

NOVEMBER Heath FLYER



As this is the last FLYER before Christmas, everyone of us at the Heath Company extends our heartfelt thanks to you our customers. Your support has made this a most pleasant year for all of us and while we cannot thank each of you personally, your letters have been most welcome and do serve to encourage us to do our best. We hope to give you many new and interesting kits during 1949 and wish all of you the most pleasant of holidays.

Many have already ordered Heath-kits for Christmas presents--the Oscilloscope and VTVM Kits are always welcome as are the other kits if they are preferred. We hope to fill all gift orders but please order as early as possible.

GETTING ACQUAINTED *with* TELEVISION

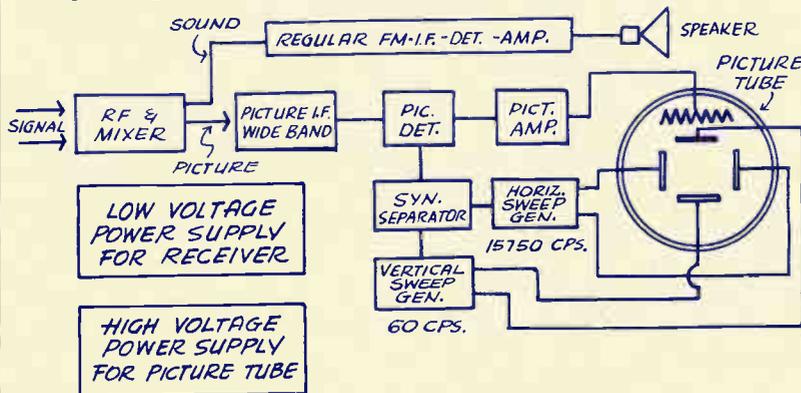
Television is really here and all of us in electronics must keep abreast with it or face the loss of a portion of our income shortly. To help understand it, the Heath FLYER will run a series of articles explaining television in simple everyday language. The Government has allotted 12 frequency channels to T.V. The lowest is 50 to 56 Mc. and the highest 210-216 Mc. Each channel is 6 Megacycles wide. The complete TV signal is actually broadcast by two transmitters, one an FM sound transmitter and the other an AM picture pulse transmitter.

These two signals are 4.5 Mc. apart but are received by one receiver whose band width must be wide enough to pass 4.5 Mc. Therefore, on one side of this wide signal is the FM sound and on the other the AM picture pulse. The receiver separates the two signals usually by the first IF stage supplying the two signals to separate receiver sections, the sound section being a conventional FM receiver.

The picture is formed by sweeping the trace of the cathode ray tube horizontally at 15750 cycles per second and vertically at 60 cycles per second. Each of two successive vertical cycles reproduces alternate lines and this is called interlaced scanning producing a complete picture 30 times a second. These sweep voltages are developed by sawtooth generators which are arranged to be synchronized with a portion of the picture pulse received from the transmitter. While the CR tube trace is being swept both vertically and horizontally (forming a rectangular pattern called a raster), the intensity or brightness of the trace is varied by another portion of the pulse received from the transmitting station. The transmitter picture signal, therefore, consists of three separate pulses, one the modulating pulse (controlling the light and dark portions of the raster), a synchronizing horizontal sweeping pulse and a synchronizing vertical sweeping pulse.

The synchronizing pulses lock-in the receiver sweep generators with the scanning sweep of the transmitter camera. The three pulses are transmitted over one wave and are separated in the receiver by proper resistance capacity circuits.

A block diagram shows the main sections of a modern T.V. set.



Heathkit 5" OSCILLOSCOPE KIT

An examination of the Heathkit Oscilloscope Kit features is convincing evidence that a complete fully equipped oscilloscope is within the range of everyone's pocketbook--even hobbyists. There is no longer need to be without this most important electronic tool--examine the world of visual electronics. Take advantage of this kit while the use of high quality government radar surplus makes this price possible. The construction of a cathode ray oscilloscope is certainly the first step in learning television. This Heathkit is complete--all tubes--cabinet--2 color panel--every part needed. Shipping Wt. 24 lbs.



\$39.50 Nothing ELSE TO BUY

All controls on front panel including switching direct to plates without changing binding posts, 60 cy test voltage, ext syn post, gain, focus, intensity, sweep coarse and fine, ext-int syn. etc.

Large 5" CR tube gives man-sized traces which can be seen from any portion of the service bench.

Sweep generator continuously variable between 15 cycles and 30,000 cycles covers both sweep frequencies used in T.V.

Oil filled high voltage filter condenser--ample capacity for complete filtering.

High gain vert and horiz amplifiers give full inch deflection with only 1/2 Volt input. Plenty of power to reproduce weak TV pulses.

Rugged fully cased electrostatically shielded power transformer supplies both high and low voltages over 1100 Volts for CR tube.

Open chassis for ease of construction. No tight corners. You can use both hands to assemble your Heathkit.

Intensity modulation connection for TV work or pulse insertion.

Heathkit RF SIGNAL GENERATOR KIT



\$19.50

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.

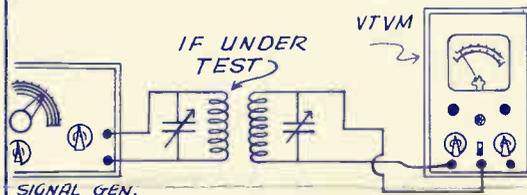
An exceptionally complete assembly and use manual makes it a lot of fun to build and no one needs to resort to slipshod methods of alignment when a quality Signal Generator Kit is available for less than a twenty dollar bill. The audio modulation is supplied by a relaxation type oscillator which also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

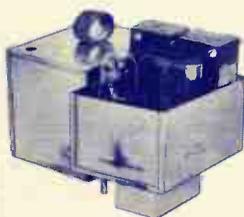
Identifying IF TRANSFORMERS

Intermediate frequency transformers can easily be identified with the use of a signal generator and VTVM. By continuity test, the connections to the two windings are determined. The maximum output of the signal generator is connected to one winding while the other winding is connected to a VTVM set to the lowest AC range.

Tune the signal generator through the several ranges until an indication is obtained on the VTVM. The trimmers may be adjusted to increase indication. The frequency of the IF is now read directly in KC or MC on the signal generator. The primary and secondary can best be determined by actual installation in a receiver determining which way gives the best performance.



6 VOLT AUTO RADIO POWER SUPPLY



\$3.95

No. 306. A 6 Volt vibrator power supply many have requested. Input 6 Volts, output 250 Volts at 60 MA. Has husky shielded transformer and OZ4 rectifier tube uses standard 4 prong vibrator (not supplied).

Excellent for amplifiers, auto radios, etc. New completely assembled in shielded case. Shipping Wt. 2 lbs.



No. 307. Transformer only from above 6 Volt vibrator input 250 Volts output. Shipping Wt. 2 pounds

\$1.95

Heathkit CONDENSER CHECKER KIT

\$19.50

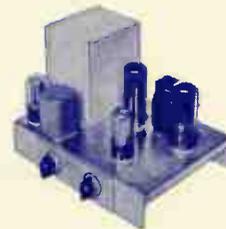


Shipping Wt. 7 lbs.

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.

Heathkit HIGH FIDELITY PUSH-PULL AMPLIFIER KIT

Only
\$14.95

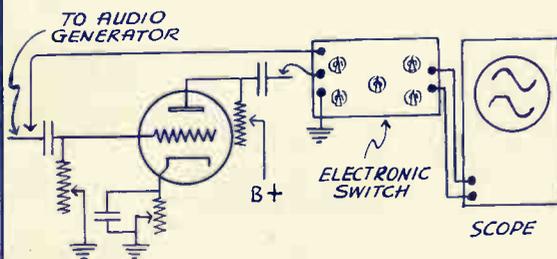


A really fine amplifier with tone quality equal to \$100.00 amplifiers. The price is made possible by the use of quality Army surplus parts. Push pull circuit with one preamp and one phase inverter stage. Push pull output using 1619 tubes (military 2½V 6L6) 110V 60 cy transformer operated complete with tubes and high grade output transformer. Shipping Wt. 20 lbs.

Accessories Available
12" high quality FM speaker matches the amplifier.....\$6.95
Mahogany speaker cabinet size 14½"x14"x8" for above speaker.....\$8.75

DEVELOPING AMPLIFIERS with Heathkit ELECTRONIC SWITCH

By using an electronic switch and viewing the input and output of each stage of an amplifier, maximum gain with minimum distortion can be achieved. Variable resistors or potentiometers can be inserted in the cathode, grid and plate circuits and these adjusted while watching the operation of the stage. In this manner, overloading, phase shift, flattened tops of waves and all other defects are immediately apparent.



Heathkit ELECTRONIC SWITCH KIT

An electronic switch consists of two amplifiers with separate inputs but common output with an electronic switching arrangement allowing only one amplifier to conduct during each half of the switching. The persistence of the oscilloscope screen together with the high rate of switching causes both traces to appear simultaneously. Varying the gain of the two amplifiers allows the traces to be moved at will over the scope screen. Thus two separate input traces appear on the scope screen independently of each other--each may be varied in size or position without reference to the other. This kit is complete as shown--cabinet, 110V transformer, 5 tubes, all other parts and complete instruction manual. Shipping Wt. 11 lbs.

Nothing ELSE TO BUY



\$34.50

Heathkit VACUUM TUBE VOLTMETER KIT

Every feature of the most expensive VTVM's. Actually at a price lower than ordinary low resistance voltmeters. These factors plus its compact size and light weight make this Heathkit one of the most popular VTVM's in use today. Thousands are being purchased by schools and laboratories--better order yours today.
Shipping Wt. 8 lbs.

\$24.50

Internal battery operated ohm meter measures resistance from 1/10 ohm to 1,000,000,000 ohms.

Beautiful grey crackle cabinet with two color panel. Modern brushed aluminum handle. . .

Clear shatterproof plastic faced meter with large easily read calibration. 500 micro-amp movement. .

Automatic meter protection. Regardless of range or type of setting the meter cannot be burned out.

Zero adjust

Pilot light

Ohms Adjust

Function selector selects either AC, negative DC, positive DC, or ohms range.

High input resistance 11 Megohms on DC with isolated test prod assures measurement of all circuits without loading. . .

Range selector 0-3V-30V-100V-300V or 1000V AC or DC with ohms X1, X100, X1000, X10M and X1 Meg.

1% ceramic divider resistors in volts and ohms ranges. No aging or matching of resistors necessary. . .

Heathkit FM & TELEVISION SWEEP GENERATOR KIT

A necessity for television and FM. 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 allowing a range of 0 to 10 Mc. A sawtooth horizontal sweeping voltage and phase control are provided for the oscilloscope.

The coils are ready assembled and precision adjusted to exact frequency. As in all Heathkits, the best of parts are supplied. Mallory filter condenser, zero coef. ceramic condensers, 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 Wt 6lbs.



\$24.50 Nothing ELSE TO BUY

Heathkit SIGNAL TRACER KIT

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.



\$19.50 Nothing ELSE TO BUY

Shipping Wt. 10 lbs.

To Heath Company
Benton Harbor
Michigan

From _____

(Please Print)

Ship via
___ Parcel Post
___ Express
___ Freight
___ Best Way

U.S. AIR FORCE ASTROGRAPH

No. 259. Brand new B29 navigation instrument. Thousands have purchased these for the cases which are beautiful plywood, steel reinforced. Ideal for tool kit, camera or projector case, phonograph case, etc. The instrument converts to contact printer. Cost government \$125.00. This is the last of them. Shipping Wt. 20 lbs.



\$39.50

Quantity	Item	Price
_____	Heathkit Oscilloscope Kit	_____
_____	Heathkit Signal Generator Kit	_____
_____	Heathkit Electronic Switch Kit	_____
_____	No. 307.6V. Vibrator Transformer	_____
_____	Heathkit Amplifier Kit	_____
_____	Heathkit VTVM Kit	_____
_____	Heathkit Sweep Gen. Kit	_____
_____	Heathkit Signal Tracer Kit	_____
_____	No. 259. Astrograph	_____
_____	No. 306. 6V Vibrator Supply	_____

Quantity	Item	Price
_____	Heathkit Audio Gen. Kit	_____
_____	Heathkit All-Wave Radb Kit	_____
_____	No. 237. Meter Special	_____
_____	No. 226 Transformer Special	_____
_____	No. 203 Tuning Unit (BC375)	_____
_____	Home Workshop Grinder Kit	_____
_____	Condenser Checker Kit	_____
_____	_____	_____
_____	_____	_____

TIPS & COMMENTS

An excellent article on converting the TULOB Tuning Unit from the BC 375 to a 200 Watt transmitter final appeared in the November issue of RADIO ELECTRONICS. We have reprinted it and include it with each TULOB ordered.

Enclosed find Check Money Order for _____.
Please ship C.O.D. Postage enclosed for _____ pounds.

Nothing ELSE TO BUY

Heathkit SINE & SQUARE WAVE AUDIO GENERATOR KIT

Finest OF FEATURES



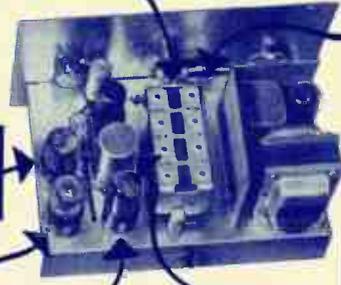
\$34.50

Check the features that have placed the Heathkit Audio Generators in the laboratories of the finest schools and radio stations. RC type circuit with the best of parts. Everything supplied--grey crackle cabinet, five tubes, 4 gang condenser, cased 110V 60 cy power transformer, all other parts. A necessity when working with an oscilloscope at a price everyone can afford. Shipping Wt. 15 lbs.

4 gang ceramic insulated 500 MMF variable condenser in RC circuit assures stability and low frequency drift.

1% precision ceramic divider assures accurate calibration and low distortion.

Latest type grounded grid output circuit practically distortionless (less than 1%).



Husky 110V 60 cy cased power transformer conservatively rated for long life.

Clipper tube switched in or out gives square waves or sine waves at flip of switch. . . .

Five tube circuit equal in design and quality to finest audio generators--Mallory FP metal cased condenser for long trouble-free life. . .

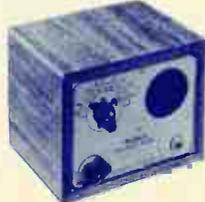
METER *Special*



\$2.95

No. 237. Our most popular meter DeJur 0-800 MA D.C. 3" square meter 0-10 MA basic movement with built in shunt. Has unlimited applications. The lowest price ever set on a new 3" square meter. Shipping Wt. 1 lb.

New Addition to the Heathkit 3 TUBE ALL-WAVE RADIO KIT



\$8.75

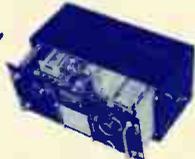
An attractive mahogany cabinet is now available for this radio kit. Excellent for learning radio or as gift for boys. Covers 550 Kc. to 6,000 Kc. including regular broadcast, police, aircraft, amateur, marine and foreign radio. Pictorial diagrams make assembly simple and pleasant. Kit supplied complete

With 3 tubes, punched chassis, plug in coil, tuning condenser, lettered panel and all other parts except cabinet, speaker or headphones. Shipping Wt. 3 lbs.

ACCESSORIES FOR RADIO KIT

- Mahogany Cabinet shown with kit.....\$2.95
- Headphones..... 1.00
- 2 1/2" FM Loudspeaker..... 1.95
- Long Wave Coil 200-500 Kc..... .90
- Short Wave Coil 6000 Kc. to 21000 Kc.. .90

TU10B TRANSMITTER Tuning Unit



No. 203. Complete tuning unit from 150 Watt G.E. Army transmitter. Wonderful value in highest quality parts. Converts to 200 Watt transmitter final. Complete instructions included. Shipping Wt. 20 lbs.

\$24.95

TRANSFORMER *Special*



\$3.95

No. 226. Hundreds have purchased one and re-ordered 3 more. Ideal home builders transformer. Supplies 746 VCT at 220 MA, 6.3 VCT at 4.5 Amps and 5 V at 3 Amps. 117 V 60 cy primary built by one of the finest transformer manufacturers. Shipping Wt. 11 lbs.

3 FOR \$9.95

Home WORKSHOP GRINDER KIT



No. 230. A grinder with a thousand uses around home or shop. Easily assembled 110V A.C. or D.C. ball bearing fully enclosed motor from surplus dynamotor. Purchaser to make simple changes and shaft extensions--complete instructions supplied. App. 5000 RPM. Ideal for tool post grinder, model motor, etc. Shipping Wt. 6 lbs.

\$3.95

The HEATH COMPANY
BENTON HARBOR, MICHIGAN

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