

OCTAVE

MRE 130/II

Owner's Manual

English

INTRODUCTION

Congratulations and thank you for choosing the OCTAVE

MRE 130/II

You are about to enjoy the benefits of one of the world's most innovative and reliable amplifiers. Take care of it, and your amplifier will provide you with many years of listening pleasure.

You often hear people claim that there has been no real progress in tube amplifier design for years. The operating principles of tubes have been documented extensively and are well known to amplifier designers. The same can, of course, be said for transistor amplifiers.

Nevertheless, there is still room for further development with both of these technologies. This is both necessary and desirable. With tube amplifiers in particular, a general reluctance to depart from the classic circuit designs has not done the technology any favours. Today's loudspeakers and source equipment provide better performance than ever before, but also make greater demands on amplifiers. Modern sound reproduction equipment delivers a level of performance at a price that simply would not have been possible 20 or even 10 years ago.

These advances have been achieved through the application of cutting edge technology as it becomes available and affordable.

Integrating these technologies into amplifier design demands a detailed knowledge of the inner workings of amplifiers and an appreciation of the sonic ramifications of each modification.

We have specialized in tube amplification for the past 30 years, during which time we have developed a number of innovative technologies that have earned us a reputation as one of the leaders in the field.

We hope you will enjoy many hours of wonderful music with your OCTAVE amplifier.



Andreas Hofmann

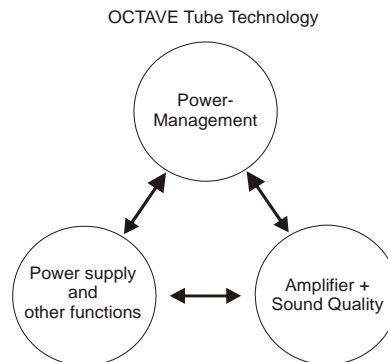
CONTENTS

	Page
Introduction	
1. OCTAVE technology	6
1.1. OCTAVE amps in contrast to other tube amps	6
1.2. About the MRE 130/II	7
2. Safety instructions	8
2.1. Before you begin	8
2.2. Placement	9
2.3. Warranty	9
3. Setting up	10
3.1. Connecting the amplifier	10
3.2. Running in	10
4. Operation: Front panel	11
5. Connections: Rear panel	12
6. Bias measurement facility	13
6.1. How it works	13
6.2. Setting the bias	14
7. Tubes	
7.1. Tube layout	15
7.2. Tube service life	15
7.3. Removing the grille	16
7.4. Replacing tubes.....	16
8. Using the Black Box or Super Black Box	17
8.1. Option: External Black Box	17
8.2. Option: External Super Black Box.....	18
9. Troubleshooting.....	19
10. Technical data and dimensions.....	20
11. FAQ	23

1. OCTAVE TECHNOLOGY

1.1. OCTAVE amps in contrast to other tube amplifiers

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|-----------------------------|--|
| Sound | 1. The design goal of OCTAVE amplifiers is honest, natural sound reproduction. The sound characteristics of an amplifier are derived from the sum of all its parts. Tubes do not themselves guarantee high quality sound. |
| Amplifier Design | 2. The limitations of classic tube designs are evident as soon as you connect the speakers. These designs often only perform to their full potential when they are used with special loudspeakers. OCTAVE amplification and power supply technology has largely overcome these well-known problems. Thanks to their unique output stage design, they will maintain their optimum sound quality with virtually any loudspeaker, irrespective of its load. |
| Control + Monitoring | 3. OCTAVE employs the latest electronic circuit designs to create the best possible operating conditions for the tubes, and thus for the amplifier itself. |



OCTAVE amplifiers are equipped with a proprietary control and monitoring system we call Power Management. This is an "electronic brain" within the amp that regulates and controls all of the amplifier's functions. It includes the **Soft Start Electronics** that gently ramp up the heating and supply voltages to save wear and tear on the components. In the event of a problem, the Power Management's **protection system** will disconnect the unit from the power supply. Power Management helps us to achieve a completely consistent sound while at the same time ensuring the total reliability of our products.

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|------------------------|---|
| Hand built | 4. OCTAVE amplifiers are hand built and individually tested. They are designed and developed by Andreas Hofmann. The company has its own winding department, in which all transformers are specially custom wound for each amplifier. |
| made in Germany | 5. OCTAVE amplifiers are 100% built in Germany. Our employees are highly qualified and committed. We collaborate closely with local specialist subcontracting companies. The hardware components are all manufactured on modern CNC machines. |

1. OCTAVE TECHNOLOGY

1.2. About the MRE 130/II

POWER MANAGEMENT	<p>The MRE 130/II monoblocs are push-pull power amplifiers in pentode configuration. They produce approx. 140W at 2% THD.</p> <p>OCTAVE power amplifiers have always set new standards. With the introduction of his RE 280 stereo power amplifier, Andreas Hofmann left traditional power amp technologies far behind. It goes without saying that this amplifier - like all OCTAVE products - included OCTAVE's proprietary Power Management and protection electronics.</p> <p>The <i>Power Management</i> system monitors and controls the heating and supply voltages at switch-on. This is tremendously important in extending the service life of the tubes and maintaining a consistent sound. It also relieves the power supply components of the strain of handling huge surge currents at turn-on.</p>
PROTECTION SYSTEM	<p>Many manufacturers neglect to include electronic or even passive protection systems in their tube amps, which means that the life - and indeed the operational safety - of these amplifiers is greatly dependent on factors over which the user has no control. OCTAVE fits its power amplifiers with an <i>electronic protection system</i> as a matter of course.</p>
LOAD STABILITY	<p>The technical breakthroughs that set the original RE 280 apart were its <i>optimized input gain section and power supply</i>. Indeed, it used a totally new power supply design, featuring double star-earthing and supply voltage isolation. The optimization of the input stage provided absolute immunity from influences such as the loudspeaker load, together with excellent phase stability for highly accurate push-pull operation and an extension of the usable frequency range up to 80kHz. From a sound quality point of view, these enhancements delivered a consistent tonal performance that remains independent of the impedance response and efficiency level of the speakers.</p>
PENTODE DESIGN	<p>With the MRE 130/II, Andreas Hofmann has gone one step further. While it has the same power management and optimized input stage as its stereo brother, it benefits from an innovative and enhanced output stage configuration. What is revolutionary about this new generation of amplifiers is that we have employed the classic, yet almost forgotten, <i>pentode configuration</i>.</p> <p>The classic pentode configuration was quite commonly used in earlier power amplifiers. It offered the benefits of reliability and a relatively high power output. From a modern perspective, its disadvantage was reduced dynamic stability and a high level of distortion. These effects are not a direct result of the pentode itself, but rather of the circuitry employed at the time.</p> <p>Andreas Hofmann has now developed a new design that eliminates the drawbacks of the classic pentode configuration. This innovative design involves the use of a second, separate power supply circuit for the auxiliary current needed for the pentode mode of operation. The characteristics of this enhanced pentode circuit are virtually ideal from both a sound quality and an engineering point of view.</p> <p>Among the welcome side effects of the enhanced pentode circuit are absolute immunity against interference and fluctuations in the supply voltage, and the problem-free use of compatible output tubes.</p>
BIAS	<p>A further effective feature is the <i>Bias measurement facility</i>.</p> <p>Unlike the simpler class-A power amplifier type, AB amplifiers require adjustment of the negative grid bias to optimize the idle current for the power tubes. The setting can change as the tubes age and it must also be adjusted whenever tubes are replaced. Normally, this requires test equipment and a knowledge of what and where to measure, but with the MRE 130/II, you can check and adjust the bias any time the amp is on.</p> <p>This adjustment has a huge influence on the sound quality and performance characteristics of an amplifier (see diagram 1 under Technical Data).</p>

2. SAFETY INSTRUCTIONS

2.1. Before you begin

Before using your MRE 130/II, please remove the protective grille and install the output tubes supplied with your amplifier in the appropriate sockets (see Removing the Grille and Tube Layout). Replace the grille before switching on.

Operating the amplifier without its protective grille is dangerous and not recommended.

In case of emergency: disconnect the plug from the mains supply

Never use an amplifier that is damaged or faulty. Make sure that it cannot be used until it has been repaired by a qualified service engineer.

Make sure that there is easy access to the IEC socket and power cord.

Do not open the case

There are dangerously high voltages and hot tubes inside this equipment. To avoid a burn or the risk of electric shock, never allow anyone except qualified personnel to open the case or remove the grille.

Servicing and maintenance

For reasons of safety, please ensure that servicing, repairs and other modifications to OCTAVE equipment are carried out only by a qualified technician. Fuses should also only be changed by a qualified technician. Always replace fuses with ones of the same type and rating. If your amplifier requires servicing, please ship or take your equipment directly to OCTAVE or to one of our authorized service centres.

Explanation of the warning symbols:



The exclamation point within an equilateral triangle is intended to alert the user to important operating and maintenance instructions.



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated 'dangerous voltages' within the product's enclosure that may be sufficient to constitute a risk of electric shock to persons.

Before connecting

Make sure that the voltage of your amplifier matches your electricity supply voltage.

Grounding

This amplifier is a protection class 1 device (with an earth conductor). To exclude the risk of electric shock in the event of a fault, the unit must be grounded. Use a three-core mains cable with a three-pin plug (supplied).

Safety warning: hot tubes!

Warning: Remove the protective grille at your own risk. OCTAVE accepts no responsibility for injuries caused by the removal of this grille.

2. SAFETY INSTRUCTIONS

2.2. Placement

1. Location

OCTAVE equipment is designed strictly for use in a dry domestic environment. Do not use it in the open air or in damp environments!

Never place plants or liquid filled containers on your OCTAVE equipment. Take care that objects do not fall or liquids are not spilled into the enclosure. Should this happen, remove the mains plug immediately and have your amplifier checked by a qualified service technician.

Condensation may form if the amplifier is taken from a cold environment into a warm one. If you do this, wait until the amplifier has reached room temperature and is dry before switching it on.

Avoid installing the unit close to sources of heat such as radiators or anywhere that it may be in direct sunlight.

Do not operate the unit near flammable materials, gases or vapours. Avoid areas where there may be heavy accumulations of dust or where the unit may be subject to mechanical vibration.

Place your OCTAVE amplifier on a stable, even surface.

2. Grille

Never operate the amplifier without the protective grille.

3. Ventilation

Make sure that your amplifier has a good flow of air around it. If you intend to install your equipment in a cupboard or a shelf unit, ensure that there is at least a ten centimetre gap between the ventilation slots and the walls all around the amplifier. The rear panel of cupboards should have ventilation holes to prevent heat build up. Do not rest the equipment on a soft surface such as carpet or foam sheeting.

2.3. Warranty

OCTAVE can only guarantee the safety, reliability and performance of this unit if modifications and repairs are carried out by specialized personnel and if the amplifier is operated in accordance with the instructions contained in this manual.

3. SETTING UP

3.1. Connecting the amplifier

1. In your own interest, please observe the Safety Precautions and positioning advice (Chapter 2)
2. Before connecting your OCTAVE amplifier up, switch off all the other equipment that you intend to connect to it. This will avoid a source of possible problems when you plug these components in.
3. Connect the outputs from your preamplifier to the appropriate inputs on the MRE 130/II amplifier. Make sure that switch 2 (on the rear panel next to the power amplifier inputs) is in the correct position.
4. Connect your loudspeakers to your MRE 130/II amplifier, making sure that you observe the correct polarity (positive on the amplifier to positive on the speakers).



5. Check that the amplifier is switched off before connecting the power cable to the wall socket.
Before connecting the optional outboard Black Box, ensure that it is switched off. (see Chapter 8, Black Box)

6. The power switch for the MRE 130/II is located on the front panel (see Chapter 4, Operation)
There is no muting or standby facility.
When you switch on, the warm-up LED next to the power switch illuminates. The unit is ready for use after about two minutes.
7. Check that the volume control is not set at maximum before playing music through the amplifier.
8. Switch the other components on in any order.

3.2. Running in

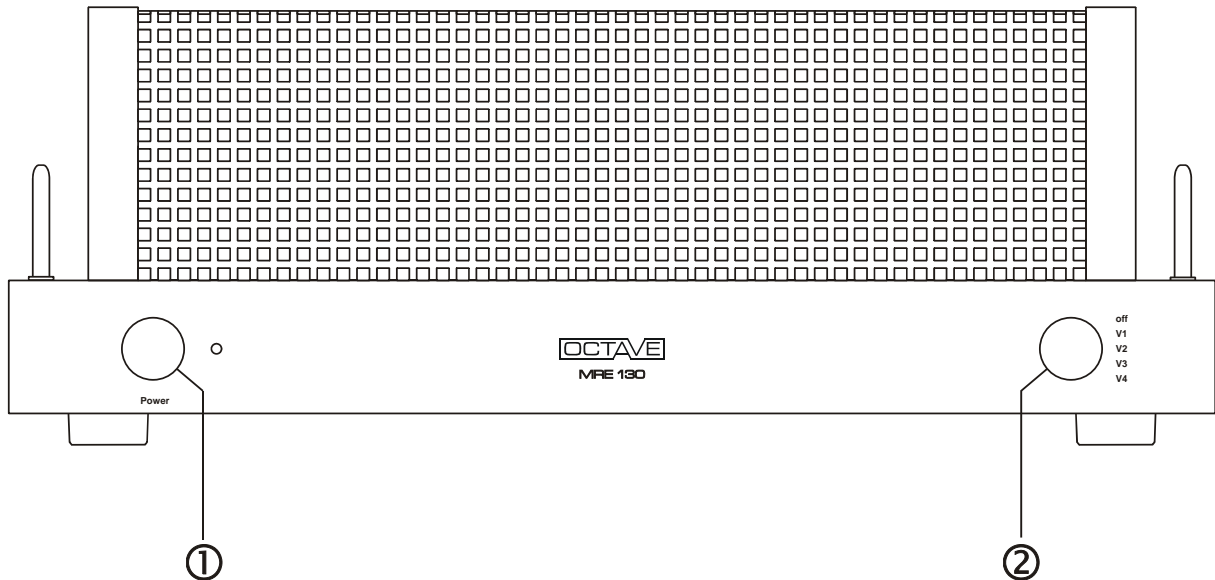
All OCTAVE equipment is subject to a 48-hour soak test at the factory to burn in the tubes. The tubes are preselected for use in each particular model.

The sound quality of tube equipment improves throughout the initial running-in period of up to three months.

During this time, daily use is beneficial (even at high levels) but not a requirement. Continuous operation does very little to help reduce the running-in time and is therefore *not* recommended.

Power amplifiers should not be left in burn in mode for longer than 4 to 5 hours. The burn in facility is intended for use only to burn in new output tubes. (See 'Replacing the tubes'). OCTAVE tubes fitted to our amplifiers or supplied as replacements do not need to be burned in.

4. OPERATION - Front panel



① Mains Power rotary switch

To switch on the amplifier, turn the knob clockwise (cw). The LED next to the knob lights up gradually.

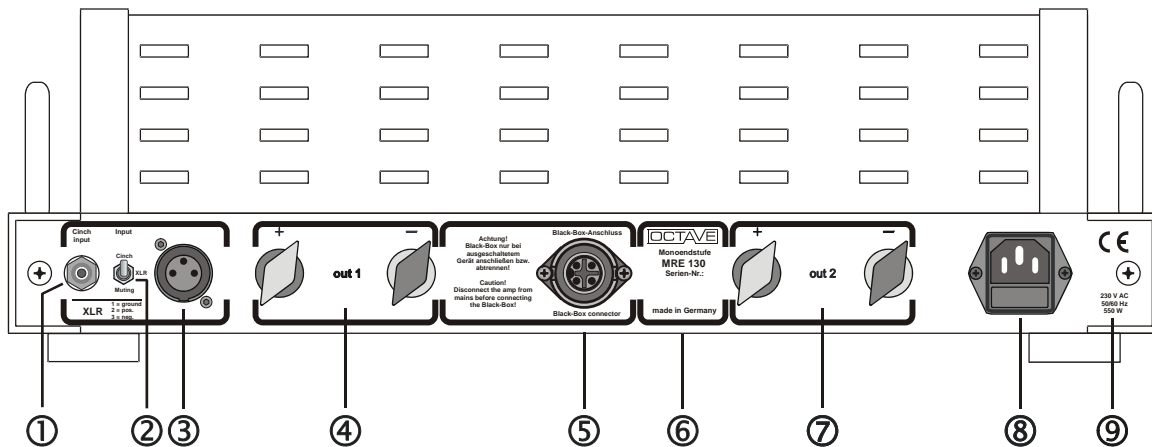
② Bias measurement selector switch


Off position:	The measurement facility is disabled
Position V1 - V4:	The measurement facility is connected to the relevant tubes. To ensure the accuracy of any adjustments, be sure to set the volume control to 0.

NOTE:

The MRE 130/II is equipped with a soft-start circuit and a power-up delay timer. The amplifier is ready for use after a delay of approximately 3 minutes. Because there are no relays in the signal path, a low-level, slightly distorted signal from your source equipment may be heard through your loudspeakers during warm-up. This circuitry extends tube service life and also protects the power section from voltage spikes.

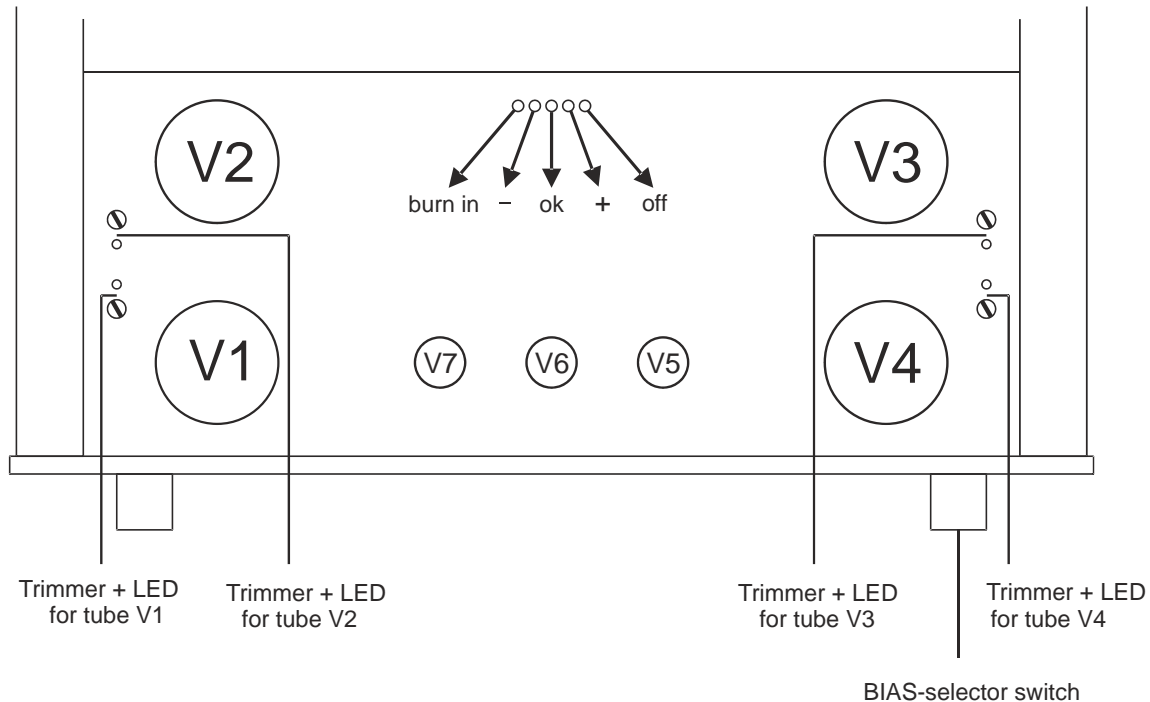
5. CONNECTIONS: Rear panel



- ① **RCA cinch input**
Input from the preamplifier (using RCA cinch interconnect)
- ② **Input muting switch**
Switches between the inputs
Switch up: RCA cinch input
Switch central: XLR input
Switch down: both inputs muted.
This position is useful for connecting and disconnecting cables without switching the power amplifier off.
- ③ **XLR input**
Input from the preamplifier (using an XLR cable)
XLR pin connections: 1 = ground, 2 = +, 3 = -
- ④+⑦ **Speaker outputs**
Loudspeaker connection terminals. When connecting the power amplifier to your speakers, take care to connect the red terminals on your amplifier to the positive terminal on your speakers. The blue (negative) terminals connect to the negative terminals on your speakers. The outputs are connected in parallel and identical.
- ⑤ **Black Box and Super Black Box connection**
 The Black Box and Super Black Box are outboard power supply upgrades for the power amplifier (see p. 14, 15). The MRE 130/II must be switched off using the power switch before connecting and disconnecting the Black Box!
- ⑥ **Model identification plate**
Model and serial number.
- ⑧ **Power connection**
AC input, IEC socket
- ⑨ **Operating voltage**
Details of the operating voltage and power consumption

6. THE BIAS MEASUREMENT SYSTEM

6.1 How it works



The bias measurement system

The bias measurement facility makes it easy for you to check and adjust the idle current of the output tubes. Getting the bias setting right for all four tubes is critical both for the sound of the power amplifier and for the service life of the tubes. This is why we have incorporated a bias measurement facility into the ME 130 that allows you to set the bias yourself without the need for test equipment. Service engineers may wish to remove the grille to set the bias, but the adjustment can also be made through the grille using a long screwdriver. The trimmers are located next to their respective tubes. Next to each trimmer you will see a pilot lamp, which shows which tubes have been selected with the bias selector switch. A row of LEDs in front of the transformer cover assists you in setting the bias correctly. It shows three conditions: bias too low, correct, and too high.

The LED display:

green LED (OK)	Setting is correct
yellow "-" LED	Setting is too low
yellow "+" LED	Setting is too high
orange "burn in" LED	Setting for burning in new tubes (see page 13)
red "off" LED	Illuminates when the electronic protection has switched the amplifier off (see pages 4 and 16)

The display is very accurate (2%). Fluctuations in the supply voltage may cause the green LED to go out and the - or + LEDs to light up. This has no detrimental effect, and does not mean you have to readjust the bias once you have set it correctly. The important thing is to adjust all four tubes at the same time.

6. THE BIAS MEASUREMENT SYSTEM

6.2. Setting the bias

Make sure that no signal is playing through the amplifier when you are adjusting the bias. It is sufficient to turn your preamp volume control to 0; there is no need to disconnect the speakers.

Procedure:

- 1) Turn the volume control on your preamp to 0.
- 2) Set the bias selector switch to V1. The green LED next to the trimmer for tube V1 will light up to show that you have chosen to adjust the bias for tube V1.
- 3) The bias setting for this tube is correct when the green OK LED on the display illuminates.
 - If the yellow + LED illuminates, the bias is set too high.
 - turn the trimmer anti-clockwise until the OK LED illuminates.
 - If the yellow - LED illuminates, the bias is set too low.
 - turn the trimmer clockwise until the OK LED illuminates.Repeat this procedure with the other three tubes
- 4) Switch the bias selector back to its "off" position.

Note:

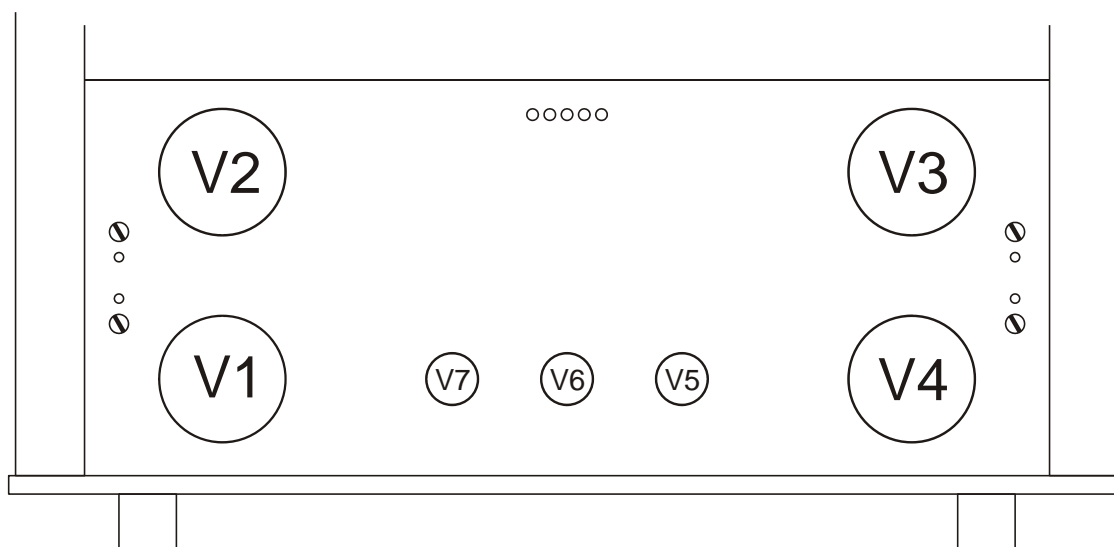


If the orange burn-in LED lights up at the same time as the yellow LED when you are adjusting the bias, it will be impossible to get the green LED to come on. This combination of LEDs shows a defective tube, which you should replace.

It is not possible to adjust the bias if the amplifier's electronic protection has cut in (as indicated by the red "off" LED in the display). When you activate the measuring facility under these circumstances, the burn-in and - LEDs will illuminate for all tubes. You must fix the fault before using the measuring facility. If a defective tube is causing the problem, you should locate and replace it. (See Troubleshooting on page 16)

7. TUBES

7.1. Tube layout



Output tubes:	V1 - V4:	6550 fitted as standard
	V1 + V2	operated in parallel
	V3 + V4	operated in parallel
Driver tubes:	V5	6 SN 7
	V6 + V7	ECC82 (E82CC, 12AU7A, 5814, 6189)

7.2. Tube service life

Thanks to the protection circuits and soft start electronics, the output tubes used in your amplifier should achieve an average service life of 3 to 5 years. Although this life expectancy figure is typical, it cannot, of course, be guaranteed absolutely, since it is dependent on the type and the manufacturer of the tubes themselves.

The internal protection and soft start circuits cannot prevent tube faults. They are designed to minimize the stress on the amplifier and to protect it should a fault develop. You can select tubes by measuring their characteristics, but this does not guarantee that they will last for a long time. Indeed, it is impossible to predict how long output tubes will last. A well-made tube has a life expectancy of between 3 and 5 years. However, it remains impossible to detect certain weaknesses in the structure of a fully functional tube.

The protection circuits in the power amplifier will also protect the unit against the damage that a defective output tube could cause.

- Driver tubes can last for 10 years or longer.
- Because tubes have different service lives, you will never have to renew the entire tube complement at the same time.
- Please note that some tubes need a long time (up to 300 hours) to achieve their optimum sound quality.

7. TUBES

7.3. Removing the grille

Operating the amplifier without its protective grille is dangerous and not recommended.

To remove the grille:

1. For your own safety, switch the amplifier off using the on/off switch and disconnect the power cord.
2. Pull the grille upward to remove.

7.4. Replacing tubes

Tubes should only be replaced by qualified personnel.

General procedure:



Switch the amplifier off and allow it to cool down for 10 minutes. Take off the protective grille. Remove the old tubes and fit the new ones.

New driver tubes

Replacement driver tubes require no adjustment.

New output tubes:

1. Before you switch the amplifier back on after new output tubes have been fitted, turn all bias adjustment controls counter clockwise as far as they will go. These are ten-turn potentiometers, i.e. it takes ten revolutions to go from the maximum to the minimum setting.
2. Switch the amplifier on. After the start-up period, both the minus the burn-in LEDs should light up for each output tube. If the burn-in LED for one or other of the tubes is dim, or does not light up at all, this is not necessarily a problem. If one of the tubes shows green or plus, it is defective and you should replace it.
3. After a 30-minute warm-up period, you can adjust the bias of all the output tubes as explained on page 11. When you have done this, your amplifier is ready for use. Depending on the type, age and manufacturer of the tubes, you may need to readjust the settings in the first few weeks.
4. Replace the protective grille when you are done.

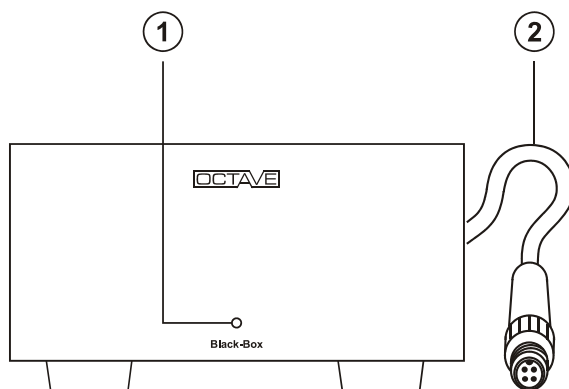
8. USING THE (SUPER) BLACK BOX

8.1. Option: External Black Box

OCTAVE, with the Black Box technology, offers an instrument to optimizing the OCTAVE amplifier in respect to the speaker. This flexibility is a unique feature of the OCTAVE brand.

The dynamic and tonal stability of an amplifier is strongly dependent upon the stability and capacity of the power supply, therefore the Black Box and Super Black Box were developed as external upgrades to the OCTAVE amplifiers' power supply storage capacitors by increasing their capacitance by a factor of 4 (Black Box) or 10 (Super Black Box), respectively. This is a tremendous benefit if the speaker is difficult to drive. Loudspeaker efficiency is made less critical, while the amplifier is enabled to handle speakers with minimum impedances as low as 2 Ohms.

The power supply capacitance increase realized via use of the Black Box or Super Black Box stabilizes current delivery and reduces the impedance interaction of the load. This improves dynamic range, separation, depth, soundstage size and articulation, rendering the musical reproduction clearer throughout the entire frequency range. The amplifier remains unaffected by mains variations and interferences due to the noise filtering characteristics of the capacitors



- ① The LED illuminates continuously when the power amplifier is on. The LED goes out when the protection circuitry trips. This is normal, as the protection circuitry cuts the power to the amplifier.
- ② High-current plug

Specifications:

Dimensions: Width x height x depth = 178 x 98 x 300 mm
 Weight: 3.1 kg
 Connection cable: 90 cm (with plug). Longer lengths available upon request

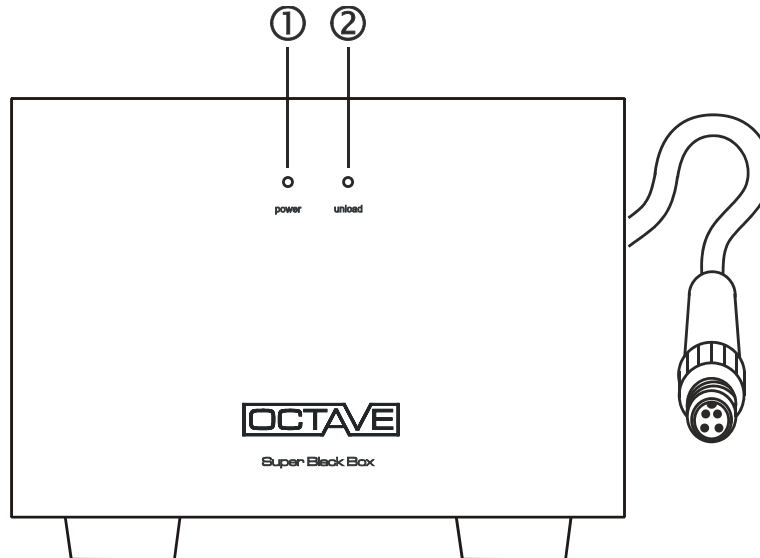
Connecting to the amplifier



- **Warning!!** Before connecting the Black Box, switch the unit off using the power switch and wait for 1 minute. When inserting the connector, guide the anti-rotation lug carefully into the mating recess in the socket.
- When you switch the amplifier on, the LED on the front panel of the Black Box will illuminate.
Please note:
 When the amplifier's electronic protection circuitry cuts in, this will cause the LED on the Black Box to go out, as it interrupts the power to the amplifier.
- Should you wish to disconnect the Black Box, switch the amplifier off first and wait until the LED on the Black Box goes out before doing so.

8. USING THE (SUPER) BLACK BOX

8.2. Option: External Super Black Box



- ① **Blue Power LED:**
The blue Power-on LED illuminates when the power amplifier (or integrated amplifier) is switched on via the amplifier's power on/off switch.
- ② **Yellow Discharge LED:**
When the power amplifier is switched off, the yellow Unload LED illuminates for about 2 seconds. This indicates that the rapid discharge circuit is discharging the electrolytics in the SBB. The discharge circuit also activates if the SBB connecting cable is removed accidentally. This makes it impossible for an SBB to contain a dangerous charge while it is disconnected.

Dimensions and weight

Dimensions: (Width x height x depth) = 203 x 149 x 360 mm (with plug)
 Weight: 5.6 kg
 Connection cable: 90 cm (with plug). Longer lengths available upon request

Connecting to the amplifier

see Black Box

9. TROUBLESHOOTING

■ **Noise and hum**

Hum in an audio system is often caused by several system components being grounded separately. It is particularly common in systems containing tuners, VCRs or satellite receivers connected to an aerial, where a hum loop may be introduced via the aerial input. Although the MRE 130/II is also grounded, it is equipped with a special technology that reliably prevents ground loops. Should an earth loop develop via a tuner or television aerial, we strongly recommend that you use a signal isolating filter on the aerial connection. This will eliminate all ground loops.

Hum when connecting the power amplifier via XLR

When connecting the power amplifier to a preamplifier using XLR cables, make sure that all three pins are connected at both ends.

■ **Switching interference**

Older fridges and 12V halogen lamps can cause cracking through the loudspeakers when they switch on and off.

Solution: the only solution is to run your system from a single distribution board - if possible, one that incorporates a mains filter. Under certain circumstances, fitting an inexpensive industrial filter in the power line of your refrigerator may be a more effective answer.

■ **The channels are unbalanced and/or there is distortion at certain frequencies**

The problem of channel imbalance or distortion in one channel is unlikely to be caused by defective tubes. The most frequent causes are cables and faulty recording devices.

Solution: Unplug all non-essential components/cables from your preamp. Swap channels to check your speaker and interconnect cables. You will generally be able to locate the fault if it changes channel or disappears altogether.

■ **Tube faults**

There are 3 different symptoms indicating a faulty tube:

1. Broken heater filament: the tube stops glowing.
2. Defective cathode layer: the tube glows, but no current can flow. You can confirm this fault using the bias display LEDs - no amount of adjustment will be able to extinguish the minus LED.
3. Internal short circuit: Normally, the electronic protection cuts in and the red "off" LED illuminates, or the tube will not respond to bias adjustment (the display keeps jumping from plus to minus or vice versa).

With faults 1 and 2, the amplifier will still operate, although the channel containing the faulty tube will be quieter than normal. At low listening levels, the fault may not be obvious, but distortion will become evident at higher listening levels.

If fault 3 occurs, the protection circuits will normally switch the amplifier off. You may also hear loud background noises just before it switches off, although these will not harm the amplifier.

You can find the faulty tube by removing one tube at a time. Operating the power amplifier with just a single output tube is allowed for test purposes and will not damage the power amplifier.

This test must only be carried out by a qualified technician.

10. TECHNICAL DATA AND DIMENSIONS

In- and Outputs

Inputs 1 x RCA, 1 x XLR
 Outputs 2 x Loudspeaker output

Amplifier

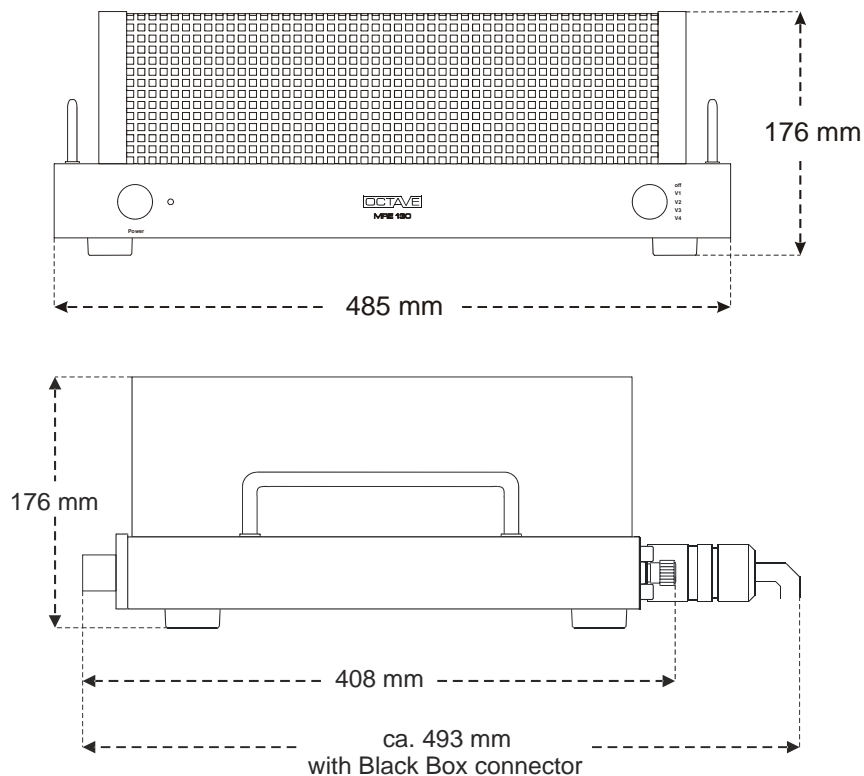
Power output 130W / 4 ohms
 Frequency response 10Hz - 80kHz / ± 0.5 dB
 Total harmonic distortion < 0.1% at 10W into 4 ohms
 Signal-to-noise ratio > 100dB
 Minimum load impedance 2 ohms
 Gain/input sensitivity + 30dB / 1V

General

Power consumption 160W minimum, 320W at full power
 Weight 22.7 kg per monobloc
 Standard accessories Power cable
 3mm slotted screwdriver for setting the BIAS,
 2 spare KT88/6550 tubes
 Dimensions Overall dimensions in mm

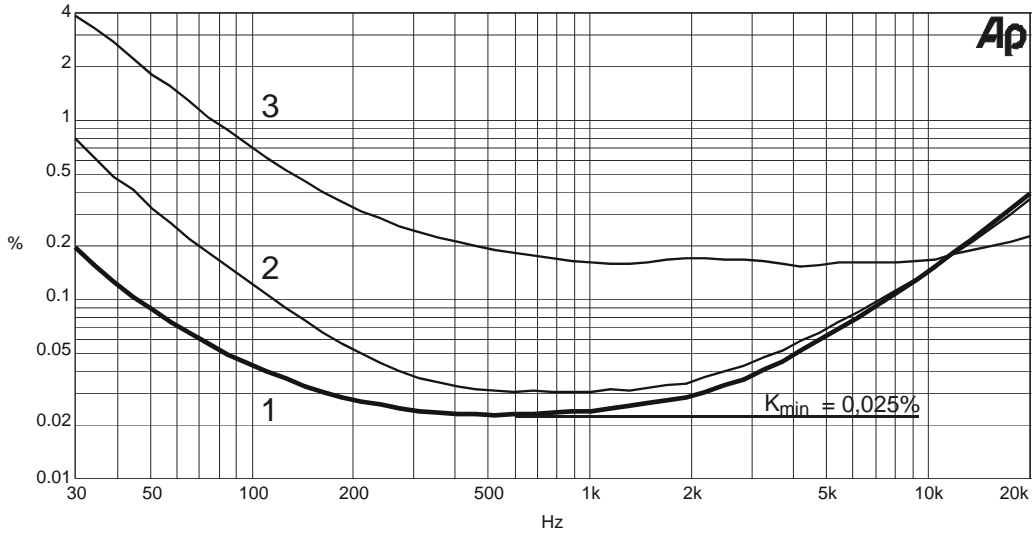
Construction

- double sided PCBs with plated-through holes using 130 μ m copper
- ceramic tube bases with silver contacts
- specially selected and burned-in longlife tubes
- professional, low inductance reservoir electrolytics, LH grade 105° C
- available in a range of anodized colours



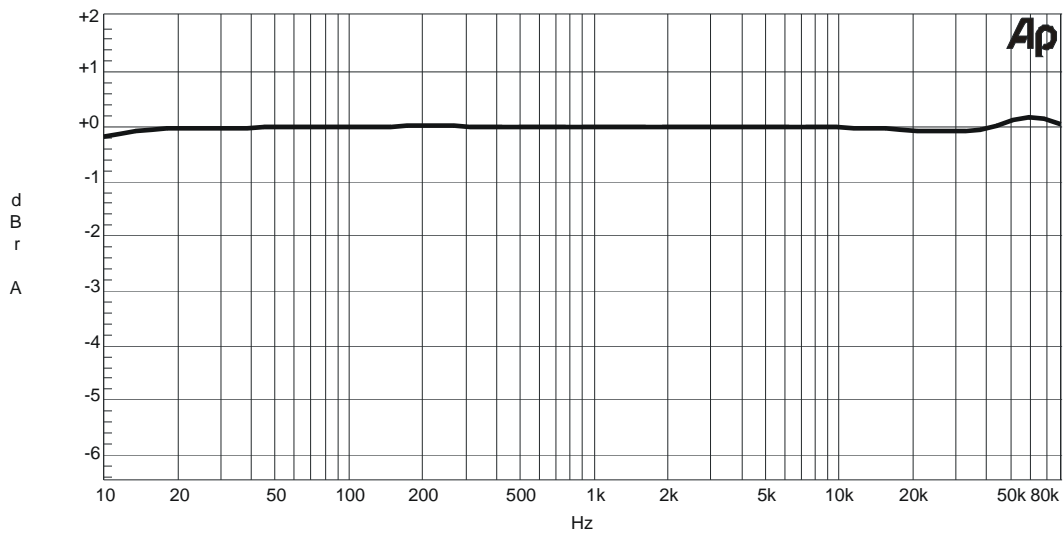
10. SPECIFICATION

Distortion in % at 3W into 4 ohms between 30Hz and 20kHz
at a variety of bias settings



- Curve 1: Bias adjusted correctly
- Curve 2: Bias 10% out
- Curve 3: Bias 30% out

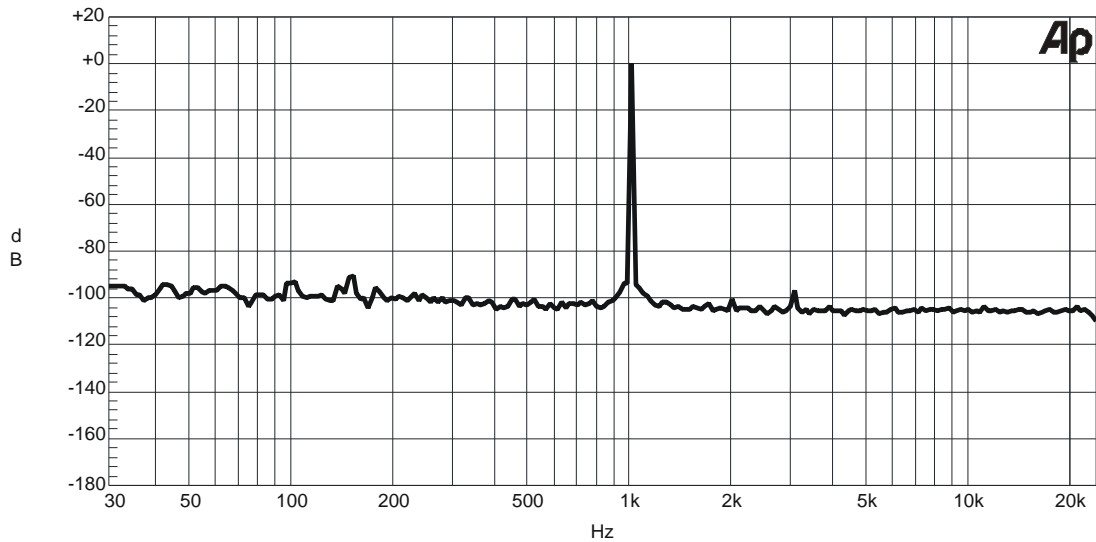
Frequency response



Between 10Hz and 90kHz the frequency response tolerance is just $0.3dB \pm$

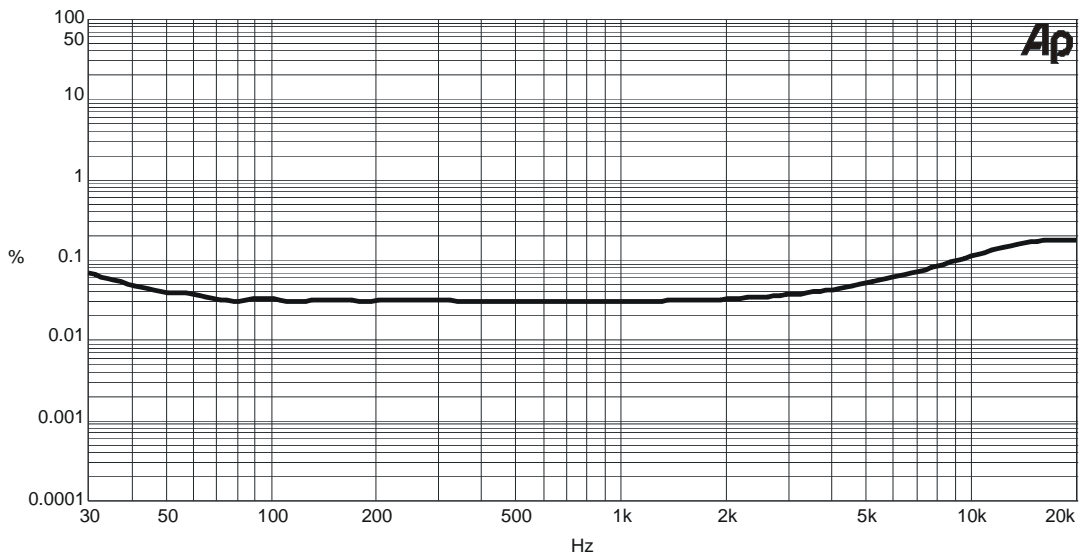
10. SPECIFICATION

Noise spectrum (1kHz at 3V)



The FFT analysis demonstrates the superb spectral purity of the output signal. No mains-borne noise (normally at 50 and 100Hz) is present.

THD between 30Hz and 20kHz



The total harmonic distortion curve is very linear, increasing only slightly at the lowest frequencies.

This performance is only possible using a highly specialist output transformer.

11. FAQ

1. Can you operate the amplifier when no loudspeakers are connected?

Yes. All OCTAVE amplifiers are protected against open circuit conditions, i.e. they will not be damaged if operated with the loudspeakers disconnected. However, when connecting your loudspeakers to the amplifier, you should set the volume control on your preamp to 0 to avoid excessive output to the speakers.

2. Can a short circuit on the speaker outputs damage the amplifier?

At low levels, the power amplifier is absolutely short-circuit proof. At higher levels, the electronic protection is activated. Under normal circumstances, a short circuit condition at the speaker outputs will not damage the amplifier.

3. How do you recognize a faulty tube?

There are 3 different symptoms indicating a faulty tube:

1. Broken heater filament: the tube stops glowing
2. Defective cathode layer: the tube glows, but no current can flow. You can confirm this fault using the bias display LEDs - no amount of adjustment will be able to extinguish the minus LED.
3. Internal short circuit: normally, the electronic protection cuts in and the red "off" LED illuminates, or the tube will not respond to bias adjustment (the display keeps returning to the red area).

With faults 1 and 2, the amplifier will still operate, although the channel containing the faulty tube will be quieter than normal. At low listening levels, the fault may not be obvious, but distortion will become evident at higher listening levels.

If fault 3 occurs, the protection circuits will normally switch the amplifier off. You may also hear loud background noises just before it switches off, but these will not harm the amplifier.

4. Is there a loss of sound quality as tubes age?

No. Tubes normally sound the same throughout their life. Our soft-start technology contributes greatly to extending the service life of tubes. You can tell when an output tube has reached the end of its useful life: it becomes impossible to adjust it correctly. Driver tubes cannot be checked, but these will generally last for well over 10 years.

5. Does the power amplifier have to have all tubes fitted?

Theoretically, the power amplifiers will operate without any tubes at all. For test purposes, or as a temporary measure, you can operate a power amplifier with less than a full complement of output tubes. Of course, its power output will be reduced, but the amplifier will come to no harm if it is operated continuously like this.

6. What is the significance of loudspeaker impedance and efficiency?

The impedance and efficiency of modern loudspeakers is not an issue for OCTAVE amplifiers. The often-quoted damping factor is not normally a guarantee that an amplifier will exert tight control over the loudspeakers. In practice, speakers of 85dB efficiency and above are suitable for use with tube amplifiers. The high stability of the OCTAVE power amplifier technology even allows the use of speakers whose impedance dips as low as 2 ohms.

You will find examples of such loudspeakers from companies such as: Magnepan, Isophon, Martin Logan, etc.

11. FAQ

7. What is the idea of selectable gain in OCTAVE preamps?

Speakers with rated efficiencies higher than 98dB are problematic when it comes to adjusting volume levels. As the range of adjustment is limited to the lower end of the volume control, it is difficult to adjust the volume with any precision. The gain switch is provided to deal with this problem. It reduces gain by a factor of 4, making volume adjustment easier and reducing background noise at the same time.

8. What cables are suitable for tube power amplifiers?

The cable manufacturers are now offering cables that have supposedly been designed specifically for tube amplifiers. Although such cables may be of good quality, there is no need to use special cables with tube amplifiers. Speaker cable can exhibit high values of capacitance and inductance. Tube power amplifiers deal with such loads better than transistor power amplifiers. The only exception would be in the case of tube preamp to power amp interconnect cable longer than 5 metres. In this instance, a low capacitance cable is advisable.

9. Why are balanced inputs rarely seen on integrated tube amplifiers?

Unlike transistor amplifiers, it is not possible to design balanced (or bridgeable) tube power amplifiers. You may come across an occasional "quasi-balanced" tube power amp, but this makes little sense when you think about it, because it is complex to implement and the need for very tight tube tolerances means that sound quality will suffer when tubes are replaced. This is why unbalanced remains the better approach for tube equipment. It also has the added benefit of superior long-term stability.



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