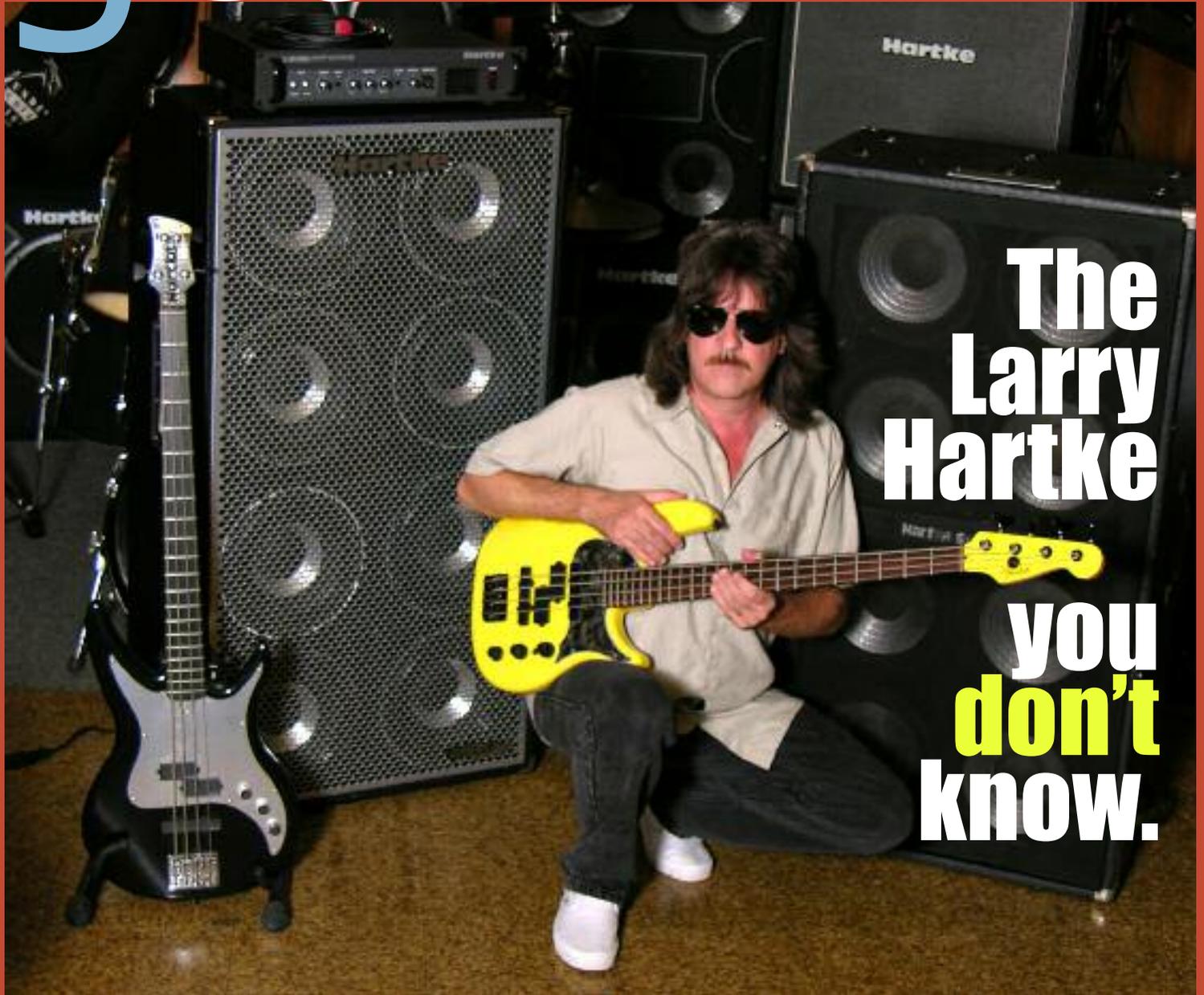


# bass gear



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# The Larry Hartke

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Reeves  
Custom 225  
Bass Head

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bass  
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# Old School

That lightweight 9mm strapped to your side might make you feel lighter than air, but there are times where you need a bit more firepower. And then it's time to go old school. The bass amplification world has seen a recent proliferation of super lightweight, small, solid-state bass heads. This has been a significant boon for many players, particularly those with more rigorous travel requirements (and no roadies). However, as good as many of

them are, there is something to be said for going with a tried and true design that's been getting it done for decades. And yes, there is something special about a tube output section. It may not be for everybody, but the very best all-tube heads have a particular allure which I have not found in their solid-state competitors. And heck, if it's good enough for The Ox, it's good enough for me!

# High School

# Firepower

reviewed by Tom Bowlus



# John Entwistle

was a big Hiwatt user in the early 70's, and Dave Reeves was the designer behind those early Hiwatt designs which became the foundation for so much that was to follow. Reeves Amplification stays true to Dave Reeves' designs and vision,

involves a three-band tone stack (curiously arrayed Bass, Treble, Middle), plus a deceptively powerful Presence control. The preamp circuit incorporates four tubes (three 12AX7 and one 12AT7), and 225 rated watts are provided by four KT-88's. Impressively, on the test bench, the Custom 225 exceeded its rated output, cranking out 256 watts into a 4-ohm load, at 5% THD. Reeves makes mostly guitar heads, with the Custom 225 being its first dedicated bass amp. While 16-ohm loads are fairly common in guitar land,

tube choices in his Amp Lab review. The DI is transformer-balanced, but has no other controls (e.g., no level control, ground lift, or pre/post option). Reeves lists the weight of the Custom 225 as 59 lbs, and our test unit weighed in pretty close to that at 61.0 lbs. There is no cooling fan, which means that the Custom 225 is a very quiet head. Even better, the passive cooling was good enough that the Reeves aced our half-power/half-hour thermal tests.



and they now bring us their first bass head, the Custom 225. Is 225 watts enough to compete in a world full of ham-fisted drummers and Marshall-toting skinny-string shredders? Come along as we find out just what kind of firepower the Custom 225 is packing!

## *Stocking the Arsenal*

The Custom 225 is a fairly straight forward all-tube bass head. It features two channels (Normal and Bright), with separate input gains for each, and an active/passive switch. The tone stack

ideally, I would have rather seen 2/4/8-ohm options – rather than the 4/8/16-ohm taps provided. Still, the most common loads encountered by a gigging bass player are 4 and 8 ohms, so you do have this covered, either way.

All Reeves heads are hand-wired, employing a dual turret board layout. The attention to detail carries over not only to the cosmetic features of the amp, but also to the tube selection. When I unpacked the Custom 225, I was very pleased by the mix of new old stock (NOS) and current production tubes. Tom Lees has a nice discussion of these

## *The Man Behind the Legend*

Dave Reeves was an exceptional designer and a bit of a visionary. His name has been associated with a number of companies over the years, and it can be a bit confusing to sort out exactly which products are the fruits of Mr. Reeves' labor. Dave apprenticed at both Marconi Electronics and Mullard, but seemed to be tinkering on his own most of his adult life. The first company that he formed (in the late 1960's) was Hylight Electronics. The very first units

that he made bore the “Hi-watt” badge, but one of the first big breaks for Dave came when Ivor Arbiter placed a big order of amps to be sold in his store – Sound City – as a store brand. A good number of guitar amps were made under the Sound City name, and even some dedicated bass models (like the Bass 150, which I owned for a while, and probably shouldn’t have sold). But, following a lawsuit filed by Arbiter (alleging that Hylight Electronics was using a Sound City design without

Entwistle (if you listen to Live at Leeds, the Who’s entire backline was by HIWATT), and shortly thereafter, David Gilmour.

When production demand increased to where Dave could not keep up on his own, he eventually struck a bargain with Harry Joyce, who would end up wiring HIWATT amps up until 1984. Some of the key characteristics of HIWATT amps were Dave’s demand for high-quality components, like Partridge transformers and Mullard tubes, as well

continue to make HIWATT amps today.

So, where does Reeves Amplification fit into all of this? Well, we have Bill Jansen to thank for that. Bill found out that Music Ground was making HIWATT amps in the UK, but they could not import them to the USA, as Fernandes owns the trademark rights to use the name “HIWATT” in the USA. Seeing an opportunity, Bill worked out a deal with Music Ground (HIWATT U.K.) to manufacture OEM amplifiers for sale in the USA under the name



authorization), Dave Reeves (who won that lawsuit, by the way) began building amps under the “HIWATT” logo, and he was off on his own.

As it turned out, right about his same time (1967-68) Dave got laid off from Mullard. He took his new free time (and a modest severance package) and threw them both into Hylight Electronics, which originally sold directly to musicians (less overhead!). Early high-profile users included Glenn Cornick of Jethro Tull, Peter Townsend and John

as Harry’s demanding workmanship and quality control with regard to wiring.

Tragedy struck, however, in 1981, when Dave Reeves fell down a flight of steps and died. Following his death, a group of HIWATT employees formed a new company, Biacrown Ltd., which continued to manufacture HIWATT amplifiers – for a while, at least. Biacrown ceased production in 1984, but Rick Harrison – of Music Ground, appropriately located in Leeds – did purchase the naming rights, and they

“Reeves Amplification.” Let’s hear it for capitalism!

It can be a bit confusing, but Sound City, HIWATT, and Reeves products all lead back to Dave Reeves, and to a great extent, Harry Joyce. The USA-brand HIWATT also makes a very good product, and obviously also borrows from the Reeves legacy and design. But it is a distinct and separate company from Reeves Amplification, so keep that in mind.

## *Firing Live Rounds*

The first thing you notice when you fire up the Custom 225 is the truly massive, lush, powerful low end. You feel like you are playing in a stadium with a wall full of amps behind you, no matter what the volume level. It is a highly satisfying sensation. This amp likes to crank out clean, full tones, but you can dial in a thick, husky voice if you push the input gain pretty hard. It does not do a buzzsaw distortion, though it can give you lots of meaty goodness.

I did most of my testing using the Normal input. Setting the Bass control nearly all the way down is almost like turning the amp off; you get a significant volume drop. But anything from about 8:30 on up is usable, and even all the way up is not too obnoxious – it just makes things really big and rich. The Treble control gives you good control over high-end hiss (if needed), and pulling it back a good bit does not take away any clarity. Conversely, it does not get harsh when you crank it, either. On the whole, I'd say it's fairly subtle, but useful over most of its range of motion. The Mid knob is also usable across its whole travel, and while it does not drastically alter the tonal balance, it does change the character of the midrange quite a bit. The Presence control is perhaps the most powerful of the bunch. It really helps fine-tune the high end and midrange, though it does get quite hissy at the extremes.

Switching to the Bright channel really opens up the high end and adds a very strong initial string attack. The amp sounds quicker and more immediate, though not as lush. You do lose some lows, and cannot dial in a big and full of a tone as you can on the Normal input. The lows are certainly tight, and defined, though. I was able to gig with and test the Custom 225 both before and after our Technical Editor, Tom Lees, connected the cathode bypass capacitor on the V3 tube. This change definitely had an audible effect (most noticeable in the high end on the

Normal channel). The net result being that before the connection was made, I preferred plugging into the Bright input, and after the connection was made, I preferred the Normal input. It might actually be a cool idea to rig up a switch which would allow you to complete or break that circuit. It certainly sounded excellent set up either way, but different flavors of excellent can be a nice option.

On every gig, the Reeves provided some of the best low end fill I have encountered; big and powerful, but still under control. It certainly has a certain roundness to the notes that is common with many tube heads, but it never got muddy or exhibited too much bloom. Even at lower volumes, you had a sense of power and heft to each note. But as good as the low end was, this did not come at the expense of high-end clarity. In fact, I marveled at the detail and speed of the high end. It matched up very well to a number of different cabs, including the Markbass CL108 (reviewed in this issue), Ampeg SVT410HE, Fender 610 PRO and 215 PRO, Glockenklang 6-Box, and Sadowsky SA410. Of note, the Fender cabs had the best “coliseum rig” sound (huge lows, and great definition), and the Glockenklang had a punch-through-the-middle tone that just killed.

Back in the practice room, I put the Custom 225 up against some other all-tube heads to see where it fell in the spectrum. Compared to the universal measuring stick of an Ampeg SVT-VR, the Reeves was more refined, clear, smooth and pure sounding, while the SVT was more growly, and had more midrange focus and attack. One interesting note of American versus British design is that on the Ampeg, for both the Power and the Standby switches, placing the switch in the up position turns them on, whereas on the Reeves, on = down. The Mesa/Boogie Bass 400 (also equipped with JJ KT-88's) proved to be a more direct comparison. These two heads were definitely in the same ballpark, with the Reeves offering a bigger, deeper, more enveloping low

end, and the Bass 400 having more high end detail and harmonic content. The Reeves was a tad smoother, and the Boogie a tad more aggressive, but these two amps were certainly more similar than dissimilar.

The real fun came when I broke out one of my all-time favorite heads, the (sadly discontinued) Sadowsky SA200. The SA200 proved to be smoother, more tonally balanced and consistently rich, but the Reeves was more exciting and articulate in the high end and bigger in the lows. I must admit, I went back and forth between these two for a long time, and ultimately decided that they were both worthy of top-tier status as some of the best of the best.

## *The Bottom Line*

Big, heavy, all-tube heads are certainly not expected to dominate the sales charts in these days of highly competent small, lightweight amps. But they are not ready to go the way of the dinosaur just yet, either. Tubes do have a certain appeal, and a high-end, hand-made head like the Custom 225 is a great way to show off what they bring to the table. This Reeves head has perhaps the best low-end character and presence of any amp I have tried. There is a certain rolling growl to the low notes that really satisfies, and as I mentioned, the lows are very big, very deep, and very full. The highs could get clanky or harsh with certain cabs at certain settings, but this was quite controllable. The midrange generally seems to have somewhat of a scoop going on, but the location and extent of this scoop can be moved around quite a bit.

On the whole, this is one of the best-sounding bass heads (for my personal preferences, at least) I have been able to try. It is also very refreshing to find an amp which proves to exceed its rated output power. If the siren song of vacuum tubes has reached your ears, then the Reeves Custom 225 should be required listening. ■



# REEVES 2008 C225 Bass Head

## ENCLOSURE

<b>Material</b>	.105 in (12-gauge) steel
<b>Getting inside</b>	4 bolts on bottom, 6 screws on back
<b>Time to assemble</b>	2 minutes
<b>Time to disassemble</b>	2 minutes
<b>Dimensions</b>	24" w x 11 5/8" d x 11 13/16" h
<b>Weight</b>	61 lbs
<b>Rackable</b>	No

## PREAMP

<b>Inputs</b>	1/4" Bright and Normal inputs; Active/Passive toggle
<b>Mode</b>	Tube
<b>Tubes</b>	3x 12AX7, 1x 12AT7
<b>Input Impedance</b>	1.09 M Ohm
<b>EQ Type</b>	4-Band passive
<b>EQ Features</b>	Traditional Hiwatt-style tonestack
<b>Compressor/Limiter</b>	NA
<b>Potentiometers</b>	Panel mount
<b>DI Output</b>	Post EQ fixed
<b>Effects Loop</b>	NA

## POWER AMP

<b>Mode</b>	Tube
<b>Tubes</b>	4x KT88
<b>Power Supply</b>	Tube
<b>Outputs</b>	2x 1/4"
<b>Impedance Options</b>	4, 8 or 16 ohms
<b>Pre/Power Boards</b>	2 pieces Turret boards
<b>Power Transformer</b>	Heyboer
<b>Output Transformer</b>	Partridge replica
<b>Cooling System</b>	NA
<b>Line Voltage Options</b>	120VAC
<b>Line Voltage Setting</b>	Not user adjustable

## SPECS

<b>Frequency Resp-pre</b>	+/- 3.75 dB	20 Hz - 20 kHz
<b>Frequency Resp-pre&amp;power</b>	+/- 1.17 dB	20 Hz - 20 kHz
<b>EQ Controls Down, Idle Hum</b>	<b>60 Hz</b>	-68 dB
	<b>120 Hz</b>	-70 dB
	<b>180 Hz</b>	-80 dB
<b>EQ Controls Down, Idle Noise 200 Hz - 1 KHz</b>	<b>200 Hz - 1 KHz</b>	-104 dB
	<b>1.1 KHz - 20 KHz</b>	-101 dB
<b>EQ Controls Flat, Idle Hum</b>	<b>60 Hz</b>	-56 dB
	<b>120 Hz</b>	-68 dB
	<b>180 Hz</b>	-70 dB
<b>EQ Controls Flat, Idle Noise 200 Hz - 1 KHz</b>	<b>200 Hz - 1 KHz</b>	-95 dB
	<b>1.1 KHz - 20 KHz</b>	-94 dB
<b>EQ Controls Up, Idle Hum</b>	<b>60 Hz</b>	-55 dB
	<b>120 Hz</b>	-74 dB
	<b>180 Hz</b>	-75 dB
<b>EQ Controls Up, Idle Noise 200 Hz - 1 KHz</b>	<b>200 Hz - 1 KHz</b>	-97 dB
	<b>1.1 KHz - 20 KHz</b>	-73 dB

## GENERAL

<b>Company</b>	Reeves Amplification 11122 Lushek Drive Cincinnati, Ohio 45241 www.reevesamps.com
<b>Country of Origin</b>	USA
<b>Warranty</b>	5 Years Limited
<b>Listed Price</b>	\$2,499.00
<b>Street Price</b>	\$2,499.00
<b>Options</b>	None
<b>Accessories</b>	None
<b>Price as Tested</b>	\$2,499.00
<b>Available colors</b>	Black
<b>Available options</b>	None

## CONDITIONS

<b>Acquired from</b>	Reeves Amplification
<b>Dates</b>	August through November 2008
<b>Locales</b>	Ohio
<b>Test gear</b>	Nordy vJ5, Celinder VP4, LeCompte CBS-4, Fender Roscoe Beck V, Dingwall Z3, Dingwall SJ4, Markbass CL108, Ampeg SVT410HE, Fender 610 PRO & 215 PRO, Glockenklang 6-Box, Sadowsky SA410, Ampeg SVT-VR, Mesa Bass 400, Sadowsky SA200, Elixir and Planet Waves cables.

## TEST SUMMARY

1-5 (unacceptable to impeccable)

in-hand	on-bench		
Features	3	Chassis	4
Tonal Flexibility	3.5	Vents and cooling	4.5
Ease of Use	4	Knobs / Lights	3
Aesthetics	3.5	Finish / Handles	3.5
Ergonomics	4	Jacks / Sockets	4
Tone	5	Pots / Switches	4
Value	4	Chassis Layout	4.5
		Components Resistor/Cap	4.5
		PCB / Power Transformer	4.5
		Solder / Dress	3.5
		Internal / Overall Build	5
		Output Power Rating	4
		Portability	3
		Roadworthiness	4.5
		Ease of Repair	4
		Warranty	4
		Quality per price	4

IN-HAND SCORE  
**3.9** AVERAGE

ON-BENCH SCORE  
**4.0** AVERAGE

## TONE-O-METER

The Reeves delivers stadium-filling low end, detailed, clear midrange, strong, singing high end (when properly tweaked).



## HALF POWER STRESS

1/2 Manufacturer Spec - Tested at 112.5 W into 4 ohms

TEMPERATURE °F	Idle	5min	15min	30min
Front Power Switch	73	74	80	87
Front Input Jack	73	74	77	81
Rear Power Jack	76	80	84	85
Rear Speaker Jack	73	74	80	85
Power Transformer	76	81	90	97
Output Transformer	74	77	90	94
Center of Chassis	73	104	133	146
Power Tube Retainer (avg)	74	115	145	155

### Fan noise

Ambient NA    Fan Low NA    Fan High NA

Signal interrupt (sec)	0	0	0	0
Thermal shutdown (sec)	0	0	0	0

# POWER TESTS

REEVES  
Custom 225



### KEY TO TESTS

#### Half Power Stress:

How well does this head handle the heat?

#### Full Power Output:

These numbers are largely self-explanatory, but please note that the Input Signal tells you what input voltage was required to hit our mark, with the EQ set to "optimally flat" and the gain stages set for best THD performance using a 1 kHz signal. Voltage Drop shows how much the AC line voltage sagged during our testing.

## FULL POWER OUTPUT

Unregulated Line Voltage, Amplitude Sweep  
5% Total Harmonic Distortion (THD)  
Average initial AC line voltage 120.9 - 121.5

	Nominal 8-ohm	Nominal 4-ohm	Nominal 2-ohm
<b>1K SINE WAVE</b>			
Power	241 Watts	256 Watts	NA
Input Signal	0.7 Volts	0.9 Volts	
Voltage drop	1.3 Volts	1.0 Volts	
<b>G STRING @ 98Hz</b>			
Power	230 Watts	239 Watts	
Input Signal	0.7 Volts	0.8 Volts	
Voltage drop	0.6 Volts	0.6 Volts	
<b>D STRING @ 73Hz</b>			
Power	227 Watts	242 Watts	
Input Signal	0.7 Volts	0.8 Volts	
Voltage drop	0.7 Volts	0.5 Volts	
<b>A STRING @ 55Hz</b>			
Power	187 Watts	222 Watts	
Input Signal	0.5 Volts	0.6 Volts	
Voltage drop	0.7 Volts	0.8 Volts	
<b>E STRING @ 41Hz</b>			
Power	189 Watts	217 Watts	
Input Signal	0.5 Volts	0.6 Volts	
Voltage drop	1.0 Volts	1.0 Volts	
<b>B STRING @ 31Hz</b>			
Power	175 Watts	195 Watts	
Input Signal	0.4 Volts	0.7 Volts	
Voltage drop	0.6 Volts	0.6 Volts	

bass gear **CERTIFIED**  
**POWER**

8 OHMS 1KHZ  
241 WATTS

4 OHMS 1KHZ  
256 WATTS

2 OHMS 1KHZ  
NA

Manufacturer ratings: 225 / 225 watts at 8 / 4 ohms.



## 2008 Reeves Custom 225 Bass Head

The Reeves C225 is a “no bones about it” tip of the hat to Hiwatt amps designed by the late Dave Reeves, and features many of the hallmark characteristics of Reeves’ early 1970’s designs. However, it appears that Bill Jansen (owner of Reeves Amplification) is not trying to flat-out clone the classic Hiwatt design. Rather, it seems that Bill is faithfully following the blueprint that Reeves left behind, but with a slant towards modern sensibilities in component selection and robust construction.

From the outside, the Reeves C225 oozes “old school.” Some might argue that the aesthetic is a tad pedestrian, but it seems appropriate in view of the amp’s lineage. The head cab features cleanly applied white piping that appoints a neatly installed black tolex covering. Metal mesh vent strips are provided on the top and back panels to provide ventilation for the heat produced by the tubes. Four bolts secure the chassis to the enclosure, and six screws secure the back panel. The bolts are hefty, and line up precisely, making this amp a breeze to take apart. Despite the amp’s weight, it was a quick process of removing the chassis from the head cab.

### Internal Construction

Before getting underneath the chassis, let’s look at what is on the hood. With reference to Fig. A, the tube complement consists of three 12AX7 preamp tubes, one 12AT7 phase inverter and four KT-88 power tubes. The amp arrived with a mix of new old stock (NOS) and new production preamp tubes and new-production JJ KT-88 power tubes – which are a nice, robust modern power tube. The tubes are

discussed in greater detail below.

The C225 features a Heyboer version of the classic Partridge output transformer (to the left), which many believe to be a key element of the Hiwatt tone from which the C225 is based. The power transformer (to the right) appeared to be quite sufficient for this amp. The robustness of the transformers, chassis and head cab design enabled this amp to literally scoff at my half-power/half-hour test. During testing, both the output transformer and the power transformer ran cool.

Okay, now that we have that overview,

let’s really dig into this amp. Referring to Fig. B, the inside of this amp is a master’s class in wiring, neatness and construction. This amp sports two separate turret boards, which are neatly presented. Large power supply filtering capacitors are located on each side of the chassis, and this amp carries on the Reeves tradition of laser sharp 90-degree wire bends and ruler straight wire runs. One notable aspect of this build is the diversity in component brands/types. For example, STK and Mojo Dijon coupling capacitors are utilized at the important, V1 (first) preamp tube stage. The amp further includes a blend of Suntan and Mallory capacitors, metal film resistors, carbon composition resistors,



Fig. A Front row (left to right): V1 - NOS Baldwin 12AX7; V2 – new Tung Sol 12AX7; V4 – NOS GE 12AT7; V3 – new Electro Harmonix 12AX7; Back row: four new JJ KT-88’s

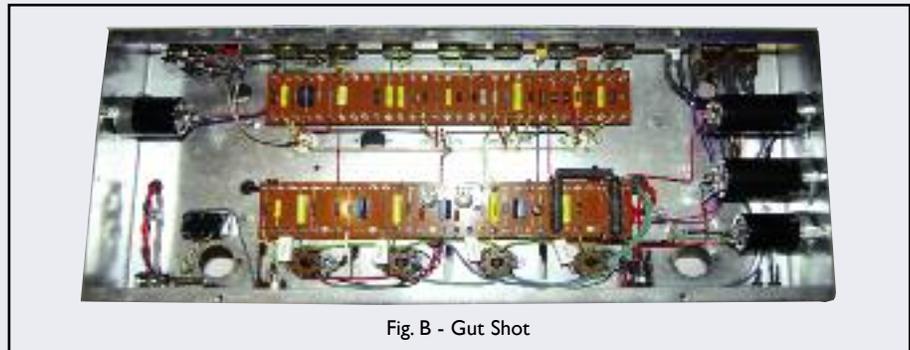


Fig. B - Gut Shot

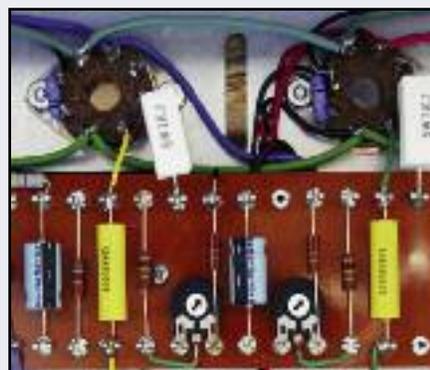


Fig. C Bias Adjusting Circuitry



Fig. D Missed solder connection

**Warning:** tube amplifiers contain lethal voltages. This amp can contain voltages in excess of 700 volts. Biasing should be performed by a qualified technician.

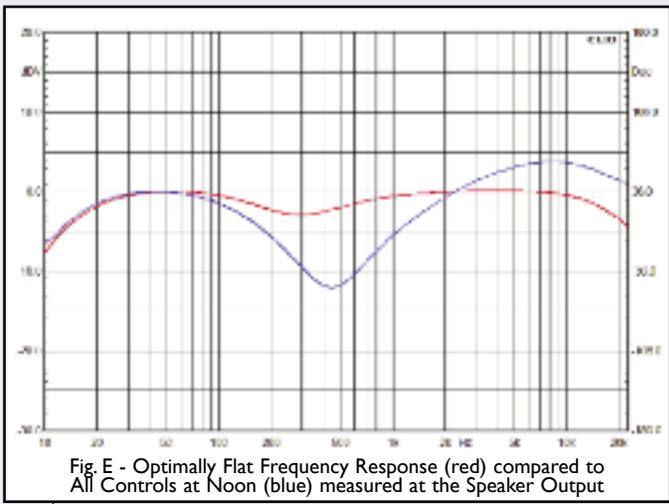


Fig. E - Optimally Flat Frequency Response (red) compared to All Controls at Noon (blue) measured at the Speaker Output

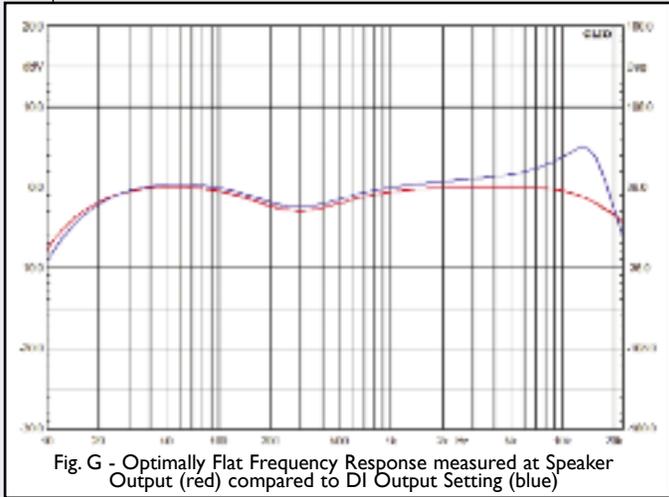


Fig. G - Optimally Flat Frequency Response measured at Speaker Output (red) compared to DI Output Setting (blue)

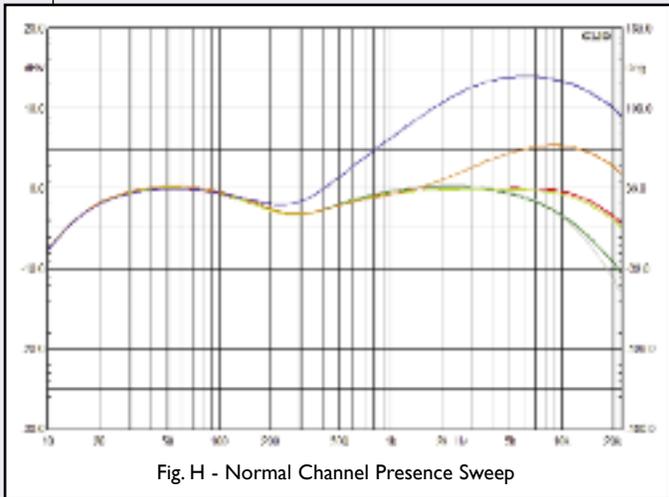


Fig. H - Normal Channel Presence Sweep

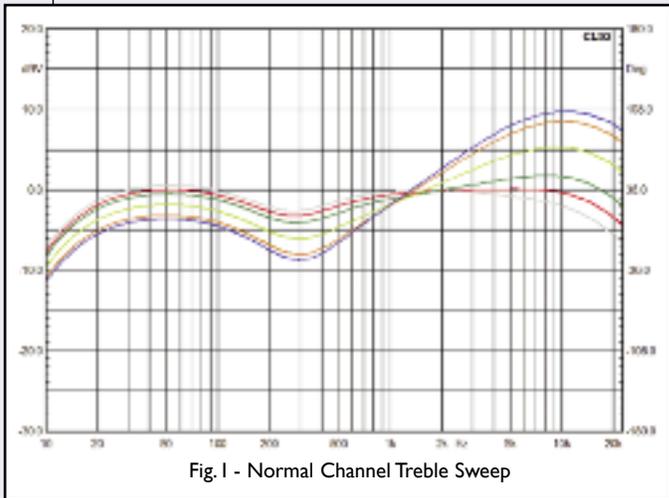


Fig. I - Normal Channel Treble Sweep



Fig. F - EQ Settings For Optimally Flat Frequency Response Measured at the Speaker Output

Dale RN65 resistors, alpha pots, etc. It appears that a good deal of effort was put into selecting components for the critical parts of the amp's signal path.

It seems that a lot of folks throw around the phrase "point-to-point" when they talk about hand-wired amps. In my opinion, turret board construction is not "true" point-to-point. However you want to argue the issue of semantics, the turret board construction in this amp looks great and exudes a sense of confidence that the amp will survive most any situation.

### Understanding The Signal Flow

In the Reeves 225, the normal channel and the bright channel each have an independent first gain stage that contributes to their unique voice. Essentially, the bright channel first gain stage and tone shaping is built around the first half of the V1 preamp tube and the normal channel first gain stage and tone shaping is built around the second half of the V1

preamp tube. The V1 preamp tube (arguably one of the more sonically important preamp tubes) in our test amp is a "new old stock" (NOS) Baldwin USA-made 12AX7. The normal channel and bright channel are summed at the grid of the V2 preamp tube, which, in our test amp, is a new production Tung-Sol 12AX7. The output of the V2 stage drives the passive tone stack, comprising the Treble, Mid and Bass (TMB) controls. The output of the TMB tone stack feeds a master volume control and the master volume output is coupled to the V3 preamp tube, which, in our test amp, is a new production Electro Harmonix 12AX7. The V3 preamp tube provides a tone stack gain-recovery stage, followed by a cathode follower.

The output of the cathode follower of V3 drives the V4 phase inverter tube, which, in our test amp is an NOS General Electric USA-made 12AT7. The quality of the phase inverter should not be overlooked, especially in KT-88 equipped amps. Obviously, NOS tubes in the V1 and V4 positions do not guarantee robustness, but Reeves' effort to provide quality tubes in the critical parts of the circuit shows the attention to detail that apparently went into this amp and adds to its boutique feel. Most importantly, careful tube selection allows the amp to perform at its best. Since the Reeves 225 uses a mix of NOS preamp tubes, it is possible that other NOS brand

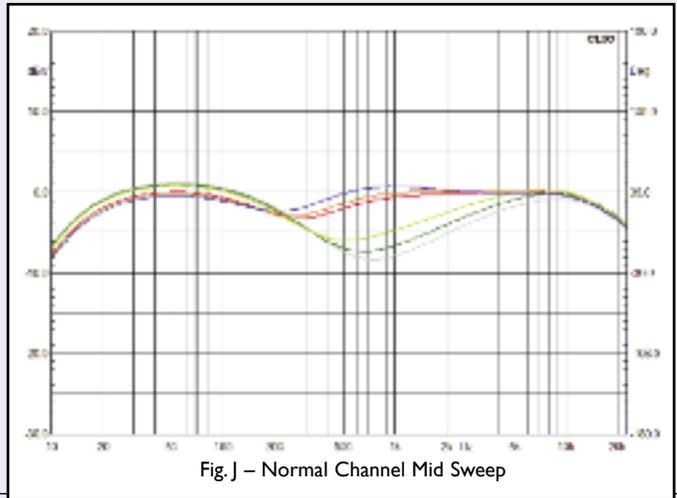


Fig. J - Normal Channel Mid Sweep

tubes may be shipped with future amps, based for example, upon the availability of NOS 12AX7 and 12AT7 tubes.

Also, I would like to provide one note of clarification. I have used the designations V1-V4 to refer to the preamp tubes in the order that the signal flows through the amp, from the first gain stage through the phase inverter. These designations are also consistent with those commonly seen on 70's era Hiwatt schematics, from which the Reeves 225 is based. However, the manual provided by Reeves includes a tube layout chart that labels the phase inverter tube as V3 and the Master gain/cathode follower tube as V4 (essentially, Reeves and I have flip flopped the V3 and V4 designations).

Before leaving the discussion on tubes, I do have one small quibble. I really wish that this amp (all tube amps for that matter) would have included a tube chart. For example, true to vintage Reeves designs, the phase inverter tube (V4) is actually the third tube over from the left (when looking from the front of the amp). So, make sure that you get the tubes in the correct order for optimal performance of this amp.

On the bench, measurements suggested that the output tube bias was running cold, measuring about 21ma at 715V (685V loaded) plate voltage. Factory bias settings are not provided in the current draft of the manual and could not be located on the Reeves website, so Reeves Amplification was contacted to verify the factory bias settings. I spoke with a gentleman by the name of Phil, who was extremely courteous and helpful. Phil knows these amps inside and out, and he informed me that Reeves biases the C225 at the factory for 60% dissipation at 35 watts. After consulting Reeves, the bias on the test amp was adjusted to factory bias values. Referring to Fig. C, setting the bias was as simple as measuring the voltage drop across the conveniently provided 1-ohm resistors on the power tube sockets, while adjusting the corresponding bias trim pots with a plastic blade screwdriver.

Please note, it is possible for new production tubes to drift as they break in. Our test amp had been through several gigs before it reached the test bench, so it is not

completely surprising to find that the bias had drifted from its factory calibration. Ten milliamps does seem like a lot to drift, but after setting the bias, no appreciable drift of the bias setting was observed during further testing.

To demonstrate one effect of the bias adjustment, refer to Fig. M. The red trace is a measure of output power with the amp biased at 21ma. The amp was adjusted to the factory preferred setting (approximately 30.5ma for our test amp), and the resulting trace is in grey. As the chart illustrates, increasing the bias to the factory value (or any higher for that matter) does not necessarily result in significantly increased output power. Rather, the total harmonic distortion levels begin to rise sharply at the amp's clipping point pretty uniformly – regardless of bias setting. However, the factory bias (grey) does generally result in lower total harmonic distortion content, especially below 1% THD levels.

Referring to Fig. D, our particular test amp had one issue with its wiring. The cathode bypass capacitor on V3 (the tone stack recovery gain stage preceding the cathode follower) was not soldered to its turret at the non-grounded side of the capacitor. Moreover, the turret was not connected to V3 (pin 8 of the socket containing the Electro Harmonix tube). Again, a call to Phil and it quickly became clear that this component should have in fact been connected to the circuit. The circuit was corrected by soldering a jumper wire (the yellow wire seen in Fig. B) between the cathode capacitor turret (center) and the associated Dale RN65 resistor (right). As this capacitor is not serially positioned in the signal path, the amplifier worked fine without it. However, the capacitor provides a frequency dependent gain to the V3A stage that provides more gain to higher frequencies. Some players who enjoy a slightly darker tone may actually prefer the amp with this cathode bypass capacitor disconnected, and it might even be worth considering adding an option to switch this capacitor in and out. It should be noted that some of Reeves' designs from the 1960's and 1970's did not include a bypass capacitor on the V3 preamp tube. Referring to Fig. L, this

chart shows a frequency response plot of the normal channel comparing the amp as received with the V3A cathode capacitor disconnected (red trace) compared to the factory correct wiring with the V3A cathode capacitor connected (black trace).

### Frequency Response

A word on the tone stack: the Reeves amp employs a classic (Reeves-designed) Hiwatt passive tone stack. In this regard, the Treble, Middle and Bass controls are positioned right after the V2 preamp tube. The circuit features a cathode follower DC coupled to the phase inverter. The Presence circuit is a negative feedback circuit taken from the 16-ohm tap, which feeds back to the cathode follower. Thus, the Presence circuitry is located in a different part of the amp's circuit from the TMB circuitry. Because its passive design inherently includes a notch in the mids, it is difficult to get a ruler-flat response out of this amp, even in the normal input.

Referring to Fig. E, the amp was adjusted to obtain its flattest response at the speaker output, which is shown in the red trace. As noted above, this amp is based upon a classic design that incorporates Reeves take on the passive tone stack, so ruler flat is...flat out. For comparison, the tone controls were all adjusted to noon, and that trace is shown in blue for sake of comparison.

Fig. F shows a photo of the tone controls for optimally flat setting (red trace in Fig. E). As the photo indicates, the Mid control is between the Treble and Presence controls. As a personal comment, I would have preferred to see the Mid control repositioned between the Treble and Bass.

Referring to Fig. G, the speaker output frequency response for the tone control settings shown in Fig. E (red trace) is compared to the output of the DI (blue trace). Both signals were normalized to 0 dB for sake of comparison. The DI output tracks the speaker output fairly well for lower frequencies, but there is a pronounced bump in the upper frequencies.

The Reeves tone stack design is different from the traditional Fender and Marshall tone stacks. As such, this tone stack may

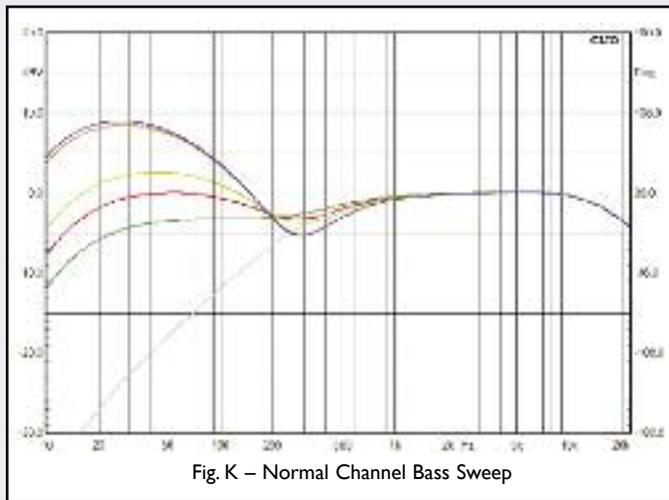


Fig. K – Normal Channel Bass Sweep

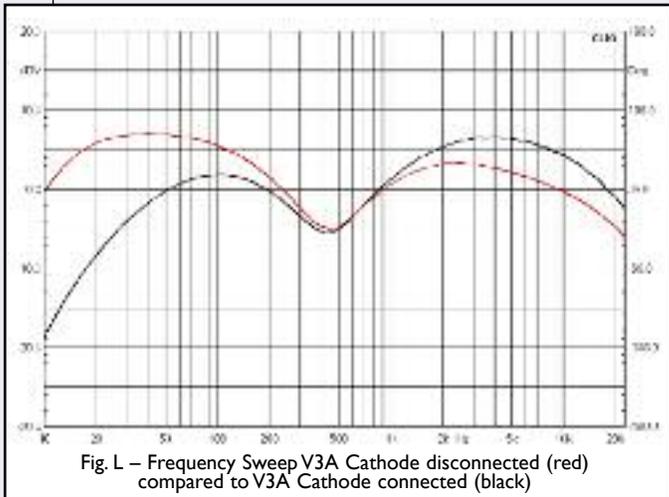


Fig. L – Frequency Sweep V3A Cathode disconnected (red) compared to V3A Cathode connected (black)

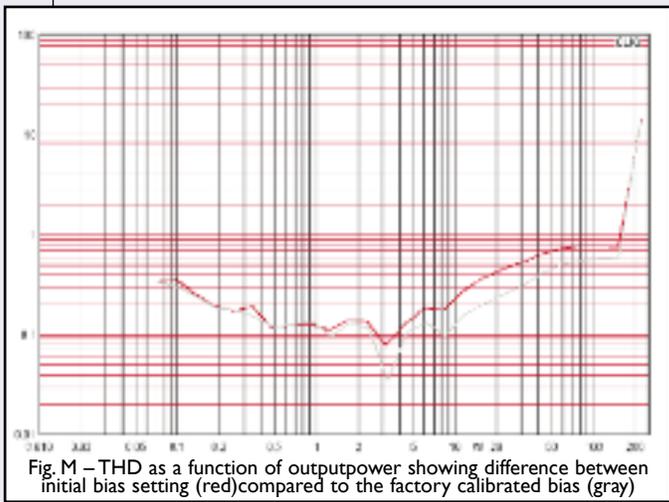


Fig. M – THD as a function of output power showing difference between initial bias setting (red) compared to the factory calibrated bias (gray)

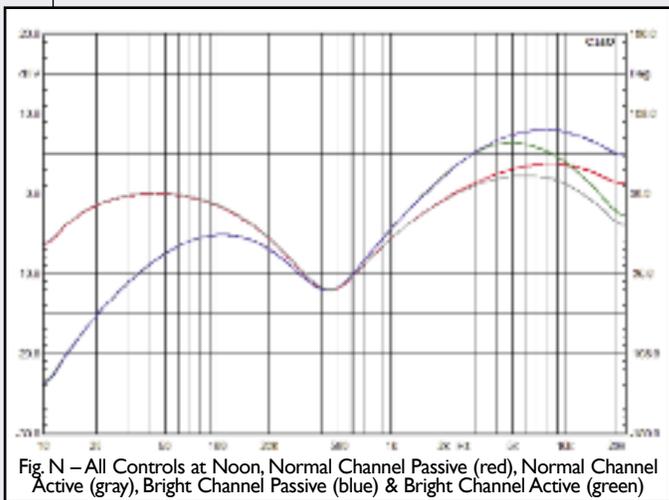


Fig. N – All Controls at Noon, Normal Channel Passive (red), Normal Channel Active (gray), Bright Channel Passive (blue) & Bright Channel Active (green)

have a different “feel” to it. Referring to Figs. H-K, frequency sweeps of each tone control of the Normal channel are illustrated. The frequency response plots give an indication as to the interaction between the bands. In the frequency sweeps, each control was swept individually at five positions. To illustrate, the traces are as follows: red = set to an optimally flat response; grey = off; green = 9 o’clock; yellow = Noon; orange = 3 o’clock; and blue = full on.

Referring to Fig. N, the amp features an Active/Passive switch. This switch provides about 15 dB of attenuation to the input signal when set to the Active position. However, frequency response sweeps further indicate that the highs are also slightly rolled off when the switch is in the Active position. In Fig. N, all tone controls are set to noon, and all traces are normalized for sake of comparison. The red trace is the Normal channel with the switch in the Passive position. The gray trace is the Normal channel with the switch in the Active position. The blue trace is the Bright channel with the switch in the Passive position. The green trace is the Bright channel with the switch in the Active position.

### Output Power

The Reeves 225 performed extremely well in our power testing. It appears that Reeves rates their output power pretty conservatively, because we exceeded the manufacturer rating for each impedance tested at 5% THD, down to about 55 Hz. In performing these tests, gain staging is important, as clipping is not limited to the power tube

section, and it is possible to clip at the input gain stage and/or phase inverter.

### Conclusion

I really like a lot about this amp. The overall construction, boutique-esque approach to tube and component selection, robustness of transformers, chassis and head cab should result in a highly reliable amp. Also, enough cannot be said about the neatness of the internal wiring. My only complaints have to do with finishing off this otherwise great package with additional details. Apparently, a manual was not provided with earlier versions of this amp, and manuals are currently not provided on the Reeves website. However, if you do not have a manual, you can contact them and they will email a copy to you. The manual is short and general, but still worth looking over. For example, the amp itself provides no indication of whether the provided DI output is pre or post tone stack. The manual clarifies that the DI is tied directly to the Output transformer, and is thus post tone stack, post master volume.

With regard to the amp itself, I would like to have seen a tube chart. As noted above, it may not be obvious to a user that the phase inverter is actually in the third position. Also, the chassis includes three unused tube punch-outs, including holes for two more power tubes and one more preamp tube. Given the voltages this amp is capable of producing, and seeing the efforts Reeves is putting forth to provide a boutique-quality feel to their amps, I would have liked to have seen plugs installed in the unused holes in the chassis. One minor additional quibble is that the back panel, including output jacks and DI could be more appropriately labeled.

As a final point, while I find it refreshing to see an emphasis on hand wiring, it also lends itself to an occasional inherent human error. As such, I think that it may also be within reason to suggest that additional quality check(s) be implemented to ensure that human errors in hand-assembling these amps can be caught at the factory. 📦