



Phil Jones Bass

M-500



BASS INSTRUMENT

AMPLIFIER

OWNER'S MANUAL

CONTENTS

Read First	Page 2
General Overview & Introduction	Page 3
Protection Circuits	Page 4
Front & Back Panel Overview	Page 5
Front & Back Panel Description	Page 6
Getting Started	Page 11
Power Graph	Page 15
Matching Speakers	Page 15
Amplifier and Speaker Power	Page 16
Routine Care & Maintenance	Page 17
Service Information	Page 17
Warranty Information	Page 18
Specifications	Page 20

Thank you for purchasing the M-500. A great deal of dedication and passion went into designing and building this no-compromise, high performance amplifier. It was conceived to be a dedicated amplifier for the "connoisseur" bassist. Reading this manual will enable you to get the best performance from it and it will give you many years of service.

READ THIS FIRST

- Before using the M-500 please read ALL the instructions.
- On receipt of product, check for any signs of physical damage arising from shipping. If any damage is visible contact your dealer.
- Keep all original packing.
- Never use this product in the vicinity of water. If the M-500 were to get wet, it could kill you by electrocution.
- The output power of this amplifier can generate enough sound pressure levels from your speakers to cause PERMANENT hearing damage to you and anyone else who is close to it. Take caution with how much volume is used. If you suffer from ears ringing, this is an indication that you may be damaging your hearing.
- Do not use this amplifier in a way that would compromise its ventilation system . Never block the air intake or fan output.
- Do not locate this amplifier near any heat source.
- This amplifier must be connected only to a power source specified in this manual.
- For safety do not leave the amplifier plugged into a power source for long periods of time when not in use.
- Do not let any liquid or foreign objects fall into any openings on the amplifier.
- Never use this amplifier if it has:
 1. suffered any physical damage.
 2. been subjected to any liquids, rain or moisture.
 3. damaged cables connected to it.If any of the above occurs, the amplifier should be examined by qualified service personnel.
- Always operate this amplifier with the correctly rated fuse.
- Never use this amplifier without proper grounding.

WARNING!

If you are using PJB Piranha speakers on your M-500, take great care with the volume control. Unlike conventional speakers PJB Piranhas are capable of generating great output levels (over 140 dB at close proximity, more than 100 times the threshold of pain). **Never allow your instrument to feedback at high output levels.** This can cause instant deafness and it could be permanent. Do not use PJB Piranha speakers for loud playing lead-guitar. Their much higher acoustic output can destroy your hearing, forever!

OVERVIEW

Although the M-500 looks small, make no mistake about what it is. The M-500 is a high performance dedicated bass instrument amplifier. It not only has incredible power; but the sound quality is as good as or better than many so called high-end audio amplifiers used in expensive Hi-Fi systems or studio monitor systems. It was designed from the ground up to take on the hard work any serious musician will subject it to. It is built from the finest of materials, some of which may not be obvious to the eye like the 2% silver-solder (Type Sn-62) connections that will never fail due to oxidization or old age. Just about every other bass amp uses regular 60/40 lead/tin solder. Silver solder lasts longer and can actually improve the sound due to lower contact resistance.

The chassis is made from 1/10-inch thick (2.5mm) steel improving the grounding and magnetic shielding, which reduces noise. It also makes it incredibly tough to withstand the rigors of the road.

The extensive pre-amp section was engineered for both passive and active basses. A comprehensive 2-section equalization was employed to give unlimited amount of control of bass tone. The compressor circuit was devised to be quick and simple to use yet effective on playing. Great attention was devoted to make this amplifier extremely low noise so it can be used in both recording situations and live performances where it is necessary to connect the

M-500 to other sound equipment such as a mixing console.

The M-500 has six protection circuits to prevent it from being damaged.

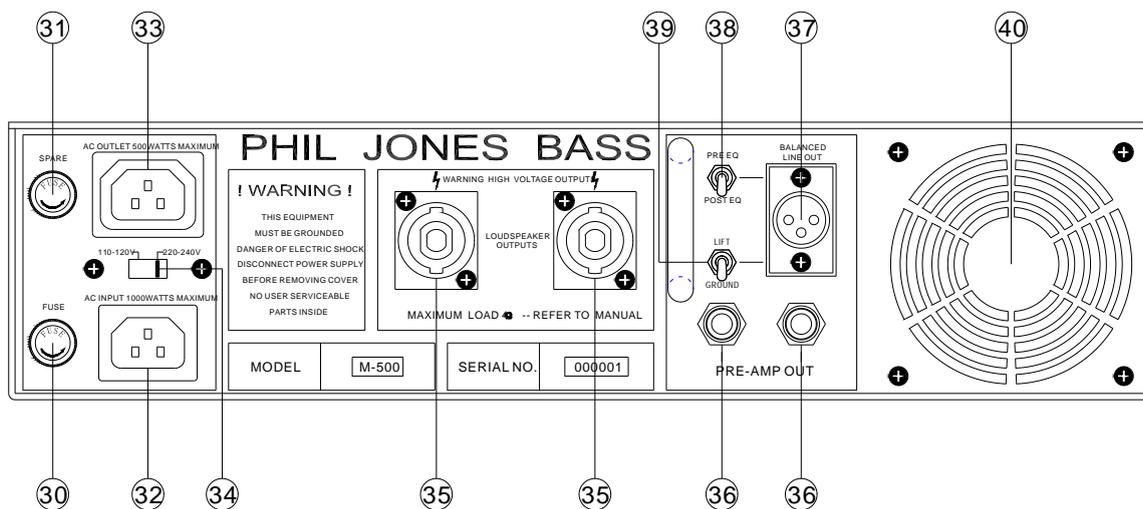
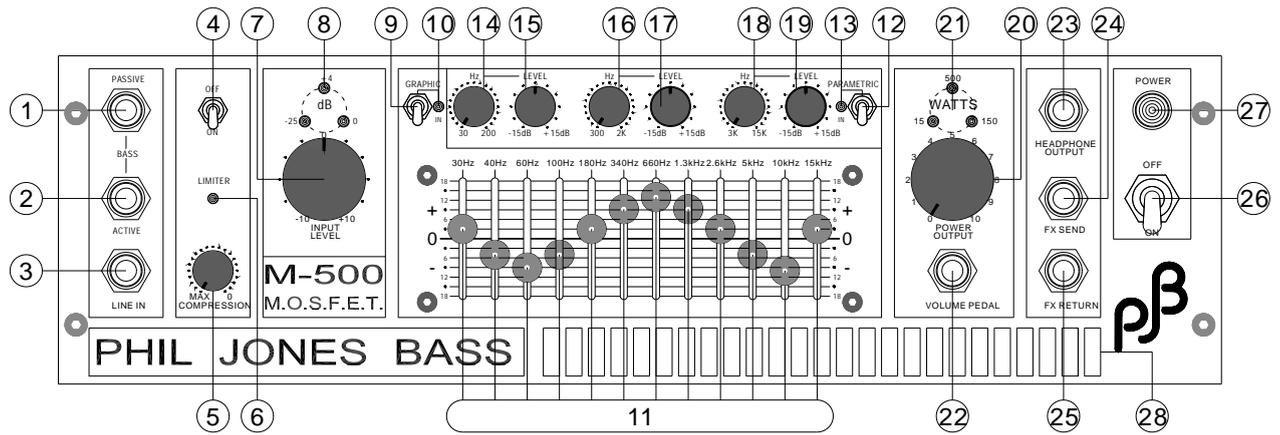
1. **Transformer Over-Heat Protection.** A heat sensing circuit breaker will disconnect the transformer from the power source, should the temperature reaches 105° C.
2. **Soft-Start Speaker Protection.** When the amplifier is switched on, the amplifier will turn on after a 2-second delay. This ensures that no transient thump is sent to the speakers at start up.
3. **Current Limiting Protection.** Should the current exceed 9 amperes in any of the output transistors, the amplifier will shut down. Switch off the amplifier and then push the reset button on the rear panel. Check your speakers are connected properly and that your cables are not faulty. If every thing is OK, switch the amplifier back on.
4. **Transistor Over-Heat Protection.** If the amplifier reaches an internal temperature of 90° C, the amplifier will turn off to protect the output transistors.
5. **Short-Circuit Protection.** If you have a faulty speaker or faulty speaker connections, the amplifier will shut down. Switch power off and press reset button on back panel.
6. **DC Output Protection.** The M-500 is a DC coupled design that offers the best performance. If a fault occurs internally in the amplifier it will shut down and protect your speakers from any lethal DC current. Be aware that DC current can destroy any loudspeaker. This circuit will also prevent any catastrophic damage to the amplifier.

If the fuse blows, there is a spare fuse located in the back panel to replace it. Please remember to keep a spare fuse always. You never know when you may need it.

Precision machined, solid aluminum control knobs and military grade toggle switches grace the front panel instead of cheap plastic ones. The M-500 is built with care and pride for truly dedicated bass players who seek the finest quality amplifiers to compliment their talents.

Although we pride ourselves on the excellence of performance and build quality we put safety first. We always use UL approved power transformers in our amplifiers and all components have voltage and current ratings well beyond their operating range.

FRONT & BACK PANEL OVERVIEW



1. PASSIVE BASS INSTRUMENT INPUT JACK.

High sensitivity input (55mV). For bass instruments featuring non-active electronics. Especially suited for older 'vintage' basses. This input jack is precisely matched to high impedance pickups enabling them to faithfully reproduce the true frequency and dynamic range of the instrument.

2. ACTIVE BASS INSTRUMENT INPUT JACK.

Lower sensitivity input (160mV) for basses with onboard electronics. Input matched for low signal to noise ratio and optimum transfer function of electrical signal from modern high-end basses.

3. LINE INPUT.

Input matched to accept high-level outputs from other bass/guitar pre-amps and signals such as CD players and drum machines. This input is a direct feed to the power amp and does not pass through limiter or EQ sections.

4. LIMITER ON/OFF SWITCH.

Sends signal through limiter or bypass.

5. COMPRESSION ADJUSTMENT LEVEL.

This will vary the level the limiter threshold. The compression ratio is 3dB to 1. Adjust this to suit your playing style and output power of instrument.

6. LIMITER INDICATOR.

This L.E.D (Light Emitting Diode) will light up when the signal is being compressed. This will vary on how hard the instrument is played and how the threshold is adjusted.

7. INPUT LEVEL SENSITIVITY CONTROL.

Just as no two basses are alike, the same goes for players with different styles and technique. This is a fine-tuning adjustment (+/- 10dB) to get the precise match between your instrument and the M-500.

8. INPUT LEVEL INDICATOR.

The LED will light up accordingly to the amount of input applied to the amplifier and therefore gives you the best signal to noise ratio and dynamic range. On normal playing the blue and green LED will show and occasionally the red LED may light up on peaks. If the red LED is continuously lighting up, reduce the level on the input sensitivity control.

9. GRAPHIC EQ ON/OFF SWITCH.

You can switch in or bypass the graphic equalizer circuit with this.

10. GRAPHIC EQ ON INDICATOR.

This will light up blue when you are going through the EQ.

11. 12-BAND GRAPHIC EQUALIZER.

This is a dedicated bass instrument equalizer designed to give you precise tone control of your instrument. It is a very powerful tone processor, which with a little understanding will give you the greatest benefit in getting the most out of your instrument and sound system.

12. PARAMETRIC EQ ON/OFF SWITCH.

You can switch in or bypass the parametric equalizer circuit with this.

13. PARAMETRIC EQ -ON INDICATOR.

This will light up blue when you are going through the parametric EQ.

14. VARIABLE FREQUENCY 30-200Hz PARAMETRIC.

Select frequency from 30 to 200Hz.

15. LEVEL CONTROL 30-200Hz PARAMETRIC.

Adjusts level +/- 15dB of selected frequency.

16. VARIABLE FREQUENCY 300Hz-2KHz PARAMETRIC.

Select frequency from 300 Hz to 2KHz.

17. LEVEL CONTROL 300Hz-2KHz PARAMETRIC.

Adjusts level +/- 15dB of selected frequency.

18. VARIABLE FREQUENCY 3KHz-15KHz PARAMETRIC.

Select frequency from 3KHz to 15KHz.

19. LEVEL CONTROL 3KHz-15KHz PARAMETRIC.

Adjusts level +/- 15dB of selected frequency

A Note on the Parametric EQ.

Some instrument amplifiers have a pre-set EQ, which may have a selected feature of bypassing it or modifying it to another factory-selected pre-set.

The PJB parametric is designed to give the player the exact amount of pre EQ required without the confines of a pre-set. It is infinitely adjustable so your tone can be exclusively yours.

The best method of setting the parametric is to have the Graphic EQ switched off. Once the ideal tone is close, fine adjustment can then be done on the graphic EQ. This combination will give an infinite number of tonal possibilities.

Again care should be used in boosting of low frequencies. The M-500 although compact is a very powerful amplifier that is capable of sending large amount of low frequency power to your speakers.

20. MASTER VOLUME CONTROL.

This is the master volume control and it controls how much power you send to your speakers. When setting up your tone or plugging in your instrument, you should keep this control at a low level to avoid damaging your hearing or your speakers.

21. OUTPUT LEVEL POWER INDICATOR.

The 3 LED lights (25W-Blue, 250W-Green, 500W-Red) will give an approximate output power to your speakers. It is calibrated to a 4Ω load. If the red light stays on continuously when you are playing, you are probably over-driving your amplifier. Back off on the master volume control if this occurs. Constantly overdriving the amplifier will cause excessive heat build up in the amplifier and it will automatically shut down to prevent further damage.

22. EXTERNAL VOLUME CONTROL SOCKET.

This is a feature whereas you can control the amplifier output by means of the external foot volume pedal.

23. HEADPHONE OUTPUT JACK.

This jack accepts ¼ inch stereo headphone jacks. When a headphone is connected to the jack, the speakers are automatically shut off. The M-500 features a high-performance headphone amplifier. This output is optimized for standard headphone impedance of 30-40Ω but will work on practically any type of headphones.

24. FX SEND OUTPUT JACK.

This jack sends the signal to an effects processing unit. It can also be used to send the signal to a tuner.

25. FX RETURN INPUT JACK.

This jack accepts the signal from an effects processing unit. Plugging this jack in only will disrupt the signal path in the M-500.

26. POWER ON/OFF SWITCH.

This switches the main power on and off in the amplifier. When the M-500 is switched on, there will be a slight delay while the protection circuits give the amplifier a "soft" start so there is no thumping sound to the loudspeakers.

27. POWER ON/OFF LAMP.

This high power LED will illuminate blue when the power is switched on.

28. AIR INTAKE -FORCED AIR COOLING SYSTEM.

The M-500 is capable of providing more than 700 watts without distortion. This is only possible by using a 'forced air' cooling system. Never block these vents, as this will greatly impair the performance and reliability of this amplifier.

30. AC POWER INPUT FUSE.

Uses slow blow 1 ¼ inch fuse. (10A for 110-115volt and 6A for 220-240volt)

31. SPARE FUSE HOLDER.

This is not connected to the circuit. It simply is a spare fuse should you ever need one. If you replace the main fuse, be sure to put a backup in its place. Always use the correct current rating fuse: 10A for 110-115volt AC input and 6A for 220-240volt AC input. Always keep a backup fuse available. You never know when you may need it.

32. IEC POWER INPUT SOCKET.

Connects the amplifier to AC power supply. Always use a grounded plug and make sure the AC cable is more than 10A rating at 250volt AC. We recommend that you always use the PJB high-current AC cable included with this amplifier as it was designed to withstand high current demand that the M-500 needs.

33. IEC POWER OUTPUT SOCKET.

This is a non-switched socket to provide power for effects units or other ancillary equipment. Maximum power rating is 1000 watts.

34. AC INPUT -VOLTAGE SELECTOR.

Switches the amplifier to run on either 110-115volt or 220-240volt AC power. **Never try to run the amplifier on a 220-240volt supply when switched to 110-115volt. This can possibly cause major damage to the amplifier.**

35. LOUDSPEAKER OUTPUTS (NEUTRIK SPEAKON CONNECTORS).

The M-500 amplifier will work on any load from 16Ω down to 2Ω, which is the safe maximum load for this amplifier. The 'Speakon' sockets are in parallel so connecting two 8Ω speakers will result in a 4Ω total load. We recommend that you use PJB high current speaker cables; which are dedicated high-current, low-resistance cables. Using inferior cables will greatly impair the performance of your system.

36. PRE AMPLIFIER OUTPUT JACKS.

These are used for driving a second amplifier such as another M-500 or the PJB S-1000 slave amplifier and even a Tuner. You can run a shielded cable from this socket to the line input of another M-500 (with both graphic EQ and parametric EQ bypassed) to give double the amplifier power. The master volume controls the level out of these jack sockets. Its own "buffer" amplifier circuit isolates each output-jack. The benefit is that each output is independent from each other. Even a faulty cable connected to one will not affect the other. (Most brands use paralleled outputs to save costs.)

37. XLR- DIRECT OUTPUT SOCKET.

This is an ultra-low impedance (200Ω) balanced line out for use with recording or PA mixing consoles. This output is not controlled by the master volume output control. Changing the input level control will however, vary the DI output.

38. XLR- DIRECT OUTPUT PRE/POST EQ SWITCH.

This switch allows you to use the M-500 EQ or bypass EQ to suit requirements of recording or sound reinforcement systems.



Phil Jones Bass™

39. XLR- DIRECT OUTPUT GROUND LIFT SWITCH.

If you are in a location with grounding problems, using this switch may eliminate noise when connected to a sound reinforcement or recording console through the DI output socket.

40. AMPLIFIER COOLING FAN OUTPUT.

The M-500 has a dual speed fan that will change speed automatically in order to maintain a safe and reliable working temperature. It is designed to be virtually inaudible during operation. **Never block the airflow output of this fan.**

GETTING STARTED

Before switching on power

Check that the voltage selector is set to the correct voltage in your country. (110-120volt USA / Japan or 220-240volt Europe / Australia.)

Connect the speaker or speakers to the M-500 using the Speakon connectors. Speakon connectors are far superior in delivering amplifier power to the speakers than standard ¼ inch jacks because they can handle much higher electrical current. For best results with this amplifier you should use PJB Piranha loudspeaker cabinets and PJB cables.

The M-500 is capable of delivering more than 700 watts power output (RMS). If you are using low power speakers, take great caution on using the volume control. The M-500 may damage your speakers if they are not PJB speakers.

ALWAYS USE A HIGH QUALITY GROUNDED AC POWER CABLE. NEVER USE THIS AMPLIFIER WITH THE GROUND CONNECTION REMOVED. We recommend you use PJB cables.

Matching the M-500 to PJB Piranha Loudspeakers

The M-500 will work on loudspeakers from 16Ω to 3Ω with ease. It can also work down to a minimum load of 2Ω with its total output power of 700 watts. It is not recommended to run on 2Ω loads at full power, during the hotter summer months. The amplifier needs a constant flow of cool air to maintain an optimal working temperature. If it does not get the proper cooling it needs, it is possible for the amplifier's thermal protection circuits to operate and turn off the amplifier. The protection circuits work on temperature and current workings in the amplifier's output transistors and power supply. AC power can vary from region to region and time of day due to electricity demand. Also because the amplifier uses force air-cooling, the operating temperature of the amplifier will vary somewhat due to the room temperature you are playing in. These factors alone could determine the amplifier to switch off.

Before turning on make sure your loudspeaker is connected to the M-500. The M-500 speaker outputs are pro-audio industry standard Neutrik Speakon connectors because they can work at higher power levels than the usual ¼ inch jacks. It is strongly recommended that you use PJB speaker cables. They are high current, low resistance dedicated speaker cables for bass instrument amplification. There is also available a PJB Speakon to ¼ inch jack cable for those who are not using PJB speakers.

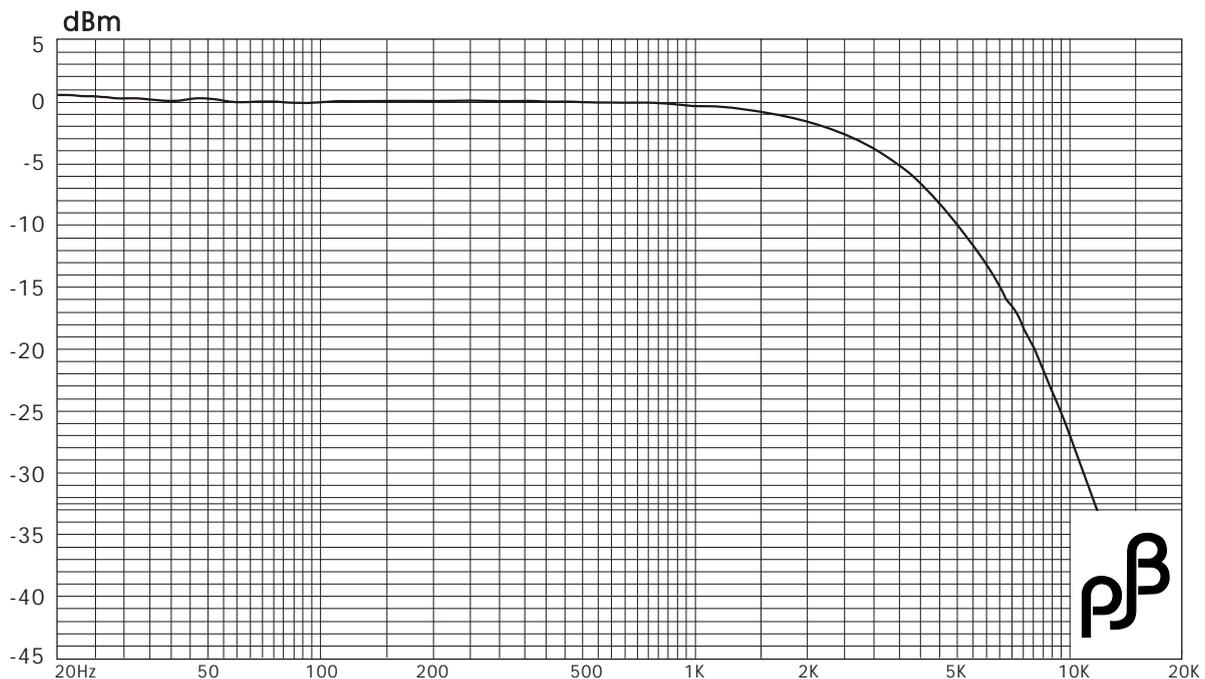
Keep volume down before plugging in your instrument. Use the passive jack for basses without onboard electronics only. Set the input level to match your instrument. When the red light blinks momentarily you are just below clipping (distortion) so back off a little on this control. Keep this control set and then bring up the master volume (#20) to about 1/3 up. The EQ circuits should be first switched off in bypass mode. What you are hearing now is the exact sound of your bass.

Setting Up Pre EQ (Parametric).

Turn on the parametric EQ switch (12). The blue light next to it will light up. Have the 3 level controls (15-17-19) adjusted so they are all centered. Switching the EQ in and out now will have no effect. Start with adjusting the level control (17) and frequency control (16). Normally you will want to cut the level back and then adjust the frequency control to suit your taste.

To set up the bass boost move the frequency control (14) to about the nine o'clock position. Then increase or decrease on the level control (15) to adjust how much bass you need. You can then adjust the frequency control (14) to tune the kind of bass tone you prefer. The frequency control extends down to frequencies lower than a low B and can even boost basses with a low F# string. Take great care in not boosting low frequencies excessively if you have a small speaker system.

The same goes for adjusting how much treble you like by using controls (16 & 17). The frequency control (16) has a very wide frequency coverage (to cover all kinds of basses including ones with 'peizo' and 'lightwave' pickups) and you will find that on some basses with magnetic pickups, the upper end of this range is beyond the output of your instrument. Many magnetic bass pickups have a frequency roll off above 4KHz! So boosting at extreme high frequencies may cause more noise than signal.



Example of Frequency response from Pickup output of 1970 Fender Precision Bass.

The Graphic EQ.

This is a 12 band EQ that covers the full spectrum of a bass and beyond. This is used to fine-tune your bass tone to perfection. Often playing in different venues will cause your bass to sound different. This is partially due to the acoustics of the hall influencing the low frequency waves that are coming from your speaker. Bass waves are large and room dimensions heavily influence them when the walls reflect the sound waves, causing them to collide by adding

together or canceling each other out. This causes some fundamental notes (the ones you feel more than hear) to ring out louder than others and some note not to be heard at all.

Here is an indication of where fundamental bass frequencies are, showing open string's approximate frequencies and acoustic wavelength.

F# string	24Hz	46 feet
B string	31Hz	36 feet
E string	41Hz	27 feet
A string	55Hz	20 feet
D string	73Hz	15 feet
G string	98Hz	11 feet
C string	130Hz	9 feet

This may give you some indication of the offending notes (frequencies) that may be booming or resonating louder or quieter than others. For example if your speakers are 5 feet from a wall, the open A string may sound lack of weight. That could be because the path length of the reflected sound off the wall from your speaker is exactly corresponding to half a wavelength on the open A string causing at that particular note a cancellation.

Note that the position of where you place your speakers will ultimately affect your tone. Placing a speaker with the back close to a wall will help to reinforce the lower notes. Placing the speaker in a room corner will further enhance the low notes.

Unfortunately for bass players, low frequencies are always very difficult to control with room acoustics. The reproduced wavelengths of the notes you are playing often correspond to the room dimensions, in which case the reflected sound off the walls interferes with the sound from the speaker. So the graphic EQ is by far your best weapon of choice in killing standing waves that develop in the room. From about 250Hz upwards, the graphic EQ is just controlling your overtones on the strings bearing in mind that even the 60Hz control will alter the second harmonic on an open B string.

The amount of control per frequency band is up to 36dB (+/- 18dB). You should try to avoid using excessive boosting of EQ on the lower frequency ranges (30,40,60 and 100Hz bands) as this will reduce amplifier headroom and possibly damage your speakers, since the amplifier may force them to move beyond their physical capability. If you hear large amounts of distortion coming from your speakers when you boost the lower bands, you should immediately back off on the EQ. If you cannot get enough low-end weight for your taste, maybe you need more speakers.

If you are playing a 4 string bass, the lowest fundamental note is 41.2Hz on the open E string. It is therefore not necessary to boost the first 30Hz band on the EQ because it is set lower than the lowest note you play and it is out of range on your instrument. In fact reducing this band will considerably tighten up you bottom end and make your bass sound more punchy.

If you are playing 5 or more strings on your bass beware that the lowest notes can cause great stress on your speakers if you do not have enough of them. Low frequencies only propagate well from large surface areas, which is why upright acoustic basses are a lot bigger than

violins. The same goes for speakers: more cone area means better coupling of low frequencies. So if you really want ground shaking lows from your B / E or even F# strings, consider using a lot more speakers.

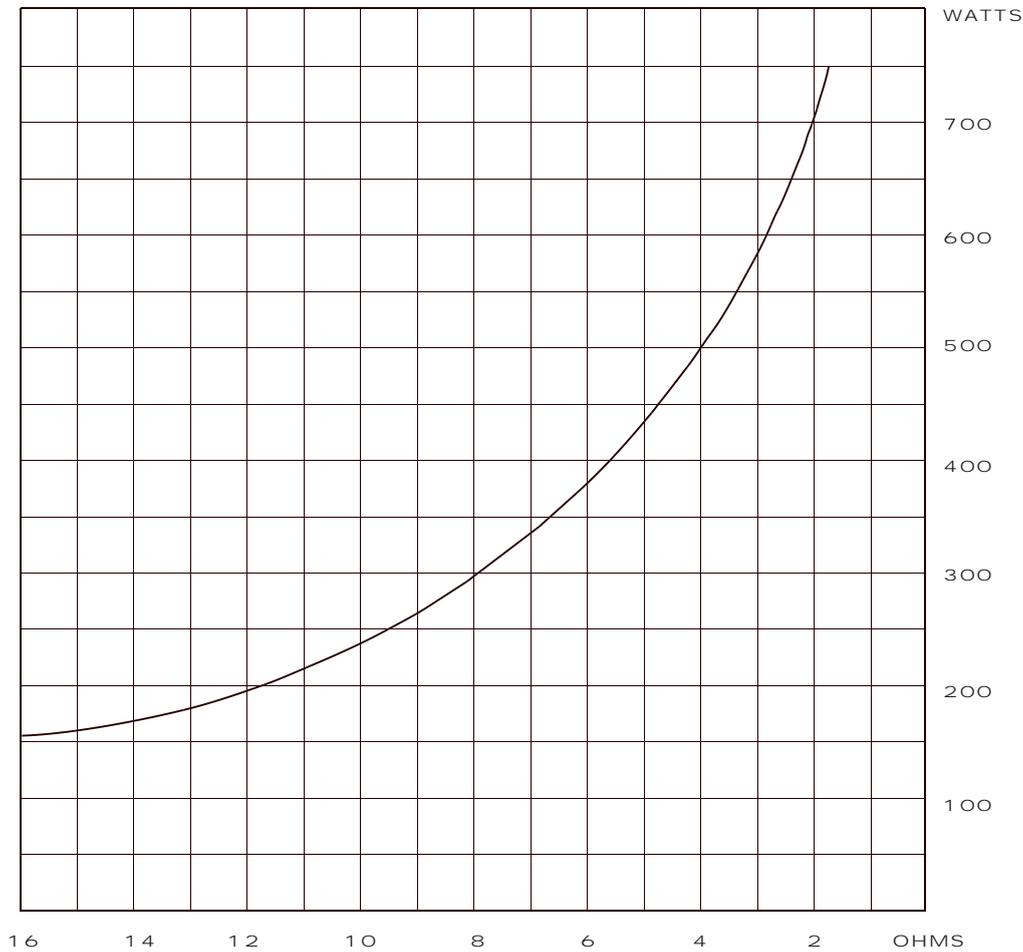
Setting up the Limiter

Although a limiter is not essential to bass amplification, it can be a useful tool in smoothing out the character of your instrument or playing style. The M-500 limiter has a preset compression ratio of 3 to 1. For each additional increase of 3dB above the set threshold, the increase in level is actually 1dB. So dynamic range of your instrument is reduced.

First set up the limiter by having the compression control (5) set fully clockwise. Now switch on the limiter (4). Start playing and turn control (14) anti-clockwise. You will see the red light start to come on and that is the indication that the limiter is now working. Set this control to suit your taste.

The M-500 has an extremely powerful EQ system. Take great care when turning up the master volume control (20). On the front panel there is a power level indicator (21). The red light shows the maximum safe power of 500 watts delivered into about 3Ω. Below is a chart of recommended speakers that are suited to the M-500. The red light will come on at these power levels indicated. This is not actually the full power that is available but the true power that is being delivered to the speakers. It is possible that the red light will flash on and off when you are playing, because this light sees the instantaneous peak power faster than what you can hear. Above this level the amplifier will increase its harmonic distortion. That still may be well below the distortion of your speakers. It is typical that many bass speakers can produce more than 10% distortion, which can still be heard as acceptable sound.

Graph showing M-500's Approximate Power into Various Impedance Loads.



<u>SPEAKERS</u>	<u>IMPEDANCE</u>	<u>APPROXIMATE POWER DELIVERED</u>
6T	12Ω	190 WATTS
9B	8Ω	280 WATTS
8T	16 Ω	160 WATTS
16B	8 Ω	280 WATTS
16H	8 Ω	280 WATTS
24B	5.3 Ω	400 WATTS
6T & 9B	4.8Ω	430 WATTS
6T & 12B	4Ω	480 WATTS
2 X 9B	4Ω	480 WATTS
8T & 16B	5.3Ω	400 WATTS
8T & 24B	4Ω	480 WATTS
2 X 16B	4Ω	480 WATTS
2 X 16B + 8T	3.2Ω	550 WATTS
2X24B	2.7 Ω	600 WATTS
2 X 24B + 2 X 8T	2Ω	720 WATTS

The above chart quotes the minimum power available from the M-500. In reality amplifier power can vary somewhat due to variations of the AC voltage supply. (Variations can occur due to supply and demand of the region. For example, on a hot day it is possible that voltages drop dramatically due to mass usage of air conditioners in the region.) Also no such speaker has true constant impedance. The impedance of a speaker will vary with frequency. PJB speakers are rated at their minimum impedance load. Power measurements on PJB amplifiers are done with constant 'sine wave' signal at full power across a static load resistor. This is the harshest environment for the amplifier and in real circumstances it would not be subjected to such a hard workout.

Although the M-500 can work on speaker loads down to 2Ω, it is not advisable to do so on a continual basis at high power levels, since there is more heat generated. If the weather is hot, there may not be enough cooling from the internal fan so the amplifier could momentarily cut out as the amp's heat protection circuits kick in.

A Note on Amplifier Power and Speaker Power Handling

Very often loudspeakers and amplifier power ratings are totally misunderstood by the non-technical user for good reason. This is a complex and involving topic that will only be touched upon in this manual.

First the ear is not capable of telling how much power is going to a loudspeaker. Secondly loudspeakers have different power ratings at each and every frequency. The amplifier will produce different power levels if the frequency changes, even if the volume is the same. Finally, we hear sound based on a logarithmic scale. So in order to perceive a note twice as loud, in theory we need 10 times the power to produce the perceived doubling of volume. In reality another parameter comes into this already complex equation. It's called "Power Compression" which are losses in the loudspeaker units due to heating up and reducing efficiency of converting the amplifier's electrical power to acoustic energy.

Loudspeakers are complex devices and very inefficient converters of electrical energy especially when it comes to reproducing bass frequencies. More than 90% of amp power goes to heating up the speakers and that is why the "Power Compression" factor is a major one. Two limiting factors determine the power handling of a bass speaker. One is the ability to withstand the heat buildup before the unit goes up on smoke. The other is the excursion capability of the cone. The cone will move in and out further not only with volume increase but also as you play lower notes. An open B or E string will cause the cone to move more than an open G-string at the same volume level. Also boosting the bass EQ will cause greater excursion on the speaker cones.

PJB bass instrument speakers were developed with a focus to overcome the problem of power compression, and this is one of the reasons they outperform competitive products both in sound quality and power handling. The M-500 is rated conservatively with ratings of distortion that are lower than the loudspeakers themselves. Many other amplifiers may have power ratings that are similar but in fact may well have higher distortion ratings. If the M-500 were to be rated this way, it will yield far greater power levels than specified. So if the

M-500 is to be used on speakers other than the PJB Piranha, take great caution since these speakers may not live up to the true power levels the M-500 can provide.

A Note On Amplifier Power Ratings

For each watt a transistor amplifier delivers to a speaker it will approximately develop one watt in heat dissipation. So at high power levels an amp can generate a lot of heat.

Not all amplifiers rated at the same power have the same actual power. If a manufacturer rates an amp with a maximum power of 200 watts, what exactly does that mean? It could run for 30 minutes before it goes up in smoke, or it could run all day long effortlessly. It depends on the quality, size and design of the amplifier and its components. The size of the amplifiers internal power supply, the type of transistors and numbers that are used in the output stage will have a major effect on manufacturing cost.

A cheap amplifier may be designed to last a few years before it dies. In essence you get what you pay for. Your M-500 is built to last for a very long time running day after day at continuous high power levels. From AC input to speaker output the M-500 has more than adequate components to deliver pure power to your speakers.

Taking care of your M-500

The M-500 will give years of reliable service if it is cared for.

Use the included cover or road case when transporting or storing the amplifier. The M-500 was built to be as rugged as possible. However you should handle it with care. Keep it away from moisture, heat and dust. Clean with a soft damp cloth such as a moist towel. Do not use chemicals or solvents to clean it.

From time to time the unit may need to be cleaned internally since airflow is constantly running through the amplifier. Dust can build up inside over long periods of time. Your service agent should check the amplifier every 2-5 years for dust build up and cleaned carefully with compressed air. (We recommend this procedure performed by qualified professional service personnel only.)

Many perishable PJB parts are available as replacements, such as handles, feet casters, grills, etc. These are available from your authorized PJB dealer or direct from PJB.

Service at a PJB Service Center

Your amplifier has very sophisticated circuitry, which should only be serviced by a fully trained technician. This is one reason each unit has the printed warning label on the back.

PJB customers may obtain service from an authorized PJB Sales & Service Center. It is important that you have your copy of sale as your proof of purchase. Simply present you bill of sale along with the defective unit to an authorized PJB Service Center to obtain service. They will handle the necessary paperwork and repair. Remember to transport your amplifier in the original PJB packaging.

Should the M-500 ever need to be serviced, service technicians will appreciate its modular construction using multi-pin plugs and Integrated Circuit sockets. So any repairs can be done quickly with ease and speed keeping repair labor costs low.

PJB is dedicated to ongoing research on bass amplification. As a result specifications are likely to change without notice owing to our relentless pursuit of perfection.

All PJB owners manuals can be downloaded from our website in PDF files.

Warranty Information

The M-500 has a warranty period of 2 years, starting from the date of purchase. The buyer must complete and return the enclosed warranty card within 14 days of purchase.

This warranty covers defect in materials or workmanship that occurs in normal use. Within warranty period PJB will repair or replace the defect unit free of labor and parts charge. It is the buyer's responsibility to use the amplifier strictly according to instructions written in this manual.

This warranty is not transferable; it is provided to original owner only.

Damage/defects caused by the following conditions are not covered by this warranty:

- Improper handling, neglect or failure to operate the unit in compliance with the instructions given in user manual;
- Connection or operation of the amplifier in any way that does not comply with the technical or safety regulations applicable in the country where the product is used;
- Repairs or modifications by anyone other than authorized PJB service agent;
- Damages/defects caused by force majeure or any other condition that is beyond the control of PJB.
- If the unit's serial number is defaced or removed.

Should you need any warranty service on the M-500, please bring it back to the dealer from whom you purchased the amplifier, along with your sales receipt. Depending on the complexity of the repair work, your dealer may return the defect unit to PJB service center for repair or replacement.

Phil Jones Bass Inc.
8559 Page Ave
St. Louis, MO 63114
USA
Phone: 314 814 3383
Fax: 314 628 9941

www.philjonesbass.com

support@philjonesbass.com

Serial Number: _____

Date Purchased: _____

Dealer: _____

SPECIFICATIONS

Frequency Response

Passive and Active input: 20Hz -20KHz +/- 1dB.

Low Cut Filter: 24dB/Octave at 20Hz.

High Cut Filter: 12dB/Octave at 20KHz.

Line Input: 10Hz-40KHz +/- 2dB.

Maximum Output Power (5% THD)

LOAD Ω	OUTPUT (Watts RMS)
16	160
12	190
8	280
6	370
4	480
3	575
2	720

Signal to Noise Ratio

Better than 80 dB (EQ off, Input-Gain on Full. Volume on Full.)

Impedance

Passive Input: >2M/22pF

Active Input: >100K/22pF

Line Input: >75K

FX Return: >75K

FX Send: < 4.7K

Pre Amp Out: < 2KΩ

Bal. Line Out: <200Ω

Levels

Passive Input: 10mV-2.5V

Active Input: 20mV-5V

Line Input: 0.5-2V

FX Return: Typical 100mV

FX Send: Typical 100mV

Pre Amp Out: 1.2V

Bal. Line Out: Typical 100mV

LED Input Meter

Passive Input: Blue 10mV Green 150mV Red 245mV.

Active Input: Blue 20mV Green 300mV Red 490mV.

Compressor / Limiter

Gain: 0dB

Compression Ratio: - 3dB: 1dB

EQ Section

1. Graphic EQ:
30, 40, 60, 100, 180, 340, 660, 1.3K, 2.6K, 5K, 10K, 15KHz at +/- 18dB Q Factor 0.7
2. Parametric EQ:
30-200Hz, 300-2KHz, 3KHz-15KHz at +/-15dB Q Factor Nominal 0.7

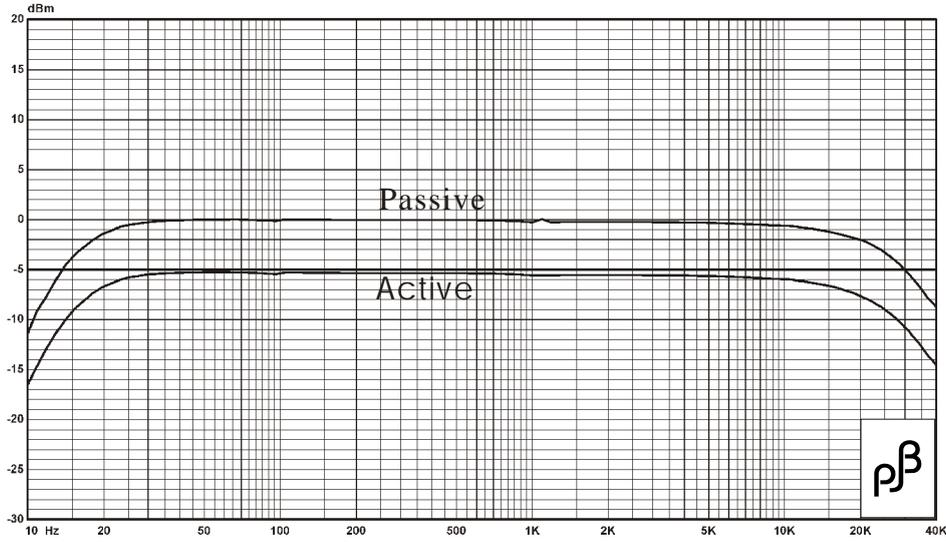
FAN

2 speeds. Slow: 12V continuous. Fast: 24V on at 60° C Heat sink Temp.

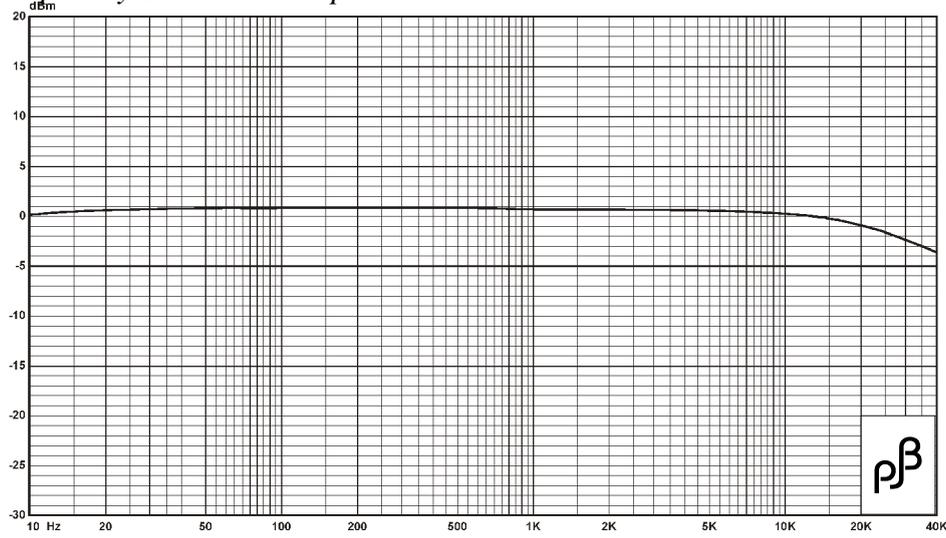
Protection Circuits

1. AC line filter.
2. Slow-blow Fuse: 10 amp (AC 110volt) / 6 amp (AC 220volt)
3. AC Transformer: auto cut off at 105°C, Auto reset at 60° C.
4. Transistor Current Drain: auto cut off at 9 amps. (Manual reset on back panel.)
5. Transistor Thermal Protection: auto cut off at 90° C.
6. Loudspeaker Short-Circuit Protection.
7. DC Output Protection.
8. Turn on protection: 2-second delay.

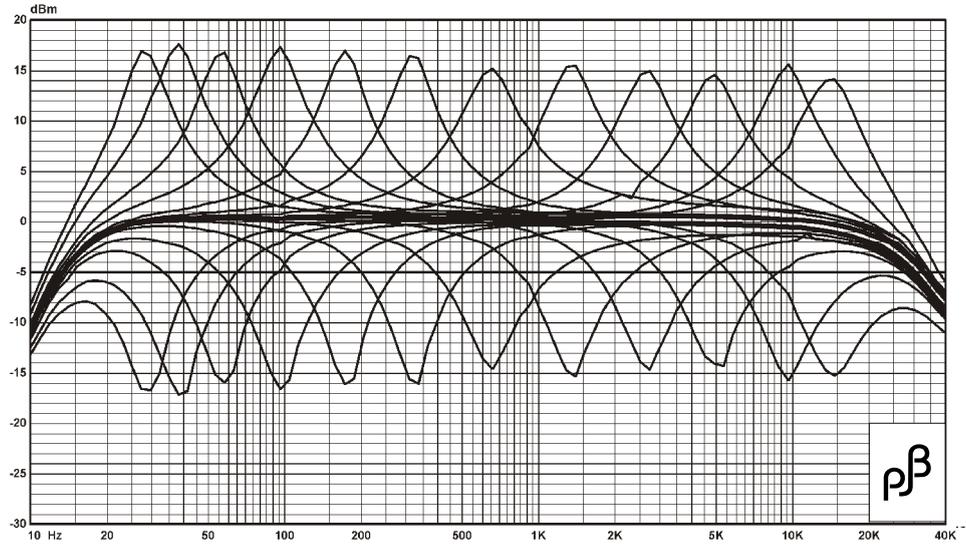
Frequency Curve Inputs: Passive (upper trace) & Active (lower trace)



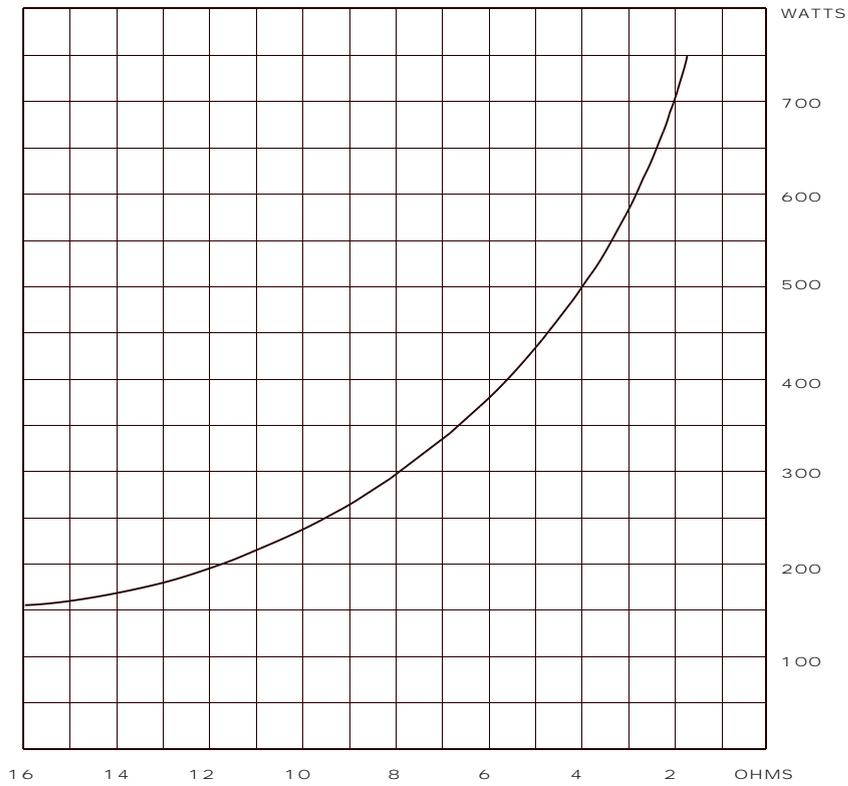
Frequency Curve Line Input.



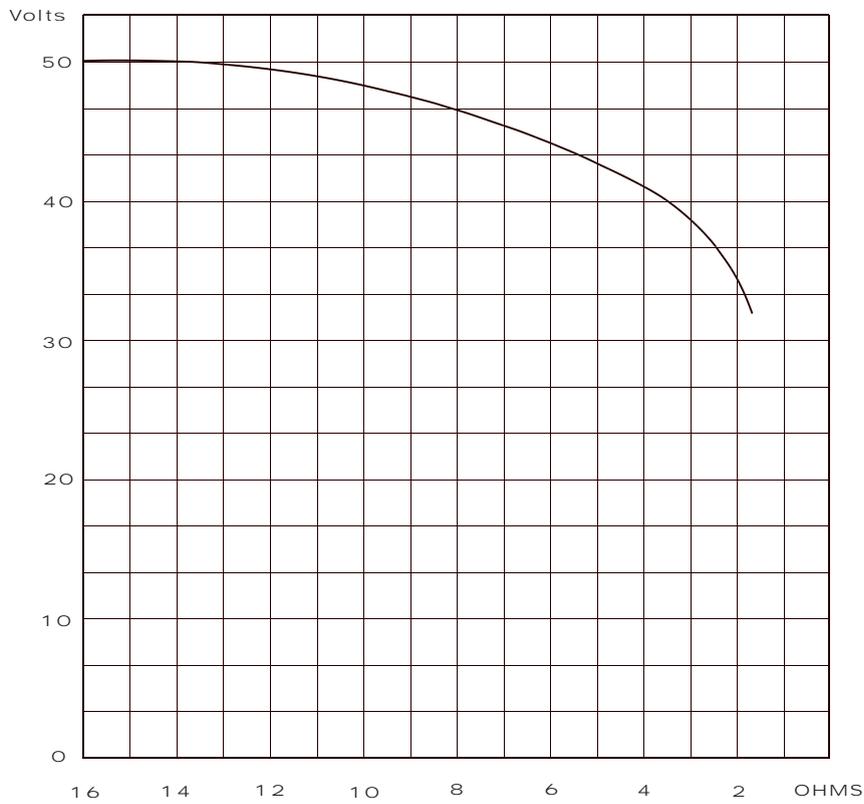
Graphic EQ

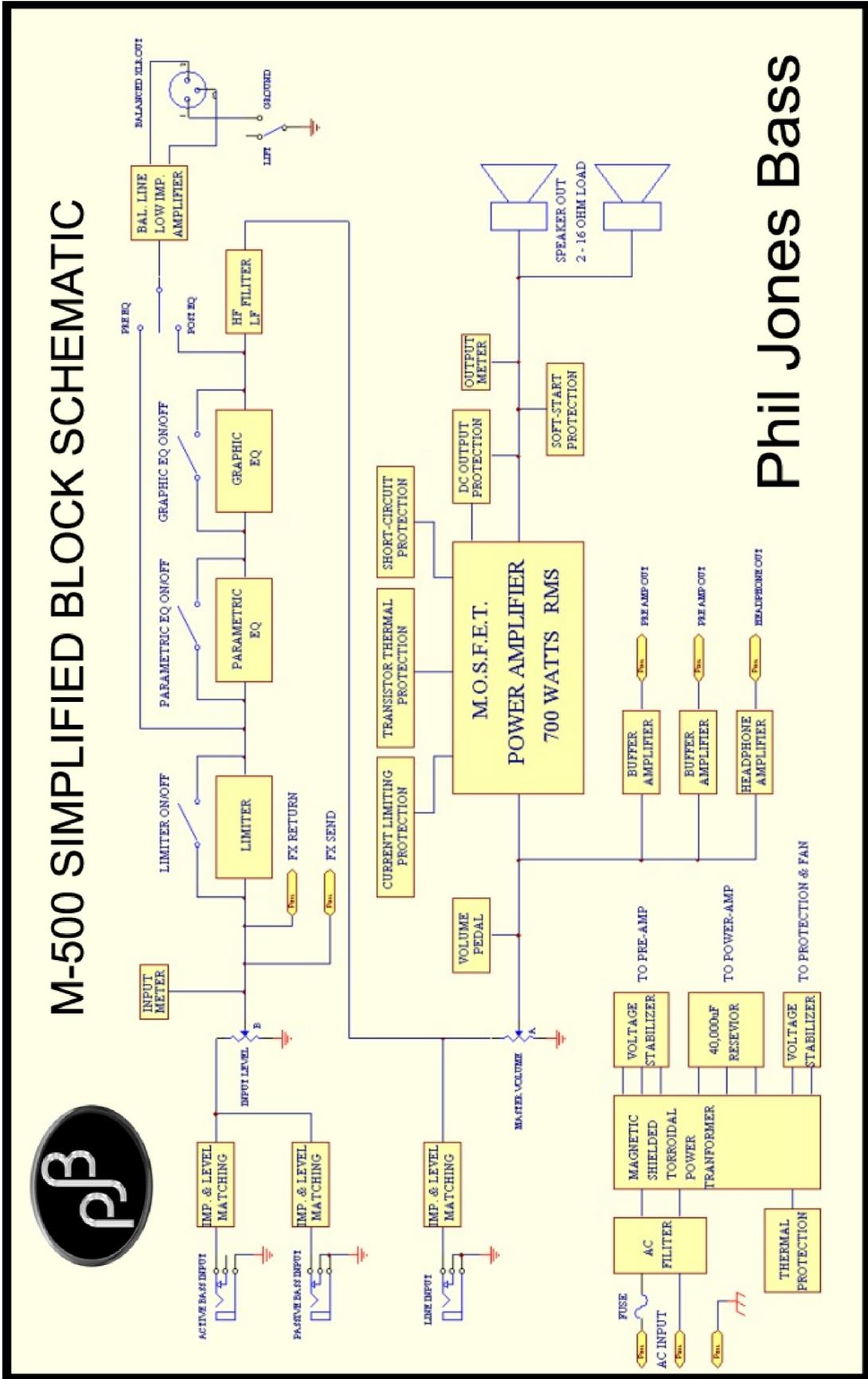


Amplifier Output Power / Impedance



Amplifier Output Voltage / Impedance





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