold-Out Pictorials Are Famous For Clarity And Simplicity**
Sound Great in Any Room!

Ideal “Extra” Radio For Den, Rec Room, Children’s Room . . . AM Table Model!
- Vernier tuning for smooth easy station selection
- Safe transformer isolated power supply
- Handsomely styled in beige and ivory plastic
- Quick and simple to build . . . easy to own

NEED A RADIO FOR THE KITCHEN? Or the bedroom? Or possibly that extra room you just remodel? With the GR-10, you can enjoy popular AM listening in any room at low cost. Its sleek, beige and muted ivory plastic cabinet enhances any surroundings. And its modern superhet circuit has the sensitivity and selectivity to provide beautifully clear reception.

COMPARE ITS HIGH PERFORMANCE FEATURES! There’s a vernier action knob for smooth, accurate tuning . . . highly selective circuits for good station selection . . . a high quality ferrite rod antenna for strong local reception . . . terminals for an external antenna to pull in far distant stations . . . a neon indicator light that gently reminds you that the unit is on or off . . . and safety-engineered, transformer-operated power supply.

SIMPLE TO ASSEMBLE! No special skills, tools, or technical background needed. You’ll have the GR-10 plugged in and playing after about four to six enjoyable hours.

Kit GR-10, 7 lbs .................................................. $16.95

GR-10 SPECIFICATIONS—Frequency coverage: 550-1620 kc. IF frequency: 455 kc. Power requirements: 105-125 volts AC 50/60 cps. Speaker: 3" PM. Antenna: Built-in ferrite rod. Dimensions: 5½" H x 10½" W x 5½" D.

Enjoy The Quiet Beauty Of FM
With This 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 start enjoying the quiet, crystal-clear fidelity of FM with the GR-11. Its low $23.50 price puts it easily within any budget. Yet its quality and performance compare to models costing far more. You’ll like its compact styling, and attractive looks, too. Ideal for placing anywhere in your house.

DELUXE FEATURES INSURE DELUXE PERFORMANCE! Features like the transformer-isolated power supply which eliminates shock hazards . . . vernier tuning for smooth, precise station selection . . . a five tube circuit that performs like seven . . . a built-in line cord antenna for local station pickup . . . separate terminals for an external FM antenna (you can use your TV antenna instead to receive distant stations) . . . and a neon “off-on” indicator light. Goes together quickly and easily, too. Takes around 5 hours with the simple step-by-step instructions, and factory aligned tuning coils.

Kit GR-11, 7 lbs .................................................. $23.50


A Busy Household Helper . . . 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! By gently waking you with music . . . no more rude buzzes or clangs. But if you are a “heavy” sleeper, an alarm sounds 10 minutes later to insure “wake-up”. Meanwhile the clock/timer automatically starts your morning coffee. What could be more convenient?

And throughout the day, the GR-121 lightens your chores by entertaining you with your favorite programs. Keeps you posted on the latest news, weather, and sports. And when nighttime rolls around, this faithful servant lulls you to sleep. Even has a pillow speaker output for private listening.

A HOST OF OPERATING CONVENIENCES! The GR-121 automatically turns itself off at any pre-set interval up to an hour. Features a built-in ferrite rod antenna for strong local station reception. And the clock/timer unit has a sweep-second hand. Easy to build, too . . . no special skills or knowledge required. The beige & ivory plastic cabinet harmonizes with any room’s decor.

Kit GR-121, 8 lbs . . . no money down, $5 mo .................................................. $28.25


Shop The Easy Heathkit Way—Select Your Kits In The Comfort Of Your Home, Mail Your Order, & Get Direct-To-Your-Door Delivery
“Learn-By-Doing” Educational Kits

Basic Electricity Kit
• Teaches principles of voltage, current & resistance • Designed by a science educator • Excellent starting point for career or spare time hobby

IDEAL FOR BEGINNERS & STUDENTS IN ELECTRONICS. The EK-1 teaches basic theory of voltage, current, resistance, series & parallel DC circuits, meter circuits, and Ohm’s Law in an interesting fun-to-do manner.

A KIT/TEXTBOOK COMBINATION. The student begins by performing basic experiments with dry-cell batteries, then starts the assembly of a volt-ohm-milliammeter which, when completed, is used to verify theorems in the text. The manual is profusely illustrated with pictorial diagrams that guide the reader through each phase of the various experiments. The textbook language is written so that meanings are fully grasped without the need of a technical vocabulary or knowledge. Final product is a handy test instrument that can be used for countless measurements in electronic circuits.

Kit EK-1, 4 lbs .................................................. $19.95

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 • Fascinating experience in the world of communications

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 tuned circuits and tubes until a regenerative receiver is built.

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 kc & 3-10 mc).

Basic Radio Part I (EK-2A), 7 lbs ................................................. $18.75
Basic Radio Part II (EK-2B), 5 lbs ................................................. $18.75
Accessory Cabinet for completed receiver, AK-8, 3 lbs ................... $3.95

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

Basic Transistors
• A kit/textbook project • Teaches transistor concepts & applications

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 circuits. This combination kit/textbook course uses the learn-by-doing concept to vividly illustrate basic theory by interesting experiments.

A WIDE VARIETY OF EXPERIMENTS. Some of the test circuits assembled by the student 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 transistor intercommunications systems.

PROVIDES AN EXCELLENT BACKGROUND. Basic transistor theory gained through this course will simplify servicing and trouble-shooting of transistorized circuitry and equipment. The EK-3 is also an ideal course for the beginner (adult or student), and an excellent refresher course for the service technician.

Kit EK-3 Basic Transistors, 4 lbs .................................................. $16.95

Manual only for EK-Series $5.00 each, 10 or more copies $3.00 each.

Heathkit Experimenter Electronic Workshop "19"
• Ideal Gift for youngsters of all ages • Makes 19 different, fascinating electronic transistor units • Provides countless hours of educational fun • “Solderless” spring-type connectors for fast, easy circuit changes • Uses safe flashlight battery power • Simple, cartoon-illustrated instructions and educational operating principles in non-technical language.

19 DIFFERENT ELECTRONIC UNITS! Imagine the fun he’ll have playing with a code flasher, burglar alarm, public address system, 5 transistor radios, electronic eye, TV silencer, metronome, wireless code and voice transmitter, etc... all made by him on one giant circuit board. Circuit changes are easy to make and components can’t get lost for they mount permanently on the circuit-workboard. All power is provided by safe, inexpensive flashlight batteries (not included).

EASY INSTRUCTIONS! Complete explanations of how-to-build, plus the “how” and “why” of each experiment in everyday, non-technical language.

COMPLETE FEATURE-PACKED KIT! Includes circuit board, 3 transistors, crystal earphone, two 3” cone-type speakers, a photo cell, relay, tuneable coil, potentiometer, resistors, capacitors, all hardware, solderless connectors, screwdriver, and instructions. A real bargain at this low price...order one for your youngster today.

Kit SK-50, 4 lbs .................................................................................. $19.95
**Photo Aids For Better Prints in Less Time!**

**Heath/Mitchell Fotoval® Darkroom Computer... Assures Uniform Prints In Less Time At Lower Cost!**

**THE FIRST PRINT IS THE PRINT!** Unbelievable? Not with the revolutionary Heath/Mitchell Fotoval® Computer System in your darkroom. Just one simple standardizing procedure, and you start producing any amount of beautiful black & white prints quickly, economically. No more wasting expensive printing paper... no more long, laborious hours wasted in the darkroom... no more guessing which paper grade to use, or how long to expose each print. Imagine the savings in time, paper and money!

**HOW DOES IT WORK?** With the unique Fotoval 35 mm Test Negative, you quickly & simply determine accurate exposure times for each type & grade of paper or variable contrast filter. You then record this information on the computer scales provided. Next, select the desired paper type & surface, and insert the corresponding computer scale into the Fotoval. Place the negative you wish to print in the enlarger. With the Fotoval light-sensitive probe positioned on the desired detailed black, adjust the meter to full scale using the enlarging lens diaphragm. Then meter the most desirable detailed highlight, and read the exposure time & paper grade (or filter) directly from the computer. Expose for the indicated time and develop. That’s all there is to it. All prints will have uniform contrast & density.

**PRINTS CAN BE DEVELOPED ANYTIME BY ANYONE!** Since all variables are held constant, you keep making prints while someone else, regardless of experience, develops the prints you’ve already made! Or the undeveloped prints can be stored in a light-tight box for developing at a later time.

**IDEAL FOR THE NOVICE AS WELL AS THE PROFESSIONAL!** To the professional photographer or printer, the advantages of Fotoval are obvious... more prints in less time, consistent print quality, lower paper costs, more profits! The easy operation and simple-to-follow instructions make it simple for the beginner to experience remarkable results, even if he’s never attempted enlarging before!

**FAST & EASY TO ASSEMBLE!** You’ll find the Fotoval as easy to build as it is to use. Requires no special skills or knowledge.

Kit PM-14, 8 lbs...no money down...$9.95... ..... $89.00

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

Now Control Exposures in Tenths Of A Second With The **NEW Heathkit Photo Timer!**

**PT-15**

$24.95

- 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 within 2% for 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.

**QUICKLY EXPOSE MANY PRINTS WITHIN A 2% DEVIATION ON ALL SETTINGS!** Now control exposure times in full seconds up to 99, or up to 9.9 in tenths of a second. All settings will be accurate within 2%. And since the time intervals are switch-selected, you can accurately reset any interval every time.

**QUICK & SIMPLE TO USE!** Simply set the desired exposure time and push the "Start" button. The Heathkit Photo-Timer turns on the enlarger & extinguishes the safelight. At the end of the pre-selected interval, it automatically turns the enlarger off and the safelight on. And to quickly expose more than one print, simply tap the "Start" button to repeat the cycle... every exposure will be accurate to within 2% of the first interval. A spring-return "stop" switch halts exposure process, if you decide time interval is incorrect. Quick & easy to assemble, too.

Kit PT-15, 4 lbs...no money down...$5.50... ..... $24.95

**PT-15 SPECIFICATIONS—**

- Timed cycle: x.0 Range: 1 to 99 seconds in 1-second steps. x.01 Range: 0.1 to 60 seconds in 0.1-second steps. AC outlets: Enlarger and safelight; each outlet provides 105-125 v. AC @ 300 watts maximum (1 ampere). Accuracy: Actual timed cycle will be within 5% of time selected. Repeatability: All timed cycles at one selected setting within 2% of each other. Switches: 0-90 seconds, in 10-second steps; 0-9 seconds, in 0.1-second steps; start push button. Time-Focus, Stop, Range, x.0 & x.01. On/Off, Controls: x.0 calibration, x.01 calibration; sensitivity. Regulation: Internal circuits regulated at 150 volts DC by an OA2 regulator tube. Power requirements: 105-125 v. AC, 50/60 cps, 6 watts. Dimensions: 6 1/2" W x 6 1/2" D x 3 1/2" H overall.
Entertaining Heathkit® Companions

New! Deluxe All-Transistor AM Portable . . . "Big-Set" Performance, Low Operating Cost, Modern Designer Styling!

- 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 sensitivity & selectivity
- Big 1/2" diameter built-in rod antenna for distant station reception
- Handsome black simulated leather case
- Fast, simple circuit board construction
- DELUXE FEATURES THAT CAN'T BE MATCHED BY MINIATURES! Like the big 4" x 6" PM speaker that provides a clean, bold sound . . . a large 1/2" diameter built-in rod antenna that pulls distant stations in with ease . . . a tuned RF stage and double-tuned I.F. stage for extra sensitivity and selectivity . . . an audio output stage that's diode biased for full performance over a wide temperature range even when battery voltage runs low . . . and a 6 transistor, 2-diode circuit that performs like 8 transistors—assures instant operation, long unchanging life. In actual side-by-side comparisons with miniatures & other portables, the GR-24 produced better station pickup, stronger volume & sharper reception!
- OUTPERFORMS MINIATURES IN ECONOMY, TOO! Cost only 1/10 as much as pocket-size models to operate! Uses 6 inexpensive size "D" flashlight batteries (not included). And a plastic battery holder protects against corrosion.
- YOU'LL LIKE ITS SMART, MODERN STYLING! A rich black simulated leather case with a chrome-color plastic frame and anodized aluminum grille. And for quick simple station selection, there are two "thumb-touch" controls, plus an easy-to-read slide-rule dial. Carries easy, too, with its light weight, compact shape, and easy-grip handle. Assembly takes about 4 to 6 hours with fast stable circuit board construction.

A Concerto At The Beach? It's Easy When You Take Along This Heathkit® All-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

A REFRESHING IDEA IN PORTABLE LISTENING! Tired of the usual AM fare? Then take along the quiet beauty of FM with this compact, "go anywhere" Heathkit GR-61! Enjoy classical or standard favorites at the beach, on a camping trip, at the ballpark ... anywhere your travels take you!

EXTRA FEATURES INSURE HI-FI PERFORMANCE! Like the 10 transistor, 2-diode circuit with 3 I.F. stages that deliver full fidelity & complete quieting ... a push-pull output stage that drives the 4" x 6" oval PM speaker for low distortion, "big-set" sound . . . external antenna terminals . . . and a headphone jack for private listening or connection to your hi-fi system.

ASSEMBLES IN ONE OR TWO EVENINGS! A pre-assembled "front-end," prealigned I.F. transformers and simple circuit board construction assure fast, easy assembly. Operates on a leakproof 9-volt battery (not included).

Kit GR-61, 6 lbs., no money dn., $5 mo. $44.95


Look To Heath For The Newest, The Finest In Electronic Kits
New! All-Transistor 23 Channel 5-Watt CB!

Only 3 Simple Controls... on/off volume, squelch & channel selector. Panel "S" meter for relative power output & signal strength measurements.

Operates "Fixed"... with accessory AC power supply.

4 MONEY-SAVING REASONS FOR YOU TO BUY HEATHKIT® CB!
1. New Lower Prices On All Units!
2. 5% Discount On two 5-Watt Unit Buy!
3. New Lowest Cost All-Transistor 5-Watt Transceiver... Kit Or Wired!
4. Lowest Crystal Prices... Only $1.99 each with order of 1 or more transceivers!

Solid-State Circuit Provides Instant Operation, Low Battery Drain... Compact, "Fit-Anywhere" Size... Transmit & Receive On All 23 Channels... Available Kit Or Factory Assembled!

- 14 transistor, 6 diode circuitry for cool, instant operation, long trouble-free life, and low battery drain.
- Provision for 23 crystal-controlled transmit & receive channels... low cost 23 channel crystal set available.
- Full 5 watt performance... a minimum of 3 watts RF output, plus 3 watts audio modulating power.
- Only 27½" H x 7" W x 10½" 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 to ratio.
- Easy to build circuit board construction.
- Gimbal mounting bracket for versatility of installation.
- Attractive Turner Ceramic PTT Mike.
- Handsome die-cast, chrome-plated front panel with rust-resistant aluminum charcoal gray cabinet.

ALL-CHANNEL CAPABILITY! Now transmit & receive on all 23 CB channels with this new Heathkit Transceiver. Just flip to any desired channel on the illuminated channel selector, and you're ready for instant 2-way communications. And its 14 transistor, 6 diode circuit keeps the GW-14 running cool... no component deterioration as with tube types. Draws only .75 amps when transmitting...12 amps on receive. You can also easily disable the pilot lights to further reduce "standby" current on receive... down to only .66 amps!

IDEAL FOR SMALL SPACES! You'll like the GW-14's compact size, too... only 27½" H x 7" W x 10½" D. Fits virtually anywhere... under the dash of your car or boat, tractor, etc. And in any position, thanks to the gimbzal mounting bracket. Due to its compact size and low current drain, the GW-14 is also ideal for the Highway Emergency Locating Plan (H.E.L.P.—channel 9).

A FULL 5 WATTS FOR "KING-SIZE" CB PERFORMANCE! And its minimum 3 watt RF output using a "twin tri" network provides increased efficiency and maximum harmonic attenuation. Relay switching has also been incorporated for complete circuit isolation between transmitter & receiver sections... eliminates interaction problems.

ONLY 3 SIMPLE CONTROLS TO OPERATE! An on/off/volume control, adjustable squelch, & illuminated channel selector. In addition, there's an improved adjustable squelch control that eliminates all speaker hiss during standby. And the automatic noise limiter minimizes ignition system and motor noise.

GOES TOGETHER EASILY! All parts mount on a single circuit board to reduce the chance for wiring errors. And to facilitate servicing & trouble-shooting, the foil circuit pattern is screened on the board top... allows quick circuit tracing! Includes a smartly styled ceramic microphone, DC power cables, and crystals for one channel—specify channel no.

(See pg. 104 for additional crystal prices.)

For 12 V, negative ground only. FCC license required. Use must comply with Part 95 of F.C.C. Regulations.

Kit GW-14, 8 lbs., no money dn., $9 mo. $89.95
Accessory power supply for 117 v. AC "fixed" station operation will be available soon.

Assembled GW-14, 9 lbs., no money dn., $12 mo. $124.95

COMPLETE 23-CHANNEL CB CRYSTAL PACKAGE... $79.95!

A regular $135.70 value! Includes transmit & receive crystals for all CB channels for complete GW-14 operating capability... a total of 46 crystals. For maximum versatility, this package is your best dollar buy!

GW-14 SPECIFICATIONS—RECEIVER SECTION: General description: 6-transistor superheterodyne circuit with RF amplifier, squelch, noise limiter, 23-channel crystal controlled tuning with tuning and relative signal strength indicator. Intermediate frequency: 455 kc. Sensitivity: 5 µv or less for a 10 db signal plus noise ratio. Selectivity: Adjacent channel attenuation is down 30 db. Audio power output: 5 watts minimum. TRANSMITTER SECTION: Nominal power output to final RF amplifier: 5 watts. Frequency control: 3rd overtone quartz crystal as selected by the 23-position channel selector switch. Frequency control effectiveness: Operating frequency will be within .005% of nominal crystal frequency over an ambient temperature range of +20 to +130 degrees F. Modulation: High level AM limited to less than 100%. Output Impedance: 50 ohms nominal. Output circuits: 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, 5-9 corresponds to approximately 100 µv signal input. For transmitting, the meter indicates the presence of power output and modulation peak. Power requirements: Positive 12 volt system (13.4 volts), receiver current drain, standby—120 ma, transmitter current drain—750 ma Dimensions: 24½" H x 7" W x 10½" D.

GW-14, 1 lb. no money dn., $8 mo. $79.95

Save 5% When You Buy 2 Or More 5-Watt Transceivers; Just Deduct 5% From Order Blank. New Lower Prices On All Units!
Save 5% On Order Of 2 Or More Heathkit®

Low-Cost CB Transceiver . . . Ideal
Where Only 1 Channel Is Desired!

GW-12A
$34.95
Was $39.95

- Crystal-controlled transmit & receive channel
- Built-in squelch & automatic noise limiter
- Superhetodyne receiver
- Ideal for fixed or mobile use
- Clean, open circuit layout for quick, easy assembly
- Includes cabinet, (push-to-talk) mike, & crystals

SOUND 1-CHANNEL CB COMMUNICATIONS IN ONE LOW COST PACKAGE! Ideal for mobile fleets where only one channel is needed. No missed calls or unnecessary usage! And think of the time and effort you could save with a home and car installation! Savings that will pay for the GW-12’s low price many times over.

CHECK THESE FEATURES! Automatic noise limiter & adjustable squelch minimize receiver noise & ignition interference for crisp, clear communications. An AC power supply is built-in, along with provision for simple plug-in connection of a DC power supply for 6 or 12 v. operation. Includes attractive 2-tone brown metal cabinet, PTT mike and crystals for 1 channel (specify freq.). Use must comply with Part 95 FCC regulations.

Kit GW-12A (AC only), 10 lbs...No money down, $5 mo...Was $39.95 $34.95
Kit GW-12D (AC & DC), 13 lbs...No money down, $5 mo...Was $44.95 $39.95

GW-12 GENERAL DESCRIPTION—Receiver section: 4-tube superhetodyne circuit with built-in squelch and noise limiter function. Sensitivity: 1 uV signal at antenna input produces 10 db signal-to-noise ratio. Selectivity: 7.5 kc at points 6 db down from peak response. Transmitter section: Power input to final RF amplifier does not exceed 5 watts. Frequency control effectiveness: Within .005% of nominal crystal frequency over ambient temperature range of —20 to +130°F. Power requirements: 117 v. AC operation, 50 watts, 6 v. DC, 8amps; 12 v. DC, 4 amps. Dimensions: 5½" H x 8½" W x 8¾" D.

Deluxe 5-Channel “Fixed Or Mobile” CB Transceiver . . . Versatile Performance Features!

- Front panel crystal socket—allows quick, convenient changing of one transmit crystal without removing cabinet
- Spotting switch—generates a signal to tune receiver to exact frequency of changeable transmit channel
- TVI filter—minimizes interference with TV sets
- Calibrated “S” meter
- 5 crystal-controlled transmit & receive channels—3-way power supply—6 or 12 v. DC, 117 v. AC
- Superhet receiver with RF stage for high performance
- Styled in handsome Heathkit marine motif
- Easy to build
- Complements Heath marine radiotelephones as alternative means of communication in many boating areas

TRANSMIT ON ANY OF 23 CHANNELS! The MW-34 boasts 5 crystal-controlled transmit & receive channels with front panel socket for quick, easy changing of one transmit crystal without removing the cabinet. For the receive function you use the spotting switch in conjunction with the variable receiver tuning. The spotting switch turns on the transmitter oscillator without going on the air, thus generating a signal for tuning the receiver to the same frequency as the transmitter.

In addition, a TVI filter is built in to minimize interference with nearby TV sets. Also has a calibrated “S” meter which automatically shifts from transmitter to receiver to indicate signal strength & relative power output.

IDEAL FOR BOAT, CAR, & 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 communica-
5-Watt CB Transceivers!

Save $20 On This Deluxe 5-Channel "Master Station" CB Transceiver...
Operate Fixed Or Mobile!

- 5 crystal-controlled transmit & receive channels
- Built-in 4-tone selective call circuitry
- All-channel receiver tuning
- Tuning meter
- Built-in 3-way power supply
- Adjustable squelch
- Switchable automatic noise limiter
- Easy to build

RUGGED & READY TO GO ANYWHERE! Car, truck, barn, office, home, etc. Ready to put you in complete command of any 2-way CB radio set-up. Ready to shorten the time and distance required for efficient farm, business or personal communications. Compare the GW-42's features and specifications. You'll be surprised that so much performance could be packed into one compact unit at so little a price. Now only $99.95 ... a savings of $20!

SELECTIVE CALL...FIXED OR MOBILE OPERATION! Built-in 4-tone selective call circuitry permits individual call of up to 4 units on any one of the 23 CB channels—92 possible combinations in all! Also eliminates unwanted CB conversations. You only call from other units operating on same selective call frequency.

Other features include a built-in 3-way power supply for 6 or 12 v. DC, and 117 v. AC operation, 5 crystal-controlled transmit & receive channels...a tremendous help when the hands are crowded; variable receiver tuning of all 23 channels with 1/2 microvolt sensitivity; efficient 5-watt input transmitter; switchable automatic noise limiter; and large slide-rule dial with planetary drive and built-in tuning meter for accurate easy station selection.

ATTRACTIVE STYLING...EASY TO BUILD! A 2-tone brown metal cabinet with anodized trim makes a handsome addition to any surroundings. Thoughtful circuit design, with 3 circuit boards and precut wired cable harness, makes assembly easy and fun-filled experience that's as rewarding as the final product. Includes PTT microphone, AC & DC power cables, FCC license pack, and crystals for 1 channel (specify freq.). Use must comply with Part 95 FCC regulations.

Kit GW-42, 23 lbs...No money down, $10.00...was $119.95 Now $99.95

GW-42 GENERAL DESCRIPTION—RECEIVER SECTION: 6 tube superheterodyne circuit with RF amplifier, squelch, noise limiter, variable or crystal receiver tuning, tuning meter and built-in tuning squelch with four front panel selected tones. Tuning range: (Crystal) Up to 5 switch selected channels (Variable): Tunes all 23 channels. Intermediate frequency: 455 kHz. Sensitivity: ½ microvolt or less for a 10 db signal to noise ratio. Selectivity: 40 db attenuation with adjacent channel 10 kc away. TRANSMITTER SECTION: Nominal power input to final RF amplifier: 5 watts. Frequency control: 3rd overtone quartz crystal as selected by the 5 position channel selector switch. Frequency control effectiveness: Operating frequency will be within 0.05% of nominal frequency with an ambient temperature range of —20 to +130 degrees F. MODULATION: AM plate modulation, automatically limited to less than 100%. Output impedance; 50-70 ohms. TONE DETECTION SECTION: Frequency control: Resistant reel relay with reeds used for generation of calling tone and frequency selection during monitoring. Controls: Volume on/off, Receiver tuning, Channel Selector, Tone Selector, Call squelch, Switch, Squelch on/off, Noise limiter on/off, Receive tone control. Power selector: Tube complement: 6CB, Receiver RF amplifier, 6B9, Triode receiver crystal oscillator, pentode mixer; 6C4, Variable oscillator, 6B8, 1st IF amplifier; 6B16, 2nd IF amplifier; 687, Diode detector diode, squelch diode, noise limiter diode; 6AN8, pentode first audio amplifier, triode microphone preamplifier; 6AG5. Combination audio output/modulator; 6AU8, Triode transmitter oscillator, pentode driver; 6AQ5, RF final amplifier, 6AN8, Voltage amplifier, cathode follower (tone squelch section); 6C4 Relay control tube (tone squelch section). Power requirements: AC at 105-125 volts, 60 cycles, 20 watts; 6VD at 9 amps; 12VD at 5 amps. Dimensions: 5" x 17/16" x 10 1/2." D.

Save Up To $15 On This 5-Channel Transceiver...
Available With Or Without Selective Call!

- 5-crystal-controlled transmit & receive channels
- Superhet receiver with RF stage
- Built-in squelch & automatic noise limiter
- Push-to-talk microphone
- Easy to build

ENJOY ADDED CHANNEL SELECTION! Choose any of 5 crystal-controlled transmit & receive channels. Use it anywhere...farm, home, car, etc.

EXTRA PERFORMANCE FEATURES! Sensitive superhet receiver with RF stage for greater range...built-in squelch & noise limiter for crisp, noise-free communications...push-to-talk microphone for simple operation...and external connectors for an extra speaker.

OPTIONAL SELECTIVE CALL ON GW-32 MODELS! Permits individual call up to 4 different units on same channel...up to 92 possible combinations. Eliminates unwanted CB calls, and speaker noise during standby.

ALL MODELS INCLUDE PTT mike, power cable, crystals for 1 channel (specify freq.)—2-tone brown metal cabinet...license forms. Use must comply with Part 95 FCC regulations.

Kit GW-22A (117 v. AC), 13 lbs. No money down, $5.00...was $59.95...now $47.95
Kit GW-22D (6 or 12 v. DC), 13 lbs. No money down, $5.00...was $64.95...now $49.95
Kit GW-32A with Selective Call (117 v AC), 14 lbs. No money down, $7.00...was $89.95...now $68.95
Kit GW-32D with Selective Call (6 or 12 v. DC), 14 lbs. No money down, $8.00...was $89.95...now $74.95

GENERAL DESCRIPTION—Receiver: 5-tube superheterodyne with RF stage, crystal-controlled, on up to 5 of the 23 channels as determined by the particular crystal(s) installed. Sensitivity: ½ microvolt for a 10 db signal-to-noise ratio. Transmitter: Power input to final RF amplifier; nominal 5 watts. Nominal power requirements: GW-22A & GW-22D—17 volts, 50/60 cps AC, 50 watts; GW-22D & GW-32D—6 volts DC, 8.0 amperes; 12 volts DC, 4.5 amperes. Dimensions: 9 13/16" x 6 1/4" x 3 9/16." W.

Shop The Easy Heathkit Way—Select Your Kits In The Comfort Of Your Home, Mail Your Order, & Get Direct-To-Your-Door Delivery.
**Compact 4-Transistor Walkie-Talkie**

*Only $35 A Pair!*

- 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

**GW-31A**

$19.95

(PAIR $35.00)

**GW-21A**

$39.95

(PAIR $74.95)

---

**Class D Citizen's Band Channel Nos. & Frequencies**

CLASS D CITIZEN'S BAND CHANNEL NOS. AND FREQUENCIES

<table>
<thead>
<tr>
<th>Channel No</th>
<th>Frequency (mc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>26.965</td>
</tr>
<tr>
<td>12</td>
<td>27.035</td>
</tr>
<tr>
<td>13</td>
<td>27.115</td>
</tr>
<tr>
<td>14</td>
<td>27.185</td>
</tr>
<tr>
<td>15</td>
<td>27.255</td>
</tr>
<tr>
<td>16</td>
<td>27.325</td>
</tr>
<tr>
<td>17</td>
<td>27.395</td>
</tr>
<tr>
<td>18</td>
<td>27.465</td>
</tr>
</tbody>
</table>

- Cannot be used for unlicensed operation of GW-31A and GW-21A.
- Communication between units of different licenses restricted to these channels; communication between units of the same license permitted on all channels.
- Shared with Class C Radio Control

**NOTE:** Specify frequency choice. When ordering several units, specify frequency for each.

---

**Special CB Accessories For Efficient Performance!**

**GW-30, Battery Set (2)**

1. **GW-30, Battery Set (2)**
   - $2.95

**GW-21A**

- **Kit GW-21A, 3 lbs**
  - No money down, $5 mo
  - $39.95

- **Kit GW-21-2 (pair) 6 lbs**
  - No money down, $5 mo
  - $74.95

**GW-30, Battery Set (2)**

- **GW-30, Battery Set (2)**
  - $2.95

**GW-21A SPECIFICATIONS — Receivers:** Crystal-controlled superheterodyne. Sensitivity: 1 uV for 10 db S/N ratio. Tuning: Dial center-controlled, increments of 1/2 channel. Tuning: Full wave or SSB. Battery: 9 volt. Antenna: 11/4" whip. Circuit: 4-transistor. Dimensions: 5 1/4" H x 3 1/2" W x 1 1/2" D.

---

**Special 23-Channel CB Package**

- Transmitter & receive crystals for all CB channels. Save $11.59.
- GW-142, 1 lb., no money down, 8 mo. $79.95

---

**Deluxe 9-Transistor 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, on the farm, or for leisure
- Crystal-controlled transmitter & superheterodyne receiver
- Built-in squelch & automatic noise limiter
- Portable—battery powered
- Up to 1 mile inter-unit operation...greater distances with Class "D" CB units
- Rust-resistant aluminum case

**A VERSATILE PERFORMER!** Use for boat to shore communications, in-plant communications between lift trucks, handlers, etc., communication on a small farm, roving microphone on convention floors, hunting & fishing trips, construction jobs, camping expeditions, surveyors, CB'ers...anywhere portable 2-way communications are needed!

**OPERATES UP TO A MILE BETWEEN UNITS!** Even greater distances with a Class "D" CB Transceiver or external antenna. Easy to operate...just set volume & squelch controls to desired level, push button to talk, release to listen!

ANYONE CAN USE IT! A license is not required for operation over the 26.97 to 27.27 frequency range when used in the manner described in FCC Regulations, Part 95. However, the GW-21 may be used as a licensed CB unit as described in FCC Regulations, Part 95. Includes 2-tone rust-proof aluminum case, shoulder strap, crystals (specify freq.) earphone for private listening. Simple circuit board assembly. Less battery. Choose a pair for extra savings!

- **Model GW-12 Cowl Mount Mobile Antenna, 2 lbs...$9.95. 48" fiberglass whip. Patented rocker support for 8-point ground. Complete with 15' RG-58U cable and connector.**

- **Model CBF-1 Ground Plane Antenna, 7 lbs...$17.95. Non-directional 4 1/4 wave antenna measuring 9" x 4" from bracket bottom to radiating top. Includes 50' RG-58AU cable and clamp.**

- **Model GDP-15, Antenna Specialists M-117 Base Station CB Antenna, 12 lbs...$29.36 Super Magnum. Omni-directional full "85 wave radials for max. RF decoupling. Includes 50' RG-58AU cable & connectors.**

- **Model GDP-25, Antenna Specialists M-125 Rooftop Mobile Antenna, 3 lbs...$15.40 Stainless steel spring. 3/4" "snap-in" mount; includes 20' RG-58U cable & connector.**

- **Model GW-12 Microphone, 2 lbs...$6.95. Push-totalk type with tailored response for crisp communications. Complete with coiled cable, less connector.**

- **Extra Transmit & Receive Crystals, 1 lb. (specify base/mobile or handheld transceiver) ea. $2.95. Only $1.99 with order of one or more 5-watt Transceivers.**

---

**Budget With Heathkit**

*You Get Twice As Much For Your Budget With Heathkit*
Heathkit® Walkie-Talkie!

Powerful 1-Watt Walkie-Talkie...Operates Up To 3 Miles...Includes $20 Rechargeable Battery!

- Efficient 10-transistor, 2-diode circuit for dependable, trouble-free performance
- Up to 3-mile inter-unit communications
- Crystal-controlled transmit & receive
- Adjustable squelch control & automatic noise limiter
- $20 rechargeable battery included
- Built-in 117 v. AC battery charger
- Sturdy, rustproof all-metal case
- Simple to build & operate

POWERFUL, PORTABLE & DEPENDABLE! Ready to go anywhere to provide you with efficient 2-way communications up to three miles between units...5 to 10 miles when used with an external antenna or a Class "D" 5-Watt Citizen's Band Transceiver. Ready to go to work instantly to keep you in contact with the office, home, other members of your hunting or fishing party!

MORE POWER, CLEAR RECEPTION! The GW-52A's superhet receiver has a RF amplifier to pull in weak stations with ease. And with the adjustable squelch control and automatic noise limiter, there's virtually no annoying atmospheric noise, or ignition and electrical interference.

COMPARE THESE EXTRA PERFORMANCE FEATURES! For added performance and convenience, there's a heavy-duty 10-cell nickel-cadmium battery that lasts a minimum of 1500 hours (10% transmit, 90% receive) and up to 5000 hours...over 2 years of normal workday use! Outlasts conventional batteries many times over. And you can recharge it on 117 v. AC house current, or from your car's 12 v. battery with a special 6 foot cord which plugs into the cigarette lighter. To keep you posted on the battery's charge state, there's a built-in battery condition meter.

LIGHTWEIGHT, COMPACT, EASY-TO-HANDLE! It's slim, trim size and light 2½ lb. weight make it easy to handle. Also includes a leather shoulder strap for easy carrying, and an elastic hand strap for a firm, comfortable grip while in use.

RUGGED LIFETIME CABINET...SIMPLE TO ASSEMBLE! With its fast, simple circuit board construction, your GW-52A goes together in a few hours. And the entire unit is attractively housed in a rustproof, 2-tone green aluminum case with a 35" chrome-plated telescopic antenna. Complete with rechargeable battery, power cords, earphone for private listening, FCC license pack (simply fill out forms & mail to get license), and crystals (specify channel no.). Use must comply with Part 95, FCC regulations. Order a pair for extra savings!

Kit GW-52A, 4 lbs...No money down, $7 mo...Was $74.95 Now $69.95
Kit GW-52-2, 8 lbs...No money down, $12 mo...Was $139.95 Now $129.95


Simple Controls
Just set the volume and squelch controls to desired level, push button on side to talk, release to listen! Also shown are external antenna socket for extended range and earphone jack for private listening.

Easy Circuit Board Assembly
All parts mount on a clearly marked circuit board. It's fast, easy and protects against wiring errors. assures the high stability necessary for consistently good results in all communications.

Built-in Battery Condition Meter
Shows condition and state of battery charge when "transmit" button is pressed.

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

**TELEVISION SETS**
- Deluxe 25” Color TV. 14, 15
- Deluxe 21” Color TV. 16, 17
- 23” Black & White TV. 13
- Antennas, Boosters, & Rotor. 16

**ELECTRONIC ORGANS**
- Deluxe Transistor Organ. 10, 11
- Low-Cost Transistor Organ. 12

**STereo/HIGH FIDELITY**
- Accessories. 18, 19, 32, 36, 39, 42, 43
- Amplifiers. 19, 24, 27, 28, 30, 31, 33
- Cabinet. 42, 43
- Cartridges. 36
- Headphone Control Box, Headphones. 39
- FM Multiplier Converter. 32
- Record Changers & Turntables. 34, 35, 36
- Speakers. 40, 41
- Speaker Systems. 37, 38, 39
- Stereo Receiver. 20
- Stereo Systems. 22, 23, 42, 43
- Tape Recorders. 42
- Tuners. 18, 24, 26, 27, 28, 29, 30, 32

**GENERAL PRODUCTS**
- Automotive:
  - Engine Tester Kit. 92
  - Ignition Analyzer. 85
  - Tachometer. 85
  - Timing Light. 92
  - Beginner’s Kits. 6
- Fotovar Darkroom Computer. 99
- Photo-Timer. 98
- Garage Door Opener. 94
- Intercom Systems. 95
- Motor Speed Control. 94
- Nut Driver Set. 94
- Monitor Radios. 45
- Radios, Portable. 9, 100
- Radios, Table. 96, 97
- Radios, Shortwave. 89, 90, 91
- Soldering Irons, Tool Kits. 94

**CITIZEN’S BAND**
- Antennas & Accessories. 104
- Transceivers. 101, 102, 103
- Walkie-Talkies. 104, 105

**MARINE ELECTRONICS**
- Antennas, Radiophone. 85, 86
- Deck Speaker. 85
- Depth Sounder. 87
- Direction Finder. 87
- Dual Horn/Hailer. 85, 86
- Fuel Vapor Detector. 88
- Power Inverter. 88
- Radioheating Ground System. 88
- Radiotelephones. 84, 85, 86
- Tachometer. 88

**EDUCATIONAL PRODUCTS**
- Analog Computer. 64
- Basic Electricity Course. 96
- Basic Radio Courses. 98
- Basic Transistor Course. 96
- Berkeley Physics Lab. 65
- IMPScite. 64
- Technical Applications Courses. 65

**MALMSTAD-ENKE INSTRUMENTATION LAB**
- Complete Lab Station. 67
- DH Recording Electrometer. 73
- Polarography Module. 72
- Separate Lab Station Components. 68, 69, 70, 71
- Servo-Chart Recorder. 66

**AMATEUR RADIO**
- Accessories. 74, 75, 76, 77, 78, 79, 80, 81, 82
- Amateur Radio Course. 76
- Linear Amplifiers. 78, 83
- Mobile Speaker. 77
- Power Supplies. 75, 77, 78
- Receivers. 74, 82
- Signal Monitor Scope. 80
- Spectrum Monitor. 80
- Transducers. 74, 79, 81
- Transmitters. 75, 83
- Variable Frequency Oscillator. 76

**TEST & LAB INSTRUMENTS**
- Accessories. 46, 58, 60, 63
- Audio Analyzer. 57
- Battery Eliminator. 58
- Capacitor Checker. 50
- Oscilloscope Kit. 60
- Electronic Switch. 63
- Generators. 51, 52, 53, 54, 55, 60
- Harmonic Distortion Meter. 57
- Impedance Bridge. 52
- Oscilloscopes. 62, 63
- Power Supplies. 58, 59
- Probe Kits. 56
- “Q” Meter. 60
- Resistance Kit. 60
- Signal tracer. 50
- Substitution Boxes. 60
- Transistor Testers. 49, 50
- Tube Testers. 61
- VOM. 48
- VTM’s. 46, 47, 48

**ORDER & SHIPPING INSTRUCTIONS.** 54, 55

---

**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 business.

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 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 opener; 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 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 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
AMATEUR RADIO
EDUCATIONAL
HOME & HOBBY ITEMS
GARRARD STEREO CHANGERS
MARINE ELECTRONICS
LAB & TEST INSTRUMENTS
CITIZEN'S BAND RADIO
Affiliated Companies: Daystrom Ltd., Cooksville (Toronto) Canada • Daystrom Ltd., Gloucester, England • Heathkit Gerate GmbH., Sprendlingen Bei Frankfurt/Main, Germany • Daystrom S.A., Geneva, Switzerland • Daystrom S.A., Zurich, Switzerland • Daystrom Overseas GmbH., Vienna, Austria