

# The Wheatfield HA-1 Owner's Manual

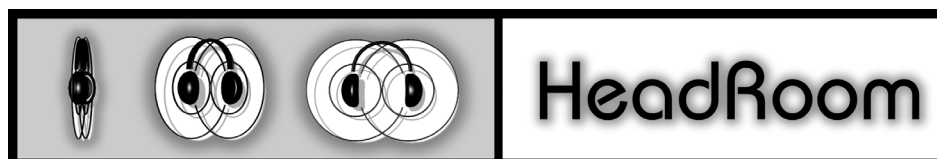
Headphone Amplifier  
HeadRoom Corporation



## Wheatfield Audio HA-1 Tube Amplifier

The *HA-1 Headphone Amp / Pre-Amp* from Wheatfield Audio is an affordable vacuum-tube headphone amplifier that is also designed to be used as a single-source pre-amp to drive a power amplifier.

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obsessed headphone geeks at your service.

## Elegant Simplicity

We believe in simplicity. So, the circuitry employed in the HA-1 is as simple as possible. A single-ended, class A triode gain stage is directly coupled to a single-ended triode cathode follower. No negative feedback is employed. There is only one capacitor (actually two in parallel, an electrolytic and a polypropylene) directly in the signal path.

## Good Tubes

The tube used for the gain stage is the venerable 12AU7/ECC82 medium-mu dual triode. The output stage employs a special dual triode, the 7044. The 7044, originally designed for computer service, makes an outstanding low-output-impedance cathode follower. Two sections are operated in parallel in each channel to provide an output impedance of around 35 ohms.

Good supplies of both 12AU7 and 7044 tubes are available in the marketplace. For those that like to experiment with changing tubes, there are many good 12AU7 types to choose from, and the 7119 and 6182CC can be used in place of the 7044 with no modifications.

## A Fine Headphone Amplifier

First and foremost, the HA-1 is designed to be an audiophile-quality headphone amplifier.

Because of its low output impedance, the HA-1 can drive nearly *any* dynamic headphones, from 32 ohms to 600 ohms. Unlike many competing amps (both tube and solid-state), which either lack the current drive for low-impedance headphones, or the voltage capability for high-impedance headphones, the HA-1 can drive them all.

## A Zero-Feedback, Single-Source Pre-Amp

The HA-1 is an excellent single-source pre-amp to act as a line stage between a CD player and a power amplifier. It's ideal for use in a simple system, or to drive a single-ended triode power amp to provide a true all-triode, zero-feedback system. It can also be used between a source (like a CD player) and a pre-amp or integrated amp, to provide the utmost headphone listening quality, and to add some tube "character" to a solid-state system.

As a pre-amp, the HA-1 is very different from other tube pre-amps. Most use several high gain tubes as gain stages, with negative feedback employed to lower the distortion. In contrast, the HA-1 uses only one medium gain tube gain stage, with no negative feedback.

While it's true that the HA-1 has higher distortion figures than tube pre-amps that use negative feedback, to many listeners it sounds better. *And it's the sound that matters.*

The line outputs are provided through gold-plated RCA jacks on the rear panel. The line outputs are muted when you plug a pair of headphones into the front panel headphone jack.

## Quality Components, Quality Construction

High-quality yet affordable components have been chosen carefully for use in the HA-1. Polypropylene capacitors are used alongside quality electrolytic capacitors, like the Nichicon "Muse". Quality carbon composition and metal film resistors are selected for their sonic characteristics.

The tubes provided with the HA-1 include a JJ/Tesla ECC82, and NOS GE 7044 output tubes.

All components (except the power transformer) are mounted on a single PC board. This method of construction provides superior signal integrity and consistency from unit to unit, compared to expensive hand wiring.

The HA-1 is assembled by hand in the USA.

## Important Safety Information

The HA-1 is a tube amplifier. As such, there are some safety precautions that you need to observe.



**CAUTION:** HOT SURFACES. KEEP COMBUSTIBLES AWAY FROM TUBES. DO NOT BLOCK AIR FLOW AROUND AMPLIFIER.



**DANGER:** TO PREVENT ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.

First, tubes get hot. Please ensure that there is adequate ventilation around your HA-1, and never place anything directly on top of the unit. If you place the HA-1 on shelves or in an equipment rack, make sure that there is plenty of space above it.

Also, make sure that you don't locate the amplifier near anything that could create a fire hazard. Don't place it near curtains, for example, or bedding, or anything else that is flammable. Make sure that there's nothing but air within a foot of the top of the amplifier.

Second, there are high voltages inside the chassis of the HA-1 – up to 200 Volts. Do not open the chassis of the HA-1 unless you are qualified to do so. If you have any doubts, don't do it – refer service to somebody that is familiar with working on tube equipment. And if you do open the chassis (to replace tubes, for example), make sure that it's been unplugged for at least a minute to minimize the risk of electric shock.

Like any electronic equipment, do not operate the HA-1 near water, or in any location where it is likely to get wet. If by some accident water or other liquid is spilled onto the amplifier, unplug it immediately. Take it to a competent service technician and have it checked out, dried off, and cleaned before plugging it back in.

## Unpacking, Setup, and Connection

### Unpacking the Amplifier

Carefully unpack your HA-1 amplifier. Inside the package, you will find the amplifier, a power cord, and this manual (guess you already found that, huh?) It's always a good idea to save the original packing material.

#### Checking the tubes

The HA-1 is shipped with the tubes pre-installed. Though we use some mighty tight tube sockets, it is a wise idea to check and make sure that the tubes haven't been jarred loose during shipment. If you look down through the slots on the top, you should see the three tubes installed in their sockets. If they look crooked (or if you just want to see what's inside), remove the outer case of the HA-1 by removing the seven cover screws, using a philips screwdriver. The tubes should look like they do in this picture.

### Connecting the HA-1



Plug the power cord into the amplifier, and the other end into a wall outlet. Connect the audio inputs of the HA-1 to your CD player or other source, using standard RCA-type audio interconnect cables. Note that the input connectors are color-coded, red for the right channel and white for the left.

If you're using the HA-1 as a preamp, connect your power amplifier to the line outputs in a similar manner. Plug your headphones into the connector on the front.

You're ready to listen!

## Listening with the HA-1 and headphones

It's best to start out with the volume control knob turned all the way down (counter-clockwise) until you're familiar with the HA-1.

Turn the amp on, using the front panel power switch. It's OK to leave your headphones plugged in when you turn the amplifier on and off – there is very little turn-on/turn-off “thump” generated, since the amplifier warms up slowly.

Speaking of warm-up, the amplifier takes only a half minute or so to start working, though you may find that it takes a couple of minutes for the sound quality to reach it's best.

Adjust the volume to your liking.

## About Headphones

To get good sound from the HA-1, you need good headphones. Cheap headphones driven by the best of amplifiers will still sound like cheap headphones.

The HA-1 is designed to drive any high-quality headphones of at least 30 ohms impedance. Pretty much all of the headphones made by Sennheiser, AKG, Grado, Sony, and Beyerdynamic fit into this category.

The HA-1 will drive headphones of lower impedance, but we don't recommend it. The mismatch of impedance between the amplifier and such headphones introduces larger amounts of distortion.

You can't hurt the amplifier by plugging in any type of headphones.

## As a Pre-Amp

Using the HA-1 as a pre-amp

Using the line outputs provided on the HA-1, your headphone amplifier can double as an excellent all-triode, zero-feedback pre-amp. It has more than enough gain, and a low enough output impedance, to drive even the most difficult power amplifier. When there are headphones plugged in to the front panel jack, the line outputs are muted.

Occasionally, the switch contacts on the headphone jack can become dirty, resulting in no output from one or both line output with the headphones unplugged. If this happens, blow the dust out of the jack, and repeatedly plug in and unplug your headphones. This should remove any contamination from the switch contacts.

## Replacing Tubes

Tubes don't last forever, so you can expect to replace the tubes from time to time. We have operated the HA-1 for more than 2500 hours, with no noticeable degradation of the tubes. We expect that the tubes will last between 4,000 and 10,000 hours before needing replacement. That's about an hour of listening per day, for ten to twenty years.

Of course, your mileage may vary. If you do notice degradation of the sound, or a lowering of the volume, it may be time to replace the tubes.

You can replace the tubes yourself. Just find a high-end Hi-Fi shop that sells tubes, or look on the internet – there are a number of companies that sell tubes on-line for very reasonable prices.

You don't have to use tubes made by the same manufacturer as those shipped with the amplifier – any tube with the same type number is OK. Certain equivalent replacement types are fine, too. For example:

7044	can be replaced with	7119, 6182CC
6CC82	can be replaced with	12AU7, 12AU7A, 5814, 6189,
CV4003		

## Tweaks

We think that the HA-1 is a fine amplifier, right out of the box. It was designed with what we believe is an optimal combination of components.

That being said, many audiophiles are never satisfied with any piece of equipment until they've "tweaked" it in their own special way.

We don't recommend that you make changes to the amplifier. If you choose to modify the amp or change any components, your warranty is void, so you're on your own.

## Tweaks...

We will make one exception to this rule, however. That exception is the tubes.

You may replace the tubes with others OF THE SAME OR ELECTRICALLY EQUIVALENT TYPE if you desire, without endangering your warranty.

We use some very high quality tubes in the HA-1. Specifically:

The voltage amplifier tube is a JJ/Tesla ECC82, a current production type that is among the best ECC82/12AU7 types available – better than many NOS American 12AU7's. However, if you are a connoisseur of 12AU7 types, or are just curious if you can hear the difference between the JJ and a Telefunken or RCA "clear top", go ahead and give it a spin.

The output tubes are a special NOS computer triode, the 7044. We have secured a good quantity of these tubes, but they are no longer manufactured. NOS 7044 tubes are available in the marketplace from a couple of manufacturers. If you'd like to try something different, the 7119 and 6182CC tubes are acceptable substitutes, and are easier to find than 7044's. There is a good supply of Amperex 7119 tubes in the marketplace, and you may find other European brands of 6182CC tubes (though many will be made by Amperex).

## Specifications

Note: Specifications listed are typical, and are derived from measurements on actual amplifiers. There will be some variation from one amplifier to the next. Specifications are subject to change without notice.

## Description

Single-ended, OTL, class-A triode amplifier

Single voltage amplifier stage, single cathode follower stage

DC-coupled input; capacitor-coupled output.

## General

Input impedance: 50k ohms

Input connections: Unbalanced, gold-plated RCA

Tube complement: 1x ECC82 (12AU7), 2x 7044

Power supply: Silicon rectifier, 3-stage RC filter

Power requirement: 117V, 60 Hz, 50W

Dimensions: 9.5" W x 4" H x 7.5" D

Weight: TBD

## As a Headphone Amplifier

Frequency Response (+/- 3dB) :

600 ohm load: <9Hz - 250kHz

32 ohm load: 12Hz - 250kHz

THD+N (1kHz, 1V RMS out, 100 ohm load): <0.12%

Noise: TBD

Maximum output voltage (5% THD):

600 ohm load: 13V RMS

32 ohm load: 1.5V RMS

Output impedance: Approx. 35 ohms

Output connection: Standard " stereo headphone jack

## And Now A Word About Your Hearing

People have a natural tendency to listen to music on headphones at much louder levels than they would on speakers. If you hope to avoid permanent hearing damage, it's important to be careful not to listen at extremely loud levels or to listen for too long at moderately loud levels. Because HeadRoom amps must be capable of driving even the most inefficient dynamic headphones to satisfactory listening levels, the amps are able to drive headphones of average and high efficiencies to *very* high levels. As a result, you may not be listening at a safe level even though the volume control on the amp is less than half way up. Generally speaking, when listening to headphones, you should only turn up the volume to the point at which the sound isn't too quiet.

The most common hearing damage caused by prolonged or excessively loud sound is called tinnitus. It manifests itself as a sustained ringing in the ears and can become a permanent condition. If you find that your ears are ringing or that there is a sensation of pressure or fatigue, give them a rest for a couple of days (or until they feel fresh). These symptoms are your body telling you that your ears need a break. Should you choose to ignore these symptoms, you are risking permanent hearing damage. As a general rule, sound pressure levels under 80 decibels will not damage hearing, even if listened to continually. On the other hand, anything over 100 decibels may cause permanent damage fast. Sound pressure levels anywhere in between can also be damaging. The louder the sound, the shorter the exposure time required to cause permanent damage.

Now, don't fool yourself into thinking that you either have full-blown tinnitus or you don't have it at all—you can get a slight case. For example, you might only notice your ears ringing in bed at night. Once you have a slight case of tinnitus, your ears are much more susceptible to further damage. So, if you get tinnitus, it's important to be much more careful about exposure to loud sounds. Now that we've told you to be careful, don't blame us if you blow it. If you have any more questions about hearing damage, call a doctor. Sorry to sound so sobering, but a lifetime of musical enjoyment requires ears in tiptop shape.

## 30-day Satisfaction Guaranty

Unless specifically stated, all HeadRoom purchases come with a 30-day satisfaction guaranty. We do this because we want to give you the opportunity to change your mind after you get to hear the products you bought. We're very glad to give you this option, and we want you to use it if you aren't happy with your purchase, but we also want you to be aware of the conditions under which we can provide you this guaranty:

- Please return all packages to 2020 Gilkerson Drive, Bozeman, MT 59715
- Assuming all conditions are met, we are willing to refund the entire purchased amount for products returned. We do not refund shipping charges.
- If you are experiencing trouble with a headphone amp or a headphone system, please email Sales at [sales@headphone.com](mailto:sales@headphone.com) to troubleshoot the problem. This can save all of us considerable time, effort, and money.
- If you are doing a partial return, you will be refunded the cost to you of the products returned. If you purchased a package system at a discount and are keeping some of the items in the package, your refund will be adjusted based on the retail price of the equipment you are keeping. In other words, we don't give full-price refunds on products purchased at a discount.
- If you are doing a partial return and exchange for other product, you will be eligible for all discounts that would apply to the set of products that you end up keeping.
- Products must be returned to us within 30 days of the date you receive the product. SO if you think you might want to return something to us, listen right away; it's amazing how many people say they went out of the country and didn't have a chance to listen before they left.
- Products must be in as new condition. This means that they are not only in pristine cosmetic condition and functioning perfectly, but that they are repacked with ALL materials (plastic bags, warranty cards, tie wraps, and ANY other little bit or piece that came with the product) just as you received it. Please use the original box it was received in (or another that is comparable); and please don't send your headphones back in JUST the headphone box!
- If a product is returned within 30-days, but is not in as new condition, we will charge you a 15% restocking fee PLUS any labor and materials required to return the product to as new condition.
- Return packages shipped to us must be sent "signature required" and insured, otherwise they are sent back at your own risk!
- Products returned to us after the 30-day period, or which require more cost to repair than the wholesale value of the product will simply be returned to the customer.

We want you to know that we're not hard cases about this; the vast majority of returns are refunded.

## Two-Year Product Warranty

The Wheatfield HA-1 amplifier carries a two-year parts and labor product warranty, while the tubes carry a one-year warranty. If you have any problems with your headphone listening system, please **first** call us at 1-800-828-8184. We will try to diagnose the problem over the phone, which can save both of us considerable time, effort and money. If the equipment must be returned for repair, we will authorize a return for you. HeadRoom is the only authorized service center for HeadRoom products, either in or out of warranty. If a unit is under warranty, there is no cost for the repair labor, parts, or shipping from HeadRoom back to you (i.e., You're responsible for paying the shipping charges to get the product to us). For units out of warranty, repairs are billed on a time and parts basis, plus shipping costs. When we receive the equipment, we will initiate repairs quickly (usually within three working days) and return the unit to you, or call you with an assessment of the problem.

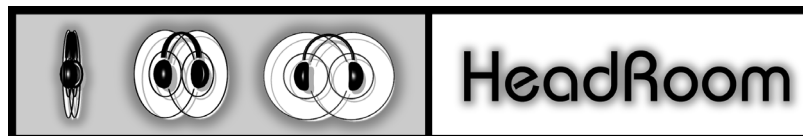
## Contacting HeadRoom

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