OWNER'S MANUAL

HP500MK3

OCTAVE

1. OCTAVE TECHNOLOGY - or

what makes OCTAVE amplifiers different from other tube amplifiers?

Sound

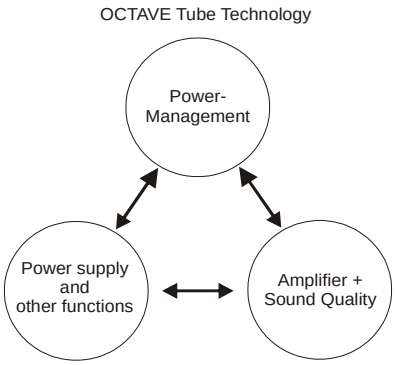
1. The design goal of OCTAVE amplifiers is honest, natural sound reproduction. The sound characteristics of an amplifier are derived from the sum of all its parts. Tubes do not themselves guarantee high quality sound.

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.

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. DISCRIPTION HP 500 MK3

The HP500 is being built since 1987. Many details were improved and a lot of changes took place through the years and made the sound of the HP 500 even more attractive. For example, today the MK III-version is always equipped with an external power supply. The XLR-output with trafo-balancing and a further designed phono-part are options, that make the HP 500 to one of the most universal tube preamplifiers of our time. Of course, older versions can be updated.

What is special about the HP 500?

- First of all, the HP 500 is equipped with our self-designed Octave-circuitry-technology, that is responsible for the exceptional sound and technical qualities.
  The special thing about the Octave-circuitry-technology is the combination of modern semiconductors with the tube. This combination makes it possible, always to keep the tube in an optimal operating limit and thereby use the whole sound potential. Disturbing characteristics of conventional tube concepts, like hum-interference, magnetic field disturbances and high output resistance, are eliminated.

- Further more, the manufacturing quality of the HP 500 is perfect, this can also be seen in the stable full-aluminium chassis with low resonance. The massive cinch-sockets make it possible to connect even thick NF-wires with large plugs.
  Every product of Octave is built in individual construction in Germany and is subject to a 100 % control. The final inspection is completed by a 48 hour burn-in-test.

- In addition, the HP 500 is equipped with a lavish special power supply, that was newly designed for the HP 500 especially.
  The power supply of the HP 500 fulfils complex functions: On the one side, it sees to a constant sound quality by keeping off mains disturbances and by creating constant working conditions due to electronic voltage stabilisation. On the other side, the built-in control logic guarantees the highest possible use reliability. With its soft-start-technology, it achieves the theoretically maximal possible life of the tubes (up to approx. 10 years).
  An additional function of the power supply is the protective circuitry, that releases the output of the HP 500 with a time lag by using a relay. Click disturbances caused by power failure etc. are therefore absolutely impossible. Transformers are made-to-measure by ourselves.

2. SAFETY INSTRUCTIONS

2.1. Before you begin

Before using your HP 500 MK3, 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 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.

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

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

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 power supply with the HP 500 MK3 .

4. Connect the inputs from your amplifier to the appropriate outputs on the HP 500 MK3 amplifier.

5. Connect your loudspeakers to your power amplifier, making sure that you observe the correct polarity (positive on the amplifier to positive on the speakers).

6. Check that the amplifier is switched off before connecting the power cable to the wall socket.

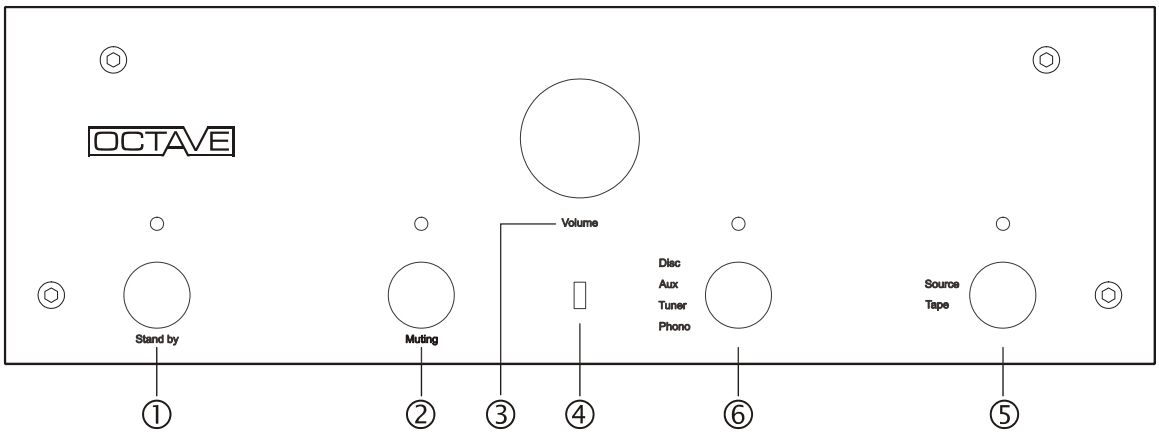
7. The stand by/power switch for the HP 500 MK3 is located on the front panel (see Chapter 4, Operation)

8. Check that the volume control is not set at maximum before playing music through the amplifier.

9. Switch on the mains power, the switch is located on the rear panel of the power supply.
   The preamplifier needs approx. 2 - 4 minutes warm up time. In the warm up time the output is shorted to ground to avoid disturbances.

10. Switch on the other components.

4. OPERATION - Front panel



① **Stand by switch**

The LED above the switch burns, if the unit is turned on. If the preamplifier is turned off, it remains in the stand by mode, which means, that parts of the electronic are still working. If the unit will not be used for a longer period, it should be turned off with mains power switch of the preamp-filter I.

② **Muting-switch**

With this function, the outputs are turned mute. You do this, when new components are to be connected to or disconnected from the inputs. By this, disturbances at the output of the preamplifier are avoided and the preamplifier does not have to be turned off. The LED above the switch burns, if the muting function is turned on.

③ **Volume control knob**

④ **IR-sensor**

The infra-red receiver is placed below the volume control knob. This area should not be covered by anything.

4. OPERATION - Front panel

⑤ **Input selector rotary-switch**

If the LED above the input selector burns (tape-source-switch ❺ in position ″source″), the here chosen source is played back at the output of the preamplifier:

disc:	playback CD
aux:	input for an additional line unit
tuner:	playback tuner or DSR
phono:	line input for an additional external phono-module etc. (only HP 500 line)

At the same time, the chosen source can be recorded through the rec.-output (rear panel of the HP 500) by tape or something similar.

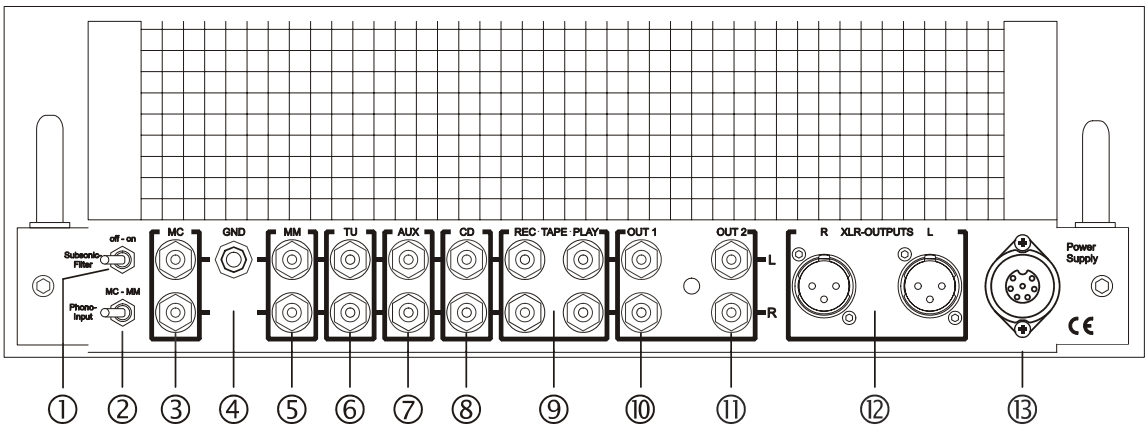
⑥ **Tape-source-rotary-switch**

- switch in position ″source″:
  the LED above the input selector ❻ burns. The source chosen with the input selector is activated. (disc, aux, tuner or phono)
- switch in position ″tape″ (tape, dat or cassette- recorder):
  the LED above the tape-source-switch ❺ burns. Playback tape is turned on. If the tape is in position ″recording″ a back tape control can be made, which means, the recorded signal is played back. (see owners manual of cassette deck, dat etc.)

Information:

The HP 500 is equipped with a turn on delay circuit. This prolongs the life of the tubes and avoids starting hum. The output of the preamplifier is short-circuited during the turn-on-time. After the turn on time of 4 minutes, the output is released and the LED above tape- or input selector switch burns (depending on the position of the tape button).

5. CONNECTIONS: Rear panel

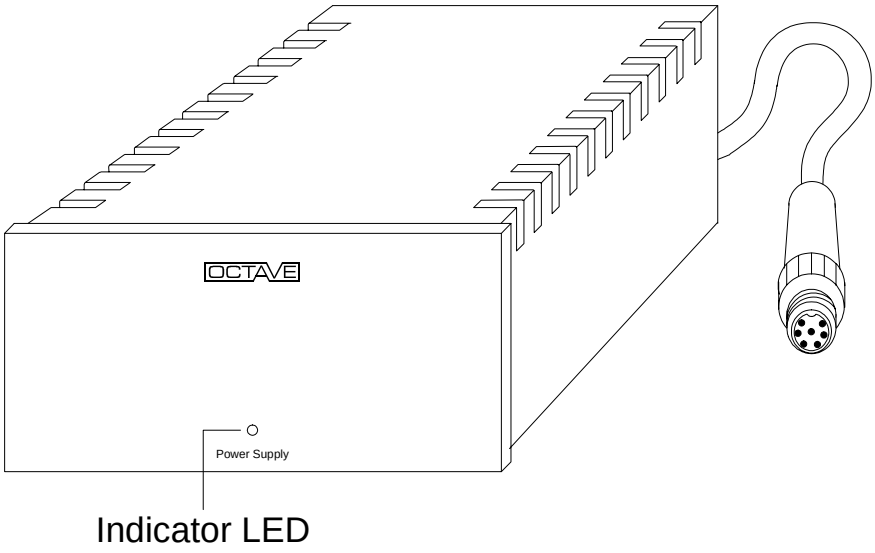


①	**Subsonic-filter switch**	turn switch left: off; turn switch right: on
②	**Phono-selector**	The toggle switch activates either MM input or MC input. Two turntables can be connected at the same time.
③	**Input MC**	input for turntables with MC-systems
④	**GND (ground) cable**	Connection for the ground cable of the turntable (if existing). Also see „connection to the stereo-equipment“, topic 3
⑤	**Input MM**	input for turntables with MM-pick-up system
⑥	**Input tuner**	
⑦	**Input aux**	additional line input for video or TV etc.
⑧	**Input CD**	
⑨	**Tape rec.** **tape play**	recording output for tape, cassette- or dat-recorders play input for tape, cassette- or dat-recorders
⑩	**Out**	cinch-output for the power amplifie**r**
⑪	**Second cinch-output**	for the second power amplifier
⑫	**XLR-output (option)**	balanced output for power amplifiers with balanced inputs left socket for left channel right socket for right channel
⑬	**Connection for the power supply preamp-filter I**	

Information:

In the connection area, the upper socket line (white) is for the left channel, the lower socket line (red) is for the right channel.

6. EXTERNAL POWER SUPPLY



The LED illuminates when the unit is switched on.

Description

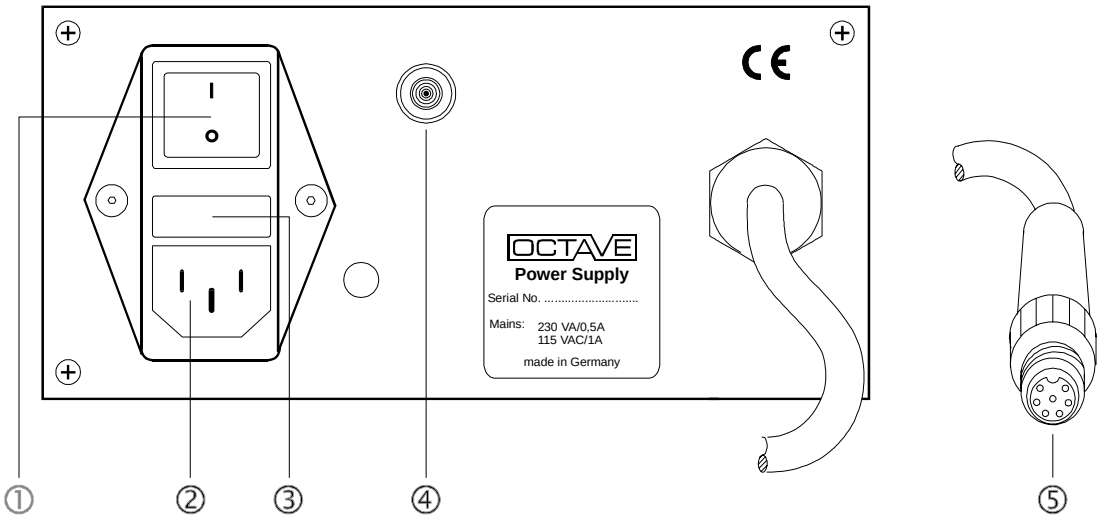
The HP 500 MK3 is equipped with a specially designed external power supply incorporating highly effective mains and high frequency filters. To provide maximum shielding from electromagnetic interference, the unit is housed in a separate case. The transformer has been specially designed for the HP 500 MK3. It cannot be used with any other device.

Benefits

The Power Supply contributes substantially to the improved sound quality of the HP 500 MK3. Its design is based on the realization that an effective improvement in sound quality can be achieved by completely isolating the preamplifier from the mains (simulated battery powered operation). Classic LC filters can reduce high frequency interference but cannot reduce low frequency interference or ground currents that are part and parcel of a "normal" power supply. Ground currents are interference currents in the signal cables connecting the various components in a stereo system. They have a definite negative effect on sound quality.

We developed a special isolation transformer that also demonstrates very good high frequency filtering characteristics. We have been able to eliminate these ground currents by completely isolating the components from the mains.

6. POWER SUPPLY REAR



① **On/off switch** Switch the unit off if you do not intend to use the preamplifier for some time.

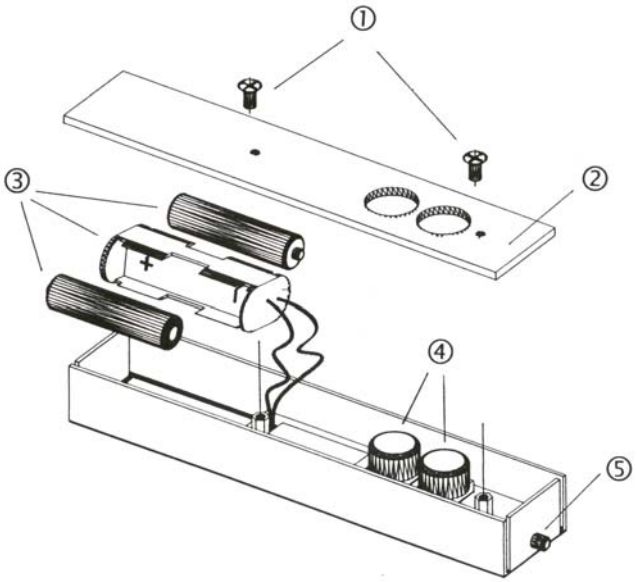
② **AC input** (three-pin receptacle):
A power cable is supplied with your preamplifier.

③ **Fuse holder** for T 0,63 AL fuse.
Changing the fuse should be left to a qualified service technician!

④ **Phase indicator light** This illuminates when the mains supply polarity is correct. To achieve the correct phase, you may have to reverse the mains plug.
If the lamp remains illuminated in both positions, this indicates a problem with the wiring in your home (faulty earth -- seek the advice of a qualified electrician).

⑤ **Preamplifier connecting cable**
Plugging in. When plugging in the connector, observe the anti-rotation lug and take care not to overtighten the coupling ring!

7. IR REMOTE CONTROL FOR VOLUME



① Front panel screws (Two M3 Philips countersunk screws)

② Keypad

③ Battery compartment for two AA 1.5 V batteries

④ Volume button + button: louder; - button: quieter

⑤ Infrared transmitter
Point the transmitter at the amplifier. The remote will operate up to a distance of about 8 metres. Please remember that infrared cannot penetrate solid objects. Make sure there is a clear line of sight between the transmitter and the receiver.

Changing the batteries

1. Undo both of the M3 countersunk screws on the remote control keypad using a no. 1 Philips screwdriver.

2. Insert a small screwdriver in the slot at the side of the remote and ease the keypad up.

3. Take the battery compartment out of the unit and replace the batteries. Observe the battery polarity markings.

4. Check the operation of the remote by pressing one of the buttons. Reassemble the unit.

8. PHONO MM/MC OPTION

The role of the phono preamplifier

A record player is an electro-mechanical device. Music signals are "pressed" into the grooves in the record, and these are physically tracked and read by the pickup cartridge. In order to get the entire 20 Hz - 20 KHz frequency range into the grooves, the frequency response has to be shaped by lowering the level of the low frequency information and raising the level of the high frequency information. This predefined equalization curve is known as RIAA equalization.

A phono amplifier must exactly equalize for RIAA recording characteristic if it is to avoid colouring the sound. Equalization accuracy must be within 0.5 dB over the entire frequency range, with channel matching of at least 0.1 dB.

The phono section of the HP 500 MK3

The phono section of the HP 500 MK3 is an enhanced version of our hybrid phono technology. The phono section now offers a greater level of compatibility with low output and low impedance moving coil cartridges. Most preamps have problems with such cartridges, since both gain and input impedance issues have to be addressed simultaneously.

We have developed an MM/MC head amp that successfully eliminates the problem areas. At the heart of the equalizer is a tube circuit containing 3 tubes. It incorporates a switchable subsonic filter, which prevents very low frequencies generated by warped records or tonearm resonances from overloading the loudspeakers. ①

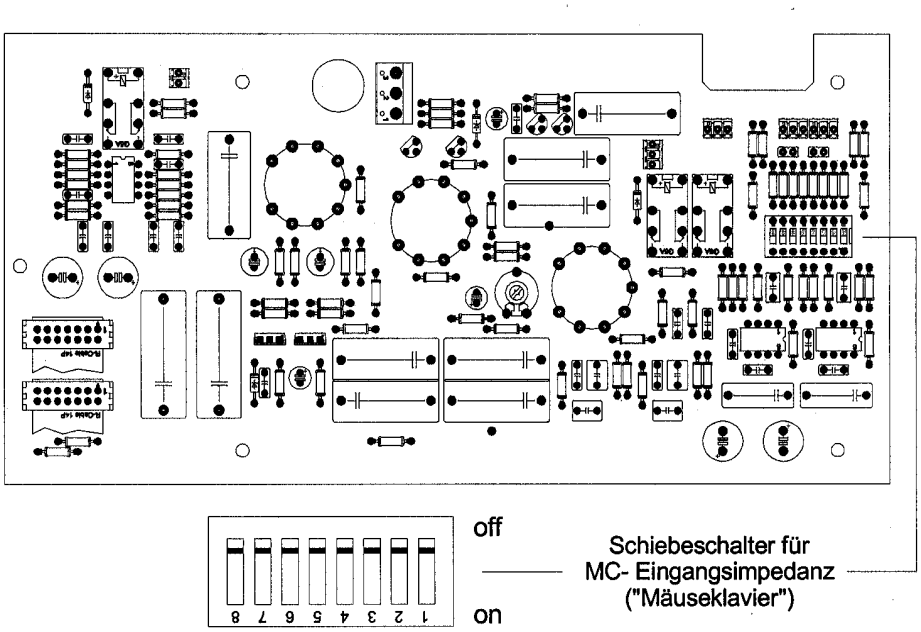
Guidelines for connecting to the phono section

1 Plug the RCA phono cable from your turntable into the appropriate (MC ③ or MM ⑤) input on your HP 500 MK3. Turn the input selector ② to Phono.

2. Connect the earth cable supplied with your turntable to the GND connection on the HP 500 MK3 ④, following the instructions provided by the turntable/arm manufacturer.
   Some tonearms do not have a separate earth cable, as the pickup system is earthed via the RCA phono plugs.
   Explanation:
   The earth is generally connected to the tonearm or the headshell. This is necessary to prevent hum or radio interference. It is usually advisable to connect the earth cable to reduce this kind of interference.

8. ADJUSTING the MC input

Before you can adjust the MC input, you need to remove the grille from your preamplifier (see **Removing the grille**).



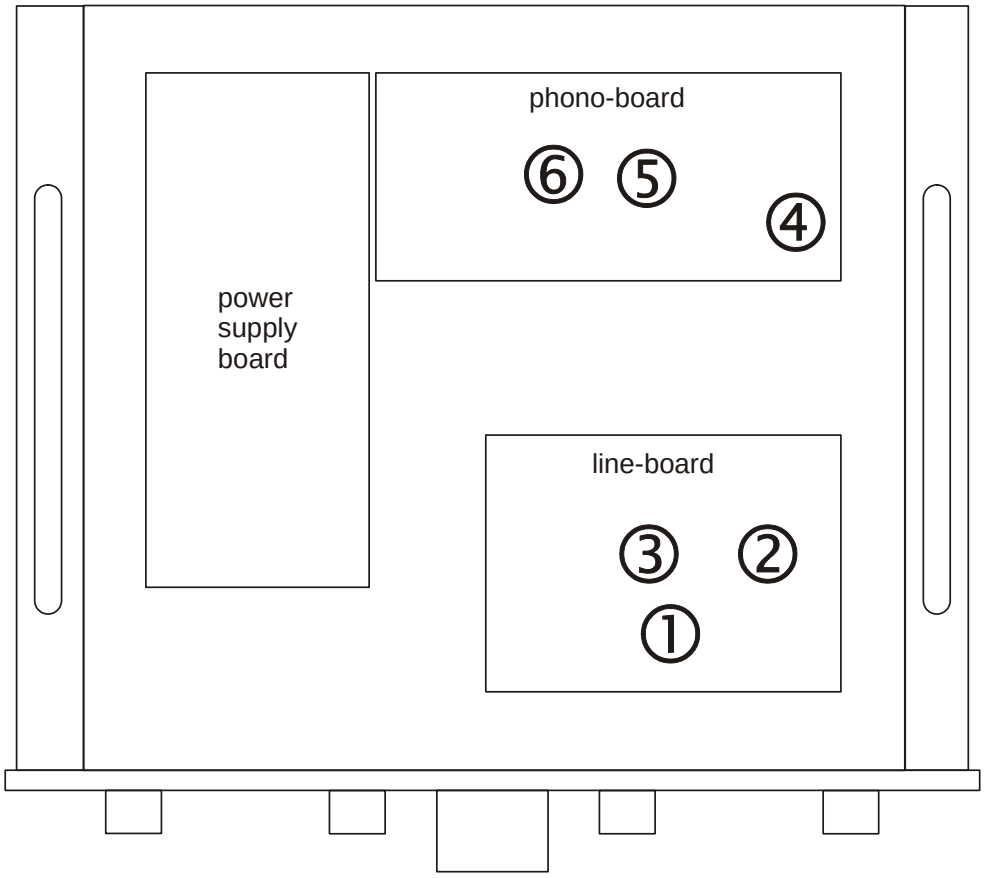
Slider switches for MC input impedance

	Left channel Switch 1 – 4			Right channel Switch 5 - 8		
Switch option	**Switch no.**	**Switch position**	**Resistance (ohms)**	**Switch no.**	**Switch position**	**Resistance (ohms)**
1	All	Off	500	All	Off	500
2	1	On	330	5	On	330
3	2	On	200	6	On	200
4	1 + 2	On	166	5 + 6	On	166
5	3	On	97	7	On	97
6	1 + 3	On	88	5 + 7	On	88
7	2 + 3	On	75	6 + 7	On	75
8	4	On	70	8	On	70
9	2 + 4	On	58	6 + 8	On	58
10	2 + 3 + 4	On	40	6 + 7 + 8	On	40
11	All	On	37	All	On	37

The input impedance setting is important in achieving a balanced sound from your pickup. You will find the recommended impedance in the specifications supplied with your pickup.
Default factory setting: 97 ohms

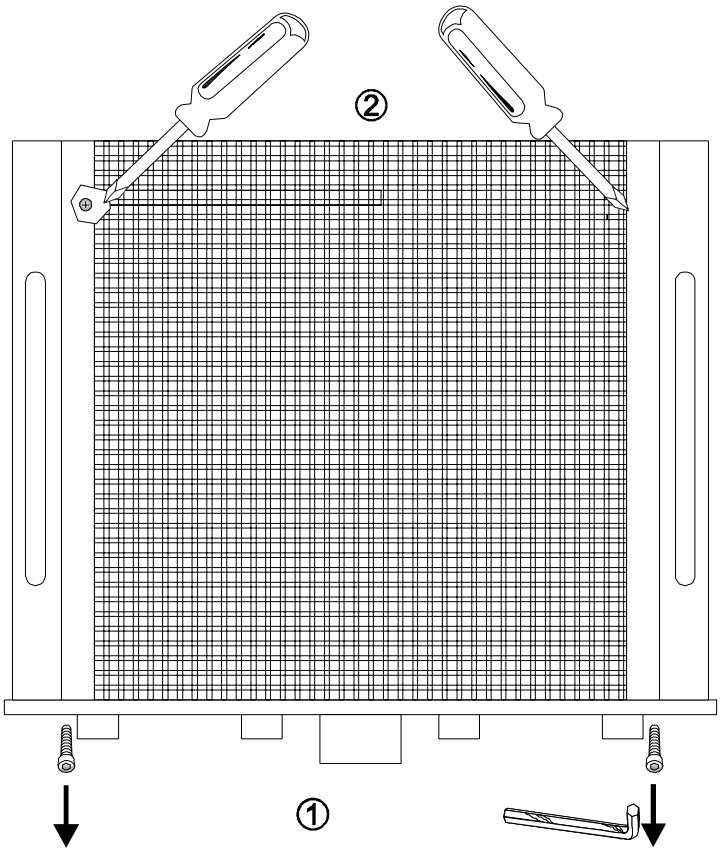
9. TUBES

9.1. Tube layout



Line board:	①	ECC 82 / 12 AU 7
	② + ③	EF 184
Phono board:	④	ECC 83 / 12 AX 7
	⑤	ECC 81 / 12 AT 7
	⑥	ECC 88 / 6922

9.2. REMOVING THE GRILLE



First, switch the unit off and remove the mains plug from its wall socket.

1. Remove the two Allen bolts located at the top left and right of the front panel using a size 4 Allen key.

2. Insert a Philips no. 1 screwdriver through the grille at the rear of the unit, and undo the two Philips screws at the left and right. These screws have retainers to prevent them being removed completely. You will need a screwdriver with a shaft that is long enough to reach through the grille.

3. Lift up the cover.

9.3. REPLACING TUBES

Please use only original OCTAVE replacement tubes. These have been selected and tested for use in our amplifiers. ***Important! Changing tubes is a job for a qualified technician!***

1. Switch off the preamplifier, unplug the power cord from the wall socket, and allow the unit 10 minutes to cool down.

2. Please refer to the drawing **Removing the cover** on page 17

3. Take out the old tubes.
Carefully remove the tubes from their sockets, taking care not to exert sideward pressure on the sockets.

4. Fit new tubes
Please ensure that the tube pins are all perfectly straight before inserting your new tubes. Straighten any bent pins very carefully by hand if necessary.

5. Cleaning tips
Cleaning agents and contact cleaners are not recommended for tube sockets. Clean dirty sockets with compressed air and carefully clean tarnished tube pins using a wire brush.

6. Please note:
No adjustments are necessary to your amplifier after fitting new tubes.
It may take new tubes some time (up to 300 hours) to achieve their optimum sound quality.
Manufacturing faults in tubes may only become evident after about 100 hours of use. You should therefore be wary of installing untested tubes. However, faulty tubes or tubes of the incorrect type will normally not damage the amplifier.

9.4. TUBE SERVICE LIFE

- Thanks to the protection circuits and soft start electronics, the tubes used in your amplifier should achieve an average service life of 10 years.

- Because the tubes have different service lives, it should never be necessary to renew the entire tube complement at the same time.

10. 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 HP 500 MK3 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 a be 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.

11. TECHNICAL DATA AND DIMENSIONS

Line stage

Gain high	17.5 dB = 7.5
Frequency response	3 Hz - 300 kHz 1.5 dB
Total harmonic distortion	0.001% at 3V / 7.5 kOhm
Signal-to-noise ratio: high gain	- 92 dB
Channel separation	65 dB 1 kHz
Crosstalk rejection between inputs	- 86 dB 10 kHz
Input impedance	100 kOhm
Output impedance	100 ohms (RCA phono) 2 x 600 ohms XLR
Channel tracking of volume control	0.5 dB - 70 dB
Pin allocation, XLR output	Pin 1: ground Pin 2: + (hot) Pin 3: - (cold)

Phono MM

Input impedance	47 kOhm II 130 pF
Sensitivity	3 mV
RIAA equalization accuracy	0.3 dB 15 Hz - 20 kHz
Gain	40 dB 1 kHz
Signal-to-noise ratio (weighted)	- 73 dB
Subsonic filter corner frequency	20 Hz / - 3 dB

Phono MC

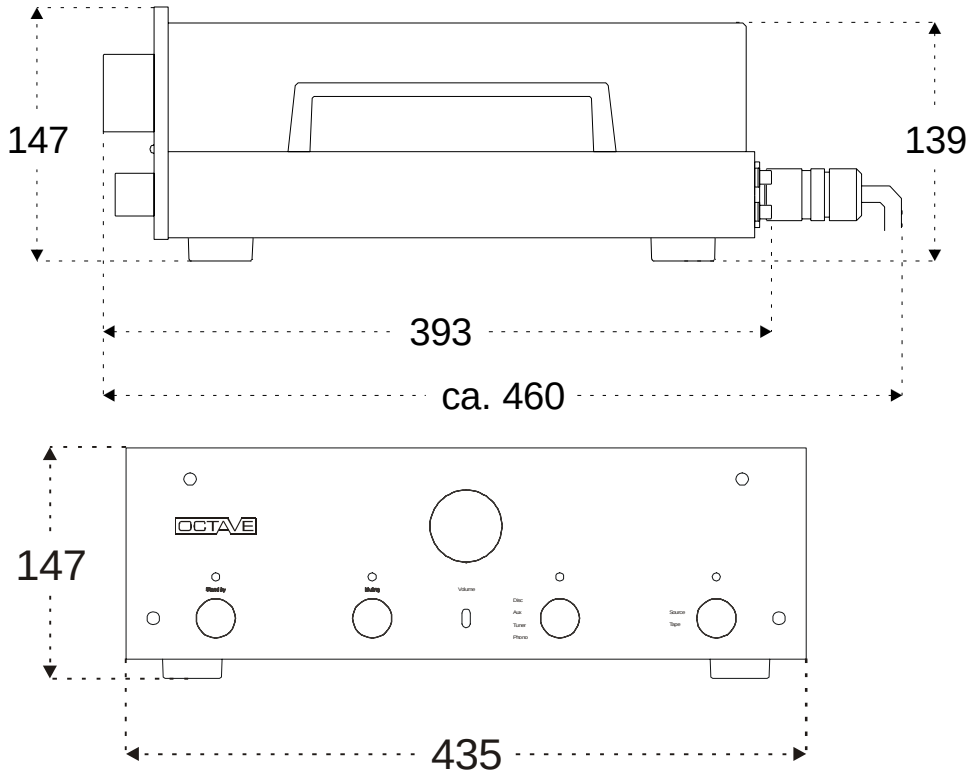
Input impedance	37-500 ohms
Sensitivity	0.1 mV
Gain	30 dB
Signal-to-noise ratio (weighted)	- 75 dB

General:

Power consumption	50 VA
Weight, preamplifier	10 kg
Weight, power supply	4 kg
Dimensions, power supply (W x H x D)	18 x 10 x 28 cm
Standard accessories	power cable, remote control

11. TECHNICAL DATA AND DIMENSIONS

Overall dimensions of the preamplifier in mm



FEATURES

- The HP 500 MK3 is fitted as standard with two RCA phono outputs and one optional XLR outputs.
- The XLR output is transformer-coupled and galvanically isolated.
- The HP 500 MK3 phono has separate inputs for MM/MC.
- An optional phono MM and MC module may be added any time.
- MC input impedance is adjustable over a wide range.
- Soft-start for heaters, operating voltage and signal output. This results in maximum service life of the tubes and noise-free switch-on/off. The output is enabled after 4 minutes.
- External power supply with multiple screened mains transformer and built-in mains filter.