
PROLUDE AMPLIFICATION

BHV450 AND BHV450L

Bass amplifier

User's manual

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Introduction

1.1 Some words to the Customer

Welcome to the club of Prolude Amplification owners! It is my pleasure to have you as a member in this small team of people who have taken notice of my handwork and intellectual product, and finally have voted for it. I hope you will feel the same as they do while your amplifier, this small part of your musical production chain, is reliably working behind you.

1.2 Some words about me

My name is Róbert Fülöp. My favourite musical instrument is the bass guitar. Its sound, shape and role within the music have all contributed to my enthusiasm. To start with, my studies and my sphere of interest have both moved me to the direction of electronics. As a result PROLUDE AMPLIFICATION was born at the beginning of the new millennium. My goal is to provide bass players with the best possible sound quality. Being an electrical engineer I'm doing it mainly with a technical mindset. However - according to the feedbacks from my satisfied customers – the musicality is also present in the final product.

The technical development has been a long process so far - end it will never come to an end. I will make further efforts to improve the product, thus satisfying the steadily changing expectations of the customer.

PROLUDE

Amplification

2 Safety instructions, warnings

2.1 Basic precautions

WARNING - When using electrical products, basic precautions should be followed, including the following:
Read all the instructions before using the product.

Do not use this product near water – for example, near a bathtub, washbowl, kitchen sink, in a wet basement or near a swimming pool.

This product may cause permanent hearing loss. Do not operate for long periods of time at a high volume level or at any level that is uncomfortable.

Make sure nothing interferes with the ventilation of the product when in use.

The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat.

The product should be connected to a power supply of the type described in the operating instructions or as marked on the product.

The power supply cord of the product should be unplugged from the outlet when left unused for a long period of time.

Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

The product should be serviced by qualified personnel when:

- The power supply cord or the plug has been damaged; or
- Objects have fallen, or liquid has been spilled into the product; or
- The product has been exposed to rain or moisture; or
- The product does not appear to operate normally or exhibits marked change in performance; or
- The product has been dropped, or the enclosure damaged.

10. Do not attempt to service the product. All servicing should be referred to qualified service personnel.

11. For continued protection against the risk of fire, replace fuses only with those of the same type and rating.

2.2 Warnings used on the equipment

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

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying this product.

2.3 Grounding instructions

This product must be grounded (earthed). If it should malfunction or break down, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a supply cord having an equipment grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with the local codes and ordinances.

DANGER - Improper connection of the equipment grounding conductor can result in a risk of electric shock. Check with a qualified electrician or serviceman if you are in doubt as to whether the product is properly grounded. Do not modify the plug provided with the product – if it will not fit the outlet, have a suitable outlet fitted.

2.4 CE mark for European harmonised standards

The CE mark which is attached to these products means it complies with the EMC Directive (89/69/EEC), CE mark directive (93/68/EEC) and Low Voltage Directive (72/23/EEC).



3 Specifications

Type	BHV450
Description	Bass amplifier
Mains voltage	230VAC 50Hz
Mains connecting device	Standard mains cord
Inrush current limiter	NTC
Power supply	BHV450: Conventional 700VA toroid transformer BHV450L: Resonant switching mode
Power consumption	700W
Output power /100Hz continuous sine/	450W @4Ohms 280W @8Ohms
Minimal load impedance	4Ohms
Bandwidth +-3dB@1W	7Hz-40kHz
Power amplifier	Class AB, transistor
Speaker output connectors	Neutrik Speakon-Jack combo NLJ2MD-H
Instrument input connectors	Neutrik 6,3mm Jack NMJ4HFD2
Input impedance	Passive: 500kohms Active: 25kohms FX Return: 15kohm
Active Equalization	Low +/-12dB@40Hz Low-Mid: +/-12dB@500Hz Mid: +/-12dB @ Mid-freq: 800-3200Hz High: +/-12dB 10kHz shelving type
Line out	250mVp@600Ohms
FX Send	350mVp@220Ohms
Phone	750mVp@50Ohms
Working temperature range	0-40°C
Storage temperature range	-25-60°C
Cooling	Fixed speed ventilator based on heatsink temperature
Weight	BHV450: 9kg BHV450L: 5,2kg
Dimensions	2U high 19" rack Width: 482mm Depth: 260mm, + 35mm handle Height: 88mm, + 4mm foot

4 Information for installing

At high power level it is necessary to consider the wiring between the amplifier and speaker cabinets.

In most cases the amplifier is placed on top of the speaker cabinet, therefore a very short speaker cable can be used for connecting the two. This is very good, because the shorter and thicker the loudspeaker cable, the better.

Do not use an instrument cable for connecting speaker cabinets!

Use high quality / Neutrik / SPEAKON-SPEAKON speaker cable with at least 2x1,5mm² or more cross section. They are reliable, robust and have less influence on the sound.

Use a speaker cable in good condition and connect the speaker cabinet to the amplifier before you switch on the amplifier.

Try to minimize the number of power strips used to connect the amplifier to the mains.

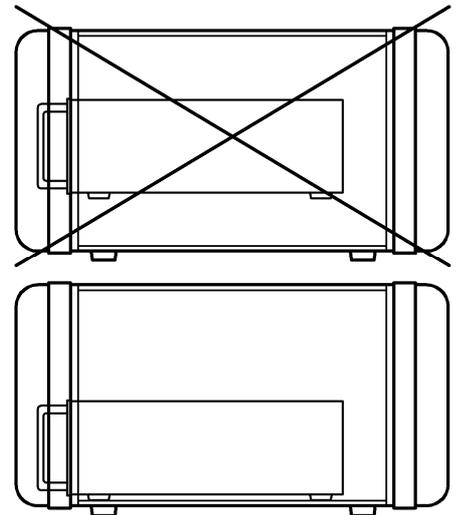
Use high quality, shielded instrument cable for connecting your instrument to the amplifier.

At high volume level the speaker cabinet might vibrate, so make sure that the placing is stable and the amplifier can not move anywhere.

When you mount the amplifier to a rack case make sure there is at least 2 cm of room near the side, because the cooling fan blows out the heat on the left side of the amp (seen from the front).

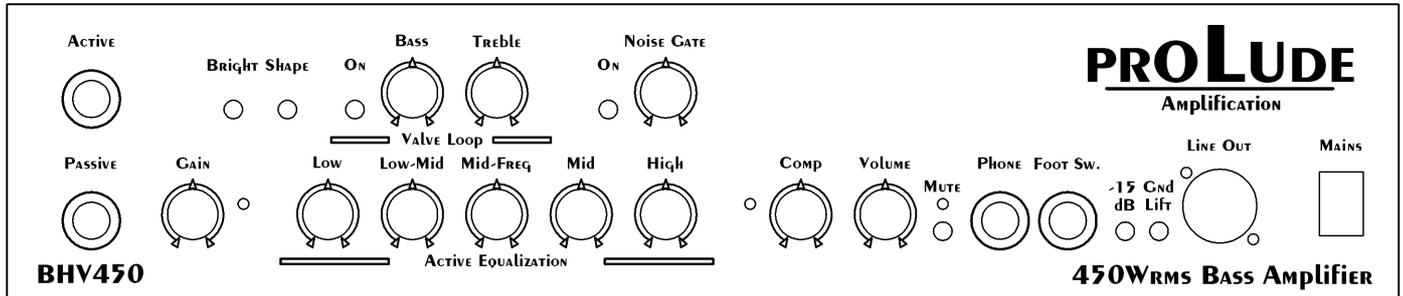
To avoid mechanical stress of the mounting rails and the amp's front panel mount the amp in such position that the feet are on the bottom of the case.

You do not have to consider this if you have a „BHV4XXL“, the light version of this amplifier.



5 Controls and functions

5.1 The front panel



5.1.1 Active

Input jack for active instruments.

5.1.2 Passive

Input jack for passive instruments

Note:

There is no significant difference between the two inputs other than the input impedance and sensitivity. The passive instruments and the preamplifierless piezo pickups „prefer” the **Passive** input, because of its higher impedance and sensitivity.

5.1.3 Gain

This controls the overall signal level of the preamplifier section. Various instruments produce different signal levels. The **Gain** control helps you to set these to the ideal signal level for the preamplifier section.

The two colour / green – red / LED – placed right from the **Gain** knob - is your feed back to set best signal level.

The **Gain** setting is OK, if the LED is blinking between green and red. It is OK to go red when you make a powerfull plucking.

Note:

The setting described above is not a rule. Adding more **Gain** will not cause any problem. In such a case you get a larger signal level with some drive, especially when the **Valve Loop** is activated. In some situations this can sound good. At this point you have to consider the power handling of your speakers, because the overdriven sound strains them more.

If you set the **Gain** too low the preamp section will not send enough signal to the power stage and the output power may be not enough and may also detain the proper functioning of the **Noise Gate** or the **Compressor**.

5.1.4 Bright

Boosts the highs adding brightness to your sound.

5.1.5 Shape

Mildly boosts the lows and highs whilst cutting the mids. You can switch on this function also with the first button of the Footswitch. In this case, however, the button on the front panel has to be in inactive position.

5.1.6 Valve Loop

A switchable section in the preamplifier with a double triode valve. It gives more warmth to your sound and contains a passive tone control circuit with **Bass** and **Treble** knobs.

This function can be activated with the **On** button or the first button of the foot switch.

5.1.7 Noise Gate

Automaticly softens down the amplifier during the pauses of your performance. Eliminates hum, buzz or single coil noise, which are audible when you stop playing. You can adjust the treshold with the potentiometer. The sounds below this treshold are recognized as noise and soften down.

Setting the treshold:

1. Set up your sound and volume on the amplifier
2. Switch on the **Noise Gate** with minimal treshold / this is the most sensitive setting
3. After some soft playing damp the strings
4. If you recognize the elimination of noise, you are finished
5. If you do not recognize it, turn up the treshold a little and go back to point three

Wrong setting:

If the threshold is set too low the **Noise Gate** will not be activated to soften the noise when you stop playing. If the threshold is set too high the softening comes too early, thus cutting the sustained sound.

Note:

The **Noise Gate** will only work properly at good **Gain** setting.

Normally if there is no noise generating effect or stomp box / like overdrive or distortion / in the signal path there is no need to turn up the treshold level, just switch on the **Noise Gate**!

5.1.8 Active Equalization

Four band active equalization system with **Low**, **Low-Mid**, semi-parametric **Mid** and **High** controls. If you leave the knobs centered, you get a linear, uncoloured sound.

You can bypass this feature with the second button of the footswitch.

5.1.9 Comp

Dynamic compressor. At the lowest position of the potentiometer this feature is inactive. By turning up it produces more gain and simultaneously brings down the threshold level, where the limitation starts. Generally, the softer playing gets more gain, than the louder. The limitation area is feed back by the blue LED placed left to the **Comp** knob.

5.1.10 Volume

Controls the overall volume of the **Speaker Outputs**. The **Line-Out**, the **Phone** and **FX-Send** are not affected by this potentiometer.

5.1.11 Mute

Mutes the **Speaker Outputs**, the **Phone** and the **Line-Out**, but the **FX Send** is not affected. If the button is pressed, the red LED is bright.

Note:

This Mute LED gives you additional information too, see section **5.1.16**.

5.1.12 Phone

Phone output drives stereo headphones / in mono mode /. Its volume can be controlled by the **Gain** potentiometer.

5.1.13 Foot Sw.

Footswitch input. You can connect a two-buttons footswitch here via a stereo jack cable.

You can activate the **Shape** or **Valve Loop** function with the first button and bypass the **Active Equalization** by the second one.

Note:

To set the function of the first button see section **5.4.8**.

5.1.14 Line Out

Balanced **Line Out** with Neutrik XLR connector. It gives a high quality line level signal to be used for PA or a recording system. The **-15dB** button reduces the signal level and the **GND Lift** button disconnects pin 1 of the XLR connector.

Note:

In most cases the **GND Lift** button has to be unpressed! When you get ground loop, hum or buzz while connecting to PA or a recording system pressing the button may help to eliminate this.

The **Phone** output provides an unbalanced, higher signal level. You can use it also for connecting to a computer's soundcard.

5.1.15 Mains

You switch on the amplifier with this switch. After switching on there is a ventilator test for about 5 seconds, after which the amplifier is in ready mode.

Important:

Please avoid switching on and off the amplifier too often, especially after playing at high volume level! After playing at high volume level give the ventilator a few minutes to cool down the amplifier before switching it off!

5.1.16 Mute LED

Multifunctional feedback LED.

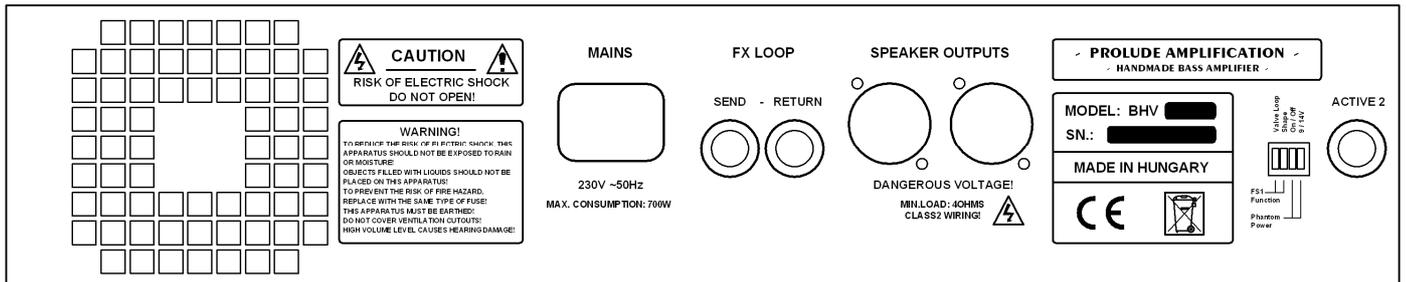
Bright when:

- the **Mute** button is pressed;

Or if unpressed:

- after switching on, during the ventilator test
- when the power stage is overheated
- when the power stage is in a fault state

5.2 The rear panel



5.2.1 Mains

The mains appliance inlet. You must use standard earthed mains cord.

Important!

This equipment should only be connected to 230VAC, 50Hz mains network!

The mains plug must be plugged into an appropriate outlet that is properly installed and grounded!

5.2.2 FX Loop

Insert your effects between these jacks. **FX Send** is output, **FX Return** is input. If you connect your tuner into this **FX Send** output, you can tune your instrument silently using the **Mute** button.

5.2.3 Active 2

Input jack for active instruments. You can connect e.g. your wireless receiver on the back of the amp. It can be very helpful when your equipment is mounted in rack case.

5.2.4 Speaker Outputs

Neutrik Speakon-Jack combo outlets. They are connected parallel inside the amplifier. Both speakon or 6,3mm jack plugs are suitable to connect speaker cabinets.

One 4ohms or one 8ohms or two 8ohms cabinets can be used. Note that the minimum load impedance should not be less than 4ohms.

Note:

The speakon connector is a more stable, robust and reliable solution. Use this - if you have one - instead of jack! Avoid long speaker cables and low quality plugs in order to maintain sound quality and volume.

The amplifier can be used without speakers as well.

Warning!

There is dangerous voltage on the speaker output! Connect the cabinets to the amplifier before switching on and do not touch the hot pole of the speaker jack!

5.2.5 Ventilation cutouts

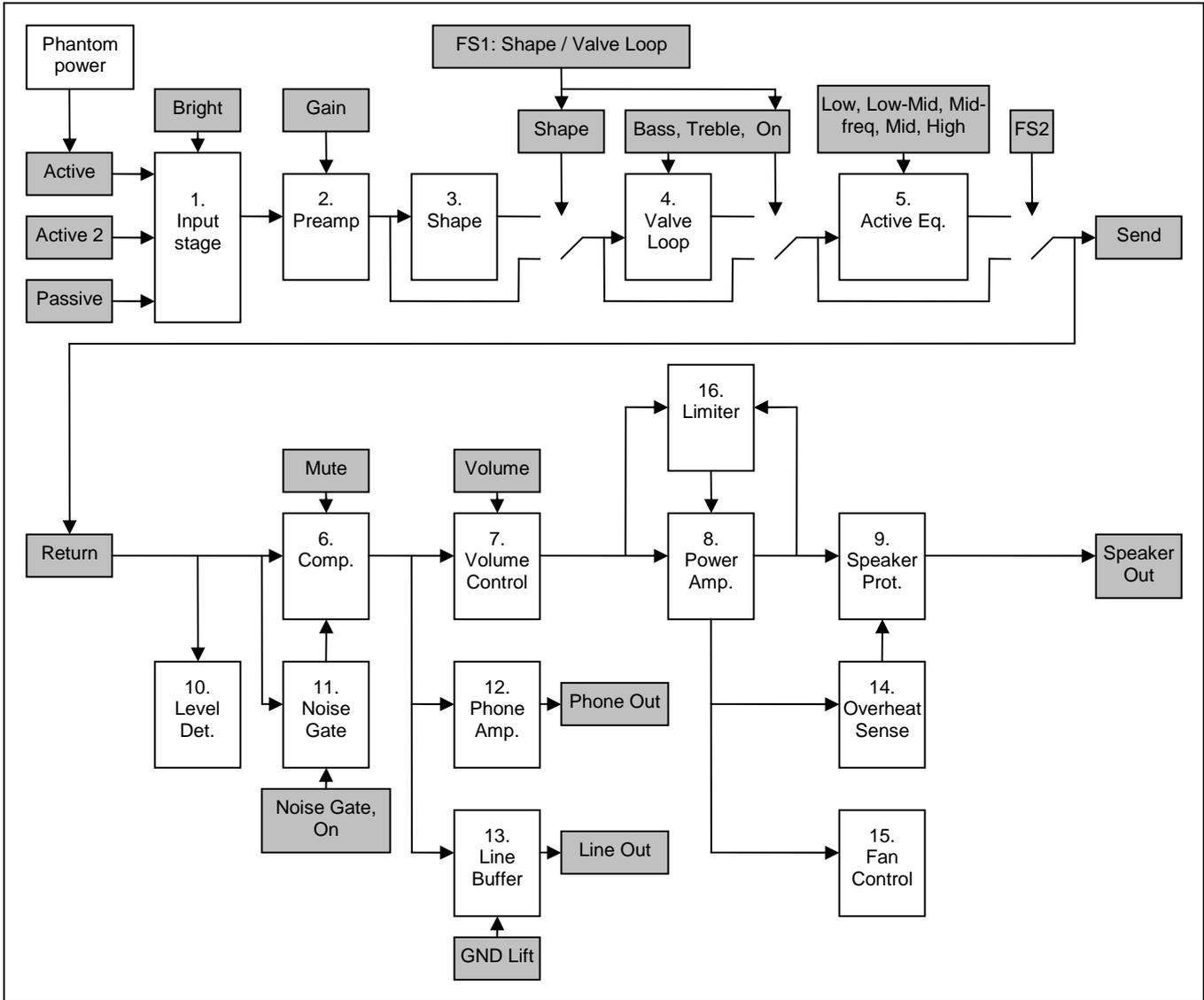
Do not cover the ventilation cutouts! Insufficient ventilating causes overheating, which can cause permanent damage to the power stage.

Note:

Overheating or fault of power stage is displayed by the Mute LED.

If this occurs, switch off the amplifier, wait for 30 minutes before then switching it on again! If the Mute LED stays lit after the ventilator test /4-5 seconds/ then the amplifier has to be brought to a qualified technician for repair.

5.3 Block diagram



5.4 Other functions, protections

5.4.1 Short circuit protection

The amplifier contains a protection circuit against wrong / shorted / speaker cable or burnt speakers.

5.4.2 Speaker protection

The speaker cabinets are protected against a possible malfunction of power stage. This circuit detaches the speaker cabinets when power stage fault occurs, protecting the cabinets from harmful direct current.

5.4.3 Click noise reduction

The connection of the speaker cabinets is internally delayed after switching on, therefore there is no click noise on the speaker cabinets when switching on or off.

5.4.4 Overheat protection

Due to insufficient ventilation, ventilator fault or too high environment temperature while playing at high volume, overheating may occur. In such a case the protection circuit detaches the speaker cabinets until the temperature of the power stage cools down. This is being displayed by the Mute LED.

5.4.5 Ventilator control

The control of the cooling ventilator is based on the temperature of the power stage's heatsink. It automatically switches itself on when the temperature reaches 60°C and switches itself off when temperature decrease below 50°C.

Do not cover the ventilation cutouts!

5.4.6 Limiter

This function protects the power section against distortion. When it detects distortion on the output, decreases the input signal of the power stage. In practise, there is no significant distortion on the power stage when you overdrive it, the system will only lose some of its dynamics.

5.4.7 Phantom power

You can activate the phantom power function in the amplifier to supply your active bass electronic connected to Active input. So you do not need a battery in your bass.

Requirements:

- stereo instrument cable
- activate the phantom power by the DIP switch located on the bottom of the amplifier. The settings are described in section **5.4.8**.
- if you use electronic without support phantom power, you have to disconnect the battery and make a short circuit on the battery clip in the bass.

Note:

The phantom power can supply 14,5V and max. 6mA. You get more headroom compared to the use of one 9V battery before. Make sure that your electronic circuit can handle more voltage than 9V. If not, you can set only 9V on the DIP switch.

Warning:

If you use this function, pay attention that you **Mute** the amplifier before plug in or out the instrument cable.

5.4.8 DIP switches

The four DIP switch section is located on rear panel of the amplifier. You can set these functions:

1. if **ON**, the **Shape** can be activated by the first button of the Foot Switch
2. if **ON**, the **Valve Loop** can be activated by the first button of the Foot Switch
3. if **ON**, the activates the phantom power
4. if **ON**, the phantom power supplies only **9V** instead of **14,5V**

Note:

If both switch 1. and 2. are **ON**, then you can switch on both the **Shape** and **Valve Loop**.

6 Maintenance, cleaning

The amplifier has no need for particular maintenance.

Occasionally check the starting of the ventilator when you switch on the amplifier!

The preamplifier valve is a long life type, probably you will never have to replace it because of aging. However, if you feel you are losing sound quality you can easily check it by switching on and off the **Valve Loop**. Replacing valves must be done by a qualified person. Only replace by using valves of the same type.

Use only soft and dry or dampened cloth for cleaning. Avoid aggressive, caustic cleaning materials.
