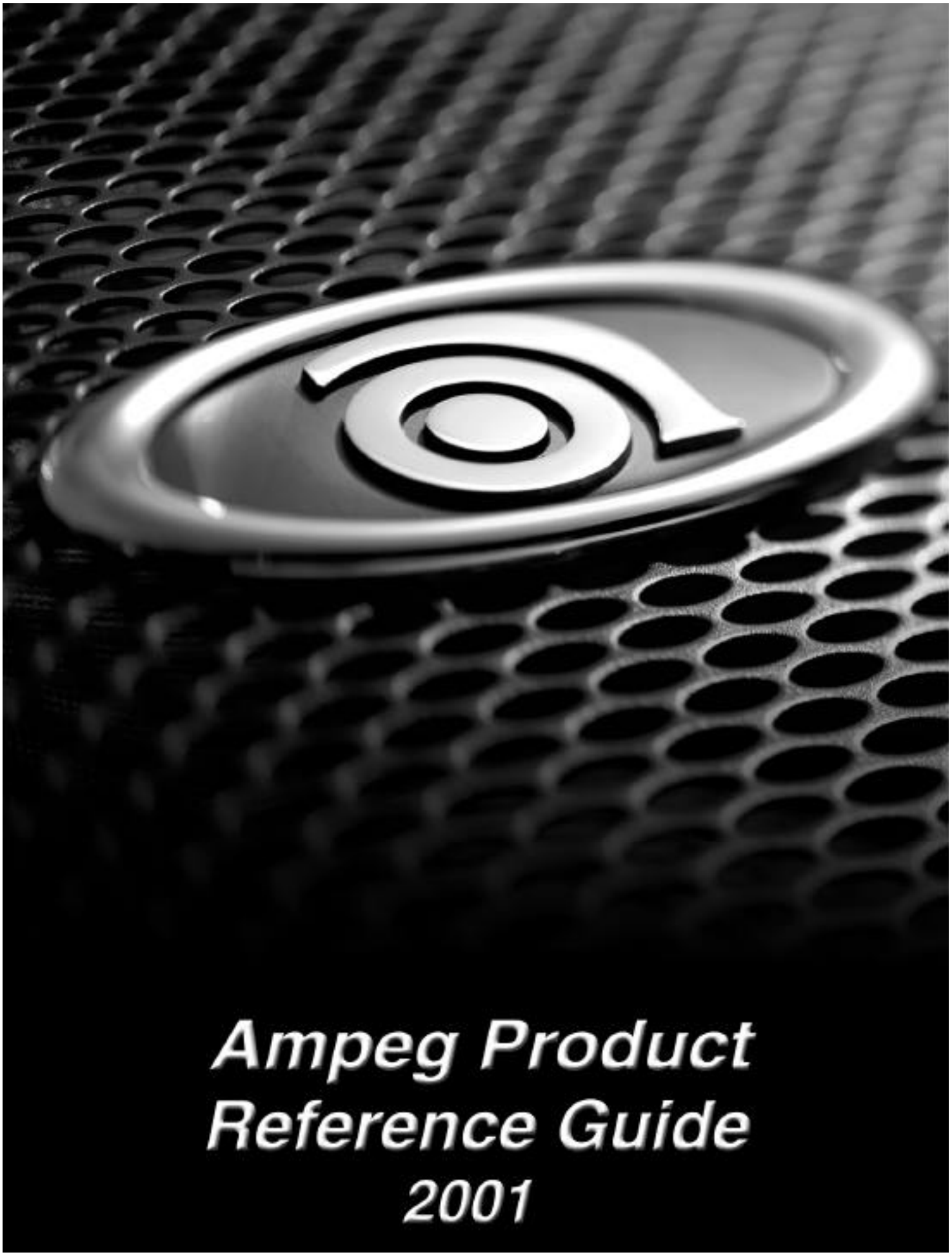

Ampeg Product
Reference Guide
2001

Welcome...

The History of Ampeg

In 1946, Everett Hull, an accomplished pianist and bass player, organized a partnership with Stanley Michaels under the name “Michaels-Hull Electronic Labs.” Their mission was to produce a new microphone pickup that Hull designed. The pickup was fitted on the end pin of an upright bass and was dubbed the Amplified Peg or “Ampeg” for short.

In 1949, Hull became the sole proprietor and changed the name of the company to the Ampeg Bassamp Company. Since that time, Ampeg has produced some of the music industry’s most innovative and memorable products, satisfying the needs of musicians all over the world. Many of these products feature incredibly unique features and performance capabilities resulting in six U.S. patents under the Ampeg brand name.

In 1960, a design engineer by the name of Jess Oliver created a combo amplifier with a chassis that could be inverted and tucked inside the speaker enclosure, protecting the inner workings and increasing the portability of the amp. Nicknamed the “Portaflex,” this amplifier became the standard in bass combos throughout the 60’s and 70’s.

Also in the early 60’s, Ampeg was the first company to incorporate reverb in an amplifier. The Reverberocket preceded Fender’s Vibroverb (often thought of as the original) by nearly two years.

In 1969, Ampeg set out to design the most powerful amplifier ever made. At that time, 50-watt amps were considered more than adequate. 100-watt amps were considered “plenty loud.” Ampeg, however, not only harnessed 300 watts of pure tube power but actually created a new valve (tube) technology - Super Valve Technology, or the SVT. Now the most sought after stage amplifier, the SVT has proven its road worthiness on stages around the world.

In 1986, St. Louis Music purchased Ampeg and continues the tradition of making quality, musician-satisfying products. The current series of Ampeg Classic models, Pro Series products, “B” Series heads and combos as well as the updated re-issue Diamond Blue Series are among the latest in the evolution of professional, innovative and feature laden amplifiers available.

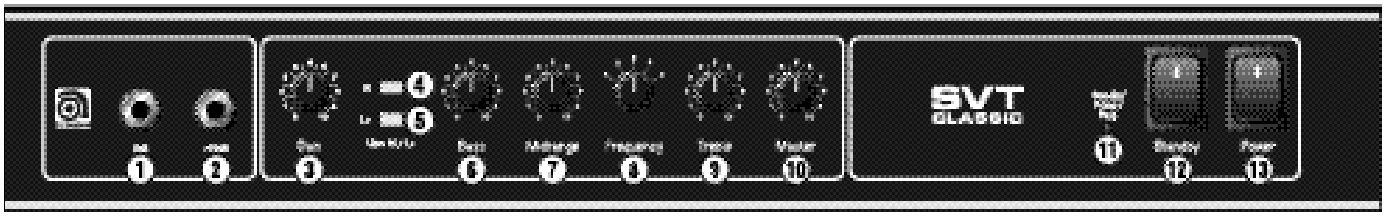
Contents:

Bass Products:

Lead Products:

NEW! The Basic 411:

SVT-CL/AV front panel:



1. 0dB INPUT: The signal output from an instrument (active or passive – typically passive) or a line level signal may be connected here by means of a shielded instrument cable. The signal at this jack is sent into the preamp at full strength.

2. -15dB INPUT: The signal output from an instrument (active or passive – typically active) or a line level signal may be connected here by means of a shielded instrument cable. The signal at this jack is padded 15dB before it is sent into the preamp.

3. GAIN: This control adjusts the basic level of signal in the preamp.

4. ULTRAHI: This switch boosts high frequencies.

5. ULTRA LO: This switch, when depressed, provides emphasis to the low frequencies by boosting the low frequencies and selectively cutting the mid frequencies.

6. BASS: This is the primary low frequency control. It allows for 12dB of cut or boost at 40Hz.

7. MIDRANGE: This is the primary midrange control. It allows for 20dB of cut or 10dB of boost at the center frequency selected by the Frequency control (8).

8. FREQUENCY: Allows you to select the center frequency for the Midrange control (7), giving you a choice of five "voices" for the Midrange. The numbers correspond to the following center frequencies as indicated: 1=220Hz, 2=450Hz, 3=800Hz, 4=1.6kHz, 5=3kHz.

9. TREBLE: This is the primary high frequency control. It allows for 20dB of cut or 15dB of boost at 4kHz.

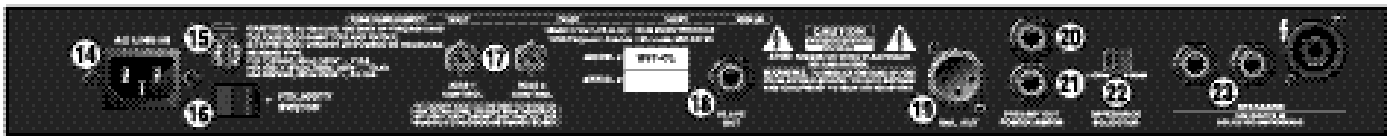
10. MASTER: This controls the signal level to the power amp and therefore the overall listening level. It also controls the level to the Preamp Out jack (20).

11. STANDBY/POWER/FAULT INDICATOR LED: This is a multi-function LED. In Standby Mode, it glows red. In the On mode (when high voltage is applied to the tubes) it glows green. If it does not turn green in the On mode, there is no high voltage present and the unit needs servicing. If the amp detects a fault in the power tube circuit, the high voltage is turned off and the LED flashes between red and green. This usually indicates a bad power tube. The amp will remain in this condition until the unit is turned off.

12. STANDBY: The Standby mode allows the tubes to warm up or remain warm without high voltage being applied to them. This extends tube life. This switch should be OFF when first turning the amplifier on. Allow the unit to warm up for 20 seconds before switching to the ON position. During short periods of non-use, the amp should be put into Standby mode.

13. POWER: This supplies AC power to the unit. Turn this switch on before turning on the Standby switch (12), as explained above. This switch must be turned off to reset the amp after a Fault condition.

SVT-CL/AV rear panel:



14. AC LINE IN: Firmly insert the supplied AC power cord into this socket until it is fully seated. Plug the male end of the cord into a grounded AC outlet. ***DO NOT DEFEAT THE GROUND PRONG OF THE AC PLUG!***

15. FUSE: This protects the unit from damage due to overload conditions or power line surges. If the fuse blows, replace it only with the same size and type.

16. POLARITY: Place this switch in the position that provides the least electrical buzz from the unit.

17. BIAS SECTION: These two controls and sets of LEDs allow the user to properly bias the power amp. See "Setting Tube Bias" on page 7 for a complete description of how to use this section.

18. SLAVE OUT: This jack receives the same signal that is being sent to the power amp. It is useful for powering another amp (slave) from this unit's preamp.

19. TRANSFORMER BALANCED OUT: This XLR jack is the preamp output. Thus, it will include any processing done in the Preamp Out/Power Amp loop (20, 21). This signal can be used to feed an external power amplifier, mixing console or house PA system.

20. PREAMP OUT: This jack carries the post-Master (10) signal. Using this jack does not break the path to the power amp. This signal can be used to feed an external power amplifier, mixing console or house PA system.

21. POWER AMPIN: This jack accepts a signal to be sent to the power amp and the Slave Out jack (18). Using this jack breaks the path from the signal that was present at the Preamp Out jack (20). This can be used as a post-Master (10) patch point.

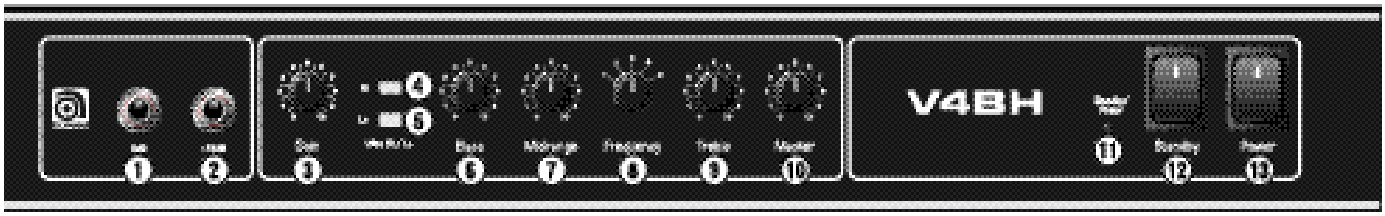
22. IMPEDANCE SELECTOR: Use this switch to match the output impedance of the amp to the speaker(s) being used (2 or 4 ohms).

23. SPEAKER OUT: Two 1/4" phone jacks and one Speakon® jack are provided for connecting speakers to the unit. These jacks are wired in parallel. When operating at or near full power, the Speakon® jack is recommended for use over the 1/4" jacks due to its higher current handling capability.

Technical Specifications:

OUTPUT POWER RATING	300 watts RMS minimum continuous @ <3% THD into 2 or 4Ω, 0.4VRMS input
TOTAL SYSTEM GAIN	67dB @ 1kHz with levels up and tones flat, -3dB @ 40Hz and 15kHz
TONE CONTROL RANGE	
BASS:	±12dB @ 40Hz
MIDRANGE:	+10dB, -20dB @ 220, 450, 800, 1.6k or 3kHz
TREBLE:	+15dB, -20dB @ 4kHz
ULTRALOW:	+2dB @ 40Hz, -10dB @ 500Hz
ULTRAHIGH:	+9dB @ 8kHz
SIGNAL TO NOISERATIO	80dB typical
TUBE COMPLEMENT	12AX7 (3), 12AU7 (2), 6550 (6)
POWER REQUIREMENTS	120VAC, 60Hz, 460VA; 100VAC, 50/60Hz, 460VA; 230VAC, 50/60Hz, 460VA
SIZE AND WEIGHT	24" W x 11.5" H x 13" D, 80 lbs.

V-4BH front panel:



1. 0dB INPUT: The signal output from an instrument (active or passive – typically passive) or a line level signal may be connected here by means of a shielded instrument cable. The signal at this jack is sent into the preamp at full strength.

2. -15dB INPUT: The signal output from an instrument (active or passive – typically active) or a line level signal may be connected here by means of a shielded instrument cable. The signal at this jack is padded 15dB before it is sent into the preamp.

3. GAIN: This control adjusts the basic level of signal in the preamp.

4. ULTRAHI: This switch boosts high frequencies.

5. ULTRA LO: This switch, when depressed, provides emphasis to the low frequencies by boosting the low frequencies and selectively cutting the mid frequencies.

6. BASS: This is the primary low frequency control. It allows for 12dB of cut or boost at 40Hz.

7. MIDRANGE: This is the primary midrange control. It allows for 20dB of cut or 10dB of boost at the center frequency selected by the Frequency control (8).

8. FREQUENCY: Allows you to select the center frequency for the Midrange control (7), giving you a choice of five "voices" for the Midrange. The numbers correspond to the following center frequencies as indicated: 1=220Hz, 2=450Hz, 3=800Hz, 4=1.6kHz, 5=3kHz.

9. TREBLE: This is the primary high frequency control. It allows for 20dB of cut or 15dB of boost at 4kHz.

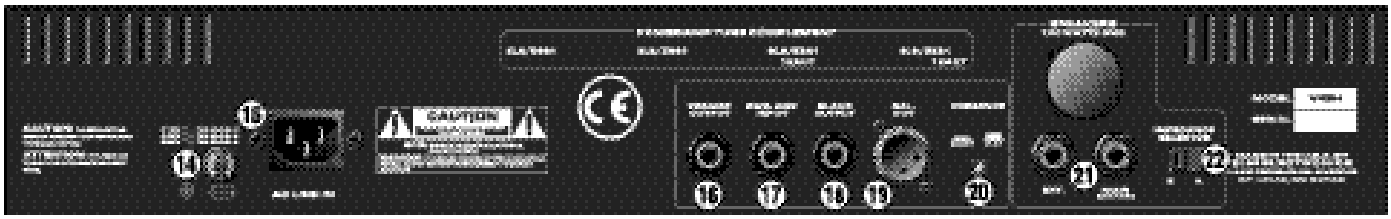
10. MASTER: This controls the signal level to the power amp and therefore the overall listening level. It also controls the level to the Preamp Out jack (16).

11. STANDBY/POWER LED: This is a dual-function LED. In Standby Mode, it glows red. In the On mode (when high voltage is applied to the tubes) it glows green. If it does not turn green in the On mode, there is no high voltage present and the unit needs servicing.

12. STANDBY: The Standby mode allows the tubes to warm up or remain warm without high voltage being applied to them. This extends tube life. This switch should be OFF when first turning the amplifier on. Allow the unit to warm up for 20 seconds before switching to the ON position. During short periods of non-use, the amp should be put into Standby mode.

13. POWER: This supplies AC power to the unit. Turn this switch on before turning on the Standby switch (12), as explained above.

V-4BH rear panel:



14. FUSE: This protects the unit from damage due to overload conditions or power line surges. If the fuse blows, replace it only with the same size and type.

15. AC LINE IN: Firmly insert the supplied AC power cord into this socket until it is fully seated. Plug the male end of the cord into a grounded AC outlet. ***DO NOT DEFEAT THE GROUND PRONG OF THE AC PLUG!***

16. PREAMP OUT: This jack carries the post-Master (10) signal. Using this jack does not break the path to the power amp. This signal can be used to feed an external power amplifier, mixing console or house PA system.

17. POWER AMPIN: This jack accepts a signal to be sent to the power amp and the Slave Out jack (18). Using this jack breaks the path from the signal that was present at the Preamp Out jack (16). This can be used as a post-Master (10) patch point.

18. SLAVE OUT: This jack receives the same signal that is being sent to the power amp. It is useful for powering another amp (slave) from this unit's preamp. It can also be used as an "unbalanced" version of the Balanced Out (19) signal.

19. BALANCED OUT: This XLR jack is the preamp output. Thus, it will include any processing done in the Preamp Out/Power Amp loop (16,17). This signal can be used to feed an external power amplifier, mixing console or house PA system.

20. PRESENCE SWITCH: When this switch is depressed a high frequency boost is added to the output signal. This helps compensate for a speaker cabinet with no high frequency driver, adding a glassy top end to the sound.

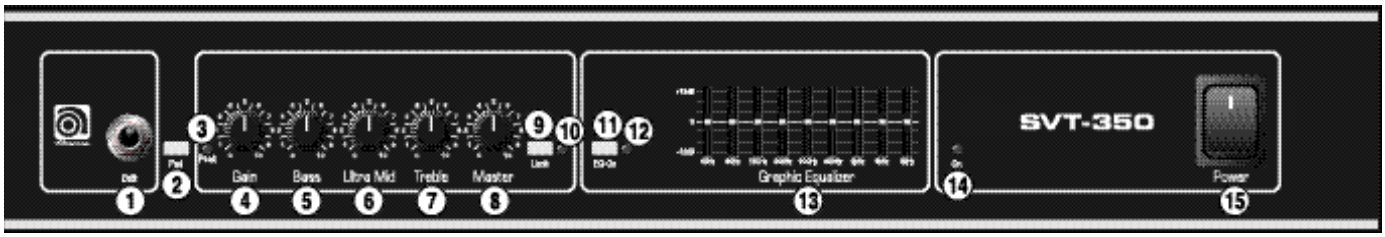
21. SPEAKER OUT: Two 1/4" phone jacks are provided for connecting speakers to the unit. These jacks are wired in parallel. Use the jack on the right ("Main") first. The jack on the left should only be used to connect a second speaker cabinet.

22. IMPEDANCE SELECTOR: Use this switch to match the output impedance of the amp to the speaker(s) being used (4 or 8 ohms).

Technical Specifications:

OUTPUT POWER RATING	100 watts RMS minimum continuous @ <3% THD into 4 or 8Ω, 0.7VRMSinput
TOTAL SYSTEM GAIN	59dB @ 1kHz with levels up and tones flat, -3dB @ 30Hz and 12kHz
TONE CONTROL RANGE	
BASS:	±12dB @ 40Hz
MIDRANGE:	+10dB, -20dB @ 220, 450, 800, 1.6k or 3kHz
TREBLE:	+15dB, -20dB @ 4kHz
ULTRALOW:	+2dB @ 40Hz, -10dB @ 500Hz
ULTRAHIGH:	+9dB @ 8kHz
SIGNAL TO NOISERATIO	80dB typical
TUBE COMPLEMENT	12AX7 (3), 12AU7 (2), 6L6/5881 (4)
POWER REQUIREMENTS	120VAC, 60Hz, 190VA; 100VAC, 50/60Hz, 190VA; 230VAC, 50/60Hz, 190VA
SIZE AND WEIGHT	23 3/4" W x 11" H x 12 3/43" D, 40 lbs.

SVT-350H front panel:



1. 0dB (INPUT): The signal output from an instrument (active or passive) or a line level signal may be connected here by means of a shielded instrument cable.

2. PAD: This switch, when depressed, attenuates the input signal by 15dB. Attenuation allows the Gain control (#4) to be used in a more usable (higher) position. If clipping is indicated with the Gain control way down, attenuation is needed.

3. PEAK LED: This LED flashes when the signal level into the preamp (excluding the graphic EQ) approaches clipping. Adjust the Gain control (4) until a strong signal from your instrument causes this LED to flicker.

NOTE: If the LEDflashes frequently with the gain at a low setting, use the Pad (2) to attenuate the input signal and readjust the Gain.

4. GAIN: This serves as the input level control for the amplifier. For the best signal-to-noise set this control so the Peak LED (3) flashes when you strike a string fairly hard.

5. BASS: This is the primary low frequency control. It allows for a range of 8dB of cut or boost at 50Hz.

6. ULTRA-MID: The primary midrange control. Rotate the control to the left of center for a "contoured" sound (more distant, less midrange output) or to the right of center for a sound which really cuts through.

7. TREBLE: This is the primary high frequency control. It allows for a range of 12dB boost or 19dB of cut at 5kHz.

8. MASTER: Set the overall output level of the amplifier with this control. The Effects Loop and Balanced Out (22,23;26) are not affected by the Master control.

9. LIMIT: The SVT-350H uses an internal Optocoupler Limiter to assist in keeping the power amplifier's output "clean" at extreme volume levels. (All amplifiers may begin to clip their output signals as they approach maximum output levels, resulting in potentially damaging distortion.) To engage the Limiter, depress the Limit switch.

10. LIMIT LED: This LED will illuminate whenever the limiter circuit is activated. This indicates that the amplifier is nearing full output and the limiter is keeping peak signals from clipping the output.

NOTE: Playing at full power with the Limiter off will give you increased output power, but the sound may be distorted. Use discretion when playing without the Limiter.

11. EQON SWITCH: Depress this switch to activate the Graphic EQ.

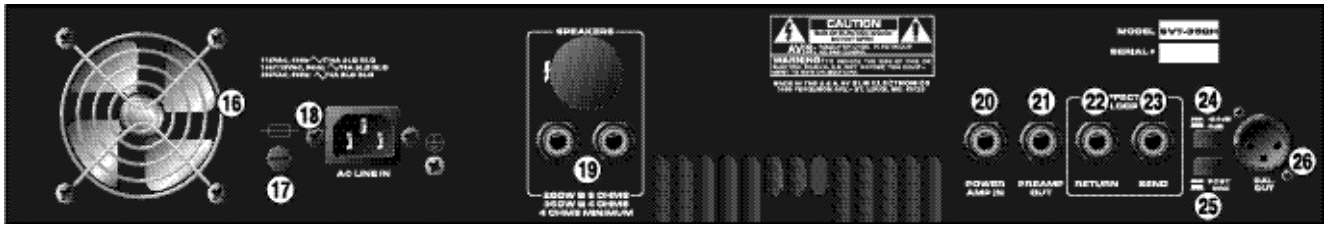
12. EQ ONLED: This LED will illuminate when the EQ is on.

13. GRAPHIC EQ: These sliders control the output of the frequencies indicated below each control. The center position of each control is flat (no boost or cut).

14. POWERON LED: This LED indicator illuminates when the POWER switch (15) is ON.

15. POWER SWITCH: This heavy-duty rocker switch applies the power to the amplifier. The amp is ON when the top of the switch is depressed, OFF when the bottom of the switch is depressed.

SVT-350H rear panel:



16. FAN: The temperature controlled, variable speed fan forces cool air into the amplifier, forcing heat out through the exhaust vents (also on the rear panel, between the speaker jacks and the power amp in jack). Never block the vent holes or the fan openings.

NOTE: It is not uncommon for the fan to remain off when the amplifier is first powered up.

17. FUSE: This protects the unit from damage due to overload conditions or power line surges. If the fuse blows, replace it only with the same size and type.

18. AC LINE IN: Firmly insert the supplied AC power cord into this socket until it is fully seated. Plug the male end of the cord into a grounded AC outlet. ***DO NOT DEFEAT THE GROUND PRONG OF THE AC PLUG!***

19. SPEAKER OUTPUTS: Use these jacks to connect the amplifier to your speaker(s) using cables terminated with 1/4" connectors. Always use high-quality speaker cables for these connections.

***NOTE:* When connecting multiple speaker cabinets to the amplifier, keep the overall impedance at or above four ohms!** The following chart shows the total impedance load when connecting speaker cabinets in parallel:

20. POWER AMPIN: This mono jack allows you to feed the preamp output of another amplifier to the input of the SVT-350H's internal power amp. This bypasses the preamp circuitry of the SVT350H.

21. PREAMPOUT: A post-EQ signal may be taken from this jack and sent to the house mixing board, recording console or external power amplifier.

22. EFFECTS RETURN: To use an external effects device, connect the OUTPUT of the device to the Return jack using a shielded cable. This feeds the processed signal into the Master section of the SVT-350H.

23. EFFECTS SEND: Connect the output from the Send jack to the INPUT of your effects using shielded cable. This sends a post-EQ signal to your effects.

24. -20dB SWITCH: This control adjusts the output level at the Balanced Line Output jack (24). The control works independently from the front panel Master control. Depressing the switch activates the 20dB pad. The result is a signal that is more compatible with the microphone inputs on a mixer.

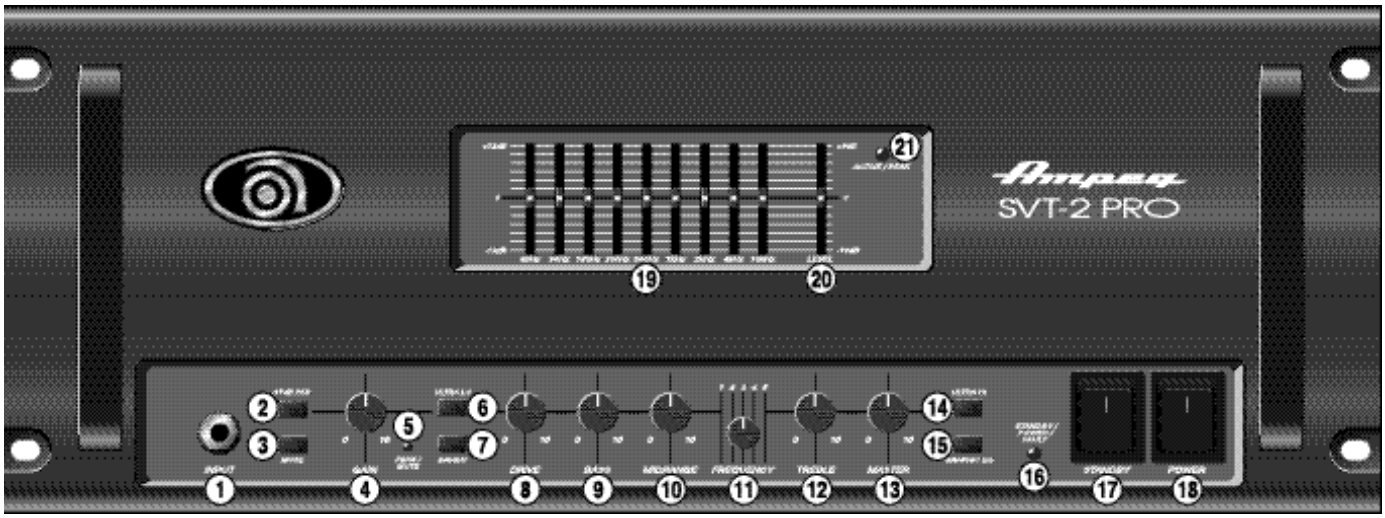
25. PRE/POST SWITCH: You can select either Pre or Post EQ for the signal at the Balanced Out jack (26) with this switch. With the switch in the OUT position, the signal at the jacks will be Pre-EQ. This is a direct output not affected by any EQ or boost settings. With the switch depressed, the signal is Post-EQ and is controlled and modified by the tone controls, Graphic EQ, and Effects Loop.

26. BALANCED OUTPUT: This XLR-type connector supplies a balanced preamp output signal for connecting to a house mixing board, recording console or external amplifiers with balanced inputs. The signal can be set to Pre or Post EQ by the back panel Pre/Post switch (25). The level can be adjusted for either mic or line type inputs using the -20dB switch (24).

Technical Specifications:

OUTPUT POWER RATING	350 watts RMS, 4 ohm load, 120VAC; 200 watts RMS, 8 ohm load, 120VAC
POWER REQUIREMENTS	120VAC, 60Hz, 300VA; 100VAC, 50/60Hz, 300VA; 230VAC, 50/60Hz, 300VA
TONE CONTROL RANGE	
BASS:	±8dB @ 50Hz
ULTRA-MID:	±8dB @ 500Hz
TREBLE:	+12dB/-19dB @ 5kHz
GRAPHIC EQRANGE	±11dB @ 40Hz; ±8dB @ 80Hz, 150Hz, 300Hz, 600Hz, 900Hz, 2kHz; ±9dB @ 5kHz, ±12db @ 9kHz
GAIN	45dB typical, tones @ center
SIGNAL TO NOISERATIO	75dB typical
SIZE AND WEIGHT	24" W x 11.5" H x 13" D, 44 lbs.

SVT-2 PRO front panel:



1. INPUT: This jack accepts a passive or active instrument or a line level signal through a shielded instrument cable.

2. PAD: This switch attenuates the input signal by 15dB. Attenuation allows the Gain control (4) to be used in a more usable (higher) position. If clipping is indicated even with the Gain control all the way down, attenuation is needed.

3. MUTE: This switch kills the input to everything except the Tuner Out (34) to allow silent tuning.

4. GAIN: This control, along with the Pad switch (2), adjusts the basic level of signal in the preamp. To get the best signal to noise ratio, set this control so that, on the loudest passages, the Peak LED (5) flashes occasionally.

5. PEAK/MUTE LED: This LED flashes when the signal level in the preamp (excluding the Graphic EQ) approaches clipping. When the Mute switch (3) is engaged, this LED stays on as a visual indicator that Mute is active.

6. ULTRALOW: This switch, when engaged, provides emphasis to the low frequencies by boosting the low frequencies and selectively cutting the mid frequencies.

7. BRIGHT: This switch, when pushed IN, boosts upper mid and high frequencies.

8. DRIVE: This control is used to overdrive the preamp in order to get various distortion sounds. In the fully counterclockwise position the preamp is in the cleanest, traditional SVT condition. As the control is rotated clockwise, signal level is increased to drive the preamp harder (into distortion). The tone of the signal is also changed to provide a smoother overdrive. The tone controls may have to be readjusted to obtain the overall desired tone. The Gain control (4) and Attenuator switch (2) interact with the Drive control. For greater overdrive, the Pad switch should be out and the Drive control fully clockwise. Use the Gain control to set the amount of overdrive desired. The Peak LED (5) will glow a steady red when the amp is used in this manner.

9. BASS: This is the primary low frequency control. It allows for 12dB of cut or boost at 40Hz.

10. MIDRANGE: This is the primary midrange control. It allows for 15dB of cut or 12dB boost at the center frequency selected by the Frequency control (11).

11. FREQUENCY: Allows you to select the center frequency for the Midrange control (10), giving you a choice of five "voices" for the Midrange. The center frequencies are (from left to right) 220Hz, 450Hz, 800Hz, 1.6kHz and 3kHz.

12. TREBLE: This is the primary high frequency control. It allows for 12dB of cut or boost at 4kHz.

13. MASTER: This controls the signal to the power amp and therefore the overall listening level. It also controls the level to the Preamp Out jack (27).

14. ULTRAHIGH: This switch boosts higher frequencies than those affected by the Bright switch (7).

15. GRAPHIC EQ: This switch places the Graphic EQ circuitry in or out of the signal path. The switch must be pushed IN for the Graphic EQ footswitch to function. In the OUT position, there is no solid state circuitry in the signal path from input to power amp out.

16. STANDBY/POWER/FAULT indicator led: This is a multi functional LED. In Standby mode, it glows red. In the On mode (when the high voltage comes on) it glows green. If it does not turn green in the On mode, there is no high voltage present and the unit needs servicing. If the amp detects a fault in the power tube circuit, the high voltage is turned off and the LED flashes between red and green. This usually indicates a bad power tube. The amp will remain in this condition until the unit is turned off.

17. STANDBY: The Standby mode allows the tubes to warm or remain warm without high voltage being applied to them. This extends tube life. During short periods of non-use, the amp should be put into Standby mode. When the amp is first turned on, it is automatically in Standby mode, regardless of the switch position. After approximately 20 seconds, the amp is in the mode selected by the switch.

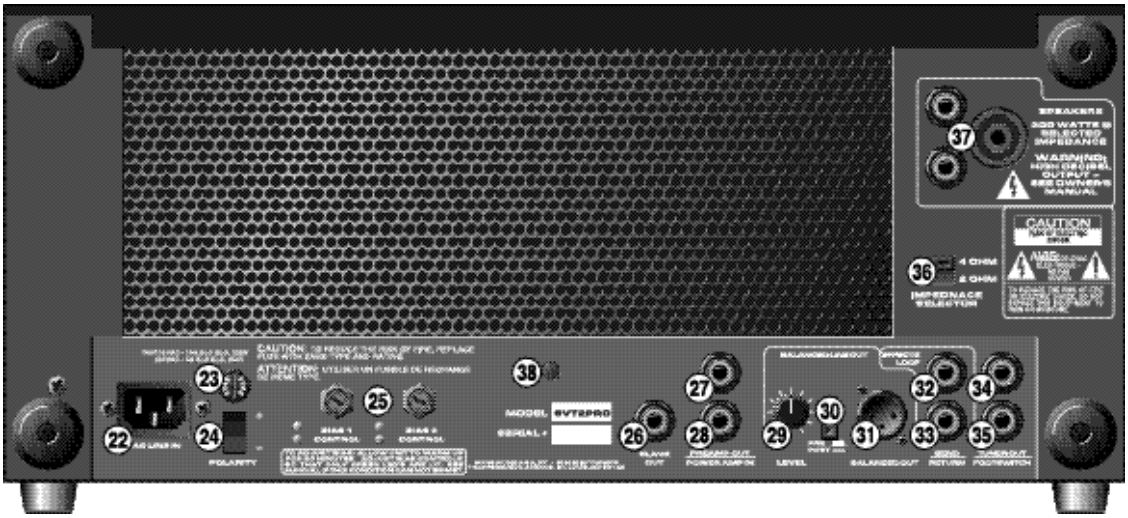
18. POWER: This supplies AC power to the unit. This switch must be turned off to reset the amp after a Fault condition.

19. FREQUENCY SLIDERS: These control the nine frequencies of the Graphic EQ section at the points indicated over each slider.

20. LEVEL: This adjusts the level of the signal to compensate for boosts or cuts, or for a desired level change when using the Graphic EQ.

21. ACTIVE LED: This LED glows green when the EQ section is enabled by the proper combination of Graphic EQ switch (15) and footswitch (35). The LED flashes red when the signal gets close to clipping.

SVT-2 PRO rear panel:



22. AC LINE IN: Firmly plug the supplied AC power cord into this socket, pushing it in until it is fully seated. Plug the male end of the cord into a grounded AC outlet. ***DO NOT DEFEAT THE GROUND PRONG OF THE AC PLUG!***

23. FUSE: Protects amp from overloads and faulty AC conditions. If fuse blows, replace only with same size and type.

24. POLARITY: Place this switch in the position that provides the least electrical buzz from the unit.

25. BIAS SECTION: These controls and LEDs allow the user to properly bias the power amp (see owners manual).

26. SLAVEOUT: This jack receives the same signal that is being sent to the power amp. It is useful for powering another amp (slave) from this unit's preamp.

27. PREAMP OUT: This jack carries the post-Master (13) signal. It does not break the path to the power amp. This signal can be used to feed an external power amplifier, mixing console, or house PA system.

28. POWER AMPIN: This jack accepts a signal to be sent to the power amp and the Slave Out jack (26). It does break the path from the Preamp Out jack (27). This can be used as a post-Master (13) patch point.

29. LEVEL: This control adjusts the level of the signal at the Balanced Out jack (31).

30. PRE/POST: This switch selects a direct out from the bass (Pre) in the OUT position and the preamp signal just before the Master (Post) in the IN position to be sent to the Balanced Out jack (31).

31. TRANSFORMER BALANCED OUT: This XLR-type jack is the output as selected by the Pre/Post switch and adjusted by the Level control (29). This signal can be used to feed an external power amplifier, mixing console, or house PA system.

32. EFFECTS LOOPSEND: This is a post-EQ, pre-Master (13) patch point send jack. It does not break the path through the preamp. When using an external signal processor, connect the INPUT of the effect to this jack using a shielded instrument cable to send the signal to the effect for processing.

33. EFFECTS LOOPRETURN: This is a pre-Master (13) patch point return jack. It breaks the path through the preamp. When using an external signal processor, connect the OUTPUT of the effect to this jack using a shielded instrument cable to feed the processed signal into the power amp section.

34. TUNER OUT: This is a direct output from the instrument which can be routed to a tuner. It is the only output that stays active when the Mute switch (3) is engaged.

35. FOOTSWITCH: This is a stereo jack which will operate with a standard dual footswitch. The tip of the plug controls the Mute operation, the ring controls the Graphic EQ operation, while the sleeve acts as a ground common to both. With the footswitch inserted, both the front panel and the footswitch Mute switches are active. The front panel Graphic EQ switch (15) must be IN for the Graphic EQ footswitch to operate.

36. IMPEDANCE SELECTOR: Use this switch to match the output impedance of the amp to the speaker(s) being used (2 or 4 ohms).

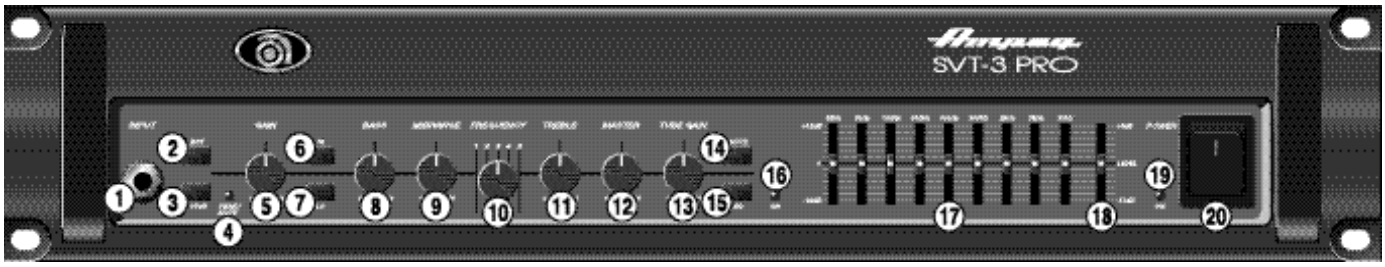
37. SPEAKERS: These jacks are provided for connecting speakers to the unit. While the 1/4" jacks are convenient, the Speakon® connector is preferred for carrying the heavy current from this amplifier.

38. RACK SUPPORT FASTENER: This is a 1/4-20 weld-nut which can be used to provide additional support for the rear pf the unit.

Technical Specifications:

OUTPUT POWER RATING	300 watts RMS minimum continuous @ less than 3% THD into 2 or 4Ω, 0.4VRMS input
TOTAL SYSTEM GAIN	70dB @ 1kHz with levels up, tone flat; -3dB @ 30Hz and 15kHz
TONE CONTROL RANGE	
BASS:	±12dB @ 40Hz
MIDRANGE:	+12, -15dB @ 220, 450, 800, 1.6k or 3kHz
TREBLE:	±12dB @ 4kHz
ULTRA LOW:	+3dB @ 40Hz, -12dB @ 500Hz
ULTRA HIGH:	+8dB @ 8kHz
BRIGHT:	+7dB @ 2kHz
GRAPHIC EQ RANGE/LEVEL	±12dB @ 40Hz, 90Hz, 180Hz, 300Hz, 500Hz, 1kHz, 2kHz, 4kHz, 10kHz; Level = +8, -10dB
SIGNAL TO NOISE RATIO	80dB typical
TUBE COMPLEMENT	12AX7 (5), 12AU7 (3), 6550 (6)
POWER REQUIREMENTS	120VAC, 60Hz, 460VA; 100VAC, 50/60Hz, 460VA; 230VAC, 50/60Hz, 460VA
SIZE AND WEIGHT	19" W x 7.375" H x 15.75" D, 70 lbs.

SVT-3 PRO front panel:



1. INPUT: The signal output from an instrument (active or passive) or a line level signal may be connected here by means of a shielded instrument cable.

2. BRIGHT: This switch, when depressed, adds a more lively top end response to the input signal.

3. -15dB: This switch, when depressed, attenuates the input signal by 15dB. Attenuation allows the Gain control (5) to be used over a larger portion of its range. If clipping is indicated with the Gain control way down, attenuation is needed.

4. PEAKLED: This LED flashes when the signal level into the preamp (excluding the graphic EQ) approaches clipping. Adjust the Gain control (5) until a strong signal from your instrument causes this LED to flicker.

NOTE: If the LED flashes frequently with the Gain at a low setting, use the -15dB switch (3) to attenuate the input signal and readjust the Gain.

5. GAIN: This serves as the input level control for the amplifier. For the best signal to noise ratio set this control so the Peak LED (3) flashes when you strike a string fairly hard.

6. ULTRAHIGH: This switch, when depressed, enhances the amount of high frequency output by 6dB at 5kHz.

7. ULTRA LOW: This switch, when depressed, greatly enhances the amount of low-end bass tones which you can feel and hear, especially the low E and low B strings (of a 5-string bass).

8. BASS: This is the primary low frequency control which allows for 12dB of cut or boost at 50Hz.

9. MIDRANGE: This is the primary midrange control which allows for 15dB of cut or boost at the center frequency selected by the Frequency control (see 10).

10. FREQUENCY: This control allows you to select the center frequency for the midrange control, giving you a choice of five "voices" for the midrange. The numbers correspond to the following center frequencies: 1=220Hz, 2=450Hz, 3=800Hz, 4=1.6kHz, 5=3kHz.

11. TREBLE: This is the primary high frequency control which allows for 19dB of cut or 14dB of boost at 5kHz.

12. MASTER: Set the overall output level of the amplifier with this control.

13. TUBE GAIN: The tube gain control varies the high voltage supply to the power amp tubes. This allows a variety of tonal response characteristics from the power amp and replaces the limiter found on typical solid state power amps. At "10" the voltage is at maximum, providing a dynamic, highly responsive tone. At "0" the voltage is at minimum, offering a thickened, more compressed tone. This tone can also be distorted, depending on volume level. In between settings are best for preventing harsh distortion when driving the power amp to its limits. The effect of this control increases from moderate to dramatic as the power amp is driven harder.

NOTE: When adjusting the tube gain control from "10" to "0" rapidly, a low frequency hum as well as muting of the output signal occur simultaneously. This is due to shifting of the DC bias point of the tubes, and is no cause for concern. Adjusting the control quickly from "0" to "10" brings a moderate delay due to the power supply capacitors charging.

14. MUTE: Use this switch to mute all outputs except the Tuner Out (rear panel, 28). The footswitch can also control muting, if the Mute switch on the front panel is left in the "out" position. (The front panel switch is still active with the footswitch connected. This is excellent for tuning your bass with an electric tuner without having to adjust any levels to turn down your sound.)

15. GRAPHICEQ: This switch, when depressed, enables the 9-band Graphic EQ (see 17 & 18). A footswitch overrides this switch.

16. ACTIVELED: This LED illuminates when the EQ is on.

17. 9-BANDGRAPHIC EQ: These sliders control the output frequencies indicated above each control. The center position of each control is flat (no boost or cut).

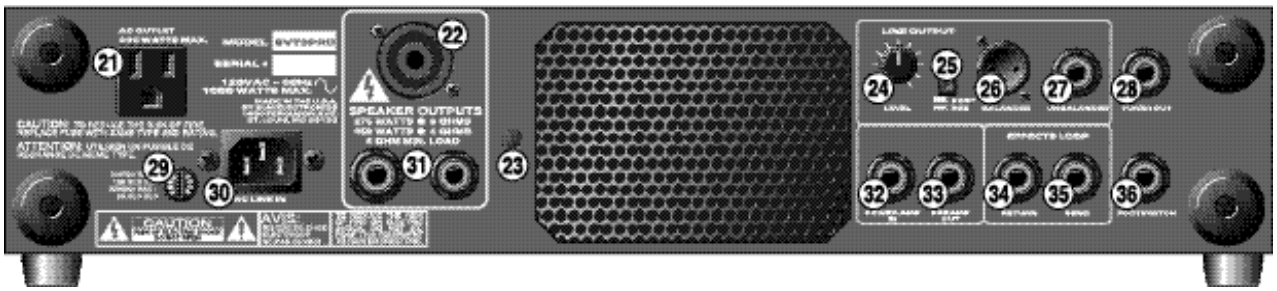
18. LEVEL: This slider is the output volume control for the Graphic EQ and only affects the signal when the EQ is engaged. If the EQ'd signal is too soft, slide the Level control up; if it's too loud, slide this control down.

19. ONLED: This LED illuminates when the Power is ON.

20. POWER: This heavy-duty rocker switch applies the power to the amplifier: the amp is ON when the top of the switch is depressed, OFF when the bottom of the switch is depressed.

NOTE: There is a delay during power up until the protection relay enables the power amplifier output.

SVT-3 PRO rear panel:



21. AC OUTLET (Domestic units only): This unswitched outlet lets you connect any AC powered device (such as an effects unit or an electronic tuner) up to a maximum of 300 watts. The jack is "hot" whenever the amplifier is plugged into a live AC outlet, regardless of the setting of the amplifier's Power switch.

22. SPEAKON® JACK: Use of this heavy-duty connector is recommended when playing at full output levels, due to its incredibly high current handling capability. Connect the amplifier to your speaker cabinet(s) using heavy gauge speaker cables terminated with the appropriate connectors. The pin connections for this jack are 1+ = positive, 1– = negative.

23. RACK SUPPORT FASTENER: For the most secure rack installation it is recommended that a supplemental support be fabricated and fastened to the amplifier via this threaded insert. Use a 1/4-20 threaded bolt that will not protrude more than 1/2" into amplifier to connect the strap.

24. LINEOUTPUTLEVEL: This control adjusts the output level at both Line Output jacks (26 and 27). This control works independently from the front panel Master control. Pull this knob to engage the Ground Lift, if necessary to eliminate hum.

25. LINE OUTPUT SELECTOR SWITCH: You can select either Pre or Post EQ for the signal at the Line Out jacks (26 and 27) with this switch. With this switch in the OUT position, the signal at the jacks will be Pre-EQ. (This is a direct output not affected by any EQ or boost settings.) When this is depressed, the signal is Post-EQ and is controlled and modified by the tone controls, Graphic EQ and the effects loop.

26,27. TRANSFORMER BALANCED LINEOUTPUTS: These jacks supply a balanced/unbalanced preamp output signal for connecting to a house mixing board, recording console or external amplifiers with balanced inputs. The signal can either be set to Pre- or Post-EQ with the Selector switch (25) and its level is controlled by the Line Out Level control (24).

28. TUNER OUT: This jack supplies the only live output when the mute switch (14) is engaged. This allows for silent tuning through an electronic tuner or killing the house send with a monitor mixer send still active.

29. FUSE: The fuse protects the unit from damage due to overload conditions or AC power line surges. If the fuse blows, replace it only with the same size and type.

30. AC LINEIN: Firmly insert the supplied AC power cord into this socket until it is fully seated. Plug the male end of the cord into a grounded AC outlet. ***DO NOT DEFEAT THE GROUND PRONG OF THE AC PLUG!***

31. 1/4" SPEAKER OUTPUT JACKS: These mono 1/4" jacks (wired in parallel) offer you a convenient method of connecting the amplifier to your speaker(s) using cables terminated with 1/4" plugs. (Whenever playing at full output levels, it is recommended that you use the Speakon jack – see 22).

32. POWER AMPIN: This jack connects directly to the internal power amp for use with an external preamp. When using an external source, connect the OUTPUT of the source to this jack using a shielded instrument cable to feed the signal into the power amp section. The internal signal is disconnected when a plug is inserted into this jack.

33. PREAMPOUT: This jack is a direct preamp output for use with an external power amp. Connect the external amp's input to this jack using a shielded instrument cable.

34. EFFECTS LOOPRETURN: When using an external signal processor, connect the OUTPUTof the effect to this jack using a shielded instrument cable to feed the processed signal into the unit.

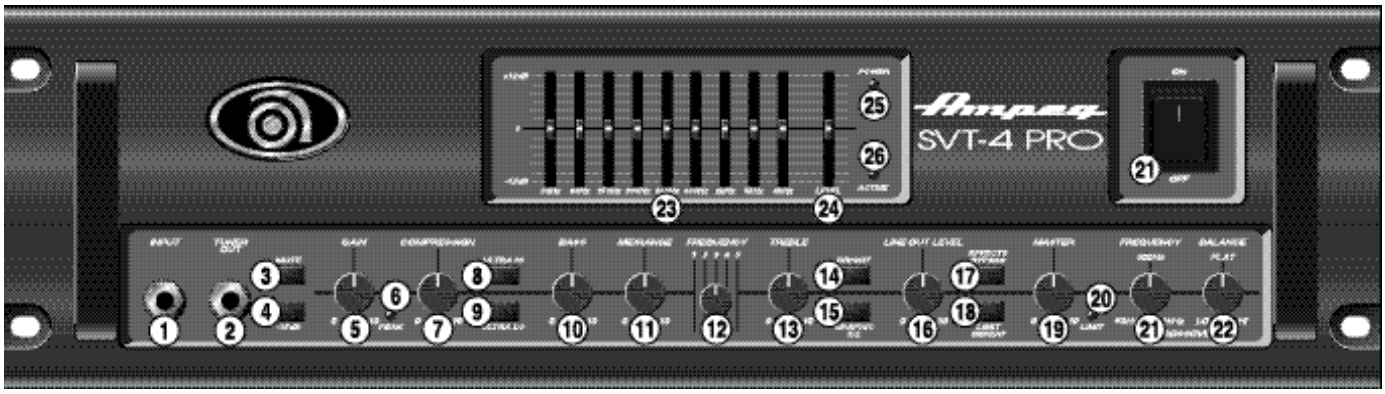
35. EFFECTS LOOP SEND: When using an external signal processor, connect the INPUT of the effect to this jack using a shielded instrument cable to send the post-EQ signal to the effect for processing.

36. FOOTSWITCH: Connect a dual footswitch to this jack for remote Mute and EQ On/Off control. On the stereo 1/4" plug, the tip controls Mute and the ring controls EQ On/Off. The EQ footswitch overrides the front panel switch and the Mute function is available from either location.

Technical Specifications:

OUTPUT POWER RATING	450 watts RMS, 4ohm load, 120VAC; 275 watts RMS, 8 ohm load, 120VAC
TONE CONTROL RANGE	
BASS:	±12dB @ 50Hz
MIDRANGE:	±15dB @ selected frequency (220, 450, 800, 1.6k or 3kHz)
TREBLE:	+14, -19dB @ 5kHz
GRAPHIC EQ RANGE	±15dB @ 33Hz; ±8dB @ 80Hz, 150Hz, 300Hz, 600Hz, 900Hz, 2kHz; ±9dB @ 5kHz; ±10dB @ 8kHz
SIGNAL TO NOISE RATIO	75dB typical
FOOTSWITCH JACK	Graphic EQ On/Off, Mute On/Off – Tip = Mute, Ring = EQ
TUBE COMPLEMENT	12AX7 (4), 12AU7 (1)
POWER REQUIREMENTS	120VAC, 60Hz, 390VA; 100VAC, 50/60Hz, 390VA; 230VAC, 50/60Hz, 390VA
SIZE AND WEIGHT	19" W x 4" H (w/feet) x 15.5" D, 25.5 lbs.

SVT-4 PRO front panel:



1. INPUT: Connect your bass guitar here using a shielded instrument cable.

2. TUNER OUT: This jack is provided for connection to an electronic tuner and is always "live," even when the Mute switch (3) is engaged. This allows for "silent tuning" as well as providing a monitor feed which stays hot even when the house mix is muted. In addition, this jack may also be used as a -6dB input (when not connected to a tuner).

3. MUTE: This switch, when depressed, mutes all outputs except the Tuner Outs. This is excellent for tuning your bass with an electric tuner without having to adjust any levels to turn down your house volume. A footswitch can also be used to control muting as long as the Mute switch on the front panel is left in the "out" position. (The front panel switch is still active with the footswitch connected; see 38, rear panel.)

4. -15dB: This switch, when depressed, will attenuate the input signal by 15dB. If your bass has active pickups, depress this switch to better accommodate its output signal level.

5. GAIN: This controls the gain of the preamp. Adjust this control until the Peak LED (6) flashes on strong signal peaks (but is not illuminated constantly while playing). To obtain the best signal to noise ratio, set the Gain control to the highest possible setting and adjust the Master (19) to obtain the desired volume level.

6. PEAK LED: This LED will illuminate when the preamp signal is nearing its clipping level, indicating optimum gain setting.

7. COMPRESSION: This controls the amount of signal compression. At the fully counter clockwise position there is no compression; at fully clockwise the compression ratio is 10:1. The sonic effect of compression is reduced dynamics, increase sustain and a more consistent output level regardless of how light or hard the strings are played. The compressor is very transparent – that is, there is very little effect on the tone of your instrument.

8. ULTRAHIGH: This switch, when depressed, increases the high frequency output by 6dB at 5kHz.

9. ULTRALOW: This switch, when depressed, greatly enhances the amount of low-end bass tones which you can feel and hear, especially the low E and low B strings (5-string basses).

10. BASS: This control allows for 12dB of cut or boost at 50Hz. The low frequency output is flat at the center position.

11. MIDRANGE: This control allows for 15dB of cut or boost at the center frequency selected by the Frequency control (see 12). The midrange output is flat at the center position.

12. FREQUENCY: This control allows you to select the center frequency for the midrange control (11), giving you a choice of five "voices" for the midrange. The numbers correspond to the following center frequencies as indicated: 1=220Hz, 2=450Hz, 3=800Hz, 4=1.6kHz, 5=3kHz.

13. TREBLE: This control allows for 19dB of cut or 14dB of boost at 5kHz. The high frequency output is flat at the center position.

14. BRIGHT: This switch, when depressed, adds a more lively top end response to the input signal.

15. GRAPHIC EQ: This switch, when depressed, enables the 9-band Graphic EQ (see 23 and 24). The sound of your bass will only be affected by the settings of the EQ slider controls when this switch is depressed, or when a footswitch is pressed. (A footswitch will override the front panel switch; see 38, rear panel.)

16. LINEOUTLEVEL: This controls the strength of the signal at the Line Out jacks (40,41,44,45, rear panel).

17. EFFECTS BYPASS: This switch, when depressed, bypasses the Effects Loop. (A footswitch will override the front panel switch; see 38, rear panel.)

18. LIMIT DEFEAT: The SVT-4 PRO employs internal limiter circuits to help keep the power amplifier's output clean at extreme volume levels. (All amplifiers may begin to clip their output signals as they approach maximum output levels, resulting in potentially speaker-damaging distortion.) These circuits may be defeated by depressing this switch, which may result in an increase in output power but with the possibility of distortion. Use discretion whenever playing with the Limit circuits defeated.

19. MASTER: This controls the overall output level of the amplifier. For the best results, adjust the Gain control as directed (see 5) and use this control to obtain the desired volume level.

20. LIMIT LED: This LED will flash any time the internal limit circuit is called upon to keep the amplifier's output signal clean. This indicates that the amplifier is nearing full output and the limiter is keeping it from clipping the output signal.

21. CROSSOVER FREQUENCY: This sets the crossover point between the Biamp High and Biamp Low Outputs when using the amplifier in the biamp mode. (See pages 13 & 14.)

22. CROSSOVER BALANCE: This adjusts the relative level between the low and high frequency biamp signals when using the amplifier in the biamp mode.

23. 9-BANDGRAPHICEQ: These sliders control the amplitude of the signal at the frequency indicated below each control. The center position of each control is flat: sliding the control upward will increase the output signal level of that frequency; sliding the control downward will decrease it.

24. LEVEL: This is the output volume control for the Graphic EQ and only affects the signal when the EQ is engaged. If the EQ'd signal is too soft, slide the Level control up; if it's too loud, slide the control down.

25. POWERLED: This LED illuminates green when the Power switch (27) is depressed.

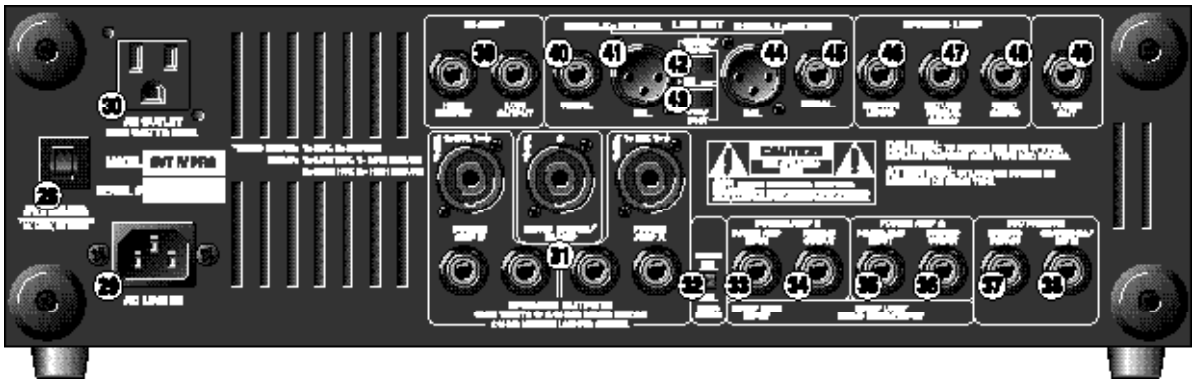
26. ACTIVELED: This LED illuminates when the Graphic EQ switch (15) is depressed.

27. POWER: This heavy-duty rocker switch applies AC power to the amplifier: the amp is ON when the top of the switch is depressed, OFF when the bottom of the switch is depressed.

Technical Specifications:

OUTPUT POWER RATING	1600 watts Mono Bridged @ 4 ohms (1200 watts continuous) 1200 watts Mono Bridged @ 8 ohms (900 watts continuous) Mono Bridged @ 4 ohms (1200 watts continuous) 2 x 900 watts @ 2 ohms (600 watts continuous) 2 x 625 watts @ 4 ohms (490 watts continuous) 2 x 350 watts @ 8 ohms (300 watts continuous)
TONECONTROL RANGE	
BASS:	±12dB @ 50Hz
MIDRANGE:	±15dB @ selected frequency (220, 450, 800, 1.6k or 3kHz)
TREBLE:	+14, -19dB @ 5kHz

SVT-4 PRO rear panel:



28. CIRCUITBREAKER: The SVT-4 PRO employs an AC line circuit breaker to help protect against damages due to excessive current demands. If the amplifier stops working, check the circuit breaker.

NOTE: When the circuit breaker opens, the button will be protruding and showing a contrasting color. You can reset the circuit breaker by pushing it in until it latches. The breaker must cool down for a short time before the button will latch. If the circuit breaker opens repeatedly with no signal input, have the amplifier checked by a qualified service person.

29. ACLINEIN: Firmly insert the supplied AC power cord into this socket until it is fully seated. Plug the male end of the cord into a grounded AC outlet. ***DO NOT DEFEAT THE GROUND PRONG OF THE AC PLUG!***

30. ACOUTLET (Domestic units only): This unswitched outlet lets you connect any AC powered device (such as an effects unit or an electronic tuner) up to a maximum of 300 watts. The jack is "hot" whenever the amplifier is plugged into a live AC outlet, regardless of the setting of the amplifier's Power switch.

31. SPEAKER OUTPUTS: The Speakon® Jacks: Use of these heavy-duty connectors is recommended when playing at full output levels. Connect the amplifier to your speaker cabinet(s) using heavy gauge speaker cables terminated with the appropriate connectors. (In the Mono Bridge mode, pin 1+ = "+," pin 2+ = "–" – see the text to left of the jacks for more pinout information.)

The 1/4" Jacks: These mono 1/4" jacks (two per channel, wired in parallel) offer you a convenient method of connecting the amplifier to your speaker(s) using cables terminated with 1/4" plugs. (Whenever playing at full output levels, it is recommended that you use the Speakon® jacks).

32. STEREO/MONO BRIDGE SWITCH: This switch sets the operating mode of the amplifier. In the "out" position the amplifier is in the Stereo Mode; with the switch in the "in" position the amplifier is in the Mono Bridged Mode.

33,35. POWER AMPINPUTS: These jacks connect directly to the internal power amp for use with external preamps. When using external sources, connect the OUTPUT of the sources to these jacks using shielded instrument cables to feed the signals into the power amp sections. The internal signal is disconnected when a plug is inserted. In the Mono Mode, Channel A = Input. In the Biamp Mode, Channel A = Low (frequency) Input, Channel B = High (frequency) Input.

34,36. PREAMP OUTPUTS: These jacks are direct preamp outputs for use with external power amplifiers, mixing boards, external effects, etc. Connect these jacks to the input jacks of an external amp using shielded instrument cables.

37. EFFECTSBYPASSFOOTSWITCH: Connect a single button footswitch to this jack for remote control of the Effects Loop. Using a footswitch overrides the front panel Effects Bypass switch.

38. GRAPHIC EQ/MUTE FOOTSWITCH: Connect a two button footswitch to this jack for remote Mute and EQ On/Off control. On the stereo 1/4" plug, the tip controls Mute and the ring controls EQ On/Off. The EQ footswitch overrides the front panel switch and the Mute function is available from either location.

39. BIAMP HIGH/LOWOUTPUTS: When used in the biamp mode, the Biamp High Out jack connects to the high frequency power amplifier and the Biamp Low Out jack connects to the low frequency power amp. (See pages 12 and 13.)

40,41,44,45. TRANSFORMER BALANCED LINE OUTPUT JACKS: These jacks supply a balanced signal for connection to a house mixing board, recording console or external amplifier(s). The signal level at these jacks is controlled by the front panel Line Out Level control (16) and is governed by the Stereo/Mono switch (42) and the Pre/Post switch (43).

42. LINE OUT STEREO/MONO SWITCH: This switch is active only when the Pre/Post switch (43) is at the "post" position (switch depressed). When active, this switch governs the signals at the Line Out jacks as follows:

In the Stereo Mode (switch out):

- The Channel A line out jacks (44,45) supply a signal from the Effects Loop Return Right/A jack (47).
- The Channel B line out jacks (40,41) supply a signal from the Effects Loop Return Left/B jack (46).

In the Mono Mode (switch depressed):

- The Channel A line out jacks (44,45) supply a "wet" mono preamp signal – any external effects are applied to this signal. The Effects Loop Left and Right returns are summed together, creating a mono effects signal.
- The Channel B line out jacks (40,41) supply a "dry" mono preamp signal – no external effects are applied to this signal.

43. LINE OUT PRE/POST SWITCH: The signal at the Line Out jacks can be set to either Pre or Post EQ with this switch. With the switch in the OUT position, the signal at the jacks will be Pre-EQ. This is a direct output not affected by any EQ or boost settings. With the switch depressed, the signal is Post-EQ and is controlled and modified by the tone controls, Graphic EQ, the Master level control, the effects loop and the Line Out Stereo/Mono switch (42).

46. EFFECTS LOOP RETURN LEFT/B: When using stereo effects, connect the effect's left channel output into this jack. Do not use this jack with mono effects.

47. EFFECTSLOOP RETURN RIGHT/A (MONO): When using stereo effects, connect the effect's right channel output into this jack. When using mono effects, connect the effect's output into this jack.

48. EFFECTSLOOPSEND: When using an external signal processor, connect the INPUT of the effect to this jack using a shielded instrument cable to send the post-EQ signal to the effect for processing.

49. TUNEROUT: This jack is provided for connection to an electronic tuner and is always "live," even when the Mute switch (3) is engaged, allowing for "silent tuning" as well as a monitor feed which stays hot even when the house mix is muted.

Technical Specifications (con't):

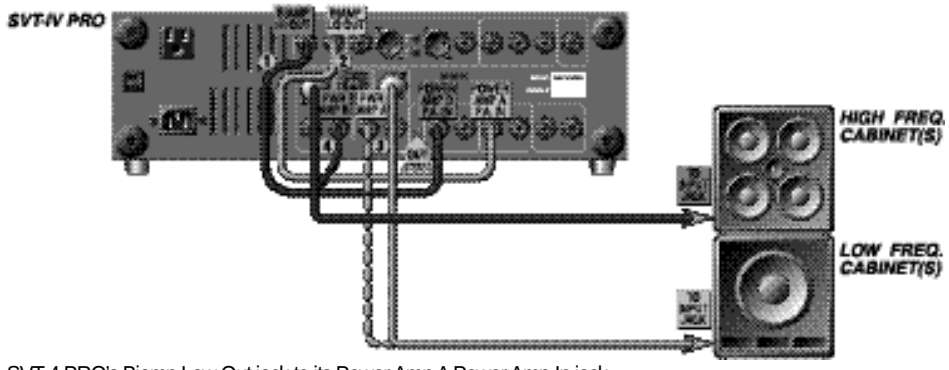
GRAPHIC EQ RANGE/LEVEL	±15dB @ 33Hz; ±8dB @ 80Hz, 150Hz, 300Hz, 600Hz, 900Hz, 2kHz; ±9dB @ 5kHz; ±10dB @ 8kHz; Level = ±10dB
TONE MODIFIER SWITCHES	Bright = +6dB @2kHz; Ultra High = +6dB @ 5kHz, Ultra Low = +2.5 @ 50,-12 @ 560 & +1.5dB @ 5kHz
SIGNAL TO NOISE RATIO	75dB typical
FOOTSWITCH JACK	Effects Bypass (mono); Graphic EQ On/Off, Mute On/Off – Tip = Mute, Ring = EQ
TUBE COMPLEMENT	12AX7 (3)
POWER REQUIREMENTS	120VAC, 60Hz, 425VA; 100VAC, 50/60Hz, 425VA; 230VAC, 50/60Hz, 425VA
SIZE AND WEIGHT	19" W x 5.6" H (w/feet) x 15.5" D, 42 lbs.

SVT-4 PRO hookups:

In the example shown below, the SVT-4 PRO's two internal power amplifiers will power both a full range cabinet and a low frequency cabinet. The crossover point for the low frequency cabinet is determined by the Crossover Frequency control (21). A full range signal is sent to the other cabinet.

Set the Stereo/Mono Bridge switch to the OUT (Stereo) position and connect the system as follows:

Biamp: Full Range / Lows

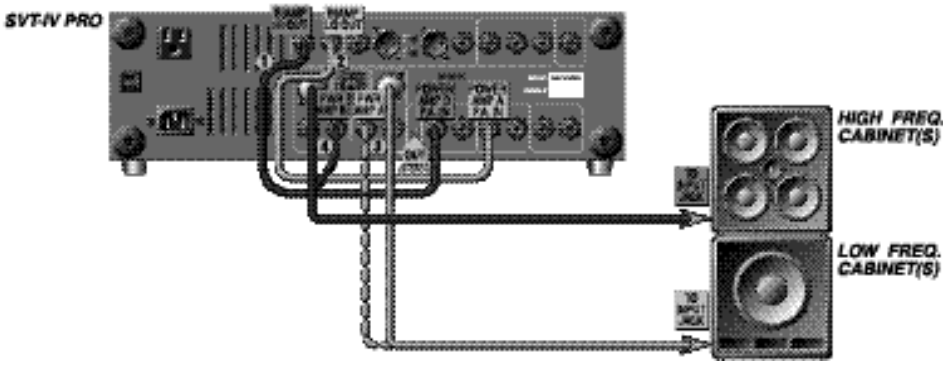


1: Connect a shielded cable from the SVT-4 PRO's Biamp Low Out jack to its Power Amp A Power Amp In jack.
2: Connect a speaker cable from the SVT-4 PRO's Power Amp A Speaker Output jack to the input jack of the low frequency cabinet(s).
3: Connect a speaker cable from the SVT-4 PRO's Power Amp B Speaker Output jack to the input jack of the full range cabinet(s).

In the example shown below, the SVT-4 PRO's two internal power amplifiers will power both a high frequency cabinet and a low frequency cabinet. The crossover point for the cabinets is determined by the Crossover Frequency control (21).

Set the Stereo/Mono Bridge switch to the OUT (Stereo) position and connect the system as follows:

Biamp: Highs / Lows

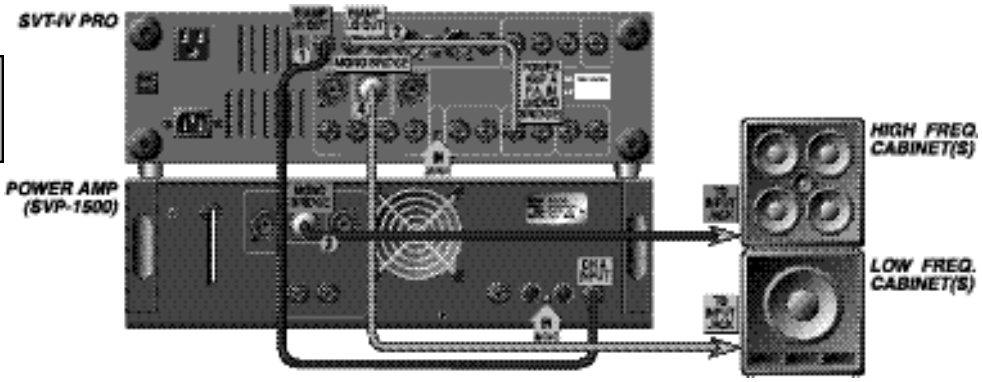


1: Connect a shielded cable from the SVT-4 PRO's Biamp High Output jack to its Power Amp B Power Amp In jack.
2: Connect a shielded cable from the SVT-4 PRO's Biamp Low Output jack to its Power Amp A Power Amp In jack.
3: Connect a speaker cable from the SVT-4 PRO's Power Amp A Speaker Output jack to the input jack of the low frequency cabinet(s).
4: Connect a speaker cable from the SVT-4 PRO's Power Amp B Speaker Output jack to the input jack of the high frequency cabinet(s).

In the example shown below, the SVT-4 PRO's two internal power amplifiers are bridged together and will power the low frequency cabinet(s). A second amplifier will be used to power the high frequency cabinet(s). The crossover point for the cabinets is determined by the Crossover Frequency control (21).

Set the Stereo/Mono Bridge switch to the IN (Mono Bridge) position and connect the system as follows:

Biamp with a Second Amp

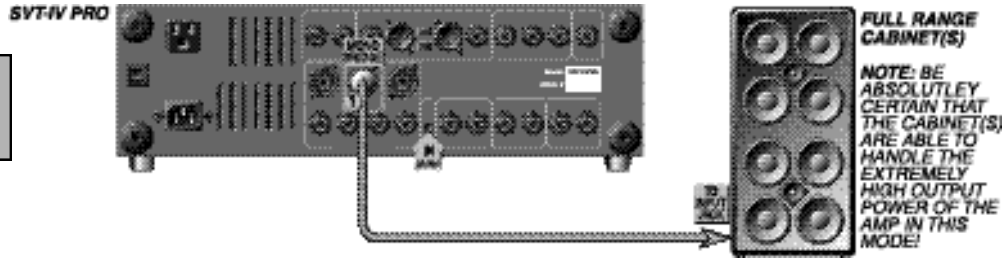


1: Connect a shielded cable from the SVT-4 PRO's Biamp High Output jack to the Input jack of the High Frequency power amplifier.
2: Connect a shielded cable from the SVT-4 PRO's Biamp Low output jack to its Power Amp A Mono Bridge Input jack.
3: Connect the high frequency power amp's Speaker Output jack to the input jack(s) of the high frequency cabinet(s). (Observe amplifier's minimum load rating!)
4: Connect a heavy duty speaker cable terminated with a Speakon® connector (pin 1+ = "+", pin 2+ = "–") from the SVT-4 PRO's Mono Bridge / Biamp Output jack to the input jack of the low frequency speaker cabinet.

SVT-4 PRO hookups:

In the example shown below, the SVT-4 PRO's two internal power amplifiers are bridged together to produce maximum output power.
Set the Stereo/Mono Bridge switch to the IN (Mono Bridged) position and connect the system as follows:

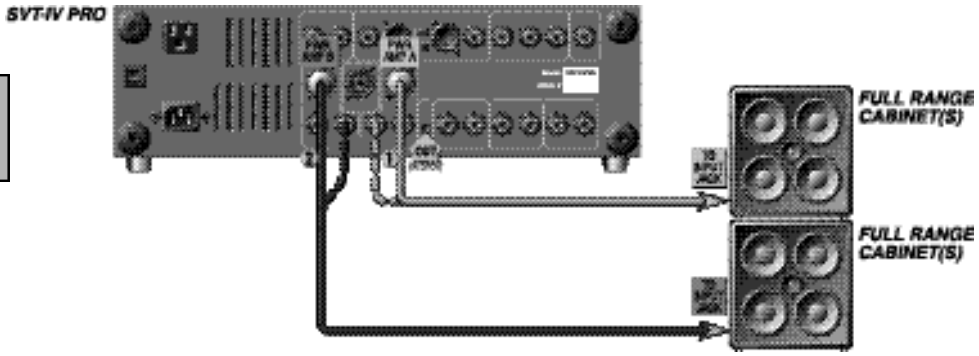
Mono Bridged



1: Connect a heavy duty speaker cable terminated with a Speakon® connector (pin 1+ = "+", pin 2+ = "–") from the SVT-4 PRO's Mono Bridge / Biamp Output jack to the input jack of a speaker cabinet capable of handling the extremely high output power.

In the example shown below, the SVT-4 PRO's two internal power amplifiers will each power a set of full range cabinets.
Set the Stereo/Mono Bridge switch to the OUT (Stereo) position and connect the system as follows:

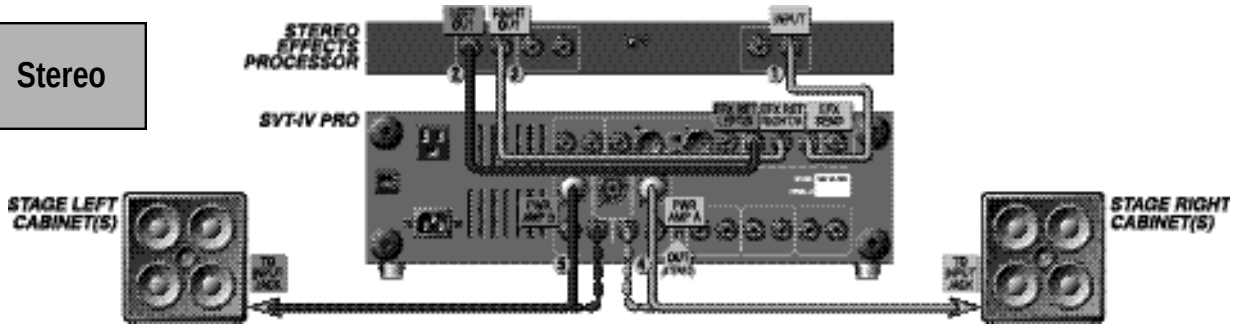
Dual Mono



1: Connect a speaker cable from the SVT-4 PRO's Power Amp A Speaker Output jack to the input jack(s) of a set of full range speakers.
2: Connect a speaker cable from the SVT-4 PRO's Power Amp B Speaker Output jack to the input jack(s) of another set of full range speakers.

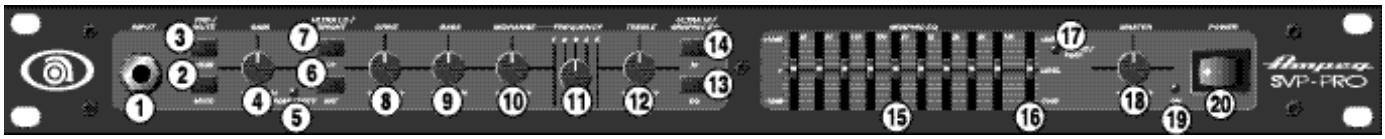
In the example shown below, the SVT-4 PRO's two internal power amplifiers will each power a set of full range cabinets in stereo.
Set the Stereo/Mono Bridge switch to the OUT (Stereo) position and connect the system as follows:

Stereo



1: Connect a shielded cable from the Effects Send of the SVT-4 PRO to the Input of a Stereo Effects Processor.
2: Connect a shielded cable from the Left Output of the Processor to the SVT-4 PRO's Effects Return Left / B jack.
3: Connect a shielded cable from the Right Output of the Processor to the SVT-4 PRO's Effects Return Right / A jack.
4: Connect a speaker cable from the SVT-4 PRO's Power Amp A Speaker Output jack to the input jack(s) of the Stage Left speakers.
5: Connect a speaker cable from the SVT-4 PRO's Power Amp B Speaker Output jack to the input jack(s) of the Stage Right speakers.
For Speakon® connectors pin 1+ = "+", pin 1– = "–".

SVP PRO front panel:



1. INPUT: The signal output from an instrument (active or passive) or a line level signal may be connected to this jack by means of a shielded instrument cable.

2. MUTE: This switch, when depressed, mutes the signal at the the Preamp Out, Effects Send and Transformer Bal. Out jacks (24, 26, 29). The signal is not affected at the Tuner Out jack (27), allowing "silent tuning."

3. PAD: This switch, when depressed, attenuates the input signal by 15dB. Attenuation allows the Gain control (4) to be used in a more usable (higher) position. If clipping is indicated with the Gain control way down, attenuation is needed.

4. GAIN: This control, along with the Pad switch (3), adjusts the level of the signal at the beginning of the preamp. To get the best signal to noise ratio, adjust this control until the Peak/Mute LED (5) flashes on the loudest passages.

5. PEAK/MUTE LED: This LED flashes when the signal level into the preamp (excluding the Graphic EQ) approaches clipping. When the Mute switch (2) is depressed, this LED stays on, indicating that the Mute function is active.

6. BRIGHT: This switch, when depressed, boosts the upper mid and high frequencies.

7. ULTRALO: This switch, when depressed, provides emphasis to the low end by boosting the low frequencies and cutting the mid frequencies.

8. DRIVE: This control is used to overdrive the preamp in order to get various distortion sounds. In the fully counterclockwise position the preamp is in the cleanest, traditional SVTcondition. As the control is rotated clockwise, signal level is increased to drive the preamp harder (into distortion). The tone of the signal is also changed to provide a smoother overdrive. The tone controls may have to be readjusted to obtain the overall desired tone. The Gain control (4) and Pad (3) interact with the Drive control. For greater overdrive, the attenuator switch should be out and the Drive control full clockwise. Use the Gain control to set the amount of overdrive desired. The Peak/Mute LED (5) will glow a steady red when the amp is used in this manner.

9. BASS: This is the primary low frequency control. It allows for 12dB of cut or boost at 40Hz.

10. MIDRANGE: This is the primary midrange control. It allows for 15dB of cut or 12dB of boost at the center frequency selected by the Frequency control (11).

11. FREQUENCY: Allows you to select the center frequency for the Midrange control (10), giving you a choice of five "voices" for the Midrange. The center frequencies are (from left to right) 220Hz, 450Hz, 800Hz, 1.6kHz, and 3kHz.

12. TREBLE: This is the primary high frequency control. It allows for 12dB cut or boost at 4kHz.

13. GRAPHIC EQ: This switch places the Graphic EQ circuitry in or out of the signal path. The switch must be de-pressed for the Graphic EQ footswitch to function. In the OUTposition, there is no solid state circuitry in the signal path from input to preamp out (in other words, the signal is "pure tubes").

14. ULTRA HI: This switch boosts the frequencies above those affected by the Bright switch (6).

15. EQ FREQUENCY SLIDERS: These sliders control the Graphic EQ section at the frequencies indicated above each slider.

16. EQ LEVEL: This adjusts the level of the signal to compensate for boosts or cuts, or to obtain a desired level change when using the Graphic EQ.

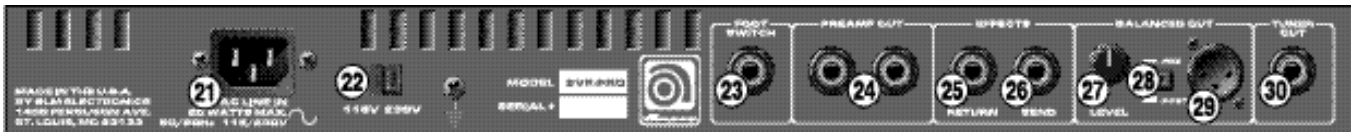
17. EQ ACTIVE/PEAK LED: This LED glows yellow when the EQ section is enabled by the proper combination of Graphic EQ switch (13) and Footswitch jack (23). The LED momentarily turns off whenever the signal gets close to clipping.

18. MASTER: This controls the signal level to the Preamp Out Jacks (24).

19. POWER INDICATOR LED: This LED glows green when the preamp is on.

20. POWER: This switch supplies AC power to the unit.

SVP PRO rear panel:



21. AC LINE IN: Firmly insert the supplied AC power cord into this socket until it is fully seated. Plug the male end of the cord into a grounded AC outlet. ***DO NOT DEFEAT THE GROUND PRONG OF THE AC PLUG!***

22. AC LINE SELECTOR: This switch selects the proper AC line voltage to match the preamp to the available AC mains. Make sure it is in the proper position.

23. FOOTSWITCH: This is a stereo jack which will operate with a standard dual footswitch. The tip of the plug controls the Mute operation, the ring controls the Graphic EQ operation, and the sleeve acts as a ground common to both. With the footswitch inserted, both the front panel and the footswitch Mute switches are active. *The front panel Graphic EQ switch (13) must be depressed for the Graphic EQ foot-switch to operate.*

24. PREAMP OUTS: These jacks carry the post-Master (18) signal. This signal is the main output which can be used to feed an external power amplifier, mixing console, or house PA system.

25. EFFECTS LOOP RETURN: This is a pre-Master (18) patch point return jack. It breaks the path through the preamp. When using an external signal processor, connect this jack to the OUTPUT of the processor by means of a shielded instrument cable.

26. EFFECTS LOOP SEND: This is a post-EQ, pre-Master (18) patch point send jack. It does not break the path through the preamp. When using an external signal processor, connect this jack to the INPUT of the processor by means of a shielded instrument cable.

27. LEVEL: This control adjusts the level of the signal at the Balanced Out jack (29).

28. PRE/POST: This switch selects a direct out from the bass (Pre) in the OUT position and the preamp signal just before the Master (18) (Post) in the depressed position. The selected signal is sent to the Balanced Out jack (29).

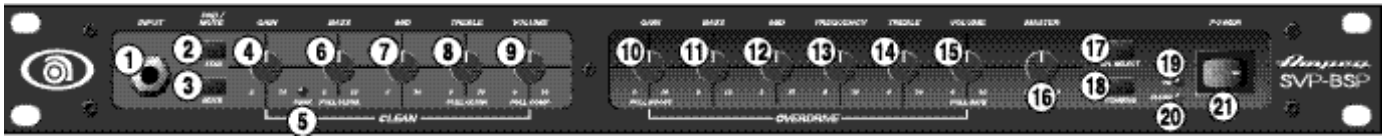
29. TRANSFORMER BALANCED OUT: This XLR-type jack is the output for the signal selected by the Pre/Post switch (28). This signal can be used to feed an external power amplifier, mixing console, or house PA system.

30. TUNER OUT: This jack is a direct output from the instrument. It is the only output that stays active when the Mute switch is depressed.

Technical Specifications:

TOTAL SYSTEM GAIN	58dB, @ 1kHz with levels up and tones flat, -3dB @ 30Hz and 15kHz
TONE CONTROL RANGE	
BASS:	±12dB @ 40Hz
MIDRANGE:	+12,-15dB @ selected frequency (220, 450, 800, 1.6k or 3kHz)
TREBLE:	±12dB @ 4kHz
ULTRA LO:	+3dB @ 40Hz, -12dB @ 500Hz
ULTRA HI:	+8dB @ 8kHz
BRIGHT:	+7dB @ 2kHz
GRAPHIC EQRANGE/LEVEL	±12dB @ 40Hz, 90Hz, 180Hz, 300Hz, 500Hz, 1kHz, 2kHz, 4kHz, 10kHz; Level = +8, -10dB
SIGNAL TO NOISE RATIO	80dB typical
TUBE COMPLEMENT	12AX7 (4), 12AU7 (1)
POWER REQUIREMENTS	120VAC, 60Hz, 28VA; 100/120VAC, 50/60Hz, 28VA; 230VAC, 50/60Hz, 28VA
SIZE AND WEIGHT	19” W x 1.75” H x 10” D, 9 lbs.

SVP BSP front panel:



1. INPUT: Plug your bass (or the output of your wireless bass receiver) in here using a shielded instrument cable.

2. MUTE: Push this button and the preamp's output is cut off (no signal gets through to your amp). The Tuner Out jack (35) isn't affected by this switch, so you tune in private.

3. PAD: If your bass has active electronics or "hot" pickups (lots of Peak LED with a low Gain setting – 4, 5), you'll need this switch. Pressing the switch in reduces the signal level going into the preamp by 15dB, allowing you more room to adjust the Gain controls (4, 10).

CLEAN CHANNEL:

4. GAIN: This control, along with the Pad switch (3), adjusts the level of the signal going into the clean channel. For the best signal to noise ratio, set this control so that the Peak LED (5) flashes during your loudest passages.

5. PEAK LED: This LED flashes when the signal level into the preamp nears clipping. When the Mute switch (2) is engaged, this LED stays lit.

6. BASS: The low frequency control for the clean channel, with a 20dB range at 40Hz. Pull the knob out to add a boost to the lowest frequencies.

7. MID: The midrange control for the clean channel, with a 21dB range at 300Hz.

8. TREBLE: The high frequency control for the clean channel, with an 18dB range at 10kHz. Pull the knob out to boost the highest frequencies.

9. VOLUME: This controls the output level for the clean channel.

OVERDRIVECHANNEL:

10. GAIN: This control, along with the Pad switch (3), adjusts the level of the signal going into the overdrive channel. Pull the knob out to boost the gain (allowing more distortion). With the boost on, the preamp automatically adjusts the frequency response to compensate for the added gain.

11. BASS: The low frequency control for the overdrive channel, with 12dB of cut or boost at 100Hz.

12. MID: The midrange control for the overdrive channel, with 5dB of cut or 20dB of boost at the center frequency as chosen by the Frequency control (13).

13. FREQUENCY: Allows you to select the center frequency for the Midrange control (12), giving you a wide range of choices for the "voice" of the Midrange. The center frequencies range from 300Hz at the "0" position to 2kHz at the "10 " position.

14. TREBLE: The high frequency control for the overdrive channel, with 12dB cut or boost at 7kHz.

15. VOLUME: This controls the output level for the overdrive channel. Pull the knob out to engage the gate circuit – this activates a fixed-threshold noise gate, which virtually turns the channel off when there's no input signal. (This keeps things quiet when your rig is on but you're not actually playing.)

16. MASTER: This controls the overall output volume level of the preamp, keeping the same balance between channels as set by their volume controls.

17. CHANNEL SELECT: This switch selects the clean channel when out and the overdrive channel when in. When a footswitch (23) is used, this switch is disabled.

18. COMBINE: This switch does exactly what it says: it combines the clean channel with the overdrive channel when the overdrive channel is selected.

NOTE: In order to hear a combination of the two channels, the Channel Select switch (17) must be in the OVERDRIVE ("in") position. Otherwise, only the clean channel will be heard.

19. CLEAN LED: This LED indicator glows green when the Clean channel is active.

20. OVERDRIVE LED: This LED indicator glows red when the Overdrive channel is active.

21. POWER: This switch turns the preamp on (towards the white mark) and off.

SVP BSP rear panel:

22. AC LINE IN: Connect the power cord here, making sure it is fully seated in the socket. Plug the male end of the cord into a grounded AC outlet. ***DO NOT DEFEAT THE GROUND PRONG OF THE AC PLUG!***

23. FOOTSWITCH: Connect a two-button footswitch here for control of muting and channel selection: tip = channel, ring = mute, sleeve = ground.

NOTE: With a footswitch attached, the channel select footswitch overrides the front panel channel switch; the mute footswitch and the front panel mute switch are both active.

24,25. PREAMP OUTPUTS: Connect these jacks to your power amp(s). If only the Clean/Mix output (25) is used, all outputs (clean, overdrive, and combined) appear at this jack. When a plug is inserted into the Overdrive output (24), the clean and overdrive outputs appear at their respective jacks.

26-29. EFFECTS LOOPS: Each channel of the preamp has its own effects loop for connecting external effects. Connect the Send jack (27 or 29, depending on the channel) to the input of the device, then connect the output of the device to the Return jack (26 or 28).

30,33. BALANCED OUTPUT LEVELS: These controls adjust the levels of the signals at the Balanced Output jacks: 30 is for Overdrive, 33 is for Clean.

31,34. TRANSFORMER BALANCED OUTPUTJACKS: These XLR-type jacks can be used to feed an external power amplifier, mixing console, or house PA system: 31 is for Overdrive, 34 is for Clean. The overdrive output is post volume and pre master. The clean channel's output is selected via the pre/post switch (32).

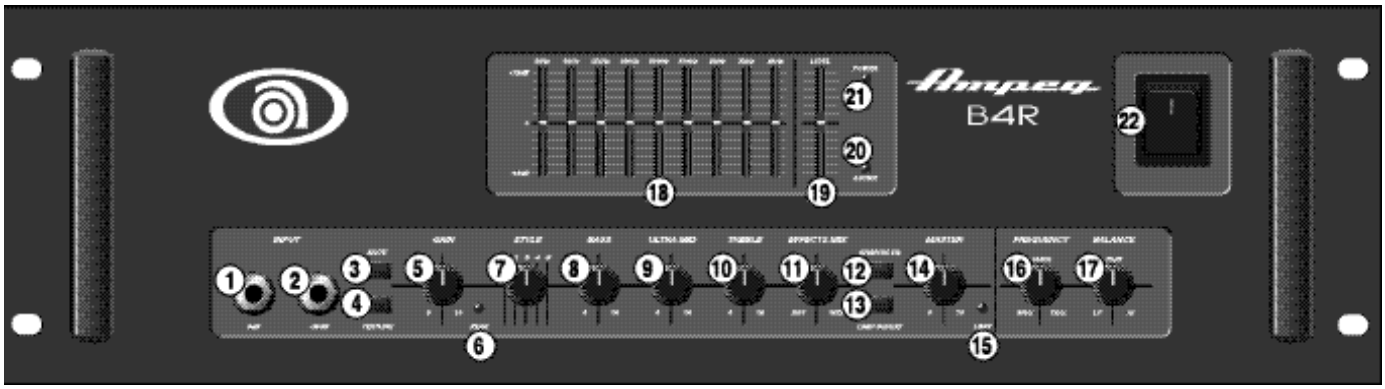
32. PRE/POST: In the post position (switch out), the signal is post volume, pre master. In the pre position (switch in), the signal is taken directly from the preamp tube. It's like having a built-in tube direct box in the preamp.

35. TUNER OUT: This jack lets you send a direct signal from your bass to your tuner, regardless of the settings of the preamp. Even with the Mute (3) engaged, the output at this jack is the same as if you connected directly from your bass.

Technical Specifications:

TOTAL SYSTEM GAIN	
CLEAN:	22dB, @ 1kHz with levels up, tones flat
OVERDRIVE: 22dB, @ 1kHz with levels up, tones flat	
TONE CONTROL RANGE	
CLEAN:	
BASS:	20dB range @ 40Hz
MIDRANGE:	21dB range @ 300Hz
TREBLE:	18dB range @ 10kHz
ULTRA LOW:	+5dB @ 30Hz
ULTRA HIGH:	+8dB @ 8kHz
BRIGHT:	+7dB @ 15kHz
OVERDRIVE:	
BASS:	±12dB @ 100Hz
MIDRANGE:	+20dB, -5dB @ 300Hz
TREBLE:	±12dB @ 7kHz
SIGNAL TO NOISE RATIO	80dB typical, Clean channel
TUBE COMPLEMENT	12AX7 (1)
POWER REQUIREMENTS	120VAC, 60Hz, 15VA; 100/120VAC, 50/60Hz, 15VA; 230VAC, 50/60Hz, 15VA
SIZE AND WEIGHT	19" W x 1.75" H x 10" D, 10 lbs.

B-4R front panel:



1. 0dB INPUT: The signal output from an instrument (active or passive – typically passive) or a line level signal may be connected here by means of a shielded instrument cable. The signal at this jack is sent into the preamp at full amplitude.

2. -15dB INPUT: The signal output from an instrument (active or passive – typically active) or a line level signal may be connected here by means of a shielded instrument cable. The signal at this jack is padded 15dB before it is sent into the preamp.

3. MUTE: This switch, when depressed, mutes all outputs *except* the Tuner Out (41). A footswitch can also control muting if the Mute switch on the front panel is left in the "out" position. (The front panel switch is still active with a footswitch connected.) This is excellent for tuning your bass with an electronic tuner without having to adjust any levels or turn down your house volume.

4. TEXTURE: This switch adds a "tube emulation" stage which changes the tone for a more aggressive sound. Using the Texture switch, you can overdrive the amplifier without typical (and harsh-sounding) solid state clipping.

5. GAIN: This control sets the level of the signal entering the preamp stage. Adjust this control until the Peak LED (6) flashes on strong signal peaks (but is not illuminated constantly while playing). To obtain the best signal to noise ratio, set the Gain control as described above and adjust the Master (14) to obtain the desired volume level.

6. PEAK LED: This LED will illuminate when the signal entering the preamp stage is near the clipping level. Adjust the Gain control (5) until a strong signal from your instrument causes this LED to flicker.

7. STYLE: This five-position switch allows you to vary the tone of the amplifier. The following table lists each of the different settings – experiment with the Style and other EQ controls (8,9,10,18,19) for the results which suit you best.

POSITION 1:	Fully "scooped" mids (mid cut)
POSITION2:	Traditional passive tone setting
POSITION3:	Basically flat
POSITION4:	Boosted high end
POSITION5:	Basically flat with low end roll off – for loud playing without "muddiness"

8. BASS: This is the primary low frequency control which allows 12dB of cut or boost at 50Hz. The low frequency output is flat at the center position.

9. ULTRAMID: This is the primary midrange control which allows 7dB of cut at 400Hz or boost at 800Hz. The midrange output is flat at the center position.

10. TREBLE: This is the primary high frequency control which allows 18dB of cut or boost at 5kHz. The high frequency output is flat at the center position.

11. EFFECTS MIX: This control varies the mix between the direct (dry) signal and the effects (wet) when the effects loop (39,40) is used. Full counterclockwise results in all direct signal (no effect) and full clockwise gives all effect and no direct signal. The clockwise position is equivalent to a series effects loop and should be used with such devices as limiters and equalizers.

12. GRAPHIC EQ: This switch activates the graphic equalizer. When a footswitch is used, this switch is disabled.

13. LIMIT DEFEAT: The B4R employs internal limiter circuits to help keep the power amplifier's output clean at extreme volume levels. (All amplifiers may begin to clip their output signals as they approach maximum output levels, resulting in potentially speaker-damaging distortion.) These circuits may be disabled by depressing this switch. This may result in an increase in output power, but also increases the possibility of distortion. Use discretion whenever playing with the Limit circuits off.

14. MASTER: This control sets the overall output level of the amplifier. For the lowest possible noise level, adjust the Gain control as described in 5 and use this control to obtain the desired volume level.

15. LIMIT LED: This LED will flash any time the internal limit circuit is called upon to keep the amplifier's output signal clean. This indicates that the amplifier is nearing full output and the limiter is keeping it from clipping the output signal.

16. FREQUENCY: This control sets the crossover point between the Biamp High and Biamp Low Outputs when using the amplifier in the biamp mode.

17. BALANCE: This control adjusts the relative level between the low and high frequency biamp signals when using the amplifier in the biamp mode.

18. 9-BANDGRAPHICEQ: These sliders control the amplitude of the frequencies indicated above each control. The center position of each control is flat: sliding the control upward will increase the output level of that frequency; sliding the control downward will decrease it.

19. LEVEL: This is the output volume control for the Graphic EQ and only affects the signal when the EQ is engaged. If the EQ'd signal is too soft, slide the Level control up; if it's too loud, slide the control down.

20. POWERLED: This LED glows green when the Power switch (22) is ON.

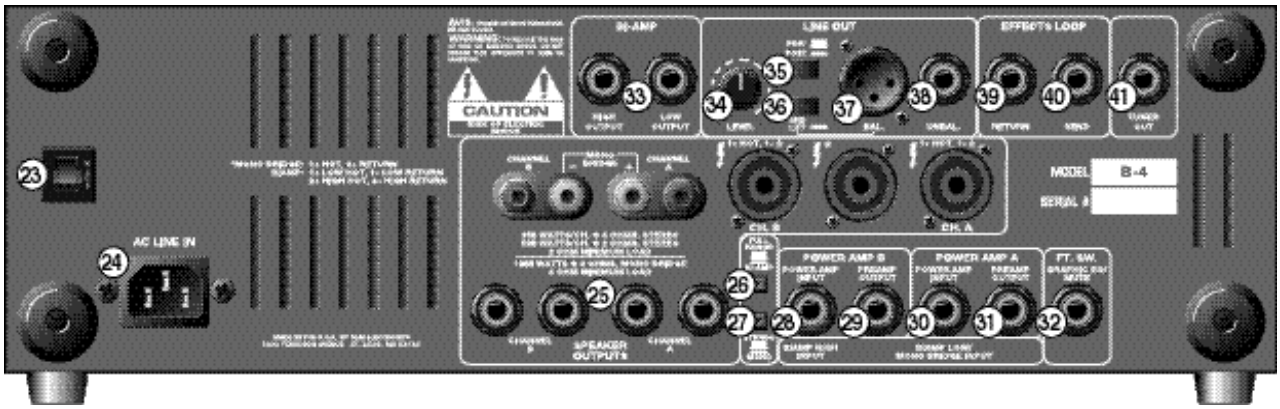
21. ACTIVELED: This LED illuminates when the EQ is on.

22. POWER: This heavy-duty rocker switch applies the power to the amplifier: the amp is ON when the top of the switch is depressed, OFF when the bottom of the switch is depressed.

Technical Specifications:

OUTPUT POWER RATING	1350 watts Mono Bridged @ 4 ohms (1000 watts continuous) 840 watts Mono Bridged @ 8 ohms (680 watts continuous) 2 x 675 watts @ 2 ohms (500 watts continuous) 2 x 420 watts @ 4 ohms (340 watts continuous) 2 x 255 watts @ 8 ohms (205 watts continuous)
TONE CONTROL RANGE	
BASS:	±12dB @ 50Hz
ULTRAMID:	+7dB @ 800Hz, –7dB @ 400Hz
TREBLE:	±18dB @ 5kHz

B-4R rear panel:



23. CIRCUITBREAKER: The B4R employs an AC line circuit breaker to help protect against damage due to excessive current demands. If the amplifier stops working, check the circuit breaker. If it has opened, the button will be protruding and showing a contrasting color. You can reset the circuit breaker by pushing it in until it latches. The breaker must cool down for a short time before the button will latch. If the circuit breaker opens repeatedly, have the amplifier checked by a qualified service person.

24. ACLINEIN: Firmly insert the supplied AC power cord into this socket until it is fully seated. Plug the male end of the cord into a grounded ACoutlet. ***DO NOT DEFEAT THE GROUND PRONG OF THE AC PLUG!***

25. SPEAKEROUTPUTS: The 1/4" jacks offer a convenient method of connecting to speaker cabinets using cables terminated with 1/4" plugs. However, when using the amplifier at or near its full output power, using the five-way binding posts (domestic units) or Speakon® jacks (export units) is recommended. The binding posts/Speakon® jacks ***must*** be used when operating in the Mono Bridged mode. (See pages 21 and 22.) In the Mono Bridged mode, pin 1+ = "+," pin 2+ = "–."

26. FULLRANGE/BIAMP: This switch determines how the signal is sent to the internal amplifiers. In the Full Range position (switch out), a full range signal is sent to both amp channels. In the Biamp position (switch in), the low frequencies are sent to Channel A and the high frequencies are sent to Channel B. (See pages 21 and 22.)

NOTE: When Biamping, the Stereo/Mono switch (27)must be set to Stereo. (See pages 21 and 22.)

27. STEREO/MONO: This switch sets the operating mode of the amplifier. In the "out" position the amplifier is in the Stereo Mode; with the switch in the "in" position the amplifier is in the Mono Bridged Mode. (See pages 21 and 22.)

28,30. POWERAMPINPUTS: These jacks connect directly to the power amp for use with external preamps. When using external sources, connect the OUTPUTof the sources to these jacks using shielded instrument cables to feed the signals into the power amp sections. The internal signal is disconnected when a plug is inserted. In the Mono Mode, Channel A = Input. In the Biamp Mode, Channel A = Low Input, Channel B = High Input. (See pages 21 and 22.)

29,31. PREAMPOUTPUTS These jacks are direct preamp outputs for use with external power amplifiers, mixing boards, external effects, etc. Connect the external unit inputs to these jacks using shielded instrument cables.

32. FOOTSWITCH: Connect a two button footswitch to this jack for remote Mute and EQ On/Off control. On the stereo 1/4" plug, the tip controls Mute and the ring controls EQ On/Off. When a footswitch is connected, the Mute switch (3) can still be used; however, the EQ switch (12) is disabled.

33. BIAMP HIGH/LOW OUTPUTS: When using the amplifier in the biamp mode, the Biamp High Out jack carries the high frequency signal and the Biamp Low Out jack carries the low frequency signal. (See pages 21 and 22.)

34. LINEOUTLEVEL: This controls the strength of the signal at the Line Out jacks (37,38) and works independently from the Master control (14).

35. LINEOUT PRE/POSTSWITCH: The signal at the Line Out jacks can be set to either Pre or Post EQ with this switch. With the switch in the OUTposition, the signal at the jacks will be Pre-EQ. This is a direct output not affected by any preamp tone settings. With the switch IN, the signal is Post-EQ and is controlled and modified by the tone controls, Graphic EQ and the effects loop.

36. LINEOUTGROUNDLIFT: This switch disconnects the ground pin of the line Out XLR jack (37), which may help reduce residual hum and buzz sometimes picked up in line out signal cables. The ground is lifted when the switch is depressed.

37,38. TRANSFORMER BALANCED LINE OUT JACKS: These jacks supply a pre-Master, line level signal for connection to a house mixing board, recording console or external amplifier(s). The XLR-type jack (37) provides a *balanced* signal; the 1/4" jack (38) provides an *unbalanced* signal. The signal level at these jacks is controlled by the Line Out Level control (34) and is governed by the Pre/Post switch (35).

39. EFFECTSLOOP RETURN: When using external effects, connect the effect's output into this jack using a shielded instrument cable.

40. EFFECTSLOOP SEND: When using an external signal processor, connect this jack to the input of the effect using a shielded instrument cable.

41. TUNEROUT: This jack is provided for connection to an electronic tuner and is always "live," even when the Mute switch (3) is engaged, allowing for "silent tuning" as well as a monitor feed which remains active when the house mix is muted.

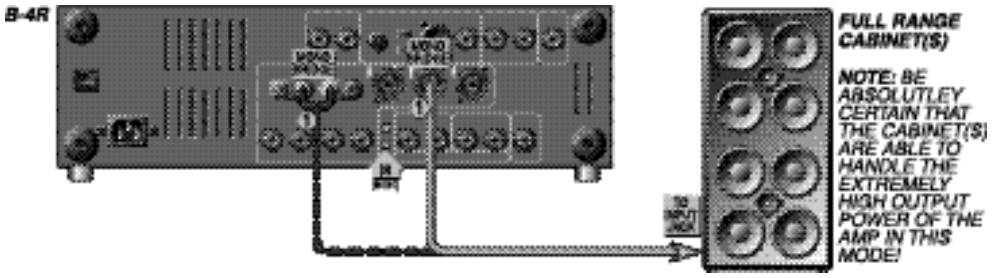
Technical Specifications (con't):

GRAPHIC EQ RANGE/LEVEL	±15dB @ 33Hz; ±10dB @ 80Hz, ±8dB @ 150Hz, 300Hz, 600Hz, 900Hz, 2kHz; ±10dB @ 5kHz; ±10dB @ 8kHz; Level = ±6dB
SIGNAL TO NOISE RATIO	75dB typical
FOOTSWITCH JACK	Graphic EQ On/Off, Mute On/Off – Tip = Mute, Ring = EQ
POWER REQUIREMENTS	120VAC, 60Hz, 800VA; 100VAC, 50/60Hz, 800VA; 230VAC, 50/60Hz, 800VA
SIZE AND WEIGHT	19" W x 5.6" H (w/feet) x 15.5" D, 43 lbs.

B-4R hookups:

In the example shown below, the B-4's two internal power amplifiers are bridged together to produce maximum output power.
Set the Stereo/Mono Bridge switch to the IN (Mono Bridged) position and connect the system as follows:

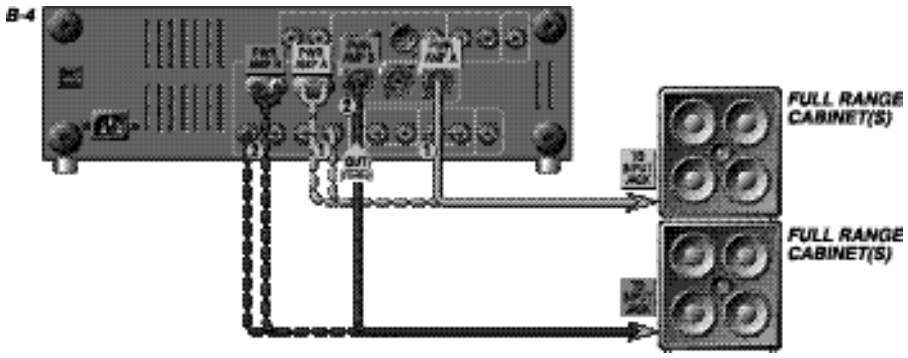
Mono Bridged



1: Connect a heavy duty speaker cable terminated with a Speakon® connector or dual banana plugs from the B-4's Mono Bridge / Biamp Output jack to the input jack of a speaker cabinet capable of handling the extremely high output power. (Speakon®: pin 1+ = "+," 2+ = "–"; Banana: Mono +, Mono –.)

In the example shown below, the B-4's two internal power amplifiers will each power a set of full range cabinets.
Set the Stereo/Mono Bridge switch to the OUT (Stereo) position and connect the system as follows:

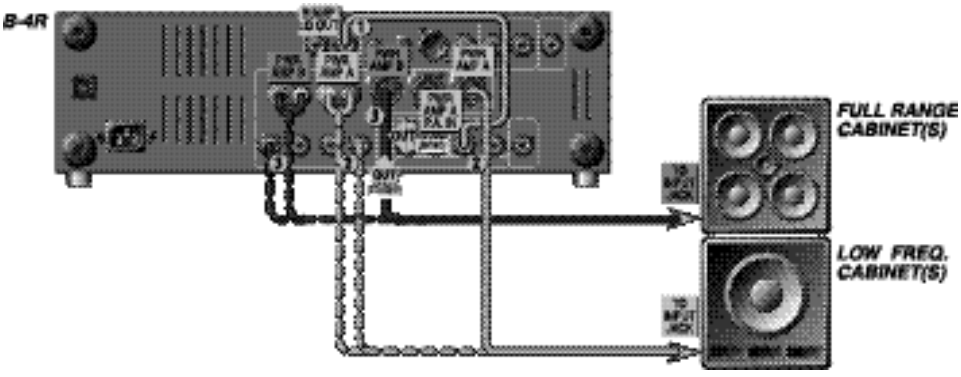
Dual Mono



1: Connect a speaker cable from the B-4's Power Amp A Speaker Output jack to the input jack(s) of a set of full range speakers.
2: Connect a speaker cable from the B-4's Power Amp B Speaker Output jack to the input jack(s) of another set of full range speakers.

In the example shown below, the B-4's two internal power amplifiers will power both a full range cabinet and a low frequency cabinet. The crossover point is determined by the Biamp Frequency control (16).
Set the Stereo/Mono Bridge switch to the OUT (Stereo) position and connect the system as follows:

Biamp: Full Range / Lows



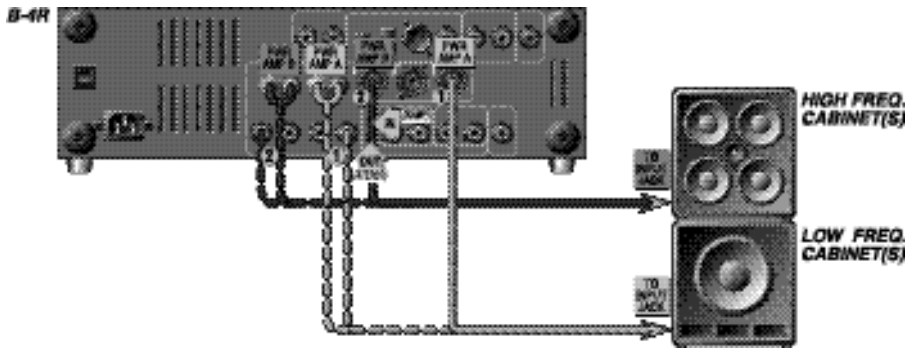
1: Connect a shielded cable from the B-4's Biamp Low Out jack to its Power Amp A Power Amp In jack.
2: Connect a speaker cable from the B-4's Power Amp A Speaker Output jack to the input jack of the low frequency cabinet(s).
3: Connect a speaker cable from the B-4's Power Amp B Speaker Output jack to the input jack of the full range cabinet(s).

B-4R hookups:

In the example shown below, the B-4's two internal power amplifiers will power both a high frequency cabinet and a low frequency cabinet. The crossover point is determined by the Biamp Frequency control (16).

Set the Stereo/Mono Bridge switch to the OUT (Stereo) position, the Full Range/Biamp switch to the IN (Biamp) position, and connect the system as follows:

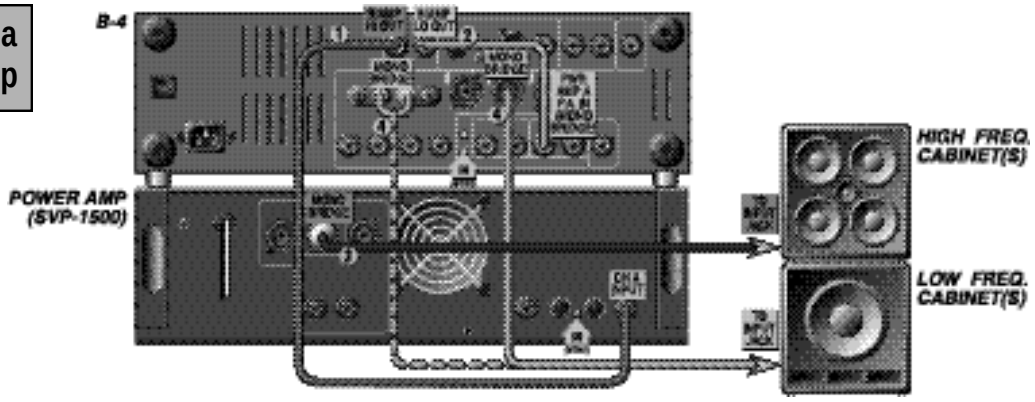
Biamp: Highs / Lows



1: Connect a speaker cable from the B-4's Power Amp A Speaker Output jack to the input jack of the low frequency cabinet(s).
2: Connect a speaker cable from the B-4's Power Amp B Speaker Output jack to the input jack of the high frequency cabinet(s).

In the example shown below, the B-4's two internal power amplifiers are bridged together and will power the low frequency cabinet(s). A second amplifier will be used to power the high frequency cabinet(s). The crossover point is determined by the Biamp Frequency control (16).

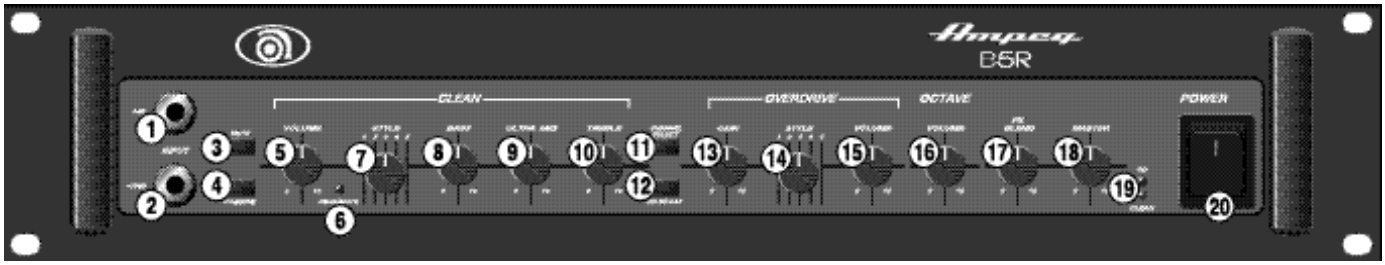
Biamp with a Second Amp



Set the Stereo/Mono Bridge switch to the IN (Mono Bridge) position and connect the system as follows:

1: Connect a shielded cable from the B-4's Biamp High Output jack to the Input jack of the High Frequency power amplifier.
2: Connect a shielded cable from the B-4's Biamp Low output jack to its Power Amp A Input jack.
3: Connect the high frequency power amp's Speaker Output jack to the input jack(s) of the high frequency cabinet(s). (Observe amplifier's minimum load rating!)
4: Connect a heavy duty speaker cable terminated with a Speakon® connector or dual banana plugs from the B-4's Mono Bridge / Biamp Output jack to the input jack of the low frequency speaker cabinet. (Speakon®: pin 1 +, 2 –; Banana: Mono –, Mono +.)

B-5R front panel:



1. 0dB INPUT: The signal output from an instrument (active or passive – typically passive) or a line level signal may be connected here by means of a shielded instrument cable. The signal at this jack is sent into the preamp at full amplitude.

2. -15dB INPUT: The signal output from an instrument (active or passive – typically active) or a line level signal may be connected here by means of a shielded instrument cable. The signal at this jack is reduced 15dB before it is sent into the preamp.

3. MUTE: This switch, when depressed, mutes all outputs *except* the Tuner Out (28). This is excellent for tuning your bass with an electronic tuner without having to adjust any levels or turn down your stage volume.

4. COMBINE: This switch, when depressed, allows the clean channel to remain active when the overdrive channel is selected, combining the two channels to create a different-sounding "third channel."

CLEANCHANNEL:

5. VOLUME: This control adjusts the output level for the clean channel and the input to the Octave circuit (16). Adjust this control no higher than that which causes the Peak/Mute LED (6) to flash on strong signal peaks.

6. PEAK/MUTE LED: This LED flashes when the signal level in the preamp approaches clipping. When the Mute switch (3) is depressed, this LED remains illuminated until the Mute is turned off.

7. STYLE: This five-position switch allows you to vary the tone of the clean channel. The following table lists each of the different settings – experiment with the Style and other EQ controls for the results which suit you best.

POSITION 1:	Fully "scooped" mids (mid cut)
POSITION2:	Traditional passive tone setting
POSITION3:	Basically flat
POSITION4:	Boosted high end
POSITION5:	Basically flat with low end roll-off – for loud playing without "muddiness"

8. BASS: This is the primary low frequency control which has a range of 22dB @ 50Hz.

9. ULTRAMID: This is the primary midrange control which has a range of 13dB @ 250Hz.

10. TREBLE: This is the primary high frequency control which has a range of 22dB @ 8kHz.

11. CHANNEL SELECT: This switch selects the clean channel in the out position and the overdrive channel when depressed.

OVERDRIVECHANNEL:

12. OD BOOST: This switch, when depressed, adds gain and tone shaping to the overdrive channel signal for heavy overdrive.

13. GAIN: This control sets the level of the signal entering the preamp stage.

14. STYLE: This five-position switch allows you to vary the tone of the overdrive channel. The following table lists each of the different settings – experiment with the Style control for the results which suit you best.

POSITION 1:	Mid cut – for clean to semi-overdriven sound
POSITION2:	Slight mid cut
POSITION3:	Basically flat
POSITION4:	High end roll-off
POSITION5:	Large mid peak tailored for heavily overdriven sound combined with the clean channel

15. VOLUME: This control adjusts the output level for the overdrive channel.

16. OCTAVEVOLUME: This control adjusts the output level for an added signal which is one octave lower than the instrument's original signal. This signal is dependent on the clean channel's Volume control (5) and can be switched by the Octave footswitch (31). The effectiveness of this signal depends on playing style, pickup selection, and neck position.

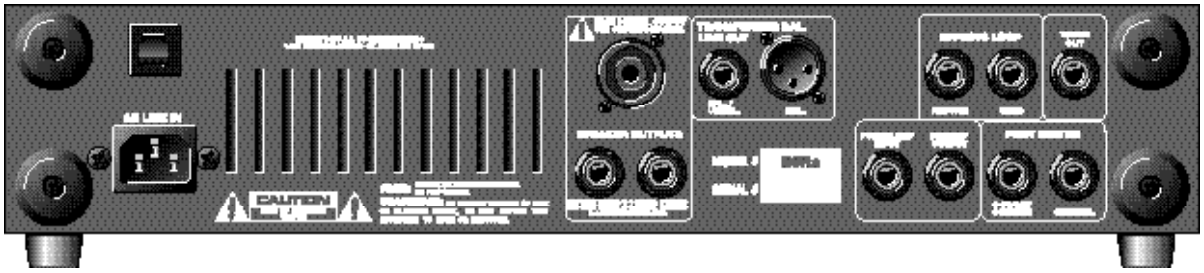
17. FX BLEND: This control varies the mix between the direct (dry) signal and the effects (wet) when the effects loop (26,27) is used. Full counterclockwise results in all direct signal (no effect) and full clockwise gives all effect and no direct signal. The clockwise position is equivalent to a series effects loop and should be used with such devices as limiters and equalizers.

18. MASTER: This control sets the overall output level of the amplifier.

19. OD/CLEAN LEDS: The red LED ("OD," upper) illuminates when the overdrive channel is selected, while the green LED ("CLEAN," lower) illuminates when the clean channel is selected.

20. POWER: This heavy-duty rocker switch applies AC power to the amplifier. The amp is ON when the top of the switch is depressed, OFF when the bottom of the switch is depressed.

B-5R rear panel:



21. CIRCUITBREAKER: The B5R employs an AC line circuit breaker to help protect against damage due to excessive current demands. If the amplifier stops working, check the circuit breaker. If it has opened, the button will be protruding and showing a contrasting color. You can reset the circuit breaker by pushing it in until it latches. The breaker must cool down for a short time before the button will latch. If the circuit breaker opens repeatedly, have the amplifier checked by a qualified service person.

22. ACLINEIN: Firmly insert the supplied AC power cord into this socket until it is fully seated. Plug the male end of the cord into a grounded ACoutlet. ***DO NOT DEFEAT THE GROUND PRONG OF THE AC PLUG!***

23. SPEAKEROUTPUTS: The 1/4" jacks offer a convenient method of connecting to speaker cabinets using cables terminated with 1/4" plugs. However, when using the amplifier at or near its full output power, using the Speakon® jack is recommended.

24,25. TRANSFORMER BALANCED LINE OUT JACKS: These jacks supply a pre-Master, line level signal for connection to a house mixing board, recording console or external amplifier(s). The 1/4" jack (25) provides a *balanced* or an *unbalanced* signal; the XLR-type jack (24) provides a *balanced* signal.

26. EFFECTSLOOPRETURN: When using external effects, connect the effect's output into this jack using a shielded instrument cable.

27. EFFECTSLOOPSEND: When using an external signal processor, connect this jack to the input of the effect using a shielded instrument cable.

28. TUNEROUT: This jack is provided for connection to an electronic tuner and is always "live," even when the Mute switch (3) is engaged, allowing for "silent tuning" as well as a monitor feed which remains active when the other outputs are muted.

29. POWERAMPINPUT: This jack connects directly to the power amp for use with an external preamp. When using an external source, connect the OUTPUT of the source to this jack by means of a shielded instrument cable to feed the signal into the power amp section. The internal signal is disconnected when a plug is inserted.

30. PREAMPOUTPUT: This jack is a direct preamp output for use with an external power amplifier, mixing board, external effects, etc. Connect the external unit input to this jack using a shielded instrument cable.

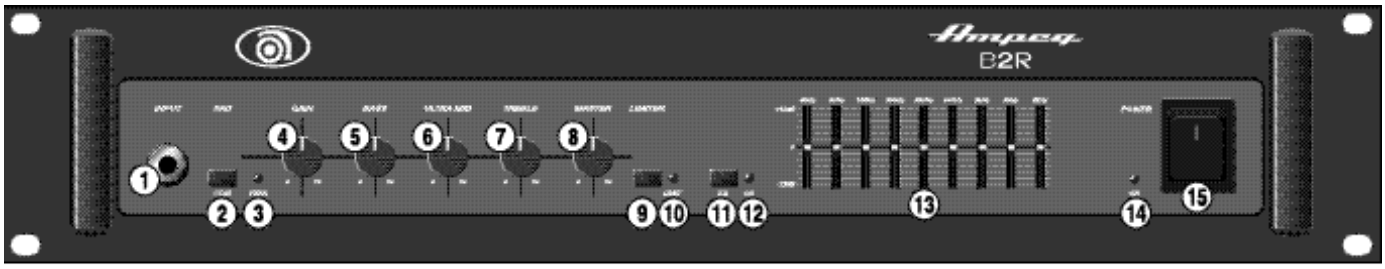
31. OCTAVE/COMBINE FOOTSWITCH: Connect a two button footswitch to this jack for remote control of the Octave and Combine features. The tip connection controls the Octave feature and the ring connection controls the Combine feature.

32. CHANNEL FOOTSWITCH: Connect a single button footswitch to this jack for remote channel selection.

Technical Specifications:

OUTPUT POWER RATING	675 watts @ 2 ohms (500 watts continuous) 2 x 380 watts @ 4 ohms (310 watts continuous) 2 x 220 watts @ 8 ohms (180 watts continuous)
TONE CONTROL RANGE	
BASS:	22dB range @ 50Hz
ULTRA MID:	13dB range @ 250Hz
TREBLE:	22dB range @ 8kHz
SIGNAL TO NOISE RATIO	75dB typical
FOOTSWITCH JACKS	A: Channel Switch; B: Octave (Tip), Channel Combine (Ring)
POWER REQUIREMENTS	120VAC, 60Hz, 545VA; 100VAC, 50/60Hz, 545VA; 230VAC, 50/60Hz, 545VA
SIZE AND WEIGHT	19/17.4" W x 3.8" H (w/feet) x 15.5" D, 32 lbs.

B-2R front panel:



1. 0DB (INPUT): The signal output from an instrument (active or passive) or a line level signal may be connected here by means of a shielded instrument cable.

2. 15dB PAD: This switch, when depressed, attenuates the input signal by 15dB. Attenuation allows the Gain control (4) to be used over a larger portion of its range. If clipping is indicated with the Gain control near minimum, attenuation is needed.

3. PEAK LED: This LED flashes when the signal level into the preamp approaches clipping. Adjust the Gain control (4) until a strong signal from your instrument causes this LED to flicker.

NOTE: If the LEDflashes frequently with the gain at a low setting, use the 15dB Pad (2) to attenuate the input signal and readjust the Gain.

4. GAIN: This serves as the input level control for the amplifier. For the best signal-to-noise ratio set this control so the Peak LED (3) flashes when you strike a string fairly hard.

5. BASS: This is the primary low frequency control which allows for 8dB of cut or boost at 50Hz.

6. ULTRA-MID: This is the primary midrange control. Rotate the control to the left of center for a "contoured" sound (more distant, less midrange output) or to the right of center for a pronounced (more up-front) tone.

7. TREBLE: This is the primary high frequency control which allows for 12dB of boost or 19dB of cut at 5kHz.

8. MASTER: Set the overall output level of the amplifier with this control. The Effects Loop and Balanced Out (23,23;26) are not affected by the Master control.

9. LIMITER: The B2R uses an internal Optocoupler Limiter to assist in keeping the power amplifier's output "clean" at extreme volume levels. (All amplifiers begin to clip their output signals as they approach maximum output levels, resulting in distortion which may damage your speakers.) To engage the Limiter, depress the Limit switch. Whenever the amplifier is at full power, the Limit LED (10) will flash. This is an indication that the limiter is keeping peak signals from clipping the output.

NOTE: Playing at full power with the Limiter off will give you increased output power, but the sound may be distorted. Use discretion when playing without the Limiter.

10. LIMITLED: This LED will flash when the internal limiter circuit is activated.

11. EQON SWITCH: Depress this switch to activate the Graphic EQ. The EQON LED (12) illuminates when the EQ is on.

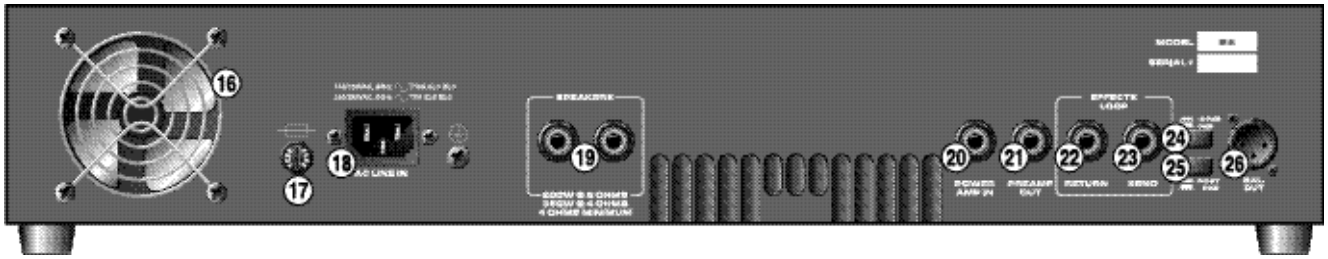
12. EQONLED: This LEDilluminates when the graphic EQ is activated.

13. GRAPHIC EQ: These sliders control the output of the frequencies indicated above each control. The center position of each control is flat (no boost or cut).

14. POWERON LED: This LED indicator illuminates when the POWER switch (15) is ON.

15. POWER SWITCH: This heavy-duty rocker switch applies the power to the amplifier. The amp is ON when the top of the switch is depressed, OFF when the bottom of the switch is depressed.

B-2R rear panel:



16. FAN: This temperature controlled, variable speed fan draws cool air into the amplifier, which forces heat out through the exhaust vents. Never block the vent holes or the fan opening.

17. FUSE: This protects the unit from damage due to overload conditions or power line surges. If the fuse blows, replace it only with the same size and type.

18. AC LINE IN: Firmly insert the supplied AC power cord into this socket until it is fully seated. Plug the male end of the cord into a grounded AC outlet. ***DO NOT DEFEAT THE GROUND PRONG OF THE AC PLUG!***

19. SPEAKER OUTPUTS: Use these jacks to connect the amplifier to your speaker(s) using cables terminated with 1/4" connectors.

NOTE: When connecting multiple speaker cabinets to the amplifier, keep the overall impedance at or above four ohms!

20. POWER AMPIN: This mono jack allows you to feed the preamp output of another amplifier to the input of the B2R's internal power amp. This bypasses the preamp circuitry of the B2R.

WARNING: This jack goes directly into the power amplifier. DONOT connect high level signals to it!

21. PREAMPOUT: A post-EQ signal may be taken from this jack and sent to the house mixing board, recording console or external power amplifier.

22. EFFECTS RETURN: To use an external effects device, connect the OUTPUTof the device to this jack by means of a shielded cable. This feeds the processed signal into the Master section of the amplifier.

23. EFFECTS SEND: Connect the output from this jack to the INPUT of your effects by means of a shielded cable. This sends a post-EQ signal to your effects.

24. -20dB SWITCH: This switch adjusts the output level at the Balanced Line Output jack (26). The control works independently from the front panel Master control. Depressing the switch activates the 20dB pad. The result is a signal that is more compatible with the microphone inputs on a mixer.

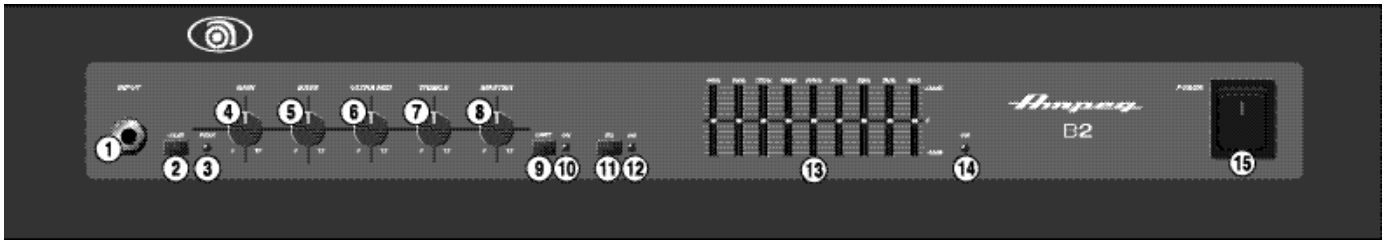
25. PRE/POST SWITCH: You can select either Pre or Post EQ for the signal at the Balanced Out jack (26) with this switch. With the switch in the OUT position, the signal at the jacks will be Pre-EQ. This is a direct output not affected by any EQ or boost settings. With the switch depressed, the signal is Post-EQ and is controlled and modified by the tone controls, Graphic EQ, and Effects Loop.

26. BALANCED OUTPUT: This XLR-type connector supplies a balanced preamp output signal for connecting to a house mixing board, recording console or external amplifiers with balanced inputs. The signal can be set to Pre or Post EQ by the Pre/Post switch (25). The level can be adjusted for either mic or line type inputs using the -20dB switch (24).

Technical Specifications:

OUTPUT POWER RATING	350 watts RMS, 4 ohm load, 120VAC; 200 watts RMS, 8 ohm load, 120VAC
POWER REQUIREMENTS	120VAC, 60Hz, 200VA; 100VAC, 50/60Hz, 200VA; 230VAC, 50/60Hz, 200VA
TONE CONTROL RANGE	
BASS:	±8dB @ 50Hz
ULTRA-MID:	±8dB @ 500Hz
TREBLE:	+12dB/-19dB @ 5kHz
GRAPHIC EQ RANGE	±11dB @ 40Hz; ±8dB @ 80Hz, 150Hz, 300Hz, 600Hz, 900Hz, 2kHz; ±9dB @ 5kHz, ±12db @ 9kHz
GAIN	45dB typical, tones @ center
SIGNAL TO NOISE RATIO	75dB typical
SIZE AND WEIGHT	19" W x 3.5" H x 12.75" D, 15 lbs.

B-2 front panel:



1. 0DB (INPUT): The signal output from an instrument (active or passive) or a line level signal may be connected here by means of a shielded instrument cable.

2. 15dB PAD: This switch, when depressed, attenuates the input signal by 15dB. Attenuation allows the Gain control (4) to be used over a larger portion of its range. If clipping is indicated with the Gain control near minimum, attenuation is needed.

3. PEAK LED: This LED flashes when the signal level into the preamp approaches clipping. Adjust the Gain control (4) until a strong signal from your instrument causes this LED to flicker.

NOTE: If the LEDflashes frequently with the gain at a low setting, use the 15dB Pad (2) to attenuate the input signal and readjust the Gain.

4. GAIN: This serves as the input level control for the amplifier. For the best signal-to-noise ratio set this control so the Peak LED (3) flashes when you strike a string fairly hard.

5. BASS: This is the primary low frequency control which allows for 8dB of cut or boost at 50Hz.

6. ULTRA-MID: This is the primary midrange control. Rotate the control to the left of center for a "contoured" sound (more distant, less midrange output) or to the right of center for a pronounced (more up-front) tone.

7. TREBLE: This is the primary high frequency control which allows for 12dB of boost or 19dB of cut at 5kHz.

8. MASTER: Set the overall output level of the amplifier with this control. The Effects Loop and Balanced Out (20,21;26) are not affected by the Master control.

9. LIMIT: The B2 uses an internal Optocoupler Limiter to assist in keeping the power amplifier's output "clean" at extreme volume levels. (All amplifiers begin to clip their output signals as they approach maximum output levels, resulting in distortion which may damage your speakers.) To engage the Limiter, depress the Limit switch. Whenever the amplifier is at full power, the Limit LED (10) will flash. This is an indication that the limiter is keeping peak signals from clipping the output.

NOTE: Playing at full power with the Limiter off will give you increased output power, but the sound may be distorted. Use discretion when playing without the Limiter.

10. LIMITLED: This LED will flash when the internal limiter circuit is activated.

11. EQ SWITCH: Depress this switch to activate the Graphic EQ. The EQON LED (12) illuminates when the EQ is on.

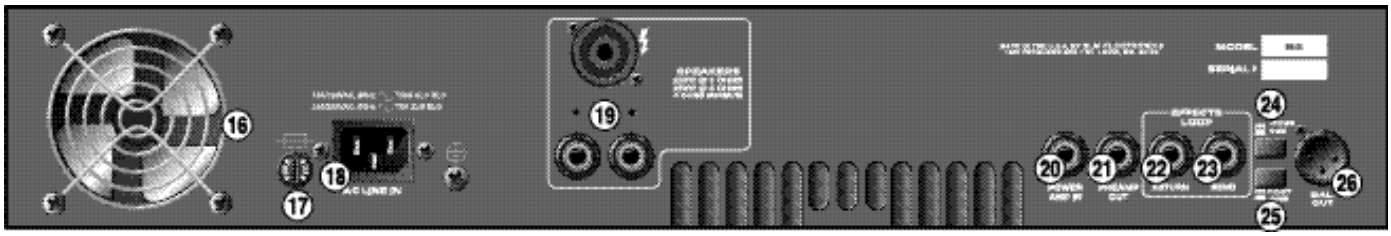
12. EQ ONLED: This LED illuminates when the graphic EQ is activated.

13. GRAPHIC EQ: These sliders control the output of the frequencies indicated above each control. The center position of each control is flat (no boost or cut).

14. POWERON LED: This LED indicator illuminates when the POWER switch (15) is ON.

15. POWER SWITCH: This heavy-duty rocker switch applies the power to the amplifier. The amp is ON when the top of the switch is depressed, OFF when the bottom of the switch is depressed.

B-2 rear panel:



16. FAN: This temperature controlled, variable speed fan draws cool air into the amplifier, which forces heat out through the exhaust vents. Never block the vent holes or the fan opening.

17. FUSE: This protects the unit from damage due to overload conditions or power line surges. If the fuse blows, replace it only with the same size and type.

18. AC LINE IN: Firmly insert the supplied AC power cord into this socket until it is fully seated. Plug the male end of the cord into a grounded AC outlet. ***DO NOT DEFEAT THE GROUND PRONG OF THE AC PLUG!***

19. SPEAKER OUTPUTS: The 1/4" jacks offer a convenient method of connecting to speaker cabinets using cables terminated with 1/4" plugs. However, when using the amplifier at or near its full output power, using the Speakon® jack is recommended.

NOTE: When connecting multiple speaker cabinets to the amplifier, keep the overall impedance at or above four ohms!

20. POWER AMPIN: This mono jack allows you to feed the preamp output of another amplifier to the input of the B2 internal power amp. This bypasses the preamp circuitry of the B2.

WARNING: This jack goes directly into the power amplifier. DONOT connect high level signals to it!

21. PREAMPOUT: A post-EQ signal may be taken from this jack and sent to the house mixing board, recording console or external power amplifier.

22. EFFECTS RETURN: To use an external effects device, connect the OUTPUTof the device to this jack by means of a shielded cable. This feeds the processed signal into the Master section of the amplifier.

23. EFFECTS SEND: Connect the output from this jack to the INPUT of your effects by means of a shielded cable. This sends a post-EQ signal to your effects.

24. -20dB SWITCH: This switch adjusts the output level at the Balanced Line Output jack (26). The control works independently from the front panel Master control. Depressing the switch activates the 20dB pad. The result is a signal that is more compatible with the microphone inputs on a mixer.

25. PRE/POST SWITCH: You can select either Pre or Post EQ for the signal at the Balanced Out jack (26) with this switch. With the switch in the OUT position, the signal at the jacks will be Pre-EQ. This is a direct output not affected by any EQ or boost settings. With the switch depressed, the signal is Post-EQ and is controlled and modified by the tone controls, Graphic EQ, and Effects Loop.

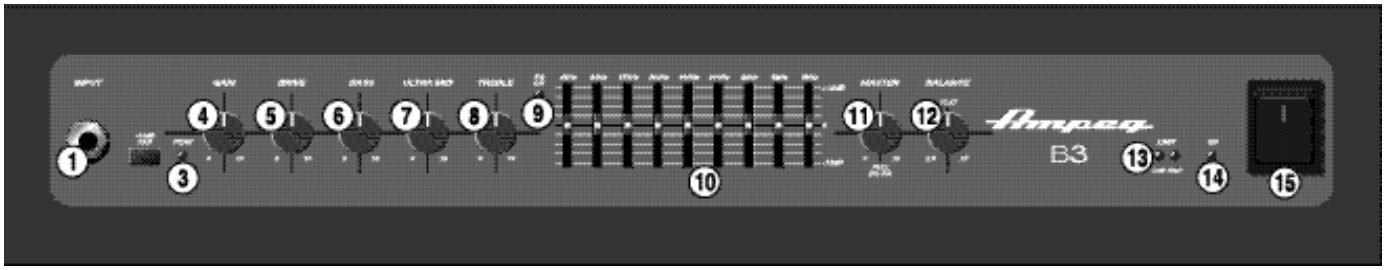
26. BALANCED OUTPUT: This XLR-type connector supplies a balanced preamp output signal for connecting to a house mixing board, recording console or external amplifiers with balanced inputs. The signal can be set to Pre or Post EQ by the Pre/Post switch (25). The level can be adjusted for either mic or line type inputs using the -20dB switch (24).

Technical Specifications:

OUTPUT POWER RATING	350 watts RMS, 4 ohm load, 120VAC; 200 watts RMS, 8 ohm load, 120VAC
POWER REQUIREMENTS	120VAC, 60Hz, 200VA; 100VAC, 50/60Hz, 200VA; 230VAC, 50/60Hz, 200VA
TONE CONTROL RANGE	
BASS:	±8dB @ 50Hz
ULTRA-MID:	±8dB @ 500Hz
TREBLE:	+12dB/-19dB @ 5kHz
GRAPHIC EQ RANGE	±11dB @ 40Hz; ±8dB @ 80Hz, 150Hz, 300Hz, 600Hz, 900Hz, 2kHz; ±9dB @ 5kHz, ±12db @ 9kHz
GAIN	45dB typical, tones @ center
SIGNAL TO NOISE RATIO	75dB typical
INTERNAL SPEAKERS	
Size/Type:	15" Ampeg Custom (1)
Magnet:	56 oz.
Voice Coil:	2.5"
Impedance:	8 ohms
SIZE AND WEIGHT:	24" W x 24.5" H[1] x 16" D, 87 lbs.

[1]add 2" for casters

B-3, B-328, B-3158 front panel:



1. INPUT: The signal output from an instrument (active or passive) or a line level signal may be connected here by means of a shielded instrument cable.

2. -15dB PAD: This switch, when depressed, attenuates the input signal by 15dB. Attenuation allows the Gain control (4) to be used in a more usable (higher) position. If clipping is indicated with the Gain control at a low setting, attenuation is needed.

3. PEAK LED: This LED flashes when the signal level into the preamp approaches clipping. Adjust the Gain control (4) until a strong signal from your instrument causes this LED to flicker.

NOTE: If the LED flashes frequently with the Gain at a low setting, use the -15dB pad (2) to attenuate the input signal and readjust the Gain.

4. GAIN: This serves as the input level control for the amplifier. For the best signal to noise ratio set this control so the Peak LED(3) flashes when you strike a string fairly hard.

5. DRIVE: This control is used to overdrive the preamp in order to get various harmonic enhancement or distorted sounds. In the fully counterclockwise position the preamp is in the cleanest condition. As the control is rotated clockwise, signal level is increased to drive the preamp harder (into distortion). The tone of the signal is also changed to provide a smoother overdrive. (The tone controls may have to be readjusted to obtain the overall desired tone.) The Gain control (4) and -15dB Pad (2) interact with the Drive control. For greater overdrive, the Pad switch should be out and the Drive control fully clockwise. Use the Gain control to set the amount of overdrive desired. The Peak LED (3) will illuminate steadily when the amp is used in this manner.

6. BASS: This is the primary low frequency control which allows for 12dB of cut or boost at 50Hz.

7. ULTRAMID: This is the primary midrange control. Rotate this control to the left of center for a "contoured" sound (more distant, less midrange output) or to the right of center for a pronounced (more up-front) tone.

8. TREBLE: This is the primary high frequency control which allows for 22dB of cut or 17dB of boost at 5kHz.

9. EQONLED: This LED illuminates when the EQ is turned on by either the Master Control (11) or a footswitch (24, rear panel).

10. GRAPHIC EQ: These sliders control the output frequencies indicated above each control. The center position of each control is flat (no boost or cut).

11. MASTER: Set the overall output level of the amplifier with this control. Pulling this knob out activates the Graphic EQ (10). When a footswitch is connected (24, rear panel) this switch is disabled.

12. BALANCE (B3158 only): This control proportions the output signal between the low and high frequency output jacks (see 18, rear panel) when using the amp in the biamp mode.

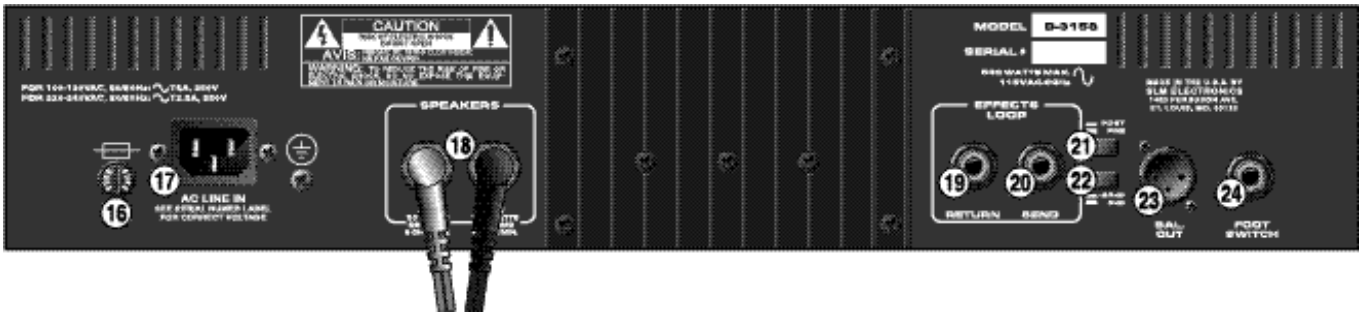
13. LIMIT LED(S): The LED illuminates whenever the amplifier is near full output, indicating that the internal limiter is keeping the output from distorting.

NOTE: There are two Limit LEDs only on the B3158: one for its low frequency power amp and one for its high frequency power amp.

14. POWER ON LED: This LED indicator illuminates when the POWER switch (15) is ON.

15. POWER SWITCH: This heavy-duty rocker switch applies the power to the amplifier. The amp is ON when the top of the switch is depressed, OFF when the bottom of the switch is depressed.

B-3, B-328, B-3158 rear panel:



16. FUSE: This protects the unit from damage due to overload conditions or power line surges. If the fuse blows, replace it only with the same size and type.

17. AC LINE IN: Firmly insert the supplied AC power cord into this socket until it is fully seated. Plug the male end of the cord into a grounded AC outlet. ***DO NOT DEFEAT THE GROUND PRONG OF THE AC PLUG!***

18. SPEAKER OUTPUTS: The 1/4" jacks offer a convenient method of connecting to speaker cabinets using cables terminated with 1/4" plugs. However, when using the amplifier at or near its full output power, using the Speakon® jack is recommended.

NOTE: When connecting multiple speaker cabinets to the amplifier, keep the overall impedance at or above four ohms!

19. EFFECTS RETURN: To use an external effects device, connect the OUTPUTof the device to this jack by means of a shielded cable. This feeds the processed signal into the Master section of the amplifier.

20. EFFECTS SEND: Connect the output from this jack to the INPUT of your effects by means of a shielded cable. This sends a post-EQ signal to your effects.

21. PRE/POST SWITCH: You can select either Pre or Post EQ for the signal at the Balanced Out jack (23) with this switch. With the switch in the OUT position, the signal at the jacks will be Pre-EQ. This is a direct output not affected by any EQ or boost settings. With the switch depressed, the signal is Post-EQ and is controlled and modified by the tone controls, Graphic EQ, and Effects Loop.

22. -20dB SWITCH: This switch adjusts the output level at the Balanced Line Output jack (23). The control works independently from the front panel Master control. Depressing the switch activates the 20dB pad. The result is a signal that is more compatible with the microphone inputs on a mixer.

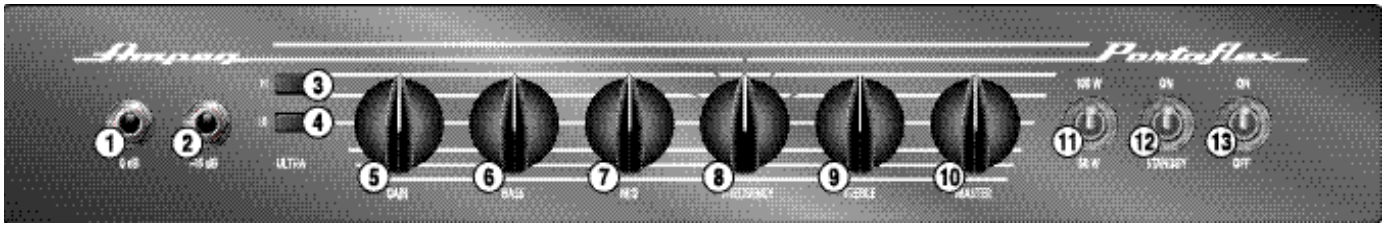
26. BALANCED OUTPUT: This XLR-type connector supplies a balanced preamp output signal for connecting to a house mixing board, recording console or external amplifiers with balanced inputs. The signal can be set to Pre or Post EQ by the back panel Pre/Post switch (21). The level can be adjusted for either mic or line type inputs using the -20dB switch (22).

24. FOOTSWITCH: Connect a one-button footswitch here for remote on/off control of the Graphic EQ (10). When a footswitch is used, the front panel EQ switch (11) is disabled.

Technical Specifications:

OUTPUT POWER RATING	**B-3, B-328:** 150W RMS, 4Ω, 115VAC; **B-3158** Low: 100W RMS, 4Ω, 115VAC, High: 50W RMS, 4Ω, 115VAC			
POWER REQUIREMENTS	120VAC, 60Hz, 170VA; 100VAC, 50/60Hz, 170VA; 230VAC, 50/60Hz, 170VA			
TONE CONTROL RANGE				
BASS:	±8dB @ 50Hz			
ULTRA-MID:	+5, -17dB @ 500Hz			
TREBLE:	+17, -22dB @ 5kHz			
GRAPHIC EQ RANGE	±11dB @ 40Hz; ±8dB @ 80Hz, 150Hz, 300Hz, 600Hz, 900Hz, 2kHz; ±9dB @ 5kHz, ±12db @ 9kHz			
GAIN	66dB typical, tones @ center			
SIGNAL TO NOISE RATIO	75dB typical			
INTERNAL SPEAKERS	**B-3:**	**B-328:**	**B-3158:**	
Size/Type:	15" Ampeg Custom (1)	8" Polyprop. (2), Hi-Effect. Piezo (1)	8" Polyprop. (1),	15" Ampeg Custom (1)
Magnet:	56 oz.	30 oz.	30 oz.	56 oz.
Voice Coil:	2.5"	1"	1"	2.5"
Impedance:	4 ohms	8 ohms	8 ohms	4 ohms
SIZE AND WEIGHT:	**B-3:** 20"W x 26"H x 13.5"D, 68 lbs.; **B-328**: 20"W x 18.75"H x 13.5"D, 57 lbs.; **B-3158:** 20"W x 34.5"H x 14.5"D, 84 lbs.			

B-15R front panel:



1,2. INPUT JACKS: Connect the signal cable from your instrument to either of these jacks: if your bass has active electronics, its output may be "hotter" than normal – the -15dB jack is padded to accommodate such signals. If your bass has normal pickups, use the 0dB jack.

3,4. ULTRA HI / ULTRA LOBOOSTS: Engage these pushbutton switches to boost the highs or lows as desired. These switches activate the boosts at their "in" positions.

5. GAIN CONTROL: Adjust this control to suit your instrument's signal level and your playing style – lower output levels and softer playing styles require a higher setting of the Gain control than high output and "hard" playing styles. Proper adjustment of this control will give you clean sound with the lowest noise.

6. BASS CONTROL: Adjust the low frequency output of the amp with this control: turn the control to the left for less; to the right for more. This control allows a range of ±25dB at 40Hz.

7. MID CONTROL: Adjust the midrange frequency output of the amp with this control: turn the control to the left for less; to the right for more. This control allows a range of ±34dB at the selected frequency (see 8).

8.FREQUENCY: This control allows you to select one of five midrange frequencies: 200, 400, 900, 1.5k or 2.5kHz. The setting of this control determines the effective range for the Mid control.

9. TREBLE CONTROL: Adjust the high frequency output of the amp with this control: turn the control to the left for less; to the right for more. This control allows a range of ±30dB at 4kHz.

10.MASTER: Set the overall output level of the amplifier with this control. When the Post/Pre switch (22) is at the IN ("Post") position, this control also affects the level at the Balanced Line Out jack (24).

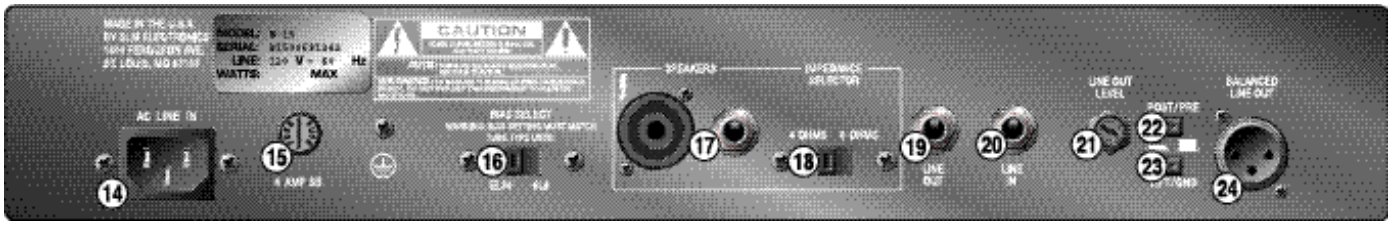
11. HALF-POWER SWITCH: For situations where lower playing volumes are appropriate, flip this switch to the "60W" (down) position. This, in effect, bypasses one-half of the output amplification devices, producing one-half the output power as before. Of course, when full output is desired, flipping the switch to the "100W" (up) position returns the amplifier to its original 100 watt state.

Note: *In the 60 watt position the amplifier will deliver approximately 40 watts into the internal speaker. To deliver the full 60 watts into the internal 8 ohm speaker, set the impedance switch (18) to the 4 ohm setting. Operation at either impedance setting is acceptable and will yield some variances in the tonality of the unit. Experiment with these settings to determine which sound best suits your personal taste.*

12. STANDBYSWITCH: Activate the amplifier with this switch, *after* the Power switch has been turned on. ***Always turn this switch off first, on last. Turn on the Power switch (13) at least 30 seconds before turning on the Standby switch.*** During breaks, turn the Standby switch off, leaving the Power switch on. This helps promote longer tube life.

13. POWER SWITCH: Turn on the main AC power with this switch. ***Always turn this switch on first, off last. Turn on the Standby switch (12) at least 30 seconds after turning on the Power switch.***

B-15R rear panel:



14. AC LINEIN: Use the supplied power cord to connect the amplifier to a suitable source of A.C. voltage. This is a grounded, three-wire cord and must be connected to a properly grounded outlet. **DONOT attempt to defeat the ground connection of the power cord!** See the serial number label for power ratings.

15. FUSE: This protects the amplifier from damage to overload conditions or power line surges. If the fuse blows, replace it only with the same size and type.

16. BIAS SELECT: Allows for instant bias adjustment when the TYPEof output tube is changed. The setting of this switch ***must*** match the type of tube being used! The amplifier is shipped with 6L6 tubes installed.

17. SPEAKERS: Connect the amplifier to the internal speaker and/or an extension speaker cabinet using these jacks. Use heavy duty speaker cables terminated with the proper connectors. The total speaker impedance can not be less than 4 ohms. (Be sure to match the Impedance Selector switch [18] to the cabinet impedance.) The B-15R's cabinet impedance is rated at 8 ohms.

18. IMPEDANCESELECTOR: Use this switch to match the amplifier to the TOTAL impedance of your speaker cabinet(s).

19. LINEOUT: Used with the Line In jack (20), this may serve as an effects loop: The signal from this jack would go to the input of the effect. Alternate uses for this jack include providing an unbalanced line level signal for connecting to an external amplifier or mixing console. The signal at this jack is affected by the Master control (10).

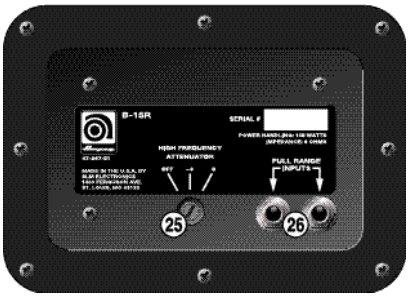
20. LINEIN: Used with the Line Out jack (19), this may serve as an effects loop: The signal from this jack would come from the output of the effect. Alternate uses for this jack include providing a means to tap directly into the internal power amplifier, bypassing the input stages completely.

21. LINEOUT LEVEL: This controls the output level of the signal at the Balanced Line Out jack (24).

22. POST/PRESWITCH: This switch determines whether or not the signal at the Balanced Line Out jack (24) is affected by the settings of the tone and master level controls. With the switch at the OUT ("Post") position, signal is affected; with the switch IN ("Pre"), the signal is not affected.

23. LIFT/GND SWITCH: This switch lifts the ground of the Balanced Line Out jack (24) at the IN position. Engage this switch only if there is excessive buzzing or hum coming from the amplifier due to ground loops.

24. BALANCEDLINE OUT: This jack provides a balanced line level signal for connecting to a mixing console, recording device or external amplifier.



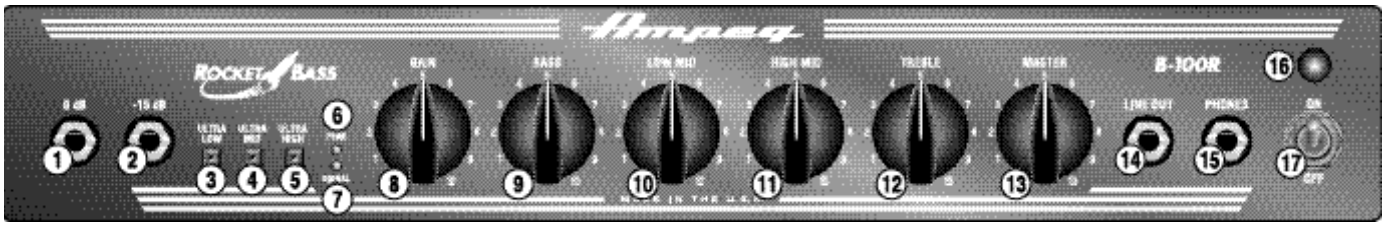
25. HIGH FREQUENCY ATTENUATOR: This three position rotary switch controls the output level of the internal high frequency driver. Use the tip of a flatblade screwdriver to set this switch to the setting which best suits your tastes.

26. FULL RANGE INPUTS: These are the input jacks for the cabinet. Connect one of these jacks to the Speaker output of the amplifier; the other jack may be used to carry the amp signal to an extension cabinet if desired.

Technical Specifications:

OUTPUT POWER RATING	100 watts @ 5%THD, 8 ohm load, 120VAC
SPEAKER SIZE AND RATING	Ampeg Vintage 15", 8 ohm, 150 watt, 2 "voice coil, 56 oz magnet High Efficiency Piezo Tweeter, 8 ohm, 150 watt (w/network)
CROSSOVER FREQUENCY	3kHz
ULTRA HIGH SWITCH	6dB Boost @ 4kHz
ULTRA LOW SWITCH	10dB Boost @ 40Hz
BASS CONTROL	25dB Range @ 40Hz
MID CONTROL	34dB Range @ 200, 400, 900, 1.5k or 2.5kHz
TREBLE CONTROL	30dB Range @ 4kHz
INPUT IMPEDANCE	0dB: 3M ohms; -15dB: 47k ohms
MAX. INPUT SIGNAL LEVEL ACCEPTED	0dB: 1V RMS; -15dB: 5.75V RMS
TOTAL SYSTEM GAIN	50dB w/tones flat, Ultra Low and Ultra High off
SIGNAL TO NOISE RATIO	90dB
POWER REQUIREMENTS	120VAC, 60Hz, 400VA; 100VAC, 50/60Hz, 400VA; 230VAC, 50/60Hz, 400VA
DIMENSIONS	24"W x 16-1/2"D x 24-1/4"H w/amp flipped inside, w/out caster board 32-7/8" H w/amp flipped out, w/out caster board; 37-1/4" H w/caster board
WEIGHT:	117 lbs

B-100R front panel:



1. 0dB Input accepts a standard 1/4" instrument plug from your bass. This input is suited for use with instruments that have passive electronics.

2. -15dB Input accepts a standard 1/4" instrument plug from high output basses. This input is padded 15dB to compensate for higher output sources and is suited for use with basses that have active electronics or high output pickups.

3. Ultra Low increases the low frequency output by 7dB at 40Hz. This adds to the rumble and overall feel of the low bass notes.

4. Ultra Mid decreases the mid frequency output by 6dB at 600Hz. This removes some of the middle frequencies for a "contoured" sound.

5. Ultra High increases the high frequency output by 7dB at 5kHz. This adds crispness to your sound.

6. Peak LED will illuminate when the Gain control (8) is set too high. This indicates overdriving of the preamplifier which causes clipping. (See the Gain control, 8.)

7. Signal LED will illuminate when the Gain control (8) is adjusted properly. (See the text for the Gain control.)

8. Gain must be adjusted to match the output of your instrument to the amplifier. For the proper setting, turn on the amplifier, turn the Gain control and the Master control (13) all the way down and begin playing your bass. Turn the Gain control up until the Signal LED (7) lights while playing and the Peak LED (6) flashes occasionally. Then adjust the Master control (13) to the desired output level.

9. Bass adjusts the output level of the low frequencies and offers a cut or boost of 12dB at 70Hz.

10. Low Mid adjusts the output level of the lower midrange frequencies and offers a cut or boost of 12dB at 300Hz.

11. High Mid adjusts the output level of the upper midrange frequencies and offers a cut or boost of 11dB at 1.5kHz.

12. Treble adjusts the output level of the high frequencies and offers a cut or boost of 14dB at 7kHz.

13. Master controls the overall output level of the amplifier and the level of the signal at the Headphones jack (15).

14. Line Out supplies a mono signal for connecting to a mixing console, tape recorder or external amplifier. The signal is pre-Master and post-EQ.

15. Phones allows the connection of a pair of stereo headphones for private practice sessions. The internal speaker is disconnected whenever headphones are used.

16. Power light indicates the amplifier is turned on by glowing an iridescent blue color.

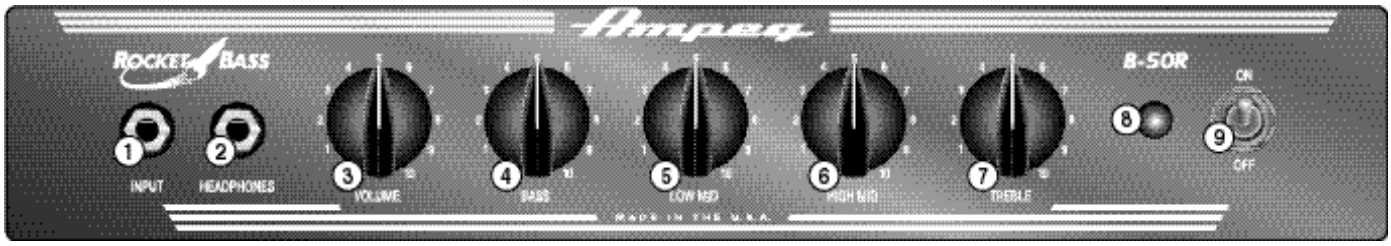
17. Power switch is used to turn the amplifier on and off.

18. Power cord (rear panel, not shown) connects the amplifier to a suitable source of A.C. voltage. This is a grounded, three-wire cord and must be connected to a properly grounded outlet. **DO NOT attempt to defeat the ground connection of the power cord!** If your amp was purchased outside of the United States, see the sticker next to the A.C. connector for its power ratings. Follow the above guidelines.

Technical Specifications:

OUTPUT POWER RATING	100 watts RMS, 4 ohm load, 120VAC
SIGNAL TO NOISE RATIO	70dB typical
POWER REQUIREMENTS	120VAC, 60Hz, 105VA; 100VAC, 50/60Hz, 105VA; 230VAC, 50/60Hz, 105VA
GAIN	57dB
ULTRA LOW	+12dB @ 40Hz
ULTRA MID	-6dB @ 600Hz
ULTRA HIGH	+7dB @ 5kHz
BASS	±12dB @ 70Hz
LOW MID	±12dB @ 300Hz
HIGH MID	±11dB @ 1.5kHz
TREBLE	±14dB @ 7kHz
SPEAKER SPECS	15", 150 w, 4 ohm, 2.5" voice coil dia., 56 oz. magnet
SIZE AND WEIGHT:	19" W x 21.25" H x 14.25" D, 65 lbs.

B-50R front panel:



1. Input accepts a standard 1/4" instrument plug from your bass.

2. Headphones allows the connection of a pair of stereo headphones for private practice sessions. The internal speaker is disconnected whenever headphones are used.

3. Volume controls the overall output level of the amplifier and the level of the signal at the Headphones jack (2).

4. Bass adjusts the output level of the low frequencies and offers a cut or boost of 12dB at 60Hz.

5. Low Mid adjusts the output level of the lower midrange frequencies and offers a cut or boost of 11dB at 200Hz.

6. High Mid adjusts the output level of the upper midrange frequencies and offers a cut or boost of 11dB at 1.2kHz.

7. Treble adjusts the output level of the high frequencies and offers a cut or boost of 13dB at 5kHz.

8. Power light indicates the amplifier is turned on by glowing an iridescent blue color.

9. Power switch is used to turn the amplifier on and off.

10. Line Out (rear panel, not shown) supplies a mono, unbalanced signal for connecting to a mixing console, tape recorder or external amplifier. (By using a TRS plug the signal is balanced – tip is "+", ring is "-".)

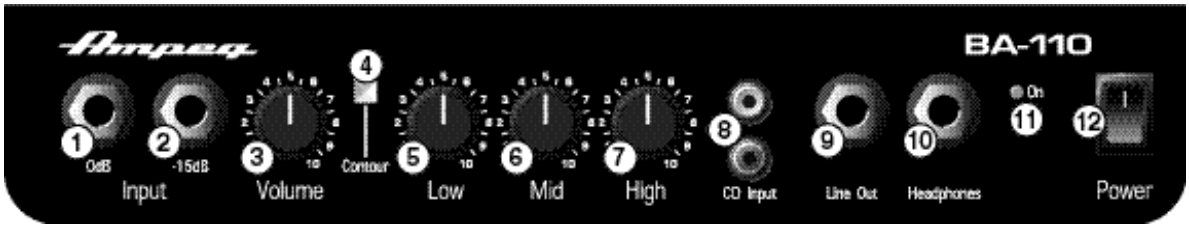
11. Power cord (rear panel, not shown) connects the amplifier to a suitable source of A.C. voltage. This is a grounded, three-wire cord and must be connected to a properly grounded outlet. **DO NOT attempt to defeat the ground connection of the power cord!** If your amp was purchased outside of the United States, see the sticker next to the A.C. connector for its power ratings. Follow the above guidelines.

Technical Specifications:

OUTPUT POWER RATING	50 watts RMS, 8 ohm load, 120VAC
SIGNAL TO NOISE RATIO	76dB typical
POWER REQUIREMENTS	120VAC, 60Hz, 80VA; 100VAC, 50/60Hz, 80VA; 230VAC, 50/60Hz, 80VA
GAIN	54dB
BASS	±12dB @ 60Hz
LOW MID	±11dB @ 200Hz
HIGH MID	±11dB @ 1.2kHz
TREBLE	±13dB @ 5kHz
SPEAKER SPECS	12", 50 w, 8 ohm, 1.5" voice coil dia., 30 oz. magnet
SIZE AND WEIGHT:	18.375" W x 20.5" H x 12.5" D, 48 lbs.

BA-110 front panel:

NEW!



1. 0dB INPUT: Connect your "passive" bass guitar here by means of a shielded instrument cable. This input is not padded and is best suited for basses without active electronics or "hot" pickups.

2. -15dB INPUT: Connect your "active" bass here by means of a shielded instrument cable. This input is padded 15dB and is best suited for basses with active electronics and/or "hot" pickups.

3. VOLUME: Use this control in conjunction with your instrument's volume controls to adjust the output level of the amplifier. The BA-110 employs a built in limiter to keep the output clean at full power, however, extreme settings may cause some audible distortion.

4. CONTOUR: This switch, when de-pressed, boosts the high and low frequencies while cutting the midrange to provide a "funk" slap-bass tone.

5. LOW: Use this control to adjust the low frequency level of the amplifier. This control has a 28dB range at 100Hz.

6. MID: Use this control to adjust the midrange level of the amplifier. This control has a 26dB range at 600Hz.

7. HIGH: Use this control to adjust the high frequency level of the amplifier. This control has a 35dB range at 10kHz.

8. CDINPUT: Use these RCAjacks to connect the line level (or headphones) output of a CD player or tape deck. The two jacks sum the stereo signal into a mono signal which is fed into the BA-110 just prior to its power amplifier. Use the volume control on the CD or tape player to control the level of this signal.

9. LINE OUT: This jack supplies a post-eq, unbalanced line level signal for connecting to a house sound board, recording unit or external amplifier. The level of this signal is controlled by the Volume control (#3).

10. HEADPHONES: For private practice sessions, plug headphones into this jack. The internal speaker is disconnected when the headphones jack is used.

11. ONLED: This LED illuminates when the amplifier is plugged in and turned on.

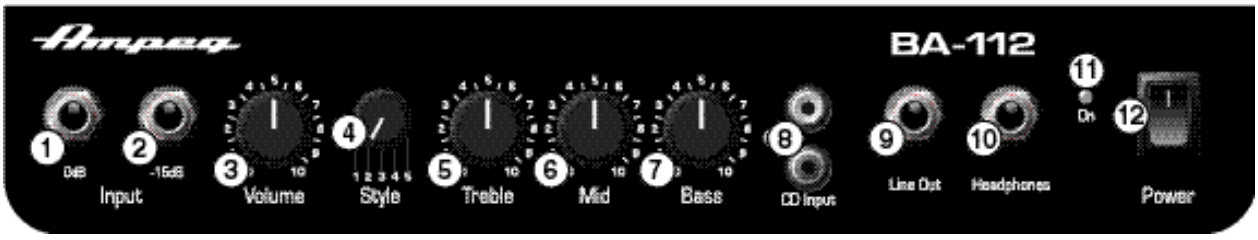
12. POWER: Use this switch to turn the amplifier on and off – the top of the switch is depressed in the on position.

13. POWER CORD (rear panel, not shown): Use this cord to connect the amplifier to a suitable source of A.C. voltage. This is a grounded, three-wire cord and must be connected to a properly grounded outlet. **DO NOT attempt to defeat the ground connection of the power cord!** If your amp was purchased outside of the United States, see the sticker next to the A.C. connector for its power ratings. Follow the above guidelines.

Technical Specifications:

OUTPUT POWER RATING	30 watts at 4 ohms
MAX INPUT LEVELS	0db Input: 800mV RMS; -15dB Input: 5VRMS; CD Input: 2V RMS
LINE OUT LEVELS	2.15V RMS
HEADPHONE OUT LEVEL	1.35V RMS
GAIN	40dB
CONTOUR	10dB boost @50Hz, 5dB cut @ 600Hz, 10dB cut @ 10kHz
HIGH	35dB range @ 10kHz
MID	26dB range @ 600Hz
LOW	28dB range @ 100Hz
SPEAKER SPECS	10", 30 w, 4 ohm, 1.5" voice coil dia., 22 oz. magnet
POWER REQUIREMENTS	120VAC, 60Hz, 22VA; 100VAC, 50/60Hz, 22VA; 230VAC, 50/60Hz, 22VA
SIZE AND WEIGHT:	15" W x 16" H x 12" D, 32 lbs.

BA-112 front panel:



1. 0dB INPUT: Connect your "passive" bass guitar here using a shielded instrument cable. This input is not padded and is best suited for basses without active electronics or "hot" pickups.

2. -15dB INPUT: Connect your "active" bass here using a shielded instrument cable. This input is padded 15dB and is best suited for basses with active electronics and/or "hot" pickups.

3. VOLUME: Use this control in conjunction with your instrument's volume controls to adjust the output level of the amplifier. The BA-112 employs a built in limiter to keep the output clean at full power.

4. STYLE: This five-position switch allows you to vary the tone of the amplifier. Experiment with the Style and other EQ controls (5,6,7) for the results which suit you best.

5. TREBLE: Use this control along with the style control to adjust the high frequency level of the amplifier. The treble control has a 36dB range at 10kHz.

6. ULTRA MID: Use this control along with the style control to adjust the midrange level of the amplifier. This control has a 30dB range @ 500Hz.

7. BASS: Use this control along with the style control to adjust the low frequency level of the amplifier. This control has a 36dB range @ 50Hz.

8. CDINPUT: Use these RCAjacks to connect the line level (or headphones) output of a CD player or tape deck. The two jacks sum the stereo signal into a mono signal which is fed into the BA-112 just prior to its power amplifier. Use the volume control on the CD or tape player to control the level of this signal.

9. LINE OUT: This jack supplies a post-eq, unbalanced line level signal for connecting to a house sound board, recording unit or external amplifier. The level of this signal is controlled by the Volume control (3).

10. HEADPHONES: For private practice sessions, plug a pair of headphones here. The internal speaker is disconnected when the headphones jack is used.

11. ONLED: This LED lights when the amplifier is plugged in and turned on.

12. POWER: Use this switch to turn the amplifier on and off – on is in the up position.

13. POWER CORD (rear panel, not shown): Connect this cord to a suitable source of A.C. voltage. This is a grounded, three-wire cord and must be connected to a properly grounded outlet. **DO NOT attempt to defeat the ground connection of the power cord!** If your amp was purchased outside of the United States, see the sticker next to the A.C. connector for its power ratings. Follow the above guidelines.

Technical Specifications:

OUTPUT POWER RATING	50 watts at 8 ohms
MAX INPUT LEVELS	0db Input: 800mV RMS; -15dB Input: 4.62V RMS; CD Input: 3.5VRMS
LINE OUT LEVELS	1.75V RMS
HEADPHONE OUT LEVEL	2.75V RMS
GAIN	57dB
STYLE	1 = -25dB @ 500Hz; 2 = -12dB @ 500Hz; 3 = flat; 4 = +5dB @ 2kHz and above; 5 = -6dB @ 50Hz and below
TREBLE	36dB range @ 10kHz
ULTRA MID	30dB range @ 500Hz
BASS	36dB range @ 50Hz
SPEAKER SPECS	12", 50 w, 8 ohm, 1.5" voice coil dia., 30 oz. magnet
POWER REQUIREMENTS	120VAC, 60Hz, 70VA; 100VAC, 50/60Hz, 70VA; 230VAC, 50/60Hz, 70VA
SIZE AND WEIGHT:	17.25" W x 18" H x 13.25" D, 39 lbs.

BA-115 front panel:

1. 0dB INPUT: Connect your "passive" bass guitar here using a shielded instrument cable. This input is not padded and is best suited for basses without active electronics or "hot" pickups.

2. -15dB INPUT: Connect your "active" bass here using a shielded instrument cable. This input is padded 15dB and is best suited for basses with active electronics and/or "hot" pickups.

3. GAIN: Use this control in conjunction with your instrument's volume controls to adjust the level of the signal sent to the preamp.

4. MASTER: Use this control to adjust the overall listening level of the amplifier. This control is also used to adjust the signal level at the Line Out jack (11).

5. STYLE: This five-position switch is used to control the tone of the amplifier. Experiment with the Style and other EQ controls (6,7,8) for the results which suit you best.

6. TREBLE: This control is used in conjunction with the style control to adjust the high frequency level of the amplifier.

7. ULTRAMID: This control is used in conjunction with the style control to adjust the midrange level of the amplifier.

8. BASS: This control is used in conjunction with the style control to adjust the low frequency level of the amplifier.

9. CDINPUT: These jacks (RCA type) are used to connect the line level (or headphones) output of a CD player or tape deck. The inputs to these jacks are summed into a mono signal which is fed into the BA115 just prior to its power amplifier. Use the volume control on the CD or tape player to control the output level.

10. HEADPHONES: The internal speaker is disconnected when the headphones jack is used.

11. LINEOUT: This jack supplies a post-eq, balanced line level signal for connecting to a house sound board, recording unit or external amplifier. The amplitude of this signal is adjusted by the Master control (4).

12. ONLED: This LED is illuminated when the amplifier is plugged in and turned on.

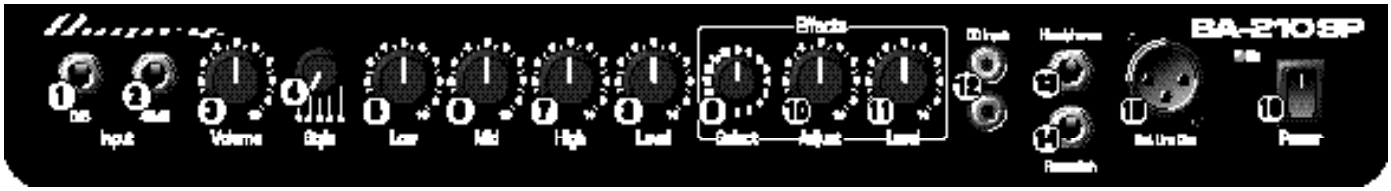
13. POWER: This switch is used to turn the amplifier on or off.

14. POWER CORD (rear panel, not shown): Connect this cord to a suitable source of A.C. voltage. This is a grounded, three-wire cord and must be connected to a properly grounded outlet. **DO NOT attempt to defeat the ground connection of the power cord!** If your amp was purchased outside of the United States, see the sticker next to the A.C. connector for its power ratings. Follow the above guidelines.

Technical Specifications:

OUTPUT POWER RATING	100 watts at 4 ohms
MAX INPUT LEVELS	0db Input: 1.75V RMS; -15dB Input: 9.75VRMS; CD Input: 5V RMS
LINE OUT LEVELS	120mV RMS
HEADPHONE OUT LEVEL	3.75V RMS
GAIN	39dB
STYLE	1 = -25dB @ 500Hz; 2 = -12dB @ 500Hz; 3 = flat; 4 = +5dB @ 2kHz and above; 5 = -6dB @ 50Hz and below
TREBLE	40dB range @ 10kHz
ULTRA MID	30dB range @ 500Hz
BASS	36dB range @ 50Hz
SPEAKER SPECS	15", 150 w, 4 ohm, 2.5" voice coil dia., 56 oz. magnet; Piezo tweeter
POWER REQUIREMENTS	120VAC, 60Hz, 70VA; 100VAC, 50/60Hz, 70VA; 230VAC, 50/60Hz, 70VA
SIZE AND WEIGHT:	21" W x 21" H x 15.5" D, 62 lbs.

BA-115SP, BA-210SP front panel:



1. 0dB INPUT: Connect your "passive" bass guitar here using a shielded instrument cable. This input is not padded and is best suited for basses without active electronics.

2. -15dB INPUT: Connect your "active" bass here using a shielded instrument cable. This input is padded 15dB and is best suited for basses with active electronics and/or "hot" pickups.

3. VOLUME: Use this control in conjunction with your instrument's volume controls to adjust the level of the signal sent to the preamp.

4. STYLE: This five-position switch is used to control the tone of the amplifier. Experiment with the Style and other eq controls (#5,6,7) for the results which suit you best.

5. LOW: This control is used in conjunction with the style control to adjust the low frequency level of the amplifier.

6. MID: This control is used in conjunction with the style control to adjust the midrange level of the amplifier.

7. HIGH: This control is used in conjunction with the style control to adjust the high frequency level of the amplifier.

8. LEVEL: Use this control to adjust the overall listening level of the amplifier. This control also adjusts the signal level of the CD Inputs (#12), the Headphones jack (#13) and the Line Out jack (#15).

9. EFFECTS SELECT*: Use this control to select the desired digital effect. A listing of the effects is shown below.

10. EFFECTS ADJUST*: Use this control to adjust one of the parameters of the selected digital effect. A listing of the parameters for each of the effects is shown below.

11. EFFECTS LEVEL: Use this control to adjust the level and intensity of the selected digital effect.

12. CD INPUT: Use these RCA jacks to connect the line level (or headphones) output of a CD player or tape deck to the amplifier. The inputs to these jacks are summed into a mono signal which is fed into the unit's power amplifier. The signal level from these jacks is adjusted by the amplifier's Level control (#8). If the signal from the source connected to these jacks is too strong, use the output level control on the source to adjust the signal to obtain the proper level for a good mix.

13. HEADPHONES: Use this jack to listen to the amplifier through a pair of stereo headphones. The internal speaker is disconnected when the headphones jack is used.

14. FOOTSWITCH*: Use this jack to connect the supplied two button footswitch to the amplifier for remote control of the digital effects. For information on programming the footswitch, see the amp topper or owners manual.

15. BAL. LINE OUT: This jack supplies a post-eq, balanced line level signal for connecting to a house sound board, recording unit or external amplifier.

16. POWER: Use this switch to turn the amplifier on or off. The adjacent LED will illuminate when the amplifier is turned on.

17. ACLINECORD (rear panel, not shown): This heavy duty, grounded, three wire power cord is to be plugged into a safely-wired, grounded, 120 volt, 60 cycle AC power outlet. DO NOT attempt to defeat the ground connection of this cable! If your amplifier was purchased outside of the United States, see the unit's rear panel for its power and voltage ratings and follow the above guidelines.

The Digital Effects – Locations and Adjustable Parameters:

EFFECT SELECT	ADJUST	EFFECT SELECT	ADJUST
0 = [illegible]	–	[illegible]	[illegible]
1 = [illegible]	[illegible]	[illegible]	[illegible]
2 = [illegible]	[illegible]	[illegible]	[illegible]
3 = [illegible]	[illegible]	[illegible]	[illegible]
4 = [illegible]	[illegible]	[illegible]	[illegible]
5 = [illegible]	[illegible]	[illegible]	[illegible]
6 = [illegible]	[illegible]	[illegible]	[illegible]
7 = [illegible]	[illegible]	[illegible]	[illegible]

***NOTE:** When using the footswitch to store and recall effects, the front panel effects and adjust controls may not always be indicitive of the selected effect.

Technical Specifications:

OUTPUT POWER RATING	**BA-115SP:**	100 watts at 4 ohms
	BA-210SP:	220 watts at 4 ohms
MAXINPUT LEVELS		0db Input: 2.00V RMS; -15dB Input: 8.00V RMS; CD Input: 7.75VRMS
LINEOUT LEVELS		1.78VRMS
HEADPHONE OUT LEVEL		900mVRMS
GAIN		41dB
STYLE		1 = -25dB @ 500Hz; 2 = -12dB @ 500Hz; 3 = flat; 4 = +5dB @ 2kHz and above; 5 = -6dB @ 50Hz and below
LOW		40dB range @ 50Hz
MID		30dB range @ 500Hz
HIGH		40dB range @ 10kHz
SPEAKERSPECS	**BA-115SP:**	15", 150 w, 4 ohm, 2.5" voice coil dia., 56 oz. magnet; Piezo tweeter
	BA-210SP:	(2) 10", 100w, 8 ohm, 2" voice coil dia., 30 oz magnet; Piezo tweeter
POWER REQUIREMENTS		120VAC, 60Hz, 320VA; 100VAC, 50/60Hz, 320VA; 230VAC, 50/60Hz, 320VA
SIZE AND WEIGHT:	**BA-115SP:**	21" W x 21" H x 15.5" D, 76 lbs.
	BA-210SP:	21" W x 21" H x 15.5" D, 86 lbs.

BA-210SPshown – the BA-210SPalso features removable casters; the BA-115SP features a tilt-back cabinet

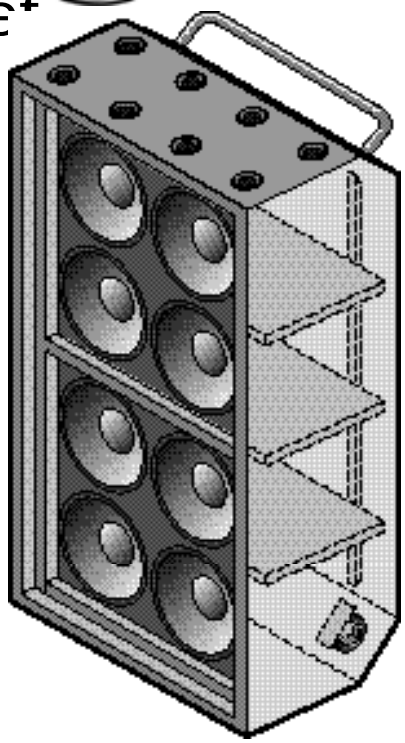
CLASSIC SERIES BASS ENCLOSURES:

SVT-810E/AV Dual Cabinet

NEW!

Component Size	8-10”
Voice Coil	2”
Magnet Weight	30 oz
RMS Handling	8x10: 800 watts
	4x10: 400 watts each
Program Handling	8x10: 1600 watts
	4x10: 800 watts each
Frequency Response (-3dB)	60 - 5kHz
Useable Low Frequency (-10dB)	42 Hz
Nominal Impedance	8x10: 4 ohms
	4x10: 8 ohms
Sensitivity	100 dB
Maximum SPL	130 dB
Crossover Frequency	n/a
Dimensions	26”x48”x16”
Weight	165 lbs

Skid rails along back of cabinet for maximum protection when loading in and out of venues and vehicles!

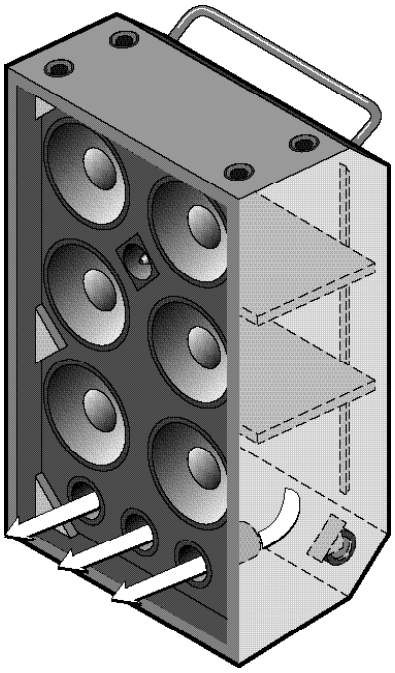


SVT-610HLF

NEW!

Component 1: Size	6-10”
Voice Coil	2”
Magnet Weight	30 oz
Component 2: Size	Horn/Driver
Voice Coil	1”
Magnet Weight	8 oz
RMS Handling	600 watts
Program Handling	1200 watts
Frequency Response (-3dB)	53 - 18kHz
Useable Low Frequency (-10dB)	42 Hz
Nominal Impedance	4 ohms
Sensitivity	98 dB
Maximum SPL	125 dB
Crossover Frequency	5kHz
Dimensions	40”x24”x16”
Weight	115 lbs

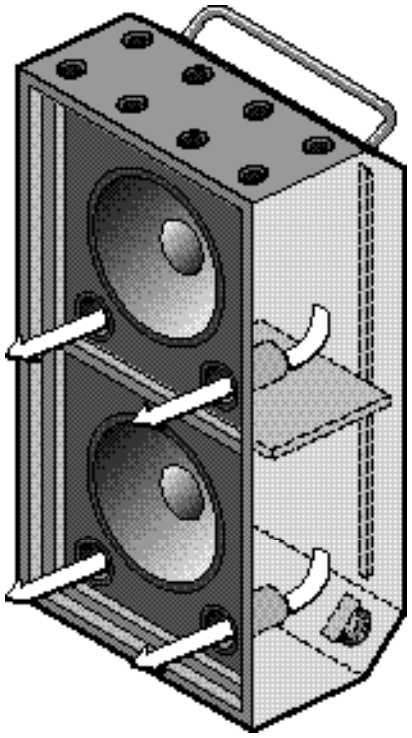
Skid rails along back of cabinet for maximum protection when loading in and out of venues and vehicles!



CLASSIC SERIES BASS ENCLOSURES:

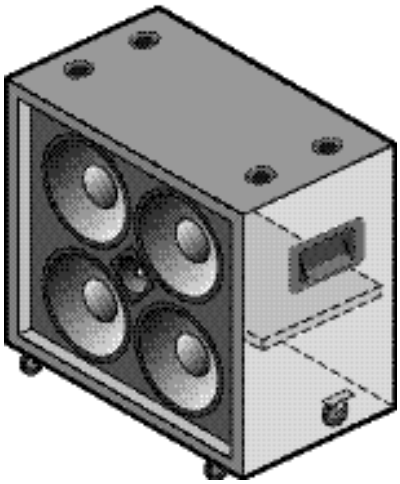
SVT-215E

Component Size	2-15” Cast
Voice Coil	2.5”
Magnet Weight	80 oz
RMS Handling	400 watts
Program Handling	800 watts
Frequency Response (-3dB)	40 - 3kHz
Useable Low Frequency (-10dB)	28 Hz
Nominal Impedance	4 ohms
Sensitivity	103 dB
Maximum SPL	129 dB
Crossover Frequency	n/a
Dimensions	26”x48”x16”
Weight	148 lbs



SVT-410HE

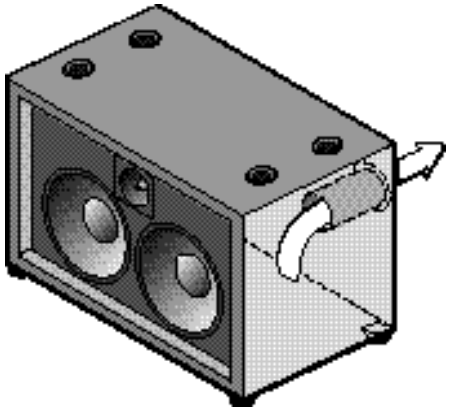
Component 1: Size	4-10”
Voice Coil	2”
Magnet Weight	30 oz
Component 2: Size	Horn/Driver
Voice Coil	1”
Magnet Weight	8 oz
RMS Handling	400 watts
Program Handling	800 watts
Frequency Response (-3dB)	60 - 18kHz
Useable Low Frequency (-10dB)	42 Hz
Nominal Impedance	8 ohms
Sensitivity	96 dB
Maximum SPL	122 dB
Crossover Frequency	4kHz
Dimensions	24”x25”x16”
Weight	91 lbs



CLASSIC SERIES BASS ENCLOSURES:

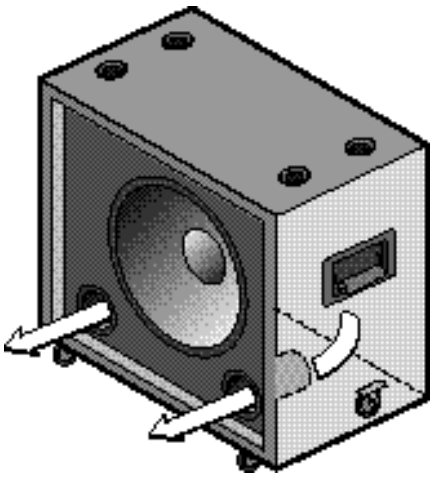
SVT-210HE

Component 1: Size	2-10” Cast
Voice Coil	2”
Magnet Weight	30 oz
Component 2: Size	Horn/Driver
Voice Coil	1”
Magnet Weight	8 oz
RMS Handling	200 watts
Program Handling	400 watts
Frequency Response (-3dB)	50 - 18kHz
Useable Low Frequency (-10dB)	41 Hz
Nominal Impedance	8 ohms
Sensitivity	96 dB
Maximum SPL	119 dB
Crossover Frequency	4kHz
Dimensions	24”x18”x16”
Weight	60 lbs



SVT-15E

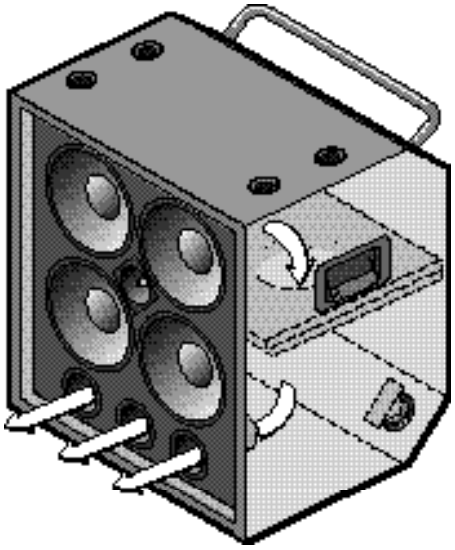
Component Size	1-15” Cast
Voice Coil	3”
Magnet Weight	95 oz
RMS Handling	200 watts
Program Handling	400 watts
Frequency Response (-3dB)	40 - 3kHz
Useable Low Frequency (-10dB)	28 Hz
Nominal Impedance	8 ohms
Sensitivity	100 dB
Maximum SPL	123 dB
Crossover Frequency	n/a
Dimensions	24”x22”x16”
Weight	72 lbs



CLASSIC SERIES BASS ENCLOSURES:

SVT-410HLF

Component 1: Size	4-10”
Voice Coil	2”
Magnet Weight	30 oz
Component 2: Type	Horn/Driver
Voice Coil	1”
Magnet Weight	8 oz
RMS Handling	400 watts
Program Handling	800 watts
Frequency Response (-3dB)	50 - 18kHz
Useable Low Frequency (-10dB)	40 Hz
Nominal Impedance	4 ohms
Sensitivity	99 dB
Maximum SPL	125 dB
Crossover Frequency	4kHz
Dimensions	24”x30”x19”
Weight	110 lbs



PRO SERIES BASS ENCLOSURES:

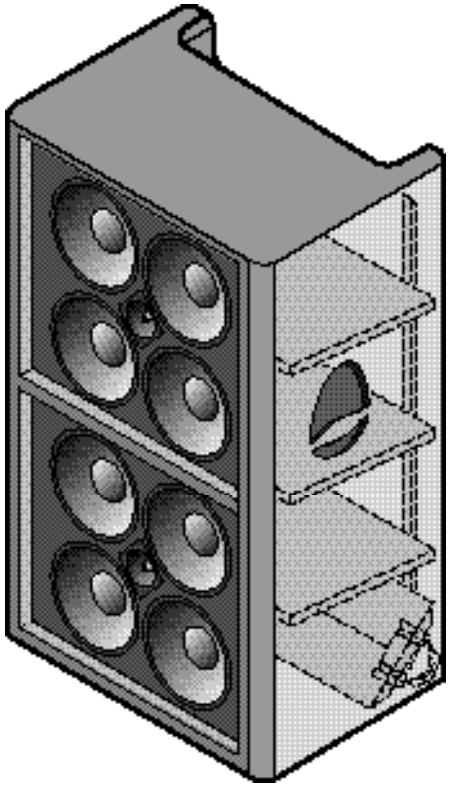
PR-810H Dual Cabinet

NEW!

FEATURES:

- **Dual 4x10 8Ω / single 8x10 4Ω design**
- **Three Coat Urethane Polymer Finish/Sealant**
- **16 Gauge Steel Grille**
- **Edge Armor Corner Protection**
- **Variable High Frequency Level**
- **High Frequency Driver Protection**
- **3" Tilt-back Casters**
- **Rear skid rails**

Component 1: Size	8-10"
Voice Coil	2.5"
Magnet Weight	56 oz
Component 2: Type	2-Horn/Driver
Voice Coil	1"
Magnet Weight	10 oz
RMS Handling	8x10: 1200 watts 4x10: 600 watts each
Program Handling	8x10: 2400 watts 4x10: 1200 watts each
Frequency Range	33 - 18kHz
Impedance	8x10: 4 ohms 4x10: 8 ohms each
Cabinet Design	Dual Bass Reflex
Dimensions	48.8"x26.25"x18.75"
Weight	212 lbs

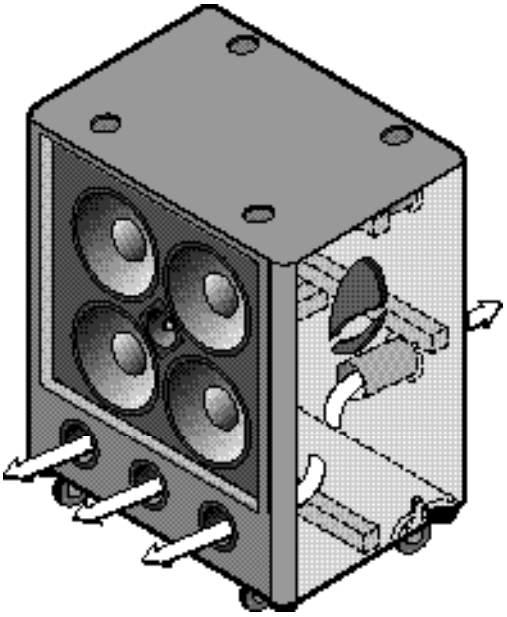


PR-410HLF

FEATURES:

- **Three Coat Urethane Polymer Finish/Sealant**
- **16 Gauge Steel Grille**
- **Edge Armor Corner Protection**
- **Variable High Frequency Level**
- **High Frequency Driver Protection**
- **2"Removable Swivel Casters**

Component 1: Size	4-10"
Voice Coil	2.5"
Magnet Weight	56 oz
Component 2: Type	Horn/Driver
Voice Coil	1"
Magnet Weight	10 oz
RMS Handling	600 watts
Program Handling	1200 watts
Frequency Range	38 - 18kHz
Impedance	4 ohms
Cabinet Design	Bass Reflex
Dimensions	30.75"x26.25"x18.75"
Weight	128 lbs



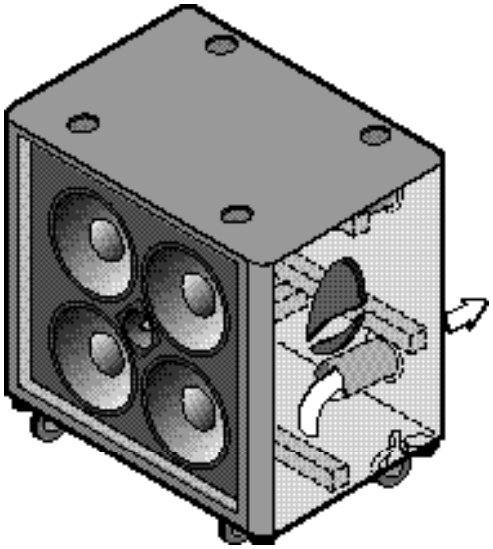
PRO SERIES BASS ENCLOSURES:

PR-410H

FEATURES:

- **Three Coat Urethane Polymer Finish/Sealant**
- **16 Gauge Steel Grille**
- **Edge Armor Corner Protection**
- **Variable High Frequency Level**
- **High Frequency Driver Protection**
- **2”Removable Swivel Casters**

Component 1: Size	4-10”
Voice Coil	2.5”
Magnet Weight	56 oz
Component 2: Type	Horn/Driver
Voice Coil	1”
Magnet Weight	10 oz
RMS Handling	600 watts
Program Handling	1200 watts
Frequency Range	42 - 18kHz
Impedance	8 ohms
Cabinet Design	Bass Reflex
Dimensions	25.5”x26.25”x18.75”
Weight	118 lbs

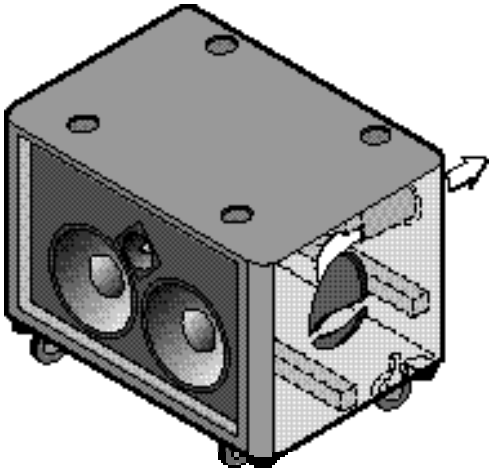


PR-210H

FEATURES:

- **Three Coat Urethane Polymer Finish/Sealant**
- **16 Gauge Steel Grille**
- **Edge Armor Corner Protection**
- **Variable High Frequency Level**
- **High Frequency Driver Protection**
- **2”Removable Swivel Casters**

Component 1: Size	2-10”
Voice Coil	2.5”
Magnet Weight	56 oz
Component 2: Type	Horn/Driver
Voice Coil	1”
Magnet Weight	10 oz
RMS Handling	300 watts
Program Handling	600 watts
Frequency Range	42 - 18kHz
Impedane	8 ohms
Cabinet Design	Bass Reflex
Dimensions	17”x26.25”x18.75”
Weight	84 lbs



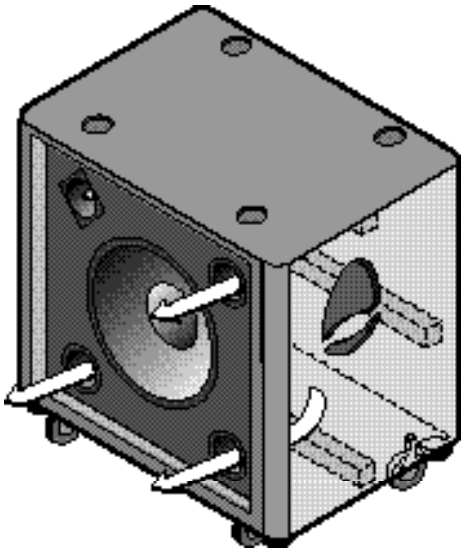
PRO SERIES BASS ENCLOSURES:

PR-15H

FEATURES:

- **Three Coat Urethane Polymer Finish/Sealant**
- **16 Gauge Steel Grille**
- **Edge Armor Corner Protection**
- **Variable High Frequency Level**
- **High Frequency Driver Protection**
- **2”Removable Swivel Casters**

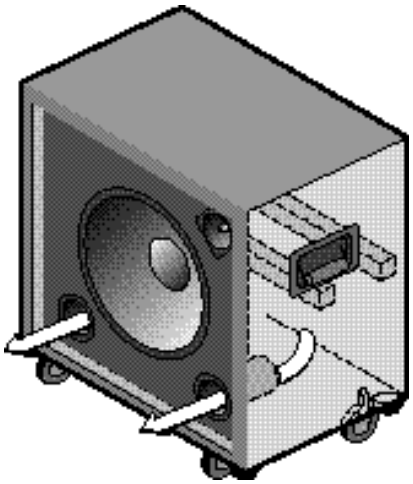
Component 1: Size	1-15”
Voice Coil	4”
Magnet Weight	109 oz
Component 2: Type	Horn/Driver
Voice Coil	1”
Magnet Weight	10 oz
RMS Handling	400 watts
Program Handling	800 watts
Frequency Range	40 - 18kHz
Impedance	8 ohms
Cabinet Design	Bass Reflex
Dimensions	25”x26.25”x18.75”
Weight	99 lbs



B-SERIES BASS ENCLOSURES:

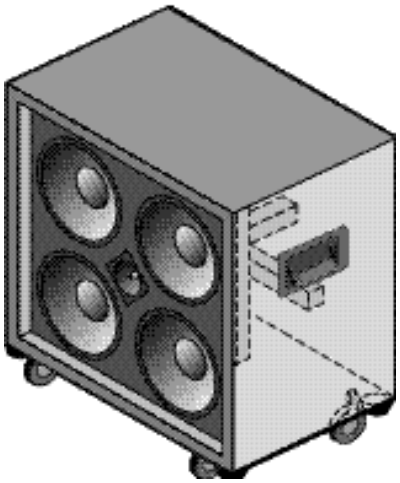
BSE-115T

Component 1: Size	1-15”
Voice Coil	2.5”
Magnet Weight	56 oz
Component 2: Type	Horn/Driver
Voice Coil	1”
Magnet Weight	8 oz
RMS Handling	150 watts
Program Handling	300 watts
Frequency Range	55 - 3.8kHz
Impedance	8 ohms
Dimensions	22.75”x22.75”x17.5”
Weight	70 lbs



BSE-410H

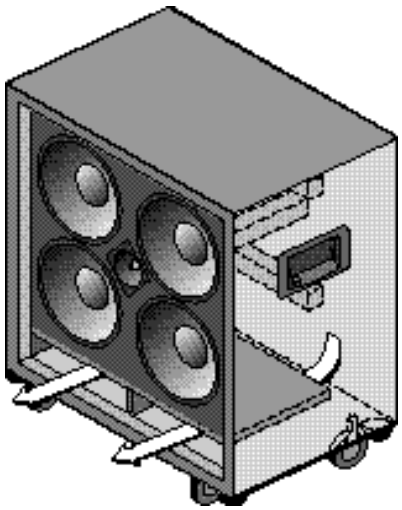
Component 1: Size	4-10”
Voice Coil	1”
Magnet Weight	22 oz
Component 2: Type	Horn/Driver
Voice Coil	1”
Magnet Weight	8 oz
RMS Handling	200 watts
Program Handling	400 watts
Frequency Range	55 - 18kHz
Impedance	8 ohms
Dimensions	22.75”x22.75”x17.5”
Weight	75 lbs



B-SERIES BASS ENCLOSURES:

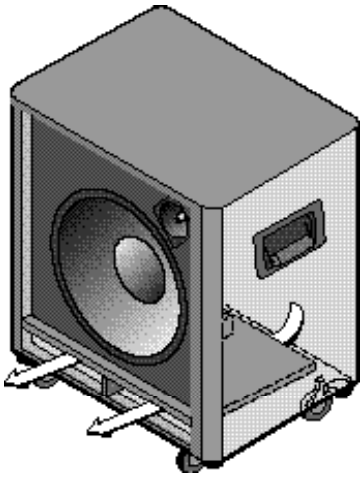
BSE-410HLF

Component 1: Size	4-10”
Voice Coil	2”
Magnet Weight	30 oz
Component 2: Type	Horn/Driver
Voice Coil	1”
Magnet Weight	8 oz
RMS Handling	400 watts
Program Handling	800 watts
Frequency Range	50 - 18kHz
Impedance	4 ohms
Dimensions	25.75”x22.75”x17.5”
Weight	91 lbs



BXT-115HL NEW!

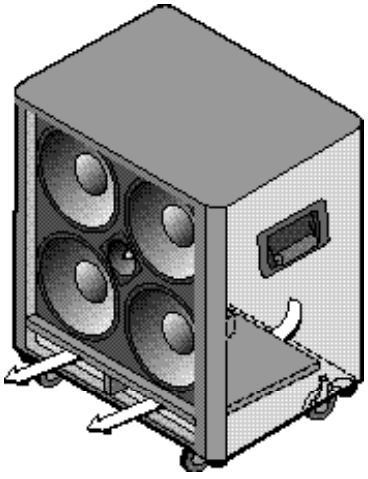
Component 1: Size	1-15”
Voice Coil	4”
Magnet Weight	109 oz
Component 2: Type	Horn/Driver
Voice Coil	1”
Magnet Weight	10 oz
RMS Handling	300 watts
Program Handling	600 watts
Frequency Range	42 - 18kHz
Usable Low Frequency	37Hz
Nominal Impedance	4 and 8 ohms*
Sensitivity	99dB
Maximum SPL	125dB
Crossover Frequency	4kHz
Dimensions	23”x26”x19”
Weight	105 lbs



**available in 4 ohm and 8 ohm models*

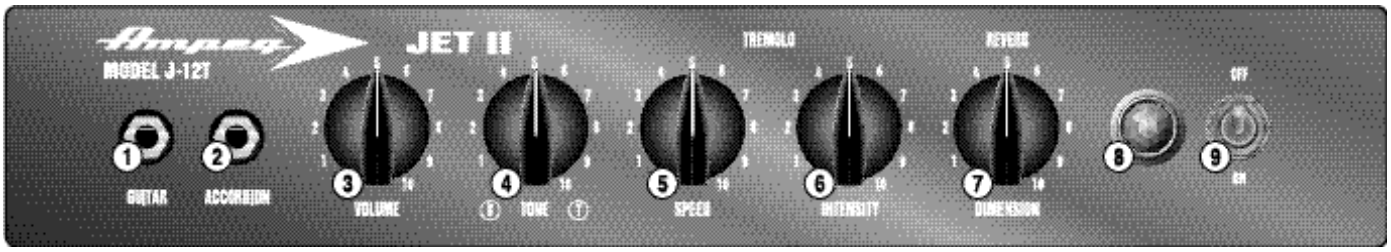
BXT-410HL NEW!

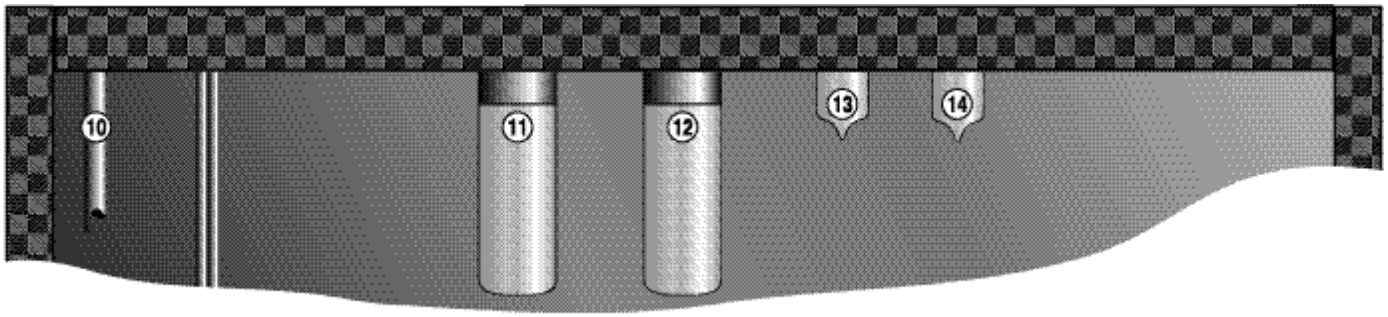
Component 1: Size	4-10”
Voice Coil	2.5”
Magnet Weight	56 oz
Component 2: Type	Horn/Driver
Voice Coil	1”
Magnet Weight	10 oz
RMS Handling	600 watts
Program Handling	1200 watts
Frequency Range	45 - 18kHz
Usable Low Frequency	35Hz
Nominal Impedance	4 and 8 ohms*
Sensitivity	99dB
Maximum SPL	127dB
Crossover Frequency	4kHz
Dimensions	26”x26”x19”
Weight	122 lbs



**available in 4 ohm and 8 ohm models*

J-12T:





Top Panel:

1. Guitar Input accepts a standard 1/4" instrument plug from your electric guitar. This input is at 0dB level.

2. Accordion Input accepts a standard 1/4" instrument plug from high output electronic instruments. This input is padded 6dB to compensate for higher output sources.

3. Volume controls the overall output level of the amplifier. At lower volume settings the sound will be clean. As you push the volume higher and crank your guitar the sound becomes distorted.

4. Tone controls the overall tonal character of the amplifier. Rotating the knob toward the "T" increases the higher frequencies, giving a brighter, more "crisp" sound. Rotating the control towards the "B" reduces the high frequencies, giving a darker, more "muffled" sound. The Tone control offers a cut or boost of 30dB at 4kHz.

5. Tremolo-Speed sets the rate at which the tremolo effect "vibrates." The Tremolo-Intensity control (#6) must be turned up to hear the effects of this knob's setting.

6. Tremolo-Intensity sets the depth of the tremolo effect. For slow, smoother vibrato effects try the Intensity control at around 6 and the Speed control at 1. For the really wild sounds, crank the Intensity up towards 8 (or beyond) and go from there.

7. Reverb-Dimension controls the amount of reverberation applied to the signal. With the control at the "0" position there is no reverb applied; as the control is turned towards "10" the amount of reverb increases accordingly.

8. Power light indicates the amplifier is turned on by glowing an iridescent blue color.

9. Power switch is used to turn the amplifier on and off.

Rear Panel:

10. Power cord connects the amplifier to a suitable source of A.C. voltage. This is a grounded, three-wire cord and must be connected to a properly grounded outlet. **DONOT attempt to defeat the ground connection of the power cord!** If your amp was purchased outside of the United States, see the sticker next to the A.C. connector for its power ratings. Follow the above guidelines.

11,12. Power Tubes: EL84 / 6CA5 (2)

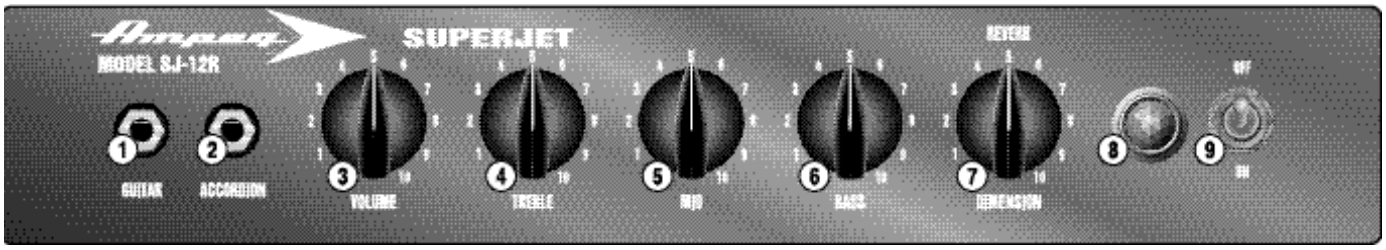
13. Power Amp Phase Splitter Tube: 12AX7A / 7025 (1)

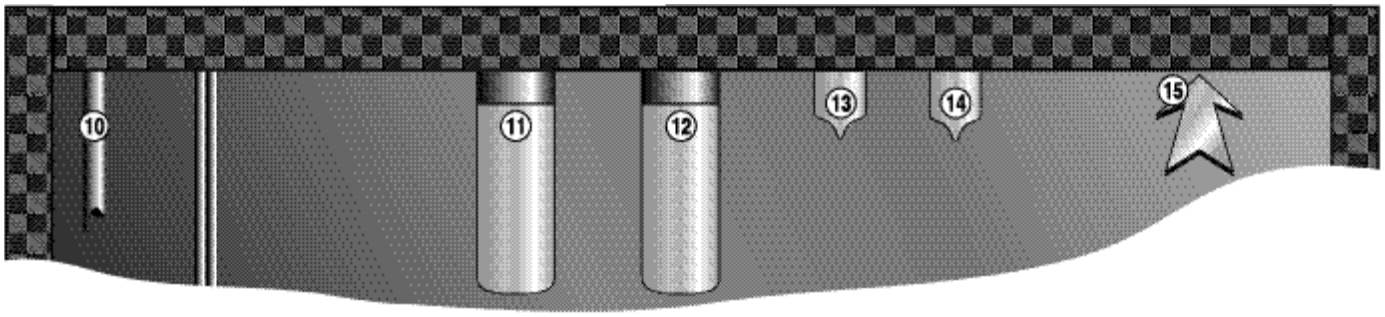
14. Preamp Tube: 12AX7A/ 7025 (1)

Technical Specifications:

OUTPUT POWER RATING	15 watts RMS @ 5% THD 8 ohm load 120 VAC
SIGNAL TO NOISE RATIO	70dB typical
POWER REQUIREMENTS	120VAC, 60Hz, 80VA; 100VAC, 50/60Hz, 80VA; 230VAC, 50/60Hz, 80VA
GAIN	62dB
TONE	30dB Boost and Cut @ 4kHz
SPEAKER SPECS	12", 20 W, 8 ohm, 1" voice coil diameter, 15 oz. magnet
SIZE AND WEIGHT:	18.75" W x 16" H x 10" D, 30 lbs.

SJ-12R:





Top Panel:

1. Guitar Input accepts a standard 1/4" instrument plug from your electric guitar. This input is at 0dB level.

2. Accordion Input accepts a standard 1/4" instrument plug from high output electronic instruments. This input is padded 6dB to compensate for higher output sources.

3. Volume controls the overall output level of the amplifier. At lower volume settings the sound will be clean. As you push the volume higher and crank your guitar the sound becomes distorted.

4. Treble adjusts the output level of the high frequency and offers a cut or boost of 12dB at 6kHz.

5. Mid adjusts the output level of the middle frequencies and offers a cut or boost of 16dB at 800Hz.

6. Bass adjusts the output level of the low frequencies and offers a cut or boost of 24dB at 50Hz.

7. Reverb-Dimension controls the amount of reverberation applied to the signal. With the control at the "0" position there is no reverb applied; as the control is turned towards "10" the amount of reverb increases accordingly.

8. Power light indicates the amplifier is turned on by glowing an iridescent blue color.

9. Power switch is used to turn the amplifier on and off.

Rear Panel:

10. Power cord connects the amplifier to a suitable source of A.C. voltage. This is a grounded, three-wire cord and must be connected to a properly grounded outlet. **DONOT attempt to defeat the ground connection of the power cord!** If your amp was purchased outside of the United States, see the sticker next to the A.C. connector for its power ratings. Follow the above guidelines.

11,12. Power Tubes: 6L6 / 6BQ5 (2)

13. Power Amp Phase Splitter Tube: 12AX7A / 7025 (1)

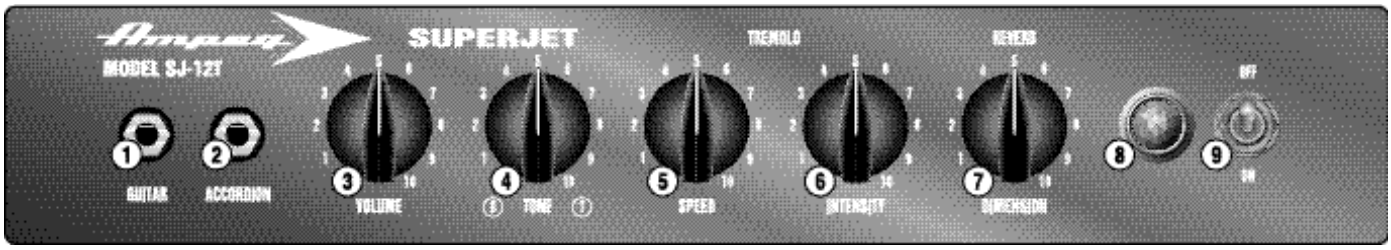
14. Preamp Tube: 12AX7A/ 7025 (1)

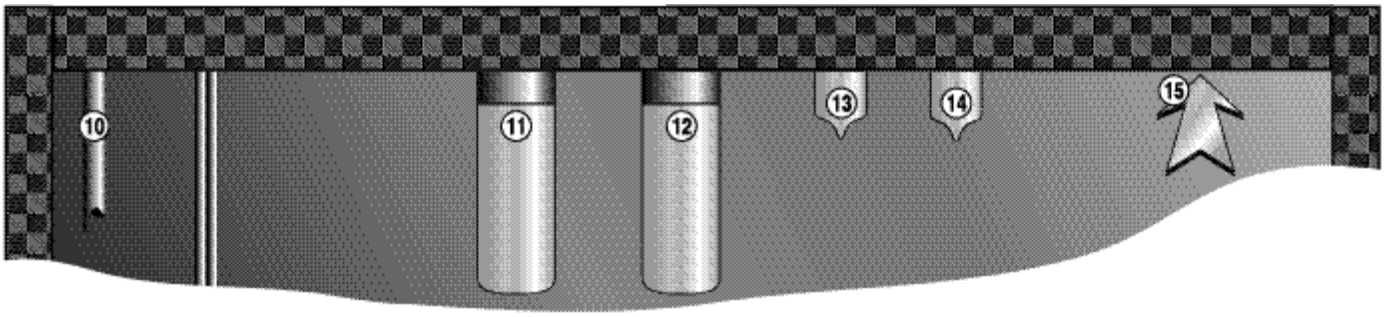
15. Footswitch Jack is located up inside the amplifier, just past the cabinet's covered back panel. Connect the supplied footswitch here for control of the Reverb on/off and a switchable 15dB of gain from 250Hz to 8kHz.

Technical Specifications:

OUTPUT POWER RATING	50 watts RMS @ 5% THD 8 ohm load 120 VAC
SIGNAL TO NOISE RATIO	70dB typical
POWER REQUIREMENTS	120VAC, 60Hz, 110VA; 100VAC, 50/60Hz, 110VA; 230VAC, 50/60Hz, 110VA
GAIN	69dB
TREBLE	12dB Boost and Cut @ 6kHz
MID	16dB Boost and Cut @ 800Hz
BASS	24dB Boost and Cut @ 50Hz
SPEAKER SPECS	12", 50 W, 8 ohm, 1.5" voice coil diameter, 34 oz. magnet
SIZE AND WEIGHT:	21" W x 17" H x 10.25" D, 40 lbs.

SJ-12T:





Top Panel:

1. Guitar Input accepts a standard 1/4" instrument plug from your electric guitar. This input is at 0dB level.

2. Accordion Input accepts a standard 1/4" instrument plug from high output electronic instruments. This input is padded 6dB to compensate for higher output sources.

3. Volume controls the overall output level of the amplifier. At lower volume settings the sound will be clean. As you push the volume higher and crank your guitar the sound becomes distorted.

4. Tone controls the overall tonal character of the amplifier. Rotating the knob toward the "T" increases the higher frequencies, giving a brighter, more "crisp" sound. Rotating the control towards the "B" reduces the high frequencies, giving a darker, more "muffled" sound. The Tone control offers a cut or boost of 30dB at 4kHz.

5. Tremolo-Speed sets the rate at which the tremolo effect "vibrates." The Tremolo-Intensity control (6) must be turned up to hear the effects of this knob's setting.

6. Tremolo-Intensity sets the depth of the tremolo effect. For slow, smoother vibrato effects try the Intensity control at around 6 and the Speed control at 1. For the really wild sounds, crank the Intensity up towards 8 (or beyond) and go from there.

7. Reverb-Dimension controls the amount of reverberation applied to the signal. With the control at the "0" position there is no reverb applied; as the control is turned towards "10" the amount of reverb increases accordingly.

8. Power light indicates the amplifier is turned on by glowing an iridescent blue color.

9. Power switch is used to turn the amplifier on and off.

Rear Panel:

10. Power cord connects the amplifier to a suitable source of A.C. voltage. This is a grounded, three-wire cord and must be connected to a properly grounded outlet. **DO NOT attempt to defeat the ground connection of the power cord!** If your amp was purchased outside of the United States, see the sticker next to the A.C. connector for its power ratings. Follow the above guidelines.

11,12. Power Tubes: 6L6 / 6CA5 (2)

13. Power Amp Phase Splitter Tube: 12AX7A / 7025 (1)

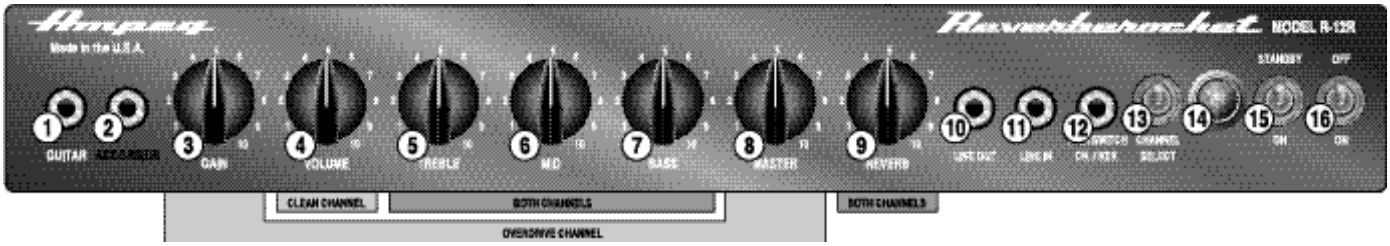
14. Preamp Tube: 12AX7A/ 7025 (1)

15. Footswitch Jack is located up inside the amplifier, just past the cabinet's covered back panel. Connect the supplied footswitch here for control of the Reverb and Tremolo on/off.

Technical Specifications:

OUTPUT POWER RATING	50 watts RMS @ 5% THD 8 ohm load 120 VAC
SIGNAL TO NOISE RATIO	70dB typical
POWER REQUIREMENTS	120VAC, 60Hz, 110VA; 100VAC, 50/60Hz, 110VA; 230VAC, 50/60Hz, 110VA
GAIN	62dB
TONE	30dB Boost and Cut @ 4kHz
SPEAKER SPECS	12", 50 W, 8 ohm, 1.5" voice coil diameter, 34 oz. magnet
SIZE AND WEIGHT:	21" W x 17" H x 10.25" D, 40 lbs.

R-12R, R-212R:



Top Panel:

1. Guitar Input accepts a standard 1/4" instrument plug from your electric guitar. This input is at 0dB level.

2. Accordion Input accepts a standard 1/4" instrument plug from high output electronic instruments. This input is padded 6dB to compensate for higher output sources.

3. Gain sets the amount of overdrive distortion for the overdrive channel. This control works along with the Master control (8).

4. Volume controls the output level of the clean channel.

5. Treble adjusts the output level of the high frequency range for both channels. This control offers a cut or boost of 24dB at 5kHz for the clean channel, 24dB at 2kHz for the overdrive channel.

6. Mid adjusts the output level of the middle frequencies for both channels. This control offers a cut or boost of 8dB at 700Hz for both channels.

7. Bass adjusts the output level of the low frequencies for both channels. This control offers a cut or boost of 24dB at 40Hz for both channels.

8. Master controls the output volume level of the overdrive channel. This control works with the Gain control (3) to produce sounds from slightly distorted to screaming and everything in between.

9. Reverb controls the amount of reverberation applied to both channels. With the control at the "0" position there is no reverb applied; as the control is turned towards "10" the amount of reverb increases accordingly.

10. Line Out serves as the "send" jack of an effect loop, when connected to the input jack of a floor pedal or rack-mounted processor. This jack can double as a signal output for connecting directly to a house sound console, recording console, powered monitor or external amplifier.

11. Line In serves as the "return" jack of an effect loop, when connected to the output jack of a floor pedal or rack-mounted processor. This jack can double as a direct-into-the amplifier signal feed when using the amp as a "slave" or extension amplifier.

12. Footswitch allows "remote control" of the channel selection and reverb on/off. Insert the stereo 1/4" plug of a two-button footswitch (such as Ampeg's AFP-2) here. The "tip" connection controls channel switching, the "ring" controls the reverb.

13. Channel Select activates the clean channel in the down position and the overdrive channel in the up position. When a footswitch is connected (see 12), this switch is bypassed and has no affect.

14. Power light indicates the amplifier is turned on by glowing an iridescent blue color.

15. Standby switch activates the amplifier when ready for play. ***Always turn this switch off first, on last. Turn the Power switch (16) on at least 30 seconds before turning on the Standby switch.*** *During short breaks of use, turn the Standby switch off, leaving the Power switch on. This will help prolong the life of the amplifier's tubes.*

16. Power switch turns the main power on and off. ***Always turn this switch on first, off last. Turn the Standby switch (15) on at least 30 seconds after turning on the Power switch.***

Rear Panel (not shown):

17. Power cord connects the amplifier to a suitable source of A.C. voltage. This is a grounded, three-wire cord and must be connected to a properly grounded outlet. **DONOT attempt to defeat the ground connection of the power cord!** If your amp was purchased outside of the United States, see the sticker next to the A.C. connector for its power ratings. Follow the above guidelines.

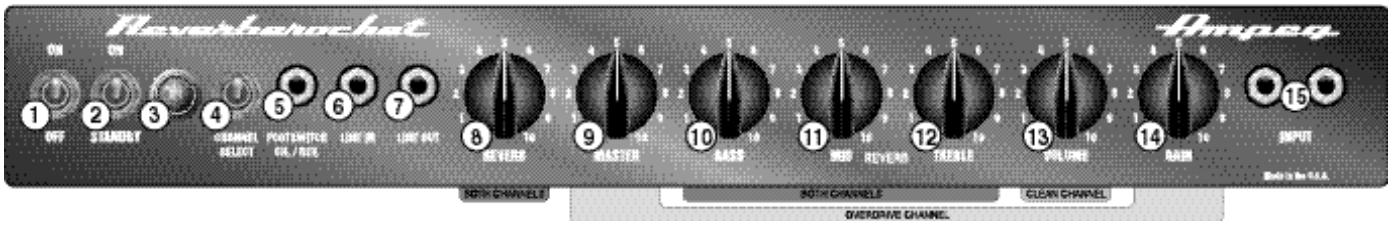
18, 19. Power Tubes: 6L6 (2)

20-22. Preamp Tubes: 12AX7A(3)

Technical Specifications:

OUTPUT POWER RATING	50 watts RMS @ 10% THD 8 ohm load 120 VAC
SIGNAL TO NOISE RATIO	65dB typical
POWER REQUIREMENTS	120VAC, 60Hz, 115VA; 100VAC, 50/60Hz, 115VA; 230VAC, 50/60Hz, 115VA
GAIN	60dB Clean channel, 95dB Overdrive channel
TREBLE	24dB Range @ 5kHz Clean channel, 24dB Range @ 2kHz Overdrive channel
MID	8dB Range @ 700Hz
BASS	24dB Range @ 40Hz
SPEAKER SPECS	12", 50 W, 8 ohm, 1.5" voice coil diameter, 34 oz. magnet (R-12R = 1, R-212R = 2)
SIZE AND WEIGHT:	R-12R: 24" W x 19" H x 11" D, 45 lbs. R-212R: 27.75" W x 19" H x 12" D, 55 lbs.

R-50H:



Top Panel:

11. Power switch turns the main power on and off. ***Always turn this switch on first, off last. Turn the Standby switch (2) on at least 30 seconds after turning on the Power switch.***

2. Standby switch activates the amplifier when ready for play. ***Always turn this switch off first, on last. Turn the Power switch (1) on at least 30 seconds before turning on the Standby switch.*** *During short breaks of use, turn the Standby switch off, leaving the Power switch on. This will help prolong the life of the amplifier's tubes.*

IMPORTANT! PLEASE NOTE: Always connect the amplifier to a suitable speaker cabinet and set the Impedance switch (18) to the proper setting *BEFORE* turning the amplifier on!

3. Power light indicates the amplifier is turned on by glowing an iridescent blue color.

4. Channel Select activates the clean channel in the down position and the overdrive channel in the up position. When a footswitch is connected (see 5), this switch is bypassed and has no affect.

5. Footswitch allows "remote control" of the channel selection and reverb on/off. Insert the stereo 1/4" plug of a two-button footswitch (such as Ampeg's AFP-2) here. The "tip" connection controls channel switching, the "ring" controls the reverb.

6. Line In serves as the "return" jack of an effect loop, when connected to the output jack of a floor pedal or rack-mounted processor. This jack can double as a direct-into-the amplifier signal feed when using the amp as a "slave" or extension amplifier.

7. Line Out serves as the "send" jack of an effect loop, when connected to the input jack of a floor pedal or rack-mounted processor. This jack can double as a signal output for connecting directly to a house sound console, recording console, powered monitor or external amplifier.

8. Reverb controls the amount of reverberation applied to both channels. With the control at the "0" position there is no reverb applied; as the control is turned towards "10" the amount of reverb increases accordingly.

9. Master controls the output volume level of the overdrive channel. This control works with the Gain control (14) to produce sounds from slightly distorted to screaming and everything in between.

10. Bass adjusts the output level of the low frequencies for both channels. This control offers a cut or boost of 24dB at 40Hz for both channels.

11. Mid adjusts the output level of the middle frequencies for both channels. This control offers a cut or boost of 8dB at 700Hz for both channels.

12. Treble adjusts the output level of the high frequency range for both channels. This control offers a cut or boost of 24dB at 5kHz for the clean channel, 24dB at 2kHz for the overdrive channel.

13. Volume controls the output level of the clean channel.

14. Gain sets the amount of overdrive distortion for the overdrive channel. This control works along with the Master control (9).

15. Each **Input** accepts a standard 1/4" instrument plug from your electric guitar. The right input is at 0dB level while the left input is padded 6dB to compensate for higher output sources.

Rear Panel (not shown):

16. Main Speaker jack: Use this jack to connect the amplifier to your speaker cabinet. Always use this jack "first" – if using a second cabinet, connect it to the Extension Speaker jack (17).

17. Ext. Speaker jack: Use this jack to connect the amplifier to a *second* speaker cabinet – always use the Main Speaker jack (16) "first."

18. Impedance switch: Use this switch to match the amplifier to the TOTAL impedance of your speaker cabinet(s).

19. AC Line In: Use the supplied power cord to connect the amplifier to a suitable source of A.C. voltage. This is a grounded, three-wire cord and must be connected to a properly grounded outlet. **DO NOT attempt to defeat the ground connection of the power cord!** See the serial number label for power ratings.

20,21. Power Tubes: EL34 (2)

22-24. Preamp Tubes: 12AX7A (3)

Technical Specifications:

OUTPUT POWER RATING	50 watts RMS @ 10% THD 8 ohm load 120 VAC
SIGNAL TO NOISE RATIO	65dB typical
POWER REQUIREMENTS	120VAC, 60Hz, 115VA; 100VAC, 50/60Hz, 115VA; 230VAC, 50/60Hz, 115VA
GAIN	60dB Clean channel, 95dB Overdrive channel
TREBLE	24dB Range @ 5kHz Clean channel, 24dB Range @ 2kHz Overdrive channel
MID	8dB Range @ 700Hz
BASS	24dB Range @ 40Hz
SIZE AND WEIGHT:	29.75" W x 11.25" H x 9.5" D, 34 lbs.

The Theory & Practice of Sound:

(A *very* condensed version)

"If a tree falls in the woods and there's no one around to hear it, does it still make a sound?"

Technically, no - not if you take into account all three of the essential elements of sound itself: **generation**, **propagation** (transmission), and **perception**. If there's no one there to perceive it, it doesn't fulfill the true definition of sound.

Thankfully, we are not trees, and we (usually) don't fall alone in the woods. The majority of us are in one form or another involved in the business of making music - whether we play it, promote it, sell the tools for it, or just enjoy it, we're into it. So what happens from the time someone strikes a string on a bass guitar, or hammers out a power cord on a six-string electric, or whispers their heart-felt emotions in a song, to the time our brain says, "Wow! I like it!"?

First of all, sound must be **generated**. For the sake of example, let's pick on the bass guitar (no pun intended!). Picture a bass player standing towards the rear-left side of a stage in a large auditorium. A large wall of amplifiers and speaker cabinets looms behind him, although none of the amplifiers are actually turned on. The only other person around is you - seated somewhere towards the back of the room, waiting to hear the sounds the musician (I mean bass player) is about to make. With confidence and authority, he strikes the open E string of his instrument. Sound has been generated! The vibrations from the string move the air around it at a certain frequency until the string ceases to vibrate. But did you hear the sound? Not very likely. The tiny vibrations from the string needed to be **propagated** (transmitted) to your ears in order for them to be **perceived** - otherwise, you couldn't hear the sound the bassist made on stage.

Now, turn on the amps! The vibration from the string is captured and transmitted from the pickups on the bass through a cable or wireless transceiver system to the amplifiers. The bassist already has his tones and levels set just the way he wants them - so he gets "his sound." That small signal which was generated by that tiny amount of air originally moved by the vibrating string is amplified about a million times and sent to the speaker cabinets. The electrical signal from the amplifiers hits the speakers, which make the speaker cones move, which push the air, which is transmitted to your ears at a concert level, where your brain converts the vibrations from the air into the sounds which you hear, and now you smile! The sound which was *generated* by the bass has been *propagated* by the amps and speakers (as well as your own ears), and *perceived* by your brain.

There's a whole bunch of technical and biological factors we glossed over in an attempt to save paper, but in a nutshell:

Generation, propagation, and perception - that's what it takes to make sound.

Ampeg amplifiers and speakers - that's what it takes to make it sound GOOD!

The Theory & Practice of Sound:

“A thousand watt bass amp?! Why would anyone need that much power?!”

To be heard, of course! Bass guitars generate low frequency sounds, which take more power to be reproduced than those from other instruments (such as lead guitars). That’s one reason why a stage rig for a bassist may have many hundreds, even thousands of watts of power, and lots of speakers to go with it, while the guitarist may only need a fraction of the firepower.

Sound levels are measured in decibels (dB) (named after none other than Alexander Graham Bell, who knew a lot about sound for his day!) The charts below show the relationship between dB levels and the changes in power they require. Keep this in mind: the average person’s ear hears differences in loudness in increments of 3dB. In order to get a 3dB increase in sound pressure (for an audible level increase), the power needs to be *doubled*. (That’s why a 120 watt amp only sounds a little louder than a 60 watt amp.) In order to double the perceived loudness, the power must be increased *ten times* – it takes a 1000 watt amplifier to produce a sound which is twice as loud as that from a 100 watt amp.

	Sound Pressure Levels (dB Level)	Sound Pressure Levels (Acoustic Watts Level)	Change of Power For Change of dB Level
Air Raid Siren @100'	130	10	10,000,000,000,000
Jet Airplane @100' / Threshold of Pain	120	1.0	1,000,000,000,000
Propeller Aircraft @20' / Loud Rock Band @5' / Thunder	110	.1	100,000,000,000
Riveting Machine @30'	100	.01	10,000,000,000
Deisel Truck @80' / Very Loud Music Peaks	90	.001	1,000,000,000
Power Lawn Mower @30' / Heavy Street Traffic @5'	80	.0001	100,000,000
Very Loud Music @5' / Heavy Traffic @40'	70	.00001	10,000,000
Loud Music @5' / Normal Conversation @5' / Noisy Office	60	.000001	1,000,000
Average Office	50	.0000001	100,000
Average Residence / Minimum Street Noise	40	.00000001	10,000
	30	.000000001	1,000
Quiet Dentist's Office	20	.0000000001	100
Whisper @5' / Quiet Recording Studio	10	.00000000001	10
Anechoic Chamber	0	.000000000001	1
Hearing Threshold			

“Paying Homage to Ohmage:”

Let’s begin with some of the basics:

1) The resistance to the flow of current through a conductor is known as impedance

2) Impedance is measured in ohms (Ω)

3) All speakers have a rated input impedance - usually 4Ω, 8Ω, or 16Ω

4) Amplifiers have a rated output impedance - usually 2Ω, 4Ω or 8Ω (often rated as “nominal” and “minimal” impedances, which are the usual vs. the minimum the amp can handle - sometimes the amp impedance is switchable, as in most tube amplifiers)

5) An amplifier performs best when its output impedance is matched to the input impedance of the speaker it is connected to

6) The resistance to an amplifier’s output presented by the speakers is referred to as the speaker load

7) Amplifiers will produce more power as the speaker load is decreased, but can be damaged by too low of a load impedance

For example: An amplifier has an output power rating of 200 watts @ 8Ω and 400 watts at 4Ω. (Lower impedances create less resistance against the output of the amplifier, allowing more of the output current to be converted to output power.) If the amplifier is connected to an 8Ω speaker, and the amp’s nominal impedance is 8Ω, the amp will put out 200 watts into the speaker. Adding another 8Ω speaker in parallel with the first creates a total speaker impedance of 4Ω (the amp’s minimal impedance is 4Ω) – the amp will put out 400 watts into both speakers.

It is essential to match the impedance of your speakers to your amplifier - especially with tube amps! A mismatched between amplifier and speaker impedances can cause poor sound, plus overheated and possibly destroyed equipment. (Ampeg amplifiers will shut down before critical failure, but then again, why take chances?)

The chart below shows the total load impedances of many common parallel speaker combinations:

			SYSTEM ONE									
			SINGLE SPEAKER			TWO SPEAKERS IN PARALLEL						
			4Ω	8Ω	16Ω	4:4Ω	4:8Ω	4:16Ω	8:8Ω	8:16Ω	16:16Ω
SYSTEM TWO	ONE SPKR	4Ω	2Ω	2.7Ω	3.2Ω	1.3Ω	1.6Ω	1.8Ω	2Ω	2.3Ω	2.7Ω
		8Ω	2.7Ω	4Ω	5.3Ω	1.6Ω	2Ω	2.3Ω	2.7Ω	3.2Ω	4Ω
		16Ω	3.2Ω	5.3Ω	8Ω	1.8Ω	2.3Ω	2.7Ω	3.2Ω	4Ω	5.3Ω
	TWO IN PARALLEL	4:4Ω	1.3Ω	1.6Ω	1.8Ω	1Ω	1.1Ω	1.2Ω	1.3Ω	1.5Ω	1.6Ω
		4:8Ω	1.6Ω	2Ω	2.3Ω	1.1Ω	1.3Ω	1.5Ω	1.6Ω	1.8Ω	2Ω
		4:16Ω	1.8Ω	2.3Ω	2.7Ω	1.2Ω	1.5Ω	1.6Ω	1.8Ω	2Ω	2.3Ω
		8:8Ω	2Ω	2.7Ω	3.2Ω	1.3Ω	1.6Ω	1.8Ω	2Ω	2.3Ω	2.7Ω
		8:16Ω	2.3Ω	3.2Ω	4Ω	1.5Ω	1.8Ω	2Ω	2.3Ω	2.7Ω	3.2Ω
		16:16Ω	2.7Ω	4Ω	5.3Ω	1.6Ω	2Ω	2.3Ω	2.7Ω	3.2Ω	4Ω

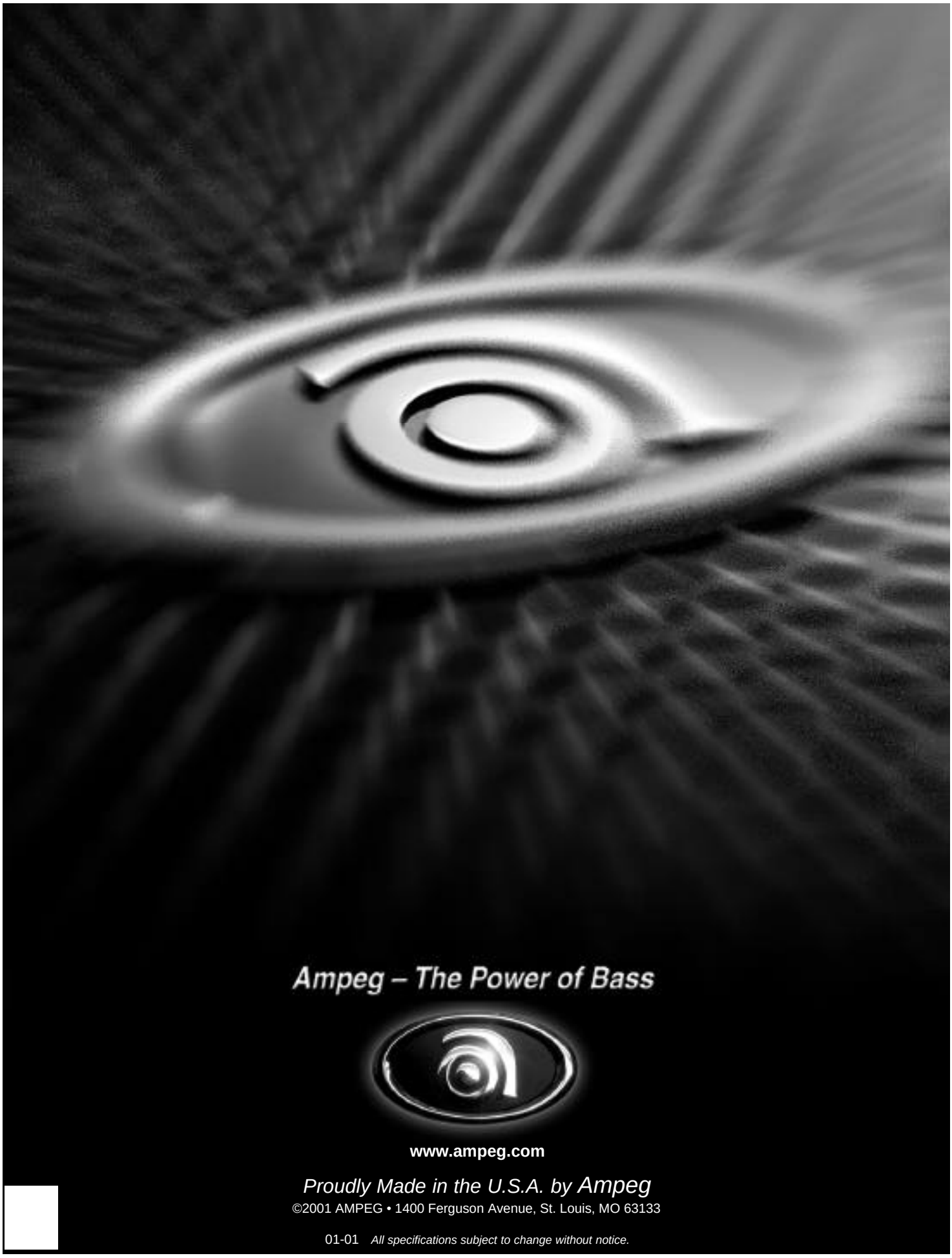
NOTE: Some combinations result in a total impedance of less than 2Ω and should be avoided!

Notes & Annotations:

A Parting Thought:

Of all of the instruments ever made, perhaps the most amazing and valuable instruments of all are your ears – a complex array of mechanical and neurological components capable of trans - lating vibrations into sounds. But unlike some other instruments, if your hearing gets damaged, there are no service centers to send it to, no tubes to replace, and usually no chance of getting it repaired. So, avoid prolonged exposure to really high sound pressure levels, and use some ear plugs when you have to. That way you cut down the chances of damaging your hearing, and you can enjoy the Power of Bass for years to come.

Ampeg - The Power of Bass



www.ampeg.com

Proudly Made in the U.S.A. by Ampeg

01-01 *All specifications subject to change without notice.*