

MARK III SERIES



BASS

OPERATING GUIDE

GENERAL DESCRIPTION

The Peavey Mark III Bass amp is the result of many years of field experience, combined with the latest electronic circuitry to produce what we believe is the finest bass amp on the market today. The new Bass utilizes newly engineered circuitry from input to output, greatly increased dynamic range, equalization (passive and active), coupled with a six-band graphic equalizer, pre and post gain controls, built-in variable electronic crossover, "DDT" compression circuitry, AUTOMIX, and complete patch panel capability. Our engineers have "brought it all together" in this one compact and powerful unit that represents the ultimate in contemporary electronic design and packaging in musical instrument amplifiers. The new Bass is powered by our totally new 400B power module which utilizes eight high voltage ultra-fast output devices bolted to a massive aluminum heatsink. The 400B module incorporates Peavey's unique "DDT" (Distortion Detection Technique) compression circuit that senses the onset of clipping and electronically compresses the signal to avoid overload of the power amplifier, thus producing the tightest and cleanest mono bass sound possible while minimizing the danger of speaker blowout at high output levels. This unique compressor has specially computed attack and release times tailored to retain the dynamics of stringed instruments. An entirely new series of color-coded knobs have been designed for this and other Mark III amplifiers that not only provide easy function identification by color, but also feature greatly improved visibility and "touch indexing" capability.

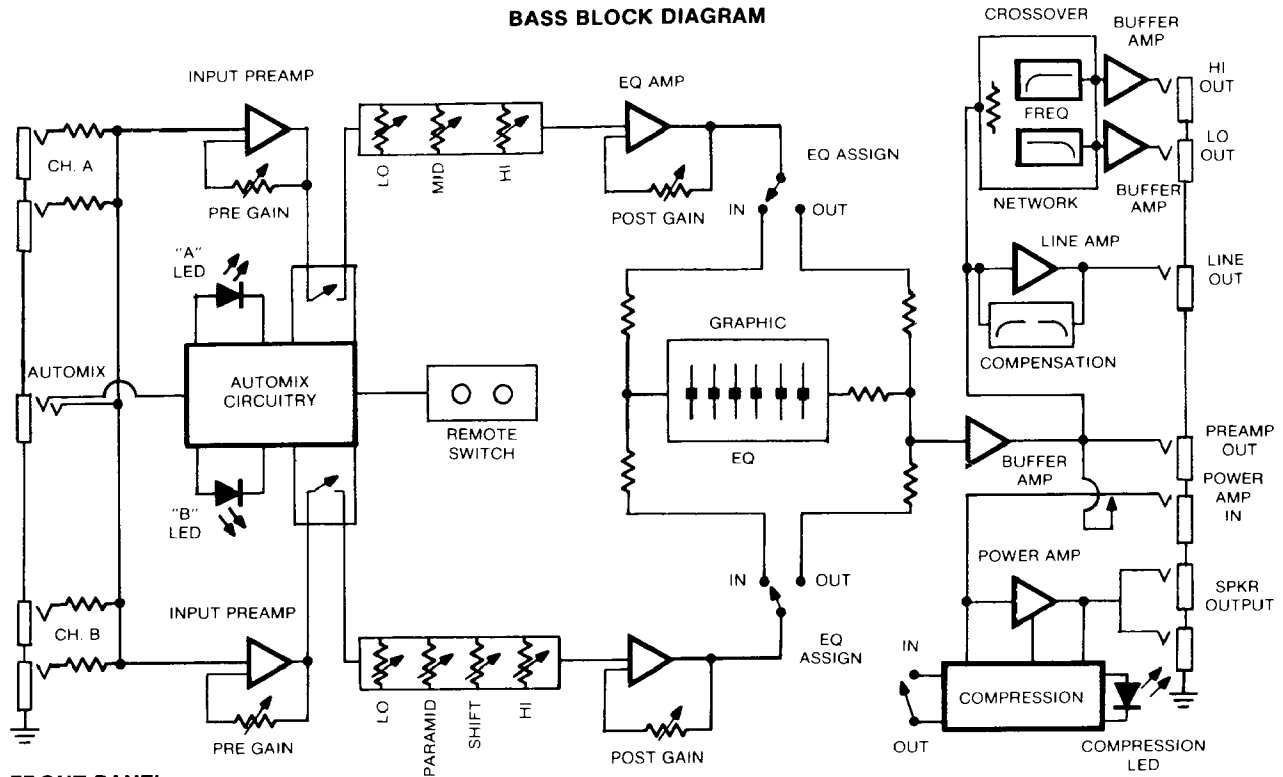
To provide even greater flexibility, Peavey has designed one channel with active EQ and parametric middle, while the other channel uses the latest in passive equalization. Our built-in variable electronic crossover is unique in its capability to electronically set the crossover at any point between 50 and 500 Hz, thus allowing bi-amplification of the bass system when utilized with an external power amplifier / speaker combination. It is generally recognized that bi-amping a bass produces the loudest and most satisfactory results obtainable with this instrument.

The comprehensive patch panel featuring both input and output connectors enables the Bass to be used with almost any accessory, even those requiring 600-Ohm impedances. The six-band graphic equalizer is switch programmable into either or both channels which are, in turn, controlled by our AUTOMIX remote footswitch. AUTOMIX enables the user to select either or both channels and LED's indicate which channels are active in the AUTOMIX mode. Our unique pre and post gain controls make possible total control of level and overall dynamics from each channel, making the AUTOMIX feature even more versatile.

Overall, the Mark III Bass is one of the most electronically sophisticated instrument amplifiers ever made and, in total, represents a quantum jump in instrument amplifier technology.

WARNING: To prevent electrical shock or fire hazard, do not expose this appliance to rain or moisture.

BASS BLOCK DIAGRAM



FRONT PANEL

INPUT JACKS 1 AND 2

The Bass features both a high gain (1) and a low gain (2) (-6 dB) input to enable it to accept signals of varying levels and also to facilitate using two instruments into either channel. The high gain (1) input is the one normally used. If the output signal from your instrument or its associated electronics is overloading the high gain (1) input, then the low gain (2) input should be used. Because of the unique switching circuitry, 1 and 2 inputs automatically are gain balanced when two instruments are inserted into both inputs.

The Bass AUTOMIX function has been recently redesigned around the latest in analog switching circuitry and includes LED activity indicators to indicate the channels in use. (PLEASE NOTE: CHANNEL LED'S ARE INACTIVE UNTIL AN INSTRUMENT IS PLUGGED INTO THE AUTOMIX JACK.)

NOTE!

THE AUTOMIX JACK IS A SPECIAL SWITCHING JACK THAT HAS A DOUBLE DETENT; I.E., TWO POSITIONS. TO ACHIEVE PROPER OPERATION, THE INPUT PLUG MUST BE INSERTED ALL THE WAY, OR, TO THE SECOND CLICK. PROPER INSERTION OF THE INSTRUMENT'S INPUT PLUG WILL BE INDICATED BY ILLUMINATION OF EITHER OR BOTH AUTOMIX LED ACTIVE CHANNEL INDICATORS.

AUTOMIX JACK (3)

The AUTOMIX circuitry was pioneered by Peavey several years ago in order to enable the use of both channels of the amplifier. It used to be common to play through one channel only while the other channel was not used. Our AUTOMIX circuitry enables the player to utilize the **full** capability of this amplifier by allowing either or both channels to be used during a performance. The switching function is controlled by the remote footswitch which is supplied as **standard equipment** with the amplifier. The AUTOMIX effect is activated when your input plug is **fully inserted** into the AUTOMIX jack and is accompanied by illumination of one or both LED's. Our improved circuitry has provided post gain controls for both channels, which are actually master volume controls for the respective channels, enabling sensitivity and dynamics to be **independently** adjusted in each channel with the selection of either or both channels accomplished by the AUTOMIX circuitry and its remote footswitch.

The remote footswitch features a "Selector" button, which enables alternate selection of **either** Channel A **or** Channel B. The "Combiner" button operates to mix the two channels together and **defeats** the "Selector" button. Obviously, when the "Combiner" button is activated, both channels are in the circuit as indicated by their LED indicators. When in the combined mode, the "Selector" button is inoperative since the combined mode must functionally override the select mode to operate both channels simultaneously. To reactivate the select mode, depress the "Combiner" button once.

PRE GAIN (4)

The pre gain controls determine the amount of gain produced in the input preamp. Please understand that this control determines the **sensitivity** and **not the power** output of the amplifier. The control settings in no way can be related to the power the amp is delivering to the speakers because of a number of other factors such as the input signal amplitude, setting of the post gain controls, etc.

EQUALIZATION

The equalization circuitry of the Bass is extremely versatile, as well as reasonably simple to operate. Channel B features the latest active circuitry, while Channel A is designed around somewhat conventional passive circuitry. Because we have included parametric middle equalization, some knowledge and operating experience is necessary to obtain maximum benefit from this versatile feature.

CHANNEL A EQUALIZATION

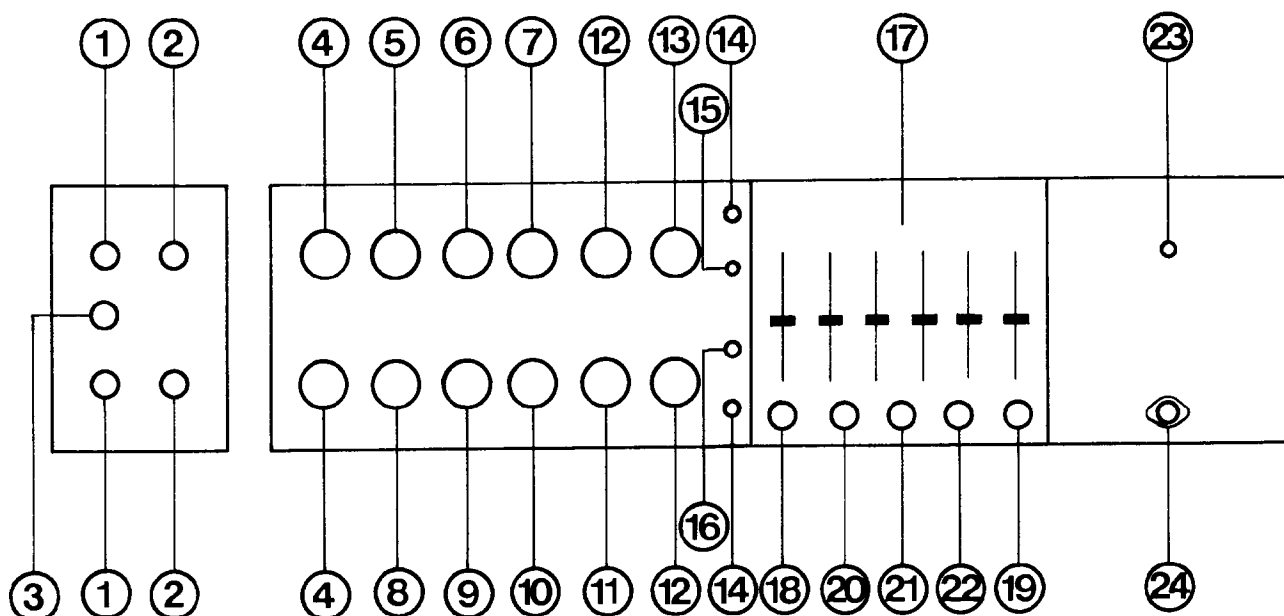
LOW EQUALIZATION CONTROL (5)

The low equalization control determines the low frequency emphasis and is capable of substantially more effect than many of the more conventional passive tonal networks. For this reason, the control will tend to make the amp sound "bassy" at high settings. We have designed the circuitry to provide more tonal variation to allow you a greater range of variable tonalities.

MIDDLE EQUALIZATION CONTROL (6)

The middle equalization control is used to tailor the relative levels of the vital mid range frequencies. Experimentation with this middle control will show that it is very effective and enables the "voicing" of Channel A to be changed significantly because of its advanced circuit design.

FRONT PANEL DIAGRAM



HIGH EQUALIZATION CONTROL (7)

The high equalization control sets the amount of high end boost available and its effect is dramatic. Overboosting of the highs is generally not desirable since it tends to cause a strident sound, as well as tending to emphasize residual preamp noise. Our equalization circuit is very effective and experimentation will allow the user to achieve almost any tonal coloring desired.

CHANNEL B EQUALIZATION

LOW ACTIVE EQUALIZATION CONTROL (8)

The low equalization control is of the active shelving type capable of producing either a boost or a cut of the low frequencies. Vertical (straight up or 12:00 o'clock) settings produce a flat response, while counter-clockwise settings produce a cut, and clockwise settings produce a boost. It should be noted that because this circuit is active, significant amounts of boost are available. One should avoid overboosting the lows since this will tend to require excessive amounts of power from the amplifier and might tend to cause excessive compression or overdrive the power amp if compression is switched out at high boost (clockwise) settings.

"PARAMID" MIDDLE EQUALIZATION

Our PARAMID equalizer is capable of two distinct equalization functions: (1) It features the ability to vary the center frequency of its action over a considerable range; (2) A second control determines whether the selected frequencies are either boosted or cut and by how much.

PARAMID CONTROL (9): The PARAMID control operates very similar to the low and high equalization controls since in the vertical (straight up or 12:00 o'clock) position, no effect is produced, while counter-clockwise settings produce a cutting effect or notch and clockwise settings produce a boosting effect or peak. Care should be taken not to overboost since this effectively increases the gain at the selected frequencies and could overdrive the power amp and/or speaker, as well as increase the residual noise.

SHIFT CONTROL (10): This control determines the center frequency of the peak or notch.

HIGH ACTIVE EQUALIZATION CONTROL (11)

The Channel B high equalization control is of the active shelving type, capable of producing either a boost or cut of the high frequencies. Its operation is similar to the low and PARAMID controls in that a vertical (straight up or 12:00 o'clock) position produces a flat response, while counter-clockwise positions yield cut and clockwise settings yield boost. It's a good idea to avoid extreme boosting of high frequencies since this tends to make the amp sound strident and unduly emphasize string noises, etc.

POST GAIN CONTROLS (12)

The post gain controls are the "master gain" controls for the respective channels. The action of these controls is conventional and experimentation will illustrate their function. Please be aware that extremely low settings of the post gain controls will require extremely high settings of the pre gain controls with subsequent loss of dynamic range in the input preamp. This may be desirable in some situations to create distortion effects in the input circuitry. However, with bass instruments, it's generally desirable to maximize dynamic range in the input preamp because of the strong output signals generated by most bass instruments. This is very important for maximum compression capability without distortion. Therefore, we recommend **post gain** settings of "7" or higher for normal use.

CROSSOVER (13)

The built-in electronic crossover is designed to allow bi-amping and has the capability to allow setting the crossover frequency at any point between 50 and 500 Hz. The reason we have included a variable crossover is to allow matching of various types of speaker enclosures together; i.e. one 18" in a folded horn and two 12" direct radiators would need to be crossed over differently than one 15" folded horn and two 10" direct radiator speakers. Our frequency variable system allows **total** flexibility.

The outputs of the crossover located on the patch panel are 600 Ohms output impedance and are capable of greater than 2 Volts RMS output. The built-in power amplifier of the Bass which normally is internally connected full range may be patched (using a short shielded cord) into either the low or the high output of the crossover network, thus using the internal power amp as one-half of the bi-amp drive system. The output of both channels plus the graphic equalizer (when switched in) feeds into the electronic crossover in order to be sure that all systems are operative in the bi-amp mode. Experimentation with the actual amp / speaker combinations will illustrate the best setting of the crossover frequency control. One should remember that the internal compressor will operate only on the internal amplifier in the bi-amp mode. The electronic crossover can be used as a low cut filter when conditions require strong penetration without overload. This is often desirable at outside concerts. Removal of the extreme low end response maximizes headroom and makes the Bass amp sound louder. Simply patch the internal power amp to the Bi-Amp High Out and adjust the frequency to the desired rolloff point.

GRAPHIC EQ ASSIGN SWITCH (14)

The graphic EQ assign switch on each channel allows "pre-programming" either or both channels to either go through or to bypass the graphic equalizer. This switching assign capability allows the operator to run one channel through the graphic while bypassing the other or to run both channels into or around the graphic. This assign capability takes on even greater importance when utilizing the AUTOMIX function since a tremendous range of variation can be obtained between the channels when one channel is bypassing the graphic while the other is fed into it.

"DDT" COMPRESSION LED AND SWITCH (15) (16)

The Bass is a compact and powerful amplifier that features a 210-Watt RMS power amplifier with a full complement of equalization controls and a new type of dynamic compression. The compression effect enables us to maximize the performance of the amp/speaker combination. We have determined through much research that the compression circuitry should prevent the power amp/speaker combination from running out of headroom (clipping) and should be as simple to operate as possible to avoid undue complication for the user. Our compression circuit is very effective and is controlled by a simple on/off switch (16). Because of the dynamics and the percussive nature of plucked strings, it is quite common to activate the compression, as indicated by the limit LED (light emitting diode) (15) at reasonably low output levels. One should not be concerned that the limit LED indicated compression virtually constantly during a performance since this is what it was designed to do; i.e., to maximize the dynamics available from the amp within its power output capabilities. The compression effect may be switched off by the toggle switch on the front panel. We have not included other compression controls since we have designed an exclusive "Distortion Detection Technique" circuit that senses conditions that might cause overload, and compression is activated **only** when clipping is imminent. This technique effectively utilizes every precious Watt available from the power amplifier.

GRAPHIC EQUALIZER (17)

The Bass features a very effective six-band active EQ circuit. Each band has been carefully selected for the proper frequency points, combining characteristics, and precise bandwidth ("Q") to most effectively handle the spectrum covered by bass instruments.

This sophisticated equalization system has been created using the latest computer-aided design techniques and has resulted in a circuit that is not only exceptional in performance, but provides remarkable consistency across its frequency range. This equalizer is capable of a 30 dB range; i.e., 15 dB boost or 15 dB cut in each of the six bands.

Each channel of the Bass has an assign switch (14) that allows the signal from the respective preamps to be sent either directly to the power amplifier or through the graphic. When this assign switch is in the "up" or "in" position, its signal is routed through the graphic; and when it's in the "down" or "out" position, that channel's signal is routed directly to the power amp.

The action of a graphic equalizer is generally well understood but several precautions should be taken to avoid overboosting the frequency extremes and thus creating difficulties. The graphic equalizer **follows** the channel equalization which is substantial by itself and when combined with the boost capability of the graphic, the range becomes tremendous. When running the individual channel low, mid or high boost near full clockwise positions, one should generally avoid overboosting that particular range again in the graphic. This "double EQ" capability enables a fantastic amount of cut or boost but must be used wisely to avoid creating a "boomy" or "muffled" sound when too much low end is boosted, as well as creating "strident", "screechy" or noisy operation when too much high end is boosted. One should also be aware that the "double equalization" available in the Bass also may cause problems in the extreme cut positions since cutting the EQ is the equivalent of reducing the gain for the affected frequency range. Experimentation will quickly illustrate the effectiveness of these equalization controls and generally, no difficulty whatsoever should be encountered.

PATCH PANEL

A full patch panel has been included to enable patching effects devices "in line" and also to provide a frequency compensated low impedance output to drive recording or P.A. consoles directly without need of a "direct box" or other amp/mixer interface device.

PREAMP OUT (18)/POWER AMP IN (19)

To allow "in line" patching of the various accessories, we have included a system of preamp out/power amp in jacks on the front panel. The preamp out is the straight preamp signal which is the sum of the outputs of the two channels. The output level is approximately 2 Volts RMS and is a relatively low (600 Ohms) output impedance. The preamp out signal is connected through a switching contact to the power amp input jack and normally the preamp out is internally connected to the power amp's input. This circuit allows basically two modes of operation. When signal is taken from the preamp output, signal is also delivered to the internal power amplifier. If access to the internal power amplifier is needed or if some accessory device such as a noise gate, delay line, effects device, etc., is to be patched "in line", then the **preamp output** signal must be connected to the **auxiliary unit's input**, while the **auxiliary unit's output** must be connected to the **power amp input** with shielded cables, thereby placing the auxiliary unit in series or "in line" with the normal signal path. Additional booster amp/speaker combinations should be patched using the preamp output. With this unique patching facility, many interesting effects can be accomplished.

LINE OUT (20)

Many attempts have been made over the years to patch the preamp circuitry of musical instrument amplifiers directly into recording or sound reinforcement mixing consoles. Most of these attempts have been unsuccessful and have resulted in players and soundmen having to utilize various forms of what is popularly referred to as a "direct box" which, of course, means further complication, expense, etc. Most previous attempts at patching signals out of musical instrument amplifiers have ignored a very basic fact...generally poor frequency response from the musical instrument amplifier's speaker system. Most amp manufacturers have compensated for the speaker's poor top end frequency response by building in some degree of high frequency boost in order to satisfy the player. While this built-in high frequency boost is indeed good for increasing the response from the system, it tends to cause excessive residual noise, as well as "strident" or "screechy" tonality in the direct preamp output signal. Our line output has a built-in compensation circuit that very closely matches the rolloff characteristic of a speaker system in order to produce an output signal that corresponds very closely to what's being heard from the speaker system. There is also a rolloff of the extreme low frequencies to avoid overload of the associated console by the "sub" bass signals. This very important feature should prove very helpful in eliminating the need for direct boxes and micing of musical instrument amplifiers. The signals from the line output jacks are low impedance (600 Ohms) unbalanced at a signal level of 2 Volts RMS.

BI-AMP LOW OUT (21)

The Bi-Amp Low Out is the output of the crossover network passing the low frequency signals from the selected crossover point down. Frequencies above this point are attenuated 12 dB per octave. The output level is greater than 2 Volts at 600 Ohms impedance.

BI-AMP HIGH OUT (22)

The Bi-Amp High Out is the output of the crossover network passing the high frequency signals from the selected crossover point up. Frequencies below this point are attenuated 12 dB per octave. The output level is greater than 2 Volts at 600 Ohms impedance.

BI-AMPING

The purpose of bi-amping is to eliminate various kinds of distortion by maximizing the system's overall dynamic range by utilizing separate independent power amps to amplify the low and the high frequencies. In systems where the various components are known such as particular speakers in particular enclosures, it has been common practice to preset the crossover point in order to achieve optimum balance. In musical instrument amplifiers that are used with a wide variety of different speaker systems operated in different sized areas, we felt it was necessary to incorporate a variable electronic crossover to facilitate matching different amp/speaker combinations together into a compatible system. Typically, the internal amplifier is used as one channel of the bi-amp, while another external amplifier is used as the other. As a general rule, the most powerful of the two amps required should be used for the low frequency since this end of the spectrum generally demands more power output than the high end of the spectrum; i.e., if you have an external 400-Watt power amplifier, you should use the internal 200-Watt power amplifier as the high end of the system by utilizing a small patch cord and patching from high out to power amp in. The low out should then be patched to the input of the external 400-Watt power amplifier, with the speaker for the high end being patched into the out jacks of the internal power amplifier and the low frequency speakers patched into the external amp's outputs. The external amp should be gain matched using its level control to set a proper "balance" of highs and lows to compensate for different speaker efficiencies and power amp sensitivities. The proper crossover frequency point should then be determined by experimentation, using various crossover frequency settings after the desired channel gain and equalization has been set in the preamp. Obviously, if an external power amplifier with less than 200 Watts is used, it should be used for the high end.

CAUTION

IT IS GENERALLY NOT ADVISABLE TO USE HIGH FREQUENCY HORN/DRIVER COMBINATIONS SUCH AS USED IN SOUND REINFORCEMENT SYSTEMS AS THE TOP END OF A BASS GUITAR SYSTEM. THE UPPER HARMONICS OF BASS INSTRUMENTS ARE BETTER HANDLED BY CONE TYPE RADIATORS WHICH WILL SOUND SMOOTHER AND WILL HANDLE MORE POWER THAN HORN/DRIVER COMBINATIONS.

PILOT LED (23)

The pilot LED indicates when the electrical supply is switched on and is actually delivering power to the amplifier.

AUTOMIX REMOTE SWITCH SOCKET (24)

The remote switch socket is the standard "DIN" type and serves as the amp connection for the **supplied** remote footswitch. Please note that the "DIN" plug has an indentation that must be matched with the matching indentation in the footswitch receptacle on the front panel. This keying action allows the footswitch to be connected only in the proper manner. If the plug is forced or undue pressure is exerted on the shell or pins, damage could result to the footswitch plug or the chassis mounted socket. As with any precision device, reasonable care should be exercised.

FUSE (25)

The fuse is located within the cap of the fuseholder and must be replaced with one of the proper type and value if it should fail. It is necessary that the proper type and value fuse be used in order to avoid damage to the equipment and to prevent voiding the warranty. If your unit repeatedly blows fuses, it should be taken to a qualified service center for repair.

POWER SWITCH (26)

On domestic units, the power switch is of the three-position type with the center position being "OFF". This switch has two "ON" positions, one of which is used to ground the amplifier properly. One of the "ON" positions will yield the lowest amount of residual hum or "popping" when the instrument is touched and this is the position that should be used.

On export models, we utilize a simple on/off switch that does not have multiple "ON" positions since the grounding (earthing) conditions vary with the different electrical systems of the United States versus other nations.

LINE CORD (27)

For your safety, we have incorporated a three-wire line (mains) cable with proper grounding facilities. It is not advisable to remove the ground pin under any circumstances. If it is necessary to use the amp without proper grounding facilities, suitable grounding adaptors should be used. Much less noise and greatly reduced shock hazard exists when the unit is operated with the proper grounded receptacles.

SPEAKER OUTPUTS (28)

The speaker output jacks are wired in parallel and are of the standard ¼" type. Either or both may be used when connecting your speaker system. The new 400B power module has been designed to work with a wide range of speaker impedances. This module is designed for optimum performance into a 4-Ohm load but will easily handle lower (2-Ohm) and higher (8-Ohm) loads. One should be aware that a higher than 4-Ohm load will result in somewhat less power. Operating this unit into 2 Ohms is acceptable if proper ventilation is provided.

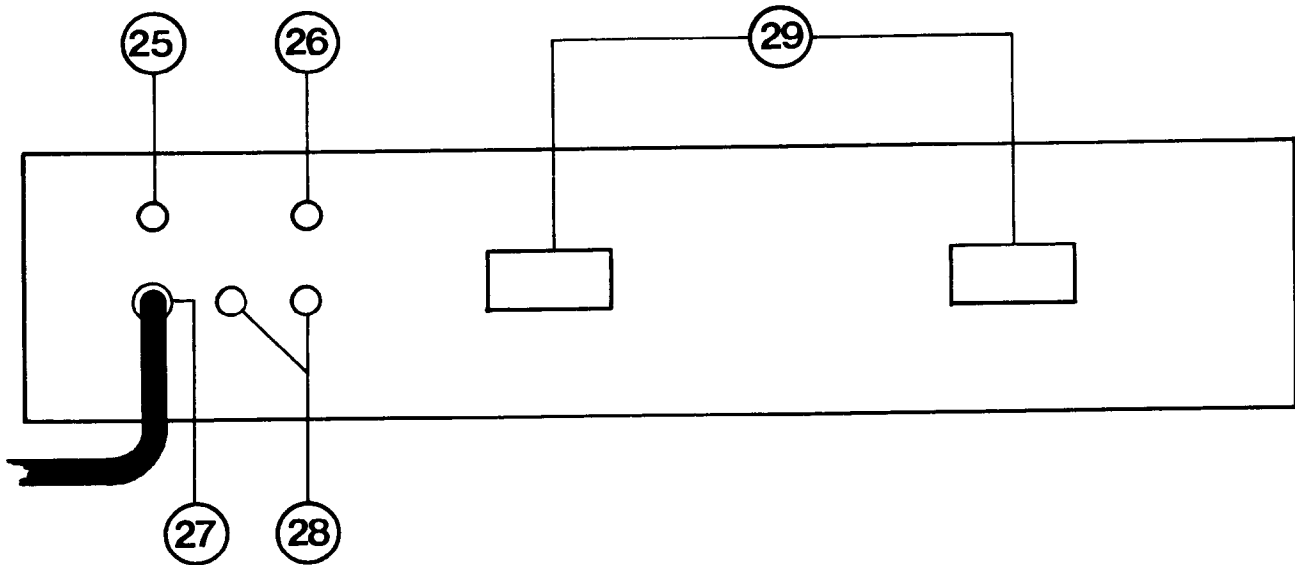
UNDER NO CONDITIONS SHOULD THE BACK MOUNTED HEATSINK OR THE COOLING GRILLE ON TOP OF THE AMP BE BLOCKED OFF OR OBSTRUCTED DURING OPERATION.

When operating at below 2 Ohms, the internal voltage/current limiting circuit will limit the dissipation of the output devices and continuous operation in this overload condition will activate the automatic thermal protective circuitry. This thermostatically controlled thermal protective circuitry is automatically resetting and will reactivate as soon as the junctions of the silicon output devices again reach safe operating temperatures. Because of the unique design of the DDT compressor, the circuitry will still minimize clipping regardless of load values.

LINE (MAINS) CORD RETAINER (29)

We have provided two large molded line cord retainers on the rear panel to allow storage of the mains cable for travel. In operation the cable should be **completely** unwrapped to allow maximum heat dissipation from the rear panel/ heatsink.

REAR PANEL DIAGRAM



BASS SPECIFICATIONS

OUTPUT POWER:

210 watts RMS @ 1% THD into 4 ohms
300 watts RMS @ 1% THD into 2 ohms

SENSITIVITY:

15 mV @ 1 KHz
(Tone Controls Flat, Volume 12:00)

INPUT IMPEDANCE:

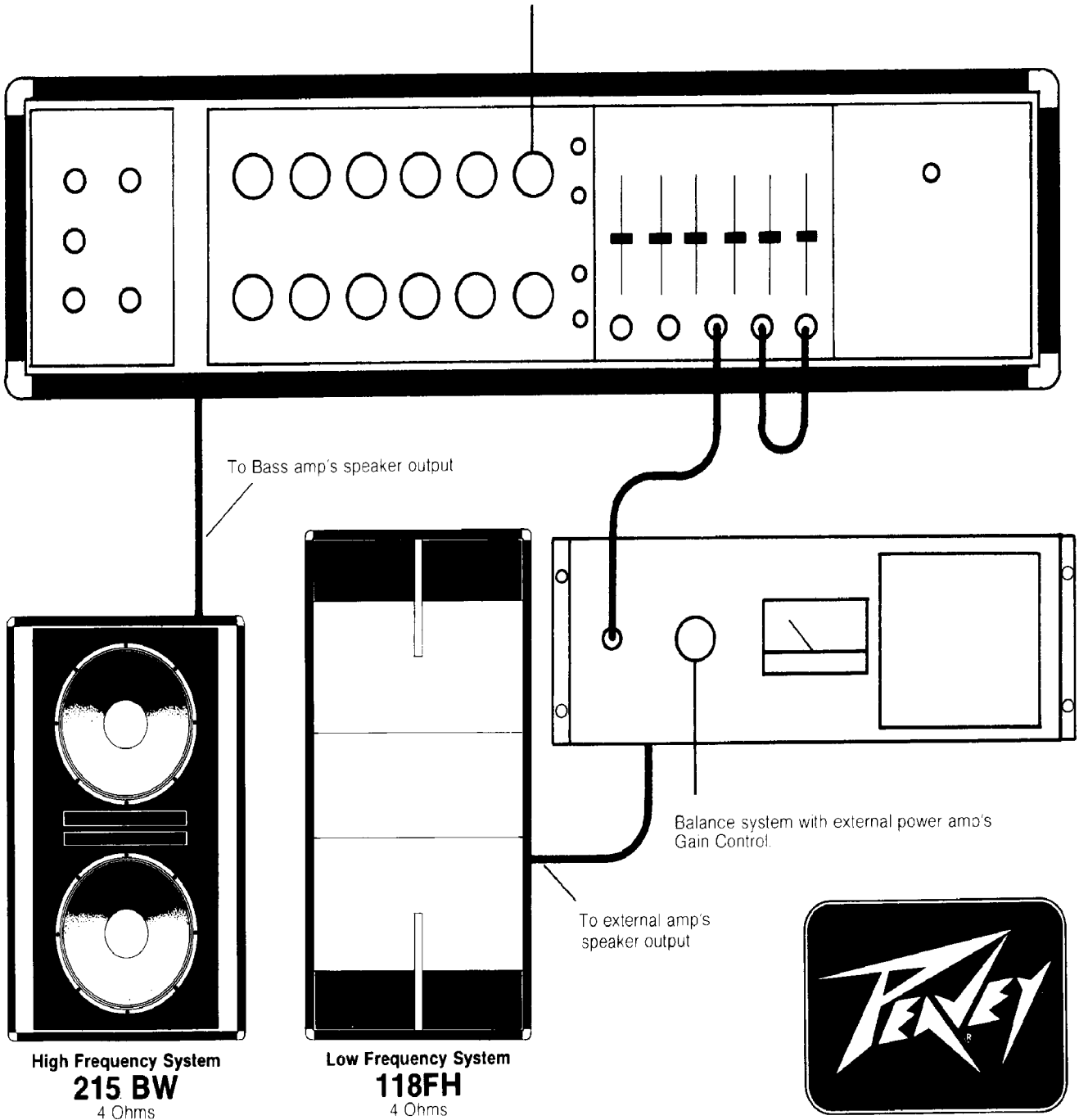
220 K ohms

SIGNAL-TO-NOISE RATIO:

70 dB (50 K ohms source impedance)

EXAMPLE OF BI-AMP HOOKUP

Set crossover point for most pleasing "Blend"
and freedom from speaker distortion.



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"Specifications are subject to change without notice."