

## Heathkit Hi-Fi and Stereo Products

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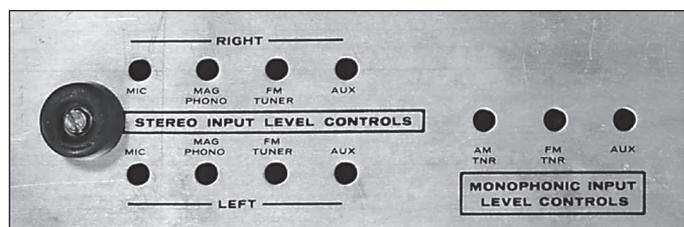
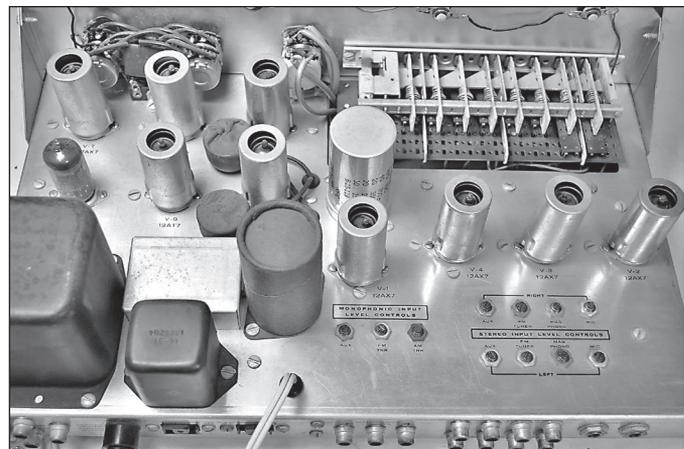
# PREAMPLIFIERS

### AA-11

Stereo Preamplifier

1961-1964

\$84.95



concealed behind a hinged lower front panel door: These controls include blend (stereo mixing), balance, scratch filter; rumble filter; stereo-mono selector; phase reversal and loudness. The AA-11 uses Heath's "refracted light" front panel illumination system.

Unlike a number of products released in 1961 that were just older products in updated cabinets, the AA-11 really was new. In function it replaces the SP-2(A) and was sold against the lower cost AA-141, itself an updated version of the SP-2A. The AA-11 first appeared in the Fall & Winter 1961 catalog.

The AA-11 contains a solid-state power supply and is the only Heath hi-fi or stereo product to use a DC filament supply. The AA-11 is also unique for its use of this particular style of front panel pushbutton switches. The buttons select any of five stereo or three monophonic inputs and main power on-off. Secondary controls are

**Frequency response:**  $\pm 0.5$  db from 20 Hz to 20 kHz,  $\pm 2$  db from 10 Hz to 30 kHz

**THD:** maximum 0.05% at 2.5 volts output

**IMD:** maximum 0.09% at 2.5 volts output

**Input impedance:**

mag phono: 47k $\Omega$

ceramic phono: 75k $\Omega$

tape head: 220k $\Omega$

microphone: 500k $\Omega$

multiplex/aux: 600k $\Omega$

monophonic: 600k $\Omega$

**Outputs:** one low impedance for power amplifier and one

# WA-P2

## Monophonic Preamp

1954-1960

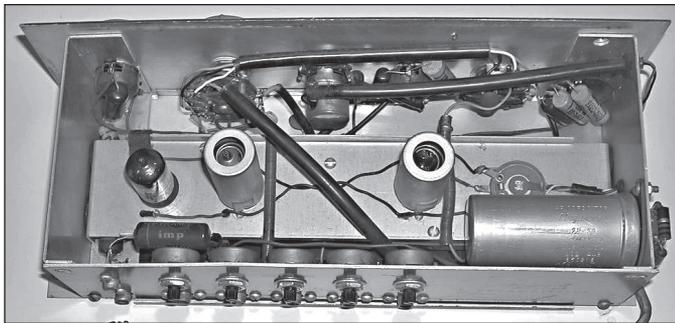
\$19.75



PHIL NELSON COLLECTION



PHIL NELSON COLLECTION



DON PETERSON COLLECTION

Released in the fall of 1954, the WA-P2 was a substantial rethink of the WA-P1, which had been introduced in 1951. An interesting note: the ad for the preamp includes Heath's first use of the word "audiophiles." In 1958 Heath began to include the subtitle "Master Control" in ad copy for the unit, though it didn't actually say that on the front panel.

David Gillespie notes the WA-P2 appears to be a direct copy of the Fisher 50C preamp (minus the power supply) and concludes that there must have been an agreement between Heath and Fisher for use of the design.

The preamp is built around a pair of 12AX7s and a 12AU7 located on a "shock mounted" sub-chassis isolated from the main chassis by rubber mounts. Features include switch selection of five inputs (three high level and two low level) each with its own rear panel level preset control; a low frequency compensation (turnover) selector for LP, RIAA, AES and "early 78s"; a high frequency compensation (roll-off) selector (8, 12-RIAA, 16 and flat); and separate bass and treble controls.

The circuit includes balancing control for adjustment

of minimum hum, input level controls, and a low impedance cathode follower output. Heath noted that the unit was suitable for "remote installation as output lead length is not critical." Heath also said the new preamp "accommodates the newly established RIAA curve." The volume control is a conventional uncompensated type at the grid of the main amplifier cathode follower output stage.

Like the WA-P1, the WA-P2 has no internal power supply. The company got many requests for a power supply but never made one. By late 1954 the company relented to demands, but chose only to published plans for a power supply users could make themselves, noting that the company could not supply the parts or any technical advice. Note that Heath's proposed power supply was for use only with the WA-P2. Also note that the power supply B+ must not exceed 300 volts under load. Refer to Figure 1 for schematic.

The microphone input is generally regarded as useless, but is easily converted to an additional phono input.

The cabinet is Heath's "satin gold," first used with later versions of the W-4M.

Replaced by the AA-60. For schematic see page 6-13.

### Wiring options for use with WA-A1, W-2M and W-3M

The WA-P2 uses a hum balance control placed directly across the filament supply. If it is used with any amplifier with a 6.3 volt filament supply having a grounded center tap, the hum balance potentiometer will burn up if it is rotated very far off of center:

Minor changes are required for use with the W-4M, W-4AM or W-5M. See pages 2-47 and 2-50.

If the WA-P2 is to be used with the WA-A1, the W-2M or W-3M, or any amplifier as described above, a couple of wiring changes are required before the preamp is plugged in. Refer to Pictorial H and make the following changes on the amplifier and power supply chassis:

- ( ) Remove the bottom cover of the power supply chassis. Carefully unsolder the green-yellow transformer lead connected to the ground lug of the connector socket. DO NOT disconnect the lead from pin 3 of the socket to this ground lug. This change removes any connection between the filament circuit and the chassis of the main amplifier. Tape the free lead and replace the bottom cover.
- ( ) Remove the bottom of the main amplifier chassis. Connect a 15k $\Omega$  1 watt resistor from the blank pin 5 on the connector socket (use sleeving) (S) to terminal C2 (S) on the 2-lug terminal strip between the connector socket and the 5881 tube socket. (C2 is the terminal nearer the center of the chassis.) The body of the resistor can be placed directly against the chassis below the 0.25 ufd condenser. Replace the bottom cover.

## Heathkit Hi-Fi and Stereo Products

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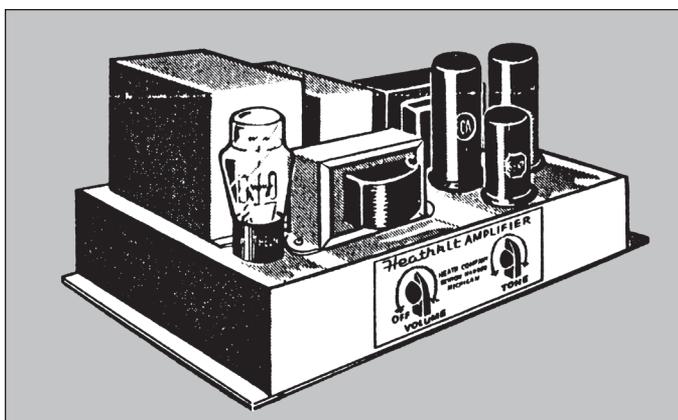
# AMPLIFIERS

### A-1

#### 25 Watt Monophonic Amplifier

1947-1948

\$14.95



As seen in November 1947 Heath flyer



As released

The A-1 was Heath's first foray into the new and soon-to-be-booming world of hi-fi. Heath's advertising copy indicated the amp was made possible by a "fortunate purchase of best quality Thordarson output transformers." Later, Heath would credit the low cost of its early amplifiers to a stash of war surplus RCA power transformers. Many of the components used in early amplifiers were WWII surplus in origin.

The A-1 amplifier first appeared in the November 1947 Heath flyer, but there is some evidence to suggest that it may have been released a month or two earlier. The A-1 was sold through July 1948, with the A-2 appearing in August.

As of this writing, amplifiers that look like the style pictured in early advertising have not been found. Specifically, A-1 amplifiers with the rectifier tube located on the left front corner of the chassis and using open-frame corner chokes have not been seen. Units found appear more like Heath's illustration for the A-2 amplifier, in which a potted choke is used and the rectifier tube is located toward the center of the chassis. The simplest explanation for this discrepancy is that the advertising illustration for the A-1 was based on an early prototype and not the unit that was finally sold. By February 1948 Heath had changed the illustration used in flyers to accurately reflect the product being sold.

The initial ad stated the output power as 25 watts. Subsequent ads did not mention the output power. Also initially, the A-1 was advertised as having output taps for 3, 8 and 15 $\Omega$ , but by February 1948 ads stated only 3 and 8 $\Omega$  taps. This change happened because Heath switched to a new output transformer provided by Chicago Transformer. Note: This change may also have reduced output power to about 17 watts.

The amplifier was described as a "high fidelity, push-pull phase inverter" type, and as being ideal for "phonograph amplifiers, public address systems, factory call systems, FM amplifiers, etc."

The power transformer's primary winding is rated at 100 volts. A large 25 $\Omega$  20 watt power resistor in series with

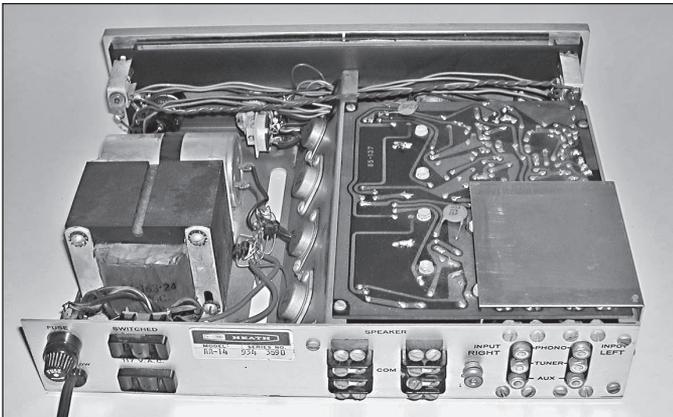
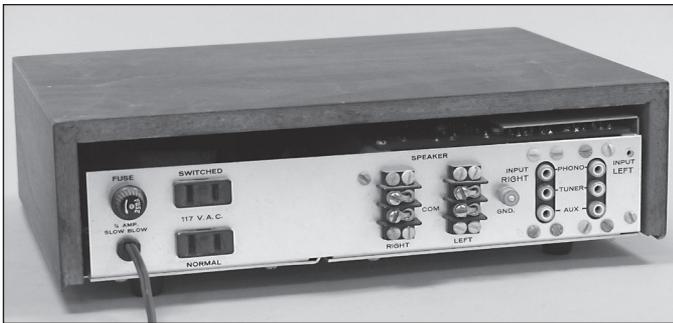
KEITH GREENHALGH COLLECTION

# AA-14

## 10 Watt Stereo Amplifier (SS)

1965-1976

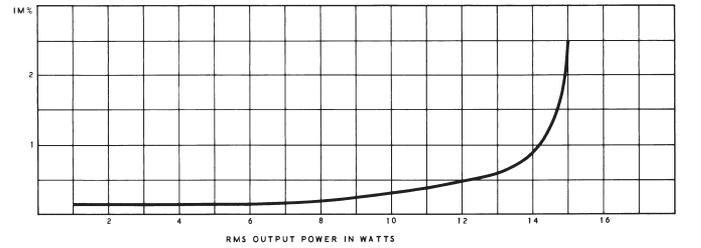
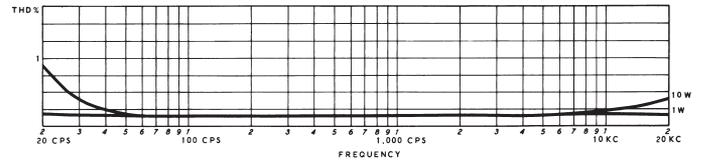
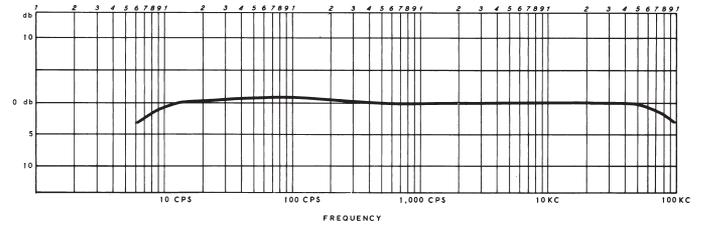
\$59.95 (less cabinet)



The AA-14 was released late in November 1965, and was designed to match the AJ-14 which had come out a few months before. Both are taken directly from the AR-14 receiver; released about a month earlier. It represents another new design style, different from other products. The six position input selector switch is a bit misleading. There are only three input pairs on the rear panel—phono, tuner and auxiliary—but each can be selected as stereo or monophonic.

The circuit employs 17 transistors and six diodes. It features edge lighting for control callouts and “new complementary transformerless output” circuits.

Review: *High Fidelity*, Aug 1966



JERRY O'REILLY COLLECTION

JERRY O'REILLY COLLECTION

DON PETERSON COLLECTION

**Output power (Heath rating):** 10 watts per channel; (IHFMM): 15 watts

**Output impedance:** 4 through 16 $\Omega$

**Damping factor:** 50 or better

**Hum and noise:**

phono: -60 db

tuner/aux: -63 db

**Frequency response:**  $\pm 1$  db 12 Hz top 60 kHz;  $\pm 3$  db 6 Hz to 100 kHz

**Power response:**  $\pm 1$  db 15 Hz to 50 kHz;  $\pm 3$  db 7 Hz to 90 kHz

**Input sensitivity:**

phono: 4.5 mV (RIAA equalization)

tuner/aux: 300 mV

**Input impedance:**

phono: 47k $\Omega$

tuner/aux: 180k $\Omega$

**Channel separation:** 45 db or better

**THD (at full output):** 0.5% or less at 1000 Hz; 1% or less at 20 Hz and 20 kHz at rated output

**IMD (at full output):** 1% or less at 60 Hz and 6000 Hz mixed 4:1

**Treble control:** 13 db cut and 15 db boost at 20 kHz

**Bass control:** 16 db cut and 15 db boost at 20 Hz

**Power requirements:** 120 VAC, 20 watts idle, 60 watts full output; Note: after about 1970, 120/240 VAC

**Size:** 12 wide x 3 high x 10.25 deep; **Weight:** 8.5 lbs

**Solid-State:** (2) 2N3391, (7) 2N2712, (2) 2N3416, (2) 2N2148, (2) 2N3053, (2) TA2577A

**Input sensitivity:**

phono: 2.2 mV (> 3 volts)

tape/tape mon: 200 mV (> 5 volts)

**Hum and noise** (10 mV reference): -60 db

**Channel separation:**

phono: 40 db

tape: 45 db

**Output impedance:** 4, 8 or 16Ω

**Tape output impedance:** about 50Ω

**Input impedance:**

phono: 49kΩ (RIAA equalization)

tape/tape mon: 100kΩ

**Tape output:** 0.4 volts with 0.2 volts input

**Bass control:** 17 db boost or cut at 20 Hz

**Treble control:** 15 db boost or cut at 20 kHz

**Power requirements:** 120/240 VAC, 20 watts at idle,

150 watts at full output

**Size:** 19.75 wide x 5 high x 12 deep; **Weight:** 24 lbs

**Solid-State:** (4) 2N5232A, (7) X29A829, (4) 2N5308, (8) TZ582,

(8) TIP41B, (8) MJE181, (5) MJE171, (1) uA739C ic, (1)

7815 ic, (1) MC1312P ic, (1) 1N4746A, (1) 1N4002

**AA-2010**

**35 Watt 4-Channel Amp (SS)**

1973-1975

\$359.95 (less cabinet)



The AA-2010 replaced the short-lived AA-2004 in the January 1973 catalog. The distinction between the two is that the 2010 will decode all types of 4-channel program material without the need for any kind of external adapter. This was made possible with a more advanced decoder IC (an SN16800N instead of the of 87403 used in the AA-2004). Heath referred to the AA-2010 as a "universal 4-channel amplifier." Otherwise the AA-2010 and AA-2004 are identical.

See AA-2004 for discussion and specifications.

**AA-2015**

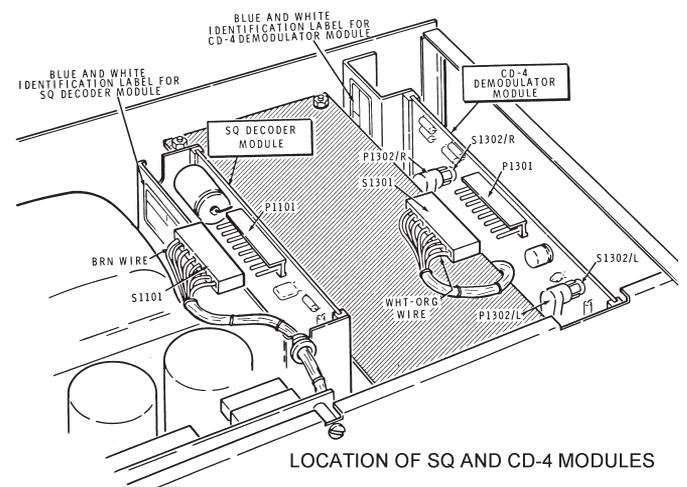
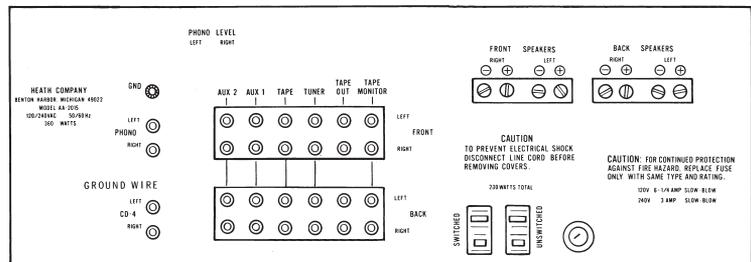
**35 Watt 4-Channel Amplifier (SS)**

1976-1978

\$399.95



HEATH CATALOG



HEATH CATALOG

The AA-2015 was released for Christmas in 1976 together with the matching AR-1515 receiver, AA-1515 2-channel amplifier and AJ-1515 tuner. It is essentially a 4-channel version of the AA-1515 but with half the output power per channel.

The VU meter for the right front channel is also used as a test meter during construction and checkout procedures.

Requires the optional SQ decoder module for SQ operation, and/or the optional CD-4 module.

Four identical speakers highly recommended.

Speaker outputs are not fused. External fusing could be installed if desired based on the figures below. Use 3AG or equivalent fuses:

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# TUNERS

### AJ-10

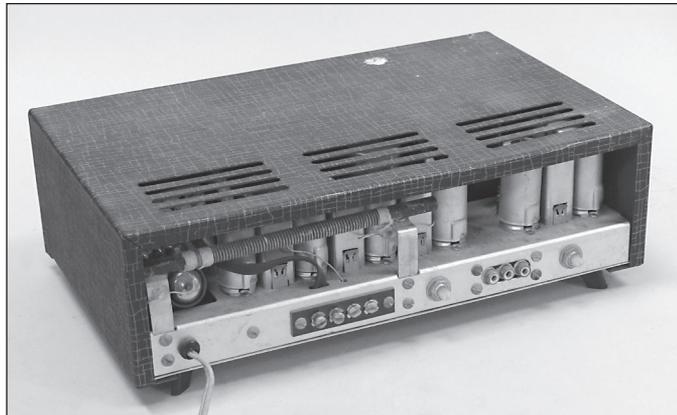
AM FM "Stereo" Tuner

1960-1961

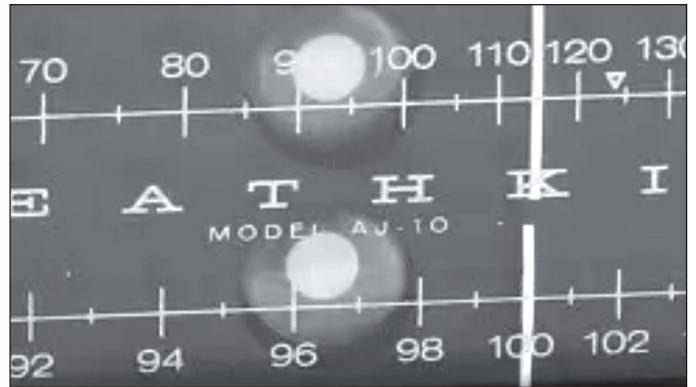
\$59.95



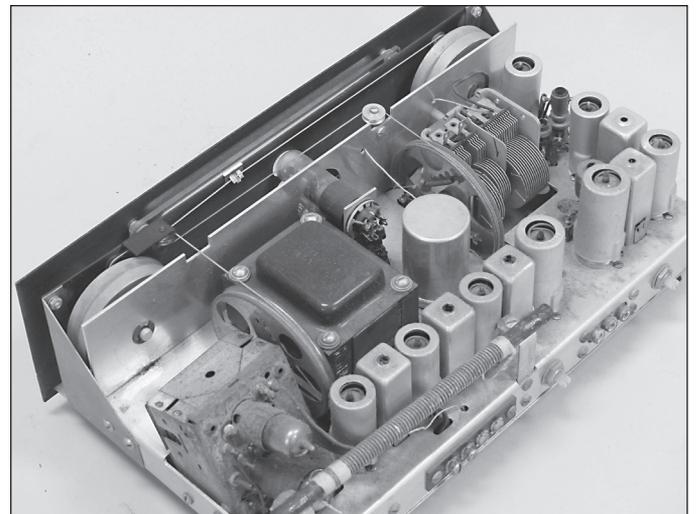
JERRY O'REILLY COLLECTION



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JERRY O'REILLY COLLECTION

Like the PT-1 and AJ-30, the AJ-10 is not a true FM stereo receiver. It contains two fully independent receivers that can operate simultaneously. This permits the reception of AM on one channel and FM on the other. See PT-1 for a discussion of why this was done.

The AJ-10 was sold, briefly, as a lower cost alternative to the AJ-30.

Features a solid-state power supply, individual flywheel tuning, and two electron ray "magic eye" indicator tubes for tuning accuracy. An AM bandwidth switch selects between "narrow" and "broad" for increased fidelity (a scheme borrowed from the AJ-20). An adjustable FM AFC control permits selection of off, half and full AFC to provide "complete control of tuning characteristics." Has a multiplex output jack for use with MX-1 or AC-11. Updated with a new cabinet in summer 1961 and rebranded as AJ-11. Note that the 6ME5 eye tubes are now scarce.

# AJ-1510(A)

FM Stereo Tuner (SS)

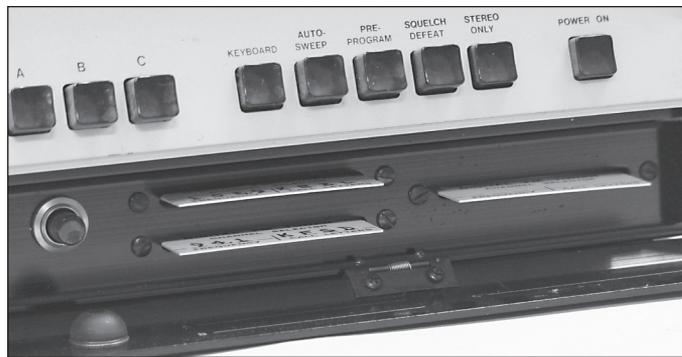
“Computer Tuner”

AJ-1510 1972-1974 \$539.95 (less cabinet)

AJ-1510A 1974-1978 \$579.95 (less cabinet)



JERRY O'REILLY COLLECTION

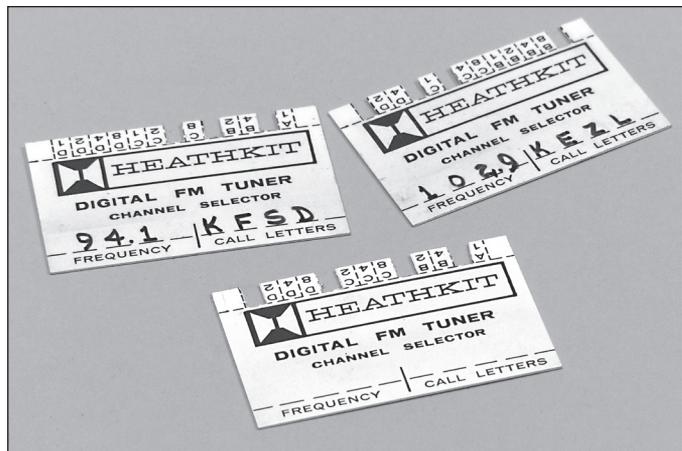


Slots for frequency programming cards

JERRY O'REILLY COLLECTION

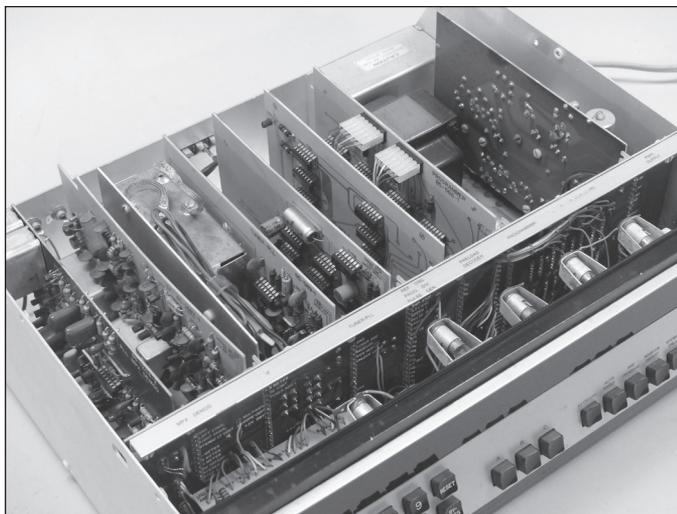


JERRY O'REILLY COLLECTION



Frequency programming cards

JERRY O'REILLY COLLECTION



JERRY O'REILLY COLLECTION

It would be fair to say that the AJ-1510 “Computer Tuner” was a sensation upon its introduction in the 1972 Christmas catalog. In fact, the ad for the 1510 consisted entirely of quotes from reviews by Julian Hirsch of *Stereo Review* and Leonard Feldman of *Audio* magazine. It would be difficult to do better than Mr. Feldman. A few of his comments follow.

...Do not confuse this digital readout tuner with some units which have recently appeared on the market and simply replace the tuning dial with numeric readout devices. The latter variety guarantees no more tuning accuracy than their “dial pointer” counterparts. When the Heath AJ-1510 is tuned exactly to 101.5 then those readout tubes read 101.5—not 101.54 or 101.47.

...At left [on the front panel] are ten keyboard buttons, numbered 1 through 0, as well as a reset button (pressed when you want to “punch up” a new station frequency) and a by-pass button (used to initiate the “auto-sweep” action which causes the tuner to sweep downward in frequency, automatically locking in on every available station in your area)...

...there are three more buttons, labeled A, B, and C...used to select three predetermined

# AJ-1510(A)

FM Stereo Tuner (SS)

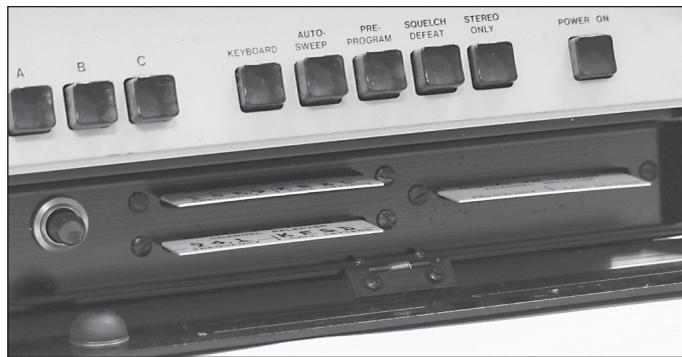
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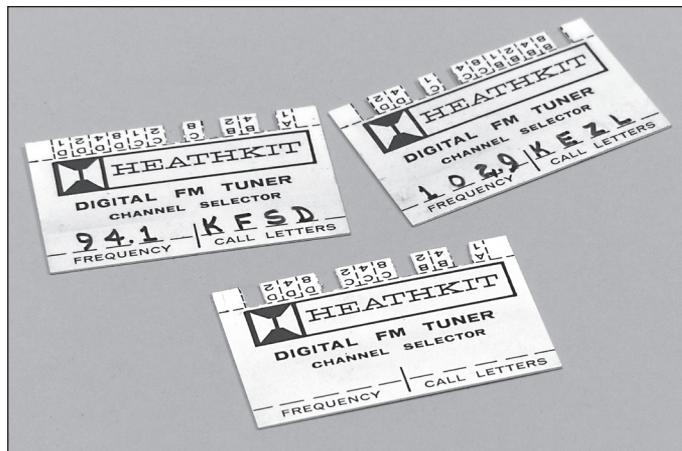


JERRY O'REILLY COLLECTION

Slots for frequency programming cards

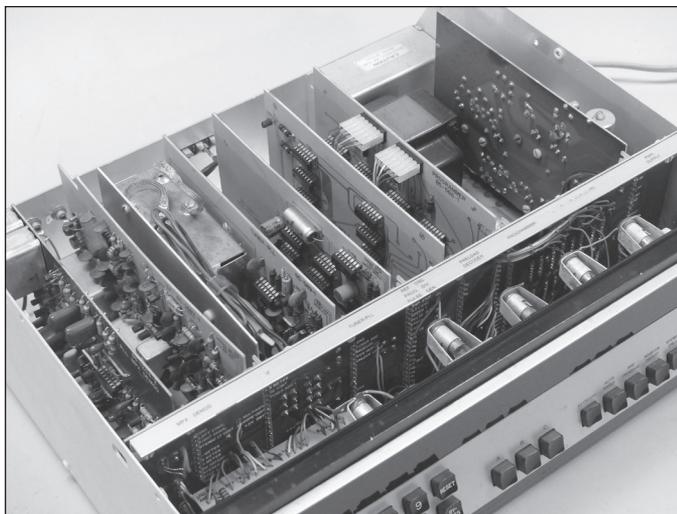


JERRY O'REILLY COLLECTION



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Frequency programming cards



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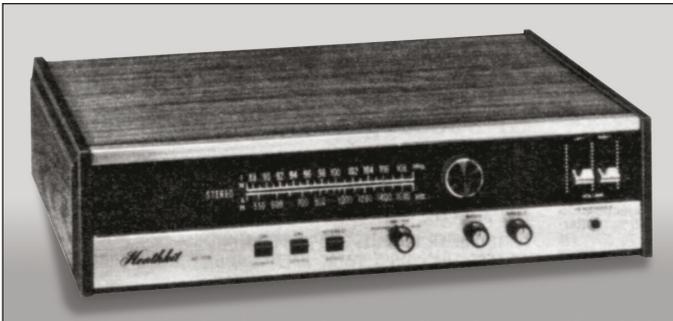
# RECEIVERS

## AC-1118

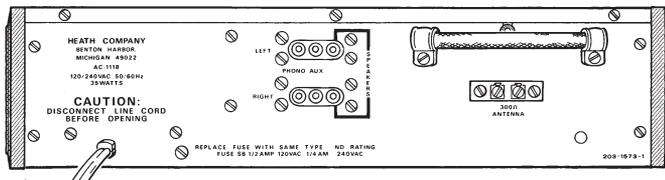
4.5 Watt AM-FM Stereo Receiver (SS)

1975-1977

\$139.95



HEATH CATALOG



The first in a series of four products which Heath called its "value system line," all introduced in January 1975. The others are the AC-1120 AM-FM 8-track stereo receiver, the AC-1122 AM-FM 8-track 4-channel receiver, and AT-1124 4-Channel Amplifier and 8-Track Player.

Within a year all of these products were reduced in price.

All units use the same basic electronics and share the same specifications.

### Amplifier Section

Output power (per channel): 4.5 watts (Heath rating)

THD: 1%

Frequency response:  $\pm 3$  db from 30 Hz to 15 kHz

Input sensitivity:

phono: 140 mV

aux: 120 mV

Hum and noise (phono and aux): -60 db

### FM Section (Monophonic)

Tuning range: 88-108 MHz

IF frequency: 10.7 MHz

Frequency response:  $\pm 3$  db from 50 Hz to 50 kHz

Sensitivity:  $5 \mu V$

Selectivity: 60 db

THD: 1%

### FM Section (Stereo)

Hum and noise: -55 db

Channel separation: 35 db at 1 kHz

THD: 1.5%

### AM Section

Tuning range: 535-1620 kHz

IF frequency: 455 kHz

Sensitivity:  $300 \mu V$  per meter

Selectivity: 40 db (alternate channel)

Hum and noise: 35 db

Power requirements: 120/240 VAC, 45 watts at rated output

Size: 16.75 wide x 4.5 high x 15 deep; Weight: 9 lbs

Solid-State: (6) 2N5232A, (1) 2N3416, (11) MPSA20, (8)

X29A829, (4) MJE181, (2) MC1357P ic, (1) MC1310 ic, (2)

1N4149, (3) 1N191, (2) MZ2362, (4) MZ2360



## Heathkit Hi-Fi and Stereo Products

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# RELATED PRODUCTS

### AA-171

Tape Recorder Electronics

1961-1962

\$39.95



HEATH CATALOG

The AA-171 is a cosmetic upgrade of the TE-1 tape recorder electronics package. See TE-1 and TR-1A for discussion.

**Tubes:** (1) 6E5, (2) 6AN8, (1) 6E5, (1) 12AU7, (1) 6X4

### AC-11(A)(B)

Stereo Multiplex Adapter

1961-1966

\$32.50

Released summer 1961. The FCC had announced official specifications for FM stereo broadcasting just a couple of months earlier, and Heath responded quickly with the AC-11 stereo multiplex adapter. The AC-11 replaced Heath's older MX-1 adapter which was based on a different system.

Includes a built-in solid-state power supply, cathode follower outputs and a separation control for adjusting the degree to which stereo is experienced. Heath was a bit



AC-11B

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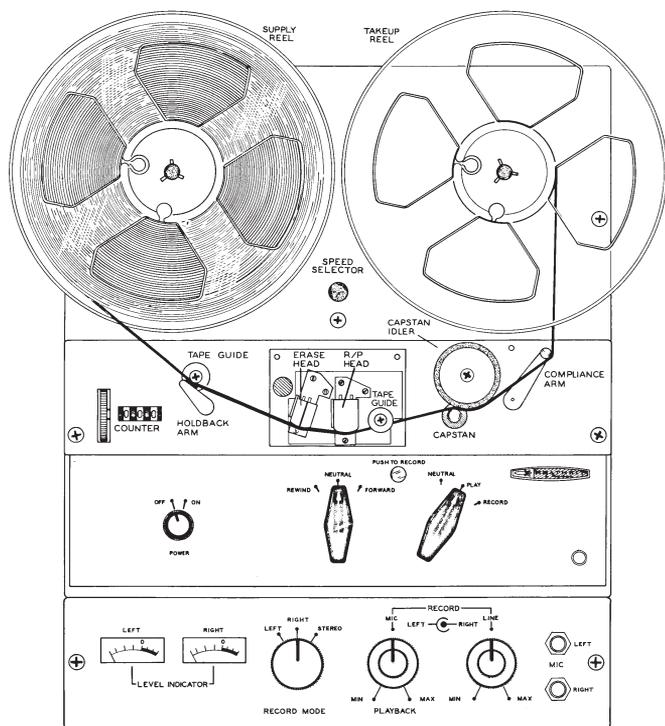
AC-11A

JERRY O'REILLY COLLECTION

light on specifications but noted the frequency response was 50 Hz to 15 kHz with built-in de-emphasis. All coils are pre-aligned. Uses "controlled signal matrixing" to assure "maximum separation of channels."

"A" version is black, "B" version is "luggage tan."

to upgrade it with recording capabilities. The electronics contains VU meters, dual concentric tone and input-output level controls, hum null, bias adjustments and meter calibration controls. See AD-12 for transport controls and additional discussion. "A" version is a semi-kit supplied with fully assembled transport. Also see AD-72.



**Record-playback head:**

4-track stereo  
 gap width: 0.00017"  
 impedance: 3340Ω (high)

**Erase head:** 4-track stereo

**Signal to noise ratio:** 45 db or better at normal recording level

**THD (record-play):** 1% or less at normal recording level with 400 Hz signal

**Channel separation:** 40 db or better at normal recording level

**Playback response (with proper NAB equalization network):**

7 1/2 ips: ±3 db from 40 Hz to 15 kHz  
 3 3/4 ips: ±3 db from 40 Hz to 10 kHz

**Playback equalization (NAB inputs):**

mic: RCA jack, 1MΩ  
 line: RCA jack, 250kΩ

**Input sensitivity (for normal recording level):**

mic: 5 mV  
 line: 160 mV

**Output:** cathode follower; 600Ω

**Output level:** 1 volt or better

**Bias frequency:** 75 kHz from a push-pull oscillator (level adjustable for optimum performance)

**Playback output:** 25 mV ±3 db

**Impedance:** high impedance, 3340Ω

**Wow and flutter:** 0.2% or less at 7 1/2 ips; 3% or less at 3.75 ips

**Fast forward and rewind time:** < 100 seconds for 1200 feet

**Motor:** shaded 4-pole induction type

**Power requirements:** 65 watts

**Size:** 12 wide x 15 high x 8 deep, requires 7 inches below panel for mounting surface; **Weight:** 18 lbs

**Tubes:** (6) 6EU7, (1) 12AU7

**AD-22L**

**Tape Recorder Electronics**

1963-1963

\$65.00



HEATH CATALOG

**T**he AD-22L is the electronics package for the AD-12 tape transport (also used in AD-22) and is used to provide recording capability. See AD-22 for discussion.

**AD-27(A)**

**10 Watt Record Changer and FM Receiver**

AD-27 1968-1971 \$169.95

AD-27A 1972-1974 \$199.95



JERRY O'REILLY COLLECTION

**T**hink of the AD-27 as an uprated AD-17. The unit has a better turntable (BSR McDonald 500A or 510) and includes a receiver section (a modified AR-14); both also

**Changer mechanism:** 16, 33, 45 and 78 rpm, brand unspecified

**Cartridge:** stereo crystal, 0.7 mil diamond and 3.0 mil sapphire

**Speakers:** 5 x 7 two-cone, impedance and brand unspecified

**Power requirements:** 120 VAC, watts unspecified

**Size:** 15.5 wide x 18 deep x 8.5 high; **Weight:** about 23 lbs

**Tubes:** unknown

## GD-16

### 2 Watt Monophonic Phonograph (SS)

1967-1970

\$39.95



HEATH CATALOG

The GD-16 is an automatic 4-speed record changer aimed primarily at a teenage user, but Heath also noted that it was, “a good way to save wear and tear on your expensive stereo system.” Good luck with that.

The changer mechanism is a Maestro model 52-79 (not the same one used in the GD-107). Heath subcontracted the preassembled particle board and polyethylene covered cabinet in “olive and ivory” with red grill cloth. The circuit uses 4 transistors, 1 diode, and a 4 x 6 speaker, and makes 2 watts of “music power.” So, a bit less in terms of “continuous output power,” which was Heath’s standard measure in its high end equipment. Built on a single PC board adjacent to the speaker. The entire unit assembles in a couple of hours. Handles a stack of six same-sized records. The only controls are speed, tone, volume and on-off-reject. Supplied with a 45 rpm spindle adapter which can be stored in a compartment under the changer. The changer folds up into the box to form a suitcase-like enclosure for carrying to “wherever the gang gets together for parties, dancing, etc.” Discontinued before Christmas

RELATED PRODUCTS

1970. Other units in this family include the RP-1, RP-2, GD-10, GD-107, GD-109 and GD-111.

**Output power:** 2 watts (IHFV)

**Speeds:** 16, 33, 45 and 78 rpm

**Cartridge type:** ceramic, 0.7 mil sapphire for LPs and 45s, 3.0 mil sapphire for 78s

**Frequency response:** ±5 db from 100 Hz to 10 kHz (RIAA equalization)

**Power requirements:** 120 VAC, 15 watts

**Size (overall):** 14 high x 7.75 high x 20.5 wide; **Weight:** about 15 lbs

## GD-28

### 8-Track Stereo Playback Deck (SS)

1969-1975

\$59.96



JERRY O'REILLY COLLECTION



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The GD-28 uses a fully-assembled and adjusted tape transport supplied by Motorola. The preamp uses 6 transistors and 2 diodes and is built on a single PC board. Features a “reject” switch to select tape tracks and has track indicator lights. Plays standard 8-track cartridges. Plugs into amplifier, tape, tuner or auxiliary inputs. No power switch.

**Tape speed:** 3 3/4 inches per second

**Output (each channel):** 300 mV

**THD:** < 3%

**Channel separation:** > 30 db at 1000 Hz

**Frequency response:** ±6 db from 50 Hz to 10 kHz

**Power requirements:** 120 VAC, 50 Hz, 75 watts at rated output

**Main cabinet size:** 30 wide x 35 high x 15 deep

**Wing speaker size (each):** 14.25 wide x 8 high x 6.5 deep;

**Weight:** about 75 lbs

## SW-1

**Tape rewinder  
"Speedwinder"**

1958-1961

\$24.95



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**T**he SW-1 tape rewinder handles up to 10.5 inch reels of recording tape and up to 800 foot reels of 8 or 16mm movie film. Will rewind 1200 feet of tape in about 40 seconds. Tape and film contact only a soft neoprene idler wheel. Automatic shutoff prevents whipping of tape or film. Also has a manual shutoff. Wood case, gray front panel.

Discontinued with a close-out sale in the May 1961 catalog.

**Size:** not stated; **Weight:** about 9 lbs

## TE-1

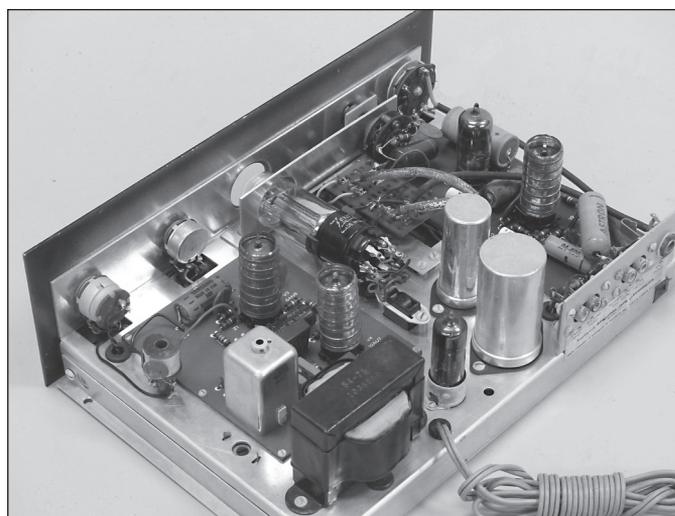
**Tape Recorder Electronics**

1958-1960

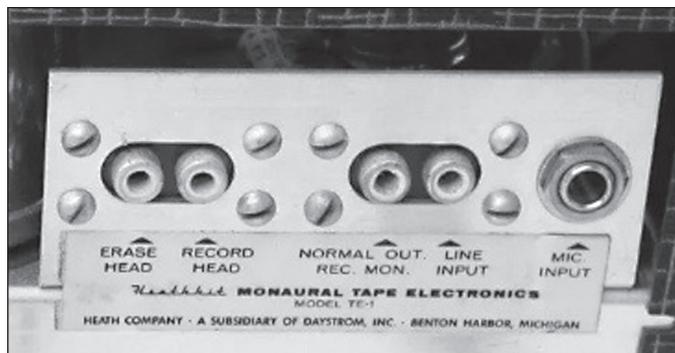
\$39.95



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**U**pdated in 1961 with a new color scheme and front panel design and rebranded as the AA-171. See TR-1A for discussion.

**Tubes:** (1) EF86, (2) 6AN8, (1) 6E5, (1) 12AU7, (1) 6X4