



# HEATH October FLYER

There was no regular September FLYER. Our customers continue to express amazement at purchasing professional quality test equipment kits at low Heathkit prices. The secret is in the method of selling. Our customers do most of the actual selling by praising Heathkits and recommending them to their friends. It is not unusual for one customer in a community to account for the sale of ten or more Heathkits. Thus while most companies add 40 to 50% for selling costs, the cost of selling Heathkits is but a few pennies out of every dollar.

There have been large increases in the cost of some Heathkit parts. Meters are up 10%, all transformers 10%, etc., but it is the aim of the Heath Company to absorb these if possible. As long as our customers continue the wonderful job they are doing, we will endeavor to do our part. This also enables us to give helpful informative articles in our FLYER as evidence of our appreciation. Let's keep it up.

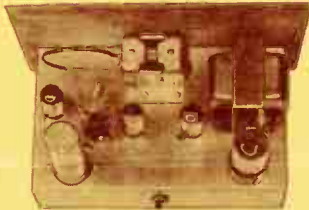
## Heathkit FM & TELEVISION SWEEP GENERATOR KIT

The newest and one of the most interesting family of Heathkits. A sweep generator brings to the service shop or experimenter the most essential instrument for properly aligning television and FM receivers. This Heathkit completely covers the entire FM and TV bands 2 Megacycles to 230 Megacycles. The unit is 110V 60 cy power transformer operated. Uses two 6J6 tubes, two 6C4 tubes and a 6X5 rectifier. An electronic sweep circuit is incorporated using both triodes of a 6J6 to allow a range of 0 to over 10 Megacycles.

A selector switch allows either frequency modulated or R.F. signals to be used. An interesting new type of miniature high frequency socket is used with terminals spaced extremely wide for easy assembly. The panel incorporates a large easily read calibrated scale and the assembled unit is easily adjusted by beating against a known radio station.

A sawtooth horizontal sweeping voltage is provided for the oscilloscope assuring that the trace will always be synchronized. A phasing control is included to correct for phase shift.

The coils are ready assembled and precision adjusted to exact frequency. As in all Heathkits, the best of parts are supplied, Mallory metal cased filter condenser (60 MFD of filter compared to an average of 16 MFD), zero coefficient ceramic condensers for high frequency, all punched and formed parts, grey crackle cabinet, 5 tubes, test leads, etc. Better get it built now and be ready for the FM and TV business.



*Shipping  
WEIGHT  
6 POUNDS*

**\$24.50**

*Nothing  
ELSE TO BUY*

## Identifying SURPLUS TRANSFORMERS

Most surplus power transformers are of very high quality and if properly identified will give long trouble free service. Many, however, are not marked sufficiently to allow identification. After establishing continuity with an ohmmeter, a few volts of AC applied to the most likely winding will allow the other windings to be measured with an AC voltmeter. A comparison of these will identify the high voltage and filament windings. 110 Volts AC can then be applied to the identified primary and the actual outputs measured. The outputs will read 5 to 10% higher than actual when no load is applied. If the wire used in winding the transformer can be measured, the amperage of each filament winding can be established from the following chart.

WIRE SIZE			CURRENT			WIRE SIZE			CURRENT		
A.W.G.A.	DIA.	AMPS.	A.W.G.A.	DIA.	AMPS.	A.W.G.A.	DIA.	AMPS.	A.W.G.A.	DIA.	AMPS.
10	.102	14	16	.051	3.2	18	.040	2.4	20	.032	1.2
12	.081	9									
14	.064	6									

In general, a winding under load which supplies rated voltage is not overloaded. Excessive drop of voltage is always an indication of drawing too much current. In average transformer construction, it is usual to provide 50 milliamperes of high voltage for every ampere of working tube filament. (Exclusive of rectifier filament.) (I.E. 6.3 at 4 Amps would give a 200 MA high voltage winding.)

## Heathkit HIGH FIDELITY PUSH PULL AMPLIFIER KIT



**\$14.95**

Shipping weight 20 lbs.

Accessories Available  
12" high quality FM speaker matches the amplifier..\$6.95  
Mahogany speaker cabinet size 14 1/2" x 14 1/2" x 8" for above speaker.....\$8.75

The shipping weight of 20 pounds for the Heathkit Amplifier proves that the transformers used are quality conservatively rated parts. The real surprise is when it is connected to an FM tuner or new long playing record player. The reproduction is truly superb. You hear the breath of the singer and the colorful harmonics of the musical instruments.

Many of the components of this Heathkit are surplus and when they are gone, there will be a considerable increase in price--better order one now.

Push pull circuit with one preamp stage and phase inverter stage. Response with  $\frac{1}{2}$  or -1 db. between 35 cycles and 13,000 cycles. Complete with all tubes, punched chassis, volume and tone controls, etc. 110V 60 cy transformer operated.



# Heathkit VACUUM TUBE VOLTMETER KIT

Everything you want in a VTVM. Shatterproof solid plastic meter face, automatic meter protection in burn-out proof circuit, push pull electronic voltmeter circuit assuring maximum stability. Linear DC and AC scales. Complete selection of voltage ranges starting with 3 Volts full scale up to 1,000 Volts. Isolated DC test prod for signal tracing and measurements of voltage while instrument is in operation. An ohmmeter section accurately measuring resistance of 1/10 ohm to one billion ohms with internal battery. Extremely high input resistance 11 megohms on all ranges DC and 6.5 megohms on AC. All these features and many more are the reasons hundreds of radio and television schools are using Heathkit VTVM's and recommending them to all students. Like all Heathkits, the VTVM kit is complete, 110V 60 cy power transformer, 500 microamp meter, tubes, grey crackle cabinet, panel, test leads, 1/4 ceramic precision divider resistors and all other parts. Complete instruction manual. Better start your laboratory now and enjoy it all winter.

Shipping weight 8 lbs.



**\$24.50**

## Which KIT? SHOULD I BUY FIRST

We often receive letters with this query. There is no doubt that a vacuum tube voltmeter is the most essential instrument in any laboratory or shop. It is like a right arm to any electronics worker. With it, all the voltages of a unit under test can be measured (many that due to loading of the circuit could not be measured with ordinary voltmeters). It serves as an output indicator, an alignment indicator, it incorporates an extremely wide range ohmmeter, it measures batteries, resistors, transformers, chokes, coils, condensers (for leakage). The voltage of A.V.C. systems, bias cells, oscillators, discriminators, etc., are easily checked. A vacuum tube voltmeter is truly the fundamental test instrument and should be first in any newly organized shop.

## Simple STROBOSCOPE from Audio Generator

An interesting stroboscope for stopping motion and observing moving machinery is easily assembled using your Heathkit Audio Generator. The only equipment necessary is an amplifier, NE42 neon bulb, and 600 Volt paper condenser between .1 and 1. MFD.

The bulb is coupled between the plate of the amplifier output tube and chassis ground using the paper tubular condenser as coupling condenser between plate and one side of neon bulb. The input of the audio generator is fed into amplifier at highest output.

The neon bulb should be mounted in a reflector. The lowest range of the generator should be used and this frequency should be multiplied by 60 to convert to R.P.M., thus, the low range measures from 1200 R.P.M. to 12,000 R.P.M.

The neon light held near a moving object in subdued light while the frequency is varied will appear to stop the movement. A chalk mark on one blade or arm of object will often aid in determining speed. Where one mark is made but two are seen, the speed is 1/2 the indicated and where four marks are seen, the speed is 1/4 indicated. The moving reed of radio vibrators may be observed and checked for proper contact in this manner.

## Heathkit SINE & SQUARE WAVE AUDIO GENERATOR KIT



**\$34.50**

Experimenters and servicemen working with a square wave for the first time invariably wonder why it was not introduced before. The characteristics of an amplifier can be determined in seconds compared to several hours of tedious plotting using older methods. Stage by stage, amplifier testing is as easy as signal tracing. The low distortion (less than 1%) and linear output ( $\pm$  one db.) make this Heathkit equal or superior to factory built equipment selling for three or four times its price. The circuit is the popular RC tuning circuit using a four gang variable condenser. Three ranges 20-200, 200-2,000, 2,000-20,000 cycles are provided by selector switch. Either sine or square waves instantly available at toggle switch. All components are of highest quality, cased 110V 60 cycle power transformer, Mallory F.P. filter condensers, 5 tubes, calibrated 2 color panel, grey crackle aluminum cabinet. The detailed instructions make assembly an interesting and instructive few hours. Shipping Weight 13 lbs.

## TIPS and COMMENTS

An excellent article on converting and using the BC 645 Transceiver in the citizens band appeared in the August ELECTRONICS Magazine. This has been reprinted by the Heath Company and copies are available on request--include stamped self-addressed envelope.

The life of soldering iron tips can be extended many times by having new tips chrome plated. The plating prevents the oxidation taking place and yet allows the tip to be tinned.

A new folder on Heathkits is about ready for distribution--the schematic of each kit is shown. A copy will gladly be sent on request.

MW26C Bendix Owners. The loop control box and loop connecting cable are now available from the Heath Company.

## HOME WORKSHOP GRINDER KIT

Easily assembled 110V AC or DC ball bearing fully enclosed motor from Army surplus dynamotor. Purchaser to make simple changes and shaft extensions, detailed instructions and all parts supplied. Motor approximately 5,000 R.P.M. Ideal for tool-post grinder, flexible shaft tool, model drill press, saw.

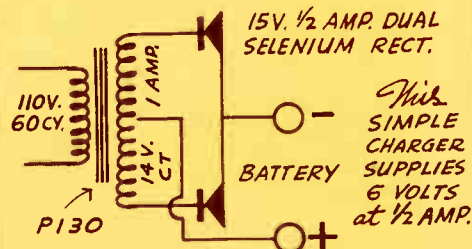


**\$39.50**

Shipping Weight 6 lbs.

## Surplus SELENIUM RECTIFIERS make Inexpensive TRICKLE CHARGER

Large quantities of selenium rectifiers are available at give away prices. These make excellent trickle chargers. The Heath Company can supply a special transformer to use in these applications.



Parts required our P130 Transformer \$1.95  
One No. 283 dual Rectifier..... .50

Shipping wt. on both items 2 lbs.

# Heathkit ELECTRONIC SWITCH KIT

Double THE UTILITY OF ANY SCOPE

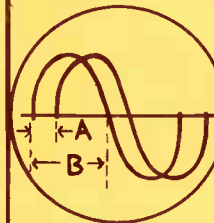


Shipping wt. 11 lbs.

**\$34.50**

An electronic switch used with any oscilloscope provides two separately controllable traces on the screen. Each trace is controlled independently and the position of the traces may be varied. It is an amazing and fascinating instrument. The input and output traces of an amplifier may be observed one beside the other or one directly over the other illustrating perfectly any change occurring in the amplifier. Distortion--phase shift and other defects show up instantly. The switch is also an excellent source of square waves over a limited range. The unit is 110 Volt 60 Cycle transformer operated. Uses 5 tubes (1 - 6X5, 2 - 6SN7's, 2 - 6SJ7's). Has individual gain controls, positioning control, and coarse and fine sweeping rate controls. The cabinet and panel match all other Heathkits. Every part supplied including detailed instructions for assembly and use.

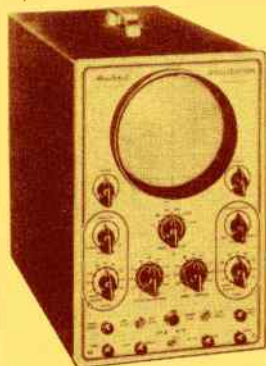
# Measuring Phase Shift with a Heathkit Electronic Switch



The phase shift through any stage of an amplifier is instantly shown and easily measured on oscilloscopes using a Heathkit Electronic Switch.

Before switch inputs are connected to the input and output of stage being measured, superimpose the traces with the positioning control. Connect the inputs and bring the traces to equal size with the gain controls. The phase angle can then be measured on scope screen and computed by the equation phase angle =  $180 \frac{A}{B}$  degrees.

# Heathkit 5" OSCILLOSCOPE KIT



Many of the largest television schools are buying Heathkit scopes in large quantities. Proof enough of this kit's suitability for FM and television work. Every part supplied including 5BFL and 5 other tubes. 110V 60 cycle power transformer supplies over 1100 Volts for 5BFL and 350V for amplifiers and sweep generator. Vertical and horizontal amplifiers using 6SJ7 tubes and a sweep generator covering 15 to 50,000 cycles using an 884 gas triode. Oil filled condensers for long life. Grey crackle cabinet, size  $8\frac{1}{2}$ " x 13" high x 17" deep. Beautiful 2 color panel. Order now and discover an entire new world of visual electronics. An oscilloscope provides almost endless sources of experimentation in radio, electronics, medicine and scientific research. Detailed instructions and photographic layout diagrams make assembly easy.

**\$39.50**

Shipping wt. 33 lbs. Express only.

# Heathkit SIGNAL TRACER KIT

Shipping wt. 10 pounds.



**\$19.50**

Nothing  
ELSE TO BUY

Let a Heathkit Signal Tracer do the tedious watching of intermittents while you go on to other profitable jobs. Follow the signal from the antenna to the defective part in a matter of seconds. Triples the repairs per man in many shops. A Heathkit Signal Tracer Kit pays for itself in a matter of days of operation. Locates faults immediately. Internal amplifier available for speaker testing and internal speaker available for amplifier testing. Connection for VTVM on panel allows visual tracing and gain measurements. Also tests phonograph pickups, microphones, PA systems, etc. Frequency range to 200 Mc. Complete ready to assemble. 110V 60 cycle transformer operated. Supplied with 3 tubes, diode probe, 2 color panel, all other parts. Easy to assemble, detailed blueprints and instructions.

## ORDER BLANK

To Heath Company  
Benton Harbor, Michigan

From \_\_\_\_\_

Ship via  
 Parcel Post  
 Express  
 Freight  
 Best Way

(Please Print)

Quantity	Item	Price
_____	Heathkit Sweep Gen. Kit	_____
_____	Heathkit Amplifier Kit	_____
_____	Heathkit VTVM Kit	_____
_____	Heathkit Audio Gen. Kit	_____
_____	Home Workshop Grinder Kit	_____
_____	Heathkit Elect. Switch Kit	_____
_____	Heathkit Oscilloscope Kit	_____
_____	Heathkit Signal Tracer Kit	_____
_____	BC 451 Control Box	_____
_____	Heathkit Photo Timer Kit	_____

Quantity	Item	Price
_____	Heathkit Signal Gen. Kit	_____
_____	Heathkit Cond. Checker Kit	_____
_____	Heathkit All-Wave Radio Kit	_____
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_____		_____

Enclosed find  Check  Money Order for \_\_\_\_\_

Please ship C.O.D.  Postage enclosed for \_\_\_\_\_ pounds.

## BC451 COMMAND SET CONTROL BOX

No. 236. The control box for the 274W transmitters contains proper CW-voice switch, channel selector switch, power switch, mike jack and telegraph key. Will save many hours time and trouble converting these transmitters. Add postage for 2 lbs.



**\$1.95**

## Heathkit PHOTO TIMER KIT



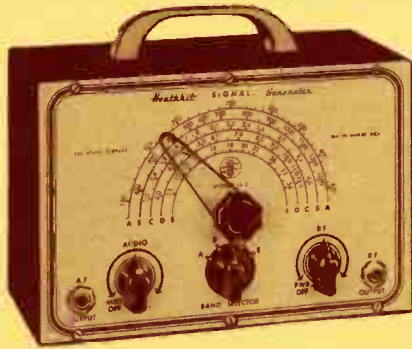
Complete kit to assemble a professional type electronic photo timer. No springs to set or levers to turn, simply set pointer knob to time and push button to repeat range  $\frac{1}{2}$  second to 45 seconds. Has focusing switch. Pictorial diagram makes assembly easy without radio experience. All parts formed, printed and plated, ready to solder together.

**\$8.75**

Add postage for 4 lbs.



# Heathkit RF SIGNAL GENERATOR KIT



**\$19.50**

*Nothing ELSE TO BUY*

This RF Signal Generator Kit is rapidly becoming our most popular kit. Calibrated from 150 Kc. to over 100 Megacycles with fundamentals to 34 Megacycles it is adequate for every service need.

An exceptionally complete assembly and use manual makes it a lot of fun to build and no one needs to resort to slipshod methods of alignment when a quality Signal Generator Kit is available for less than a twenty dollar bill. The audio modulation is supplied by a relaxation type oscillator which also supplies a sawtooth audio voltage for amplifier testing.

The coils used are precision wound and factory calibrated eliminating the need for adjusting each band. The kit is complete with large calibrated scales on two color panel, grey crackle cabinet, 110V 60 cycle power transformer, precision coils, test leads, tubes and all other parts.

Shipping wt. 8 lbs.

# Heathkit CONDENSER CHECKER KIT



**\$19.50**

*Nothing ELSE TO BUY*

Checks all types of condensers, paper mica-electrolytic-ceramic over a range of .00001 MFD to 1000 MFD. All on readable scales that are read direct from the panel. NO CHARTS OR MULTIPLIERS NECESSARY. A condenser checker anyone can read without a college education. A leakage test and polarizing voltage for 20 to 500 volts provided. Measures power factor of electrolytics between 0% and 50%. 110V 60 cycle transformer operated complete with rectifier and magic eye tubes, cabinet, calibrated panel, test leads and all other parts. Clear detailed instructions for assembly and use. Why guess at the quality and capacity of a condenser when you can know for less than a twenty dollar bill.

Add postage for 7 lbs.

# Heathkit 3 TUBE ALL-WAVE RADIO KIT



**\$8.75**

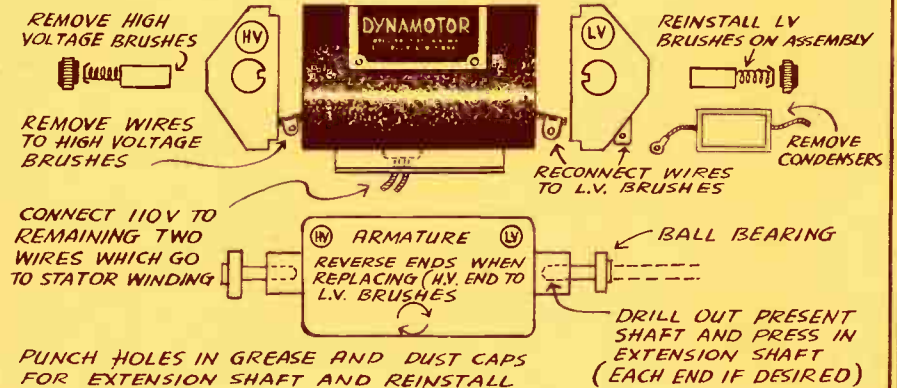
*Nothing ELSE TO BUY*

A 3 tube 110V 60 cycle AC transformer operated radio using plug in coil to cover 550 Kc. to 6,000 Kc. Covers broadcast, police, aircraft, amateur, marine and foreign broadcasts. An excellent start in radio for boys or adults. Has been constructed successfully by 10 year old boys. An excellent way to keep the family radio for adults programs. Boys will enjoy this for years and gain practical knowledge using it. Every part supplied except speaker or headphones which are extra. Add postage for 3 lbs. Headphones (extra).....\$1.00 2 1/2" PM Loudspeaker (extra)... 1.95

# Converting DYNAMOTORS to 110V. MOTORS

Most types of war surplus dynamotors make excellent ball bearing 110V universal motors by a simple change. By drilling into the armature end and pressing an extension shaft into it, pulleys or grinding wheel may be attached.

The motors make excellent devices for driving displays, toys, fans, models, tool post grinders, buffers, etc.



The HEATH COMPANY  
BENTON HARBOR, MICHIGAN

Sec. 562, P. L. & R.  
U. S. POSTAGE  
**1¢ Paid**  
Benton Harbor, Mich.  
Permit No. 273