



# MODEL BH-420

## 400 WATT BASS HEAD

### A "Head" Of It's Time

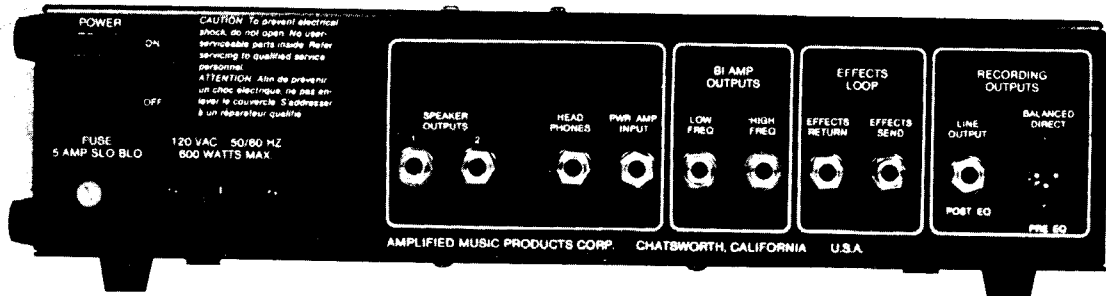
Bass musicians, engineers and retailers alike have A/B'd the AMP Model BH-420 against everything on the market and virtually all agree it's the best bass amp they've ever heard. We invite you to do the same.

Imagine, 400 Watts @ .08 THD while studio quiet at only 2.75 microvolts of input noise, a clipping indicator that monitors four separate stages of the amp to ensure the best use of its extremely wide dynamic range, an unusually good compressor/limiter that operates without adding noise, overshoot or pumping, an enhance pushbutton that emphasizes low bass and upper end brightness while reducing mid bass muddiness, an EQ section that includes bass and treble controls plus four bands of tunable semi-parametric equalization, a unique tone balance control that allows single knob rebalancing for varying room acoustics and much more (see reverse), including intelligent back panel features that cover you in all studio and live situations.

Put this all together in a beautifully compact little package that measures 17" x 4" x 9.5", weighs 25 pounds, is switchable for line voltages anywhere in the world, and your search is over.

AMP . . . Products for serious musicians.





## FEATURES

**Front Panel Includes:** High and Low gain input jacks. Gain and Master Volume controls, Limiter/Compressor with Threshold control, Flat/Enhance switch, Bass and Treble controls, Four Band Semi-Parametric Equalizer, Tone Balance, Crossover Frequency control, Clipping, Limiter Active and Power On LED indicators.

**Back Panel Includes:** Two Recording outputs—Pre EQ Balanced Direct and Post EQ Line output, Effects Loop with Send and Return jacks, High and Low Biamp outputs, Power Amp input, Headphone jack, Two Speaker Output jacks, Power Cord receptacle, Fuseholder and Power On/Off switch. Delayed turn-On and rapid turn-Off prevent power up transients.

**Side Access Panel:** Line Voltage Selector Switches for 100V, 120V, 220V, 240V - 50/60 Hz.

## SPECIFICATIONS

<b>Power Output</b>	400 Watts @ 4 Ohms, 220 Watts @ 8 Ohms
<b>Distortion</b>	.08% THD
<b>Frequency Response</b>	30 Hz to 15 KHz (-3 dB)
<b>Input Sensitivity</b>	28 mV for Rated Output
<b>Input Impedance</b>	4.7 Megohms Shunted by 300 PF
<b>Equivalent Input Noise</b>	2.75 Microvolts
<b>Maximum Input Voltage</b>	
High Gain Input	8 Volts PP
Low Gain Input	24 Volts PP
<b>Limiter Threshold Range</b>	Adjustable from 5 mV to Max Rated Input
<b>Effects Loop Level</b>	.15 Volt Nominal, 26 VPP Clean
<b>Recording Outputs</b>	
Balanced Direct (Pre EQ)	.35 Volt Nominal, 10 VPP Clean
Line Output (Post EQ)	1 Volt Nominal, 26 VPP Clean
<b>Bass &amp; Treble Controls</b>	15 dB Cut and Boost, 0 Center Click
<b>Tone Balance</b>	10 dB Cut and Boost, 0 Center Click
<b>Equalizer (4 Band)</b>	
Level Controls	15 dB Cut and Boost
Tunable Ranges	40-120 Hz, 80-240 Hz, 200-600 Hz, 400-1200 Hz
<b>Electronic Crossover Control</b>	Variable 100-1000 Hz, 12 dB/Octave
<b>Crossover Outputs</b>	1 Volt Nominal, 26 VPP Clean
<b>AC Power (Switchable)</b>	100V, 120V, 220V, 240V - 50/60 Hz
<b>Dimensions</b>	
(Width x Height x Depth)	17" x 4" x 9.5" (+ knobs, handle, feet) (432 x 102 x 241 millimeters)
<b>Net Weight</b>	25 Pounds (11.3 kilograms)
<b>Shipping Weight</b>	30 Pounds (13.6 kilograms)



AMPLIFIED MUSIC PRODUCTS CORP.

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(818) 709-0518



AMPLIFIED MUSIC PRODUCTS CORP.

OWNER'S MANUAL

MODEL BH-420 BASS AMPLIFIER

AN EXCELLENT CHOICE

Your selection of the Amplified Music Products Corp. Model BH-420 Bass Amplifier is indeed an excellent choice. The features, performance, reliability and high power output of the BH-420 make it the clear choice of today's bass player who wants the very best. With a power rating of 400 watts, the BH-420 is one of the most powerful amplifiers available in a single head. Careful selection of just the right features such as multiple recording outputs, adjustable limiter, and built-in electronic crossover along with a sophisticated ultra low noise input stage, make the BH-420 ideal for professional use either on stage live or in the recording studio. Your satisfaction in choosing the BH-420 from AMP is sure to grow as the years go by. We're proud you chose the AMP BH-420 to get the sound you want.

## FRONT PANEL FEATURES

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### INPUT JACKS

Input jack 1 should normally be used. It provides 10 dB more gain than input jack 2. Input 2 should be used only for signals greater than 8 volts peak to peak. Such large signals could occur when using a high level line output signal from other equipment, when using a special effect box between your instrument and the BH-420 (better to use the effects loop), or when using an instrument with built-in active electronics. For most signals input jack 1 will give higher gain and better signal to noise ratio. The two inputs cannot be used at the same time. Multiple signals must first be mixed or added externally and then plugged into either input jack.

### GAIN

The continuously variable gain control adjusts the signal level before it is fed to the limiter and EQ sections of the BH-420. For the best possible signal to noise ratio, the gain control should be set as high as possible without causing the clip light to flash except on peaks caused by the strongest plucking of the instrument strings. This setting may require some readjustment with extreme changes to the settings of the EQ section. It is also best to make this gain adjustment with the limiter set at minimum to prevent limiting on peaks which would obscure the unlimited clipping level. After some experimentation with your particular instrument you will probably keep your gain set to a convenient level and use the volume control to set the listening level desired.

### CLIP LIGHT

The clip indicator monitors all four stages preceeding the main volume control and will light if any one of the sections reaches its clipping level, thus warning of possible distortion. If more than occasional flashes of short duration occur, the gain control should be set lower to prevent audible distortion due to clipping.

## LIMITER

The limiter control sets the threshold level at which compression or limiting begins to take effect. Whenever the strength of a signal is greater than the threshold level setting, the gain of the limiter stage is automatically decreased just enough to hold the output at or near the limiting level. Attack and release times of the limiter have been optimized for use with bass instruments and work well with virtually all popular styles of playing. When uniform output level is desired, set the limiter control high enough to cause the active indicator to light on much of the music played but below the setting that begins to noticeably reduce sound output level. For special effects with extreme compression set the limiter control near maximum and turn up the gain control which will cause even greater compression to occur. Then set the loudness using the volume control. After using extreme limiting be sure to reset gain control to prevent excessive loudness and/or clipping.

## ACTIVE LIGHT

The active light will light whenever the signal from your instrument exceeds the threshold setting of the limiter. When the active light is on, the gain of the limiter stage is being automatically controlled to hold the output level at or near the threshold level setting.

## ENHANCE BUTTON

When the enhance button is pushed in, an enhanced frequency response occurs with boost and cut of various frequencies chosen to complement the sound of most bass instruments. The result usually gives a sweeter more transparent sound with less mid-bass muddiness.

## BASS CONTROL

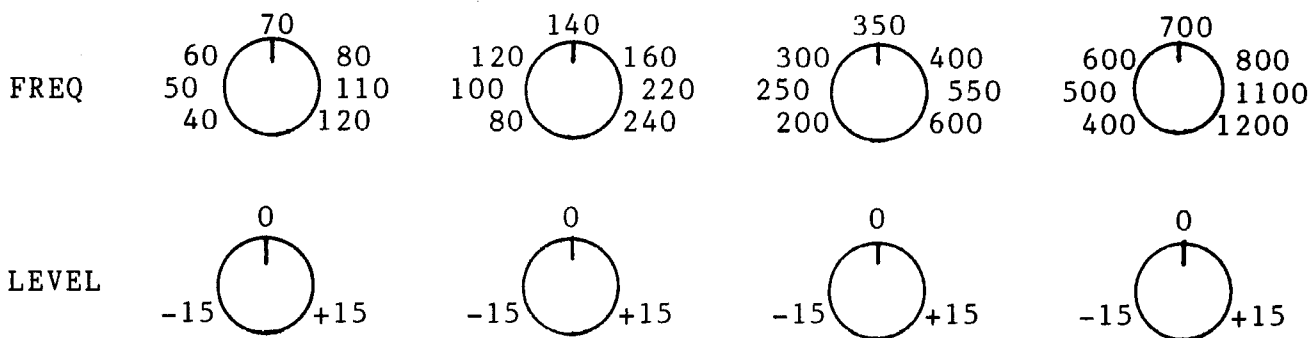
The bass control allows a wide range of adjustment for the loudness of bass frequencies. Continuous variation up to 15 dB boost or cut is available. Flat response occurs at the central position of the control, identified by a slight click.

## SEMI PARAMETRIC BASS EQUALIZER

Musicians and recording engineers have been using tone controls and equalizers for years to adjust the sound to their liking or to compensate for room acoustics. The following description will help you to understand how the semi parametric bass equalizer works and to reach your sound goal more quickly.

The semi parametric bass equalizer consists of four individual sections with two controls per section. For each section the upper control selects the particular frequency that will be affected by the setting of the level control located directly beneath it. Turning the level control counter-clockwise will cut the response in the area set by the frequency control just above it. Turning the level control clockwise will boost the response in the area set by the frequency control. Flat response occurs at the central position of each level control, identified by a slight click. When the level control is in the central or flat position the frequency control will have no effect since no boost or cut is occurring.

The chart below will help you to identify which controls will affect the various notes on the neck of your bass instrument.



---	E82	---	D73	---	C65	---	B62	---	A55	---	G49	---	F44	---	E41
---	A110	---	G98	---	F87	---	E82	---	D73	---	C65	---	B62	---	A55
---	D147	---	C131	---	B123	---	A110	---	G98	---	F87	---	E82	---	D73
---	G196	---	F175	---	E165	---	D147	---	C131	---	B123	---	A110	---	G98

## TREBLE CONTROL

The treble control allows a wide range of adjustment for the loudness of treble frequencies. Continuous variation up to 15 dB boost or cut is available. Flat response occurs at the central position of the control, identified by a slight click.

## TONE BALANCE

Turning the tone balance control counter-clockwise from its mid position will boost the low frequencies while cutting the high frequencies. Turning the tone balance clockwise will boost the high frequencies while cutting the low frequencies. With both boost and cut occurring together the psychological loudness appears nearly constant while tone balance shifts radically. Flat response occurs in the center click position. Because the tone balance control is totally independent of the other tone functions, it allows the musician to achieve accentuated bass and treble effects. As a result, really new and exciting tonal combinations are possible. There are two cases in which this control is especially useful. First, if a particular arrangement or song requires more lows or highs, they can be achieved swiftly by moving the tone balance one direction or the other. Secondly you can quickly compensate for different room acoustics you may encounter without having to disturb your favorite setting of the semi parametric equalizer tone section.

## VOLUME CONTROL

This continuously variable control adjusts the loudness or volume of the BH-420 amplifier. It controls the output level at all back panel output jacks except for the effects loop and balanced direct XLR jack.

## CROSSOVER

The crossover control allows selection of any desired crossover frequency from 100 Hz to 1000 Hz when using the biamp outputs. As an example if the crossover control is set to 250 Hz (a good choice in many bass biamp situations), all frequencies below 250 Hz will be present at the low freq biamp output jack and all frequencies above 250 Hz will be present at the high freq biamp output jack. Crossover slope is 12 dB per octave.

## POWER ON INDICATOR

The power on indicator is a green LED light indicating when the BH-420 is plugged in, turned on, and ready for use.

## BACK PANEL FEATURES

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### RECORDING OUTPUTS

The balanced direct XLR output operates PRE-EQ and is ideal for sending a low noise, low distortion, unmodified sample of your instrument signal directly to a mixing board. The voltage level of the signal will be twice the input from your instrument when using input jack number 2, and 10 dB larger when using input jack number 1. The output is plus phase at pin 2 and minus phase at pin 3. The output impedance at each of these pins is 1K ohms or 2K total. Pin 1 is grounded. None of the front panel controls affect the balanced direct output.

The line output is POST-EQ and is therefore affected by all of the front panel controls except the crossover control. It can be used to send a replica of the fully modified amplifier output including anything in the effects loop to a recording board or house P.A. board. Just remember that any changes to your control settings will affect this output. The phase of this output is positive with respect to the input signal.

### EFFECTS LOOP

The effects loop is used to send signals to and from any desired special effect box or group of boxes. Placing the effects in the effects loop usually provides better results than placing them between the instrument and the amplifier input. The BH-420 input stage provides just enough gain to reduce any noise that the effects device might otherwise introduce. The effects loop source impedance of 1K ohms and input impedance of 18K ohms minimum are ideally suited for use with virtually all popular effects now on the market. To connect the loop, place a shielded cable from the effects send jack to the input of the device and a second shielded cable from the device output to the effects return jack.

### BIAMP OUTPUTS

Low freq and high freq output jacks are provided for use in biamp setups. All frequencies below the crossover frequency come from the low freq jack, and all frequencies above the crossover frequency come from the high freq jack. The most common hookup would be to place a shielded cable from the low freq jack to the PWR. AMP. INPUT jack, thus using the BH-420 with its 400 watts of power to drive your low frequency speaker cabinet. A second shielded cable from the high freq jack is then used to feed the input of a separate power amplifier which drives the high frequency speaker.



## POWER AMPLIFIER INPUT

The PWR. AMP. INPUT jack is used to insert a signal directly into the power amplifier section of the BH-420 as described in the section above on biamping. Plugging a signal into the power amp input jack automatically disconnects the normal internal connection of the BH-420 preamp output from the power amp input.

## HEADPHONES

The headphone jack allows use of headphones for quiet practice or preshow warmup. The headphones used must have a stereo type 1/4 inch phone plug to prevent shorting out one side of the headphone output which then removes the other side as well. No harm will be done with the wrong plug, you just don't get the signal.

## SPEAKER OUTPUTS 1 AND 2

Speaker output jacks 1 and 2 are the power amplifier output jacks. Either one can be used to drive your speaker. Both can be used when driving two cabinets. The output will drive 220 watts into an 8 ohm speaker or 400 watts into a 4 ohm load. Two 8 ohm cabinets plugged into jacks 1 and 2 combine to make one 4 ohm load. The BH-420 will not be hurt by directly shorting its output even while supplying maximum output to its load. However continuous operation in this manner or continuous high level operation into speaker loads of less than 4 ohms can cause overheating and eventual damage. Under normal use the top left cover area may become quite hot. This is normal since the entire cover is used as a heat sink.

## POWER ON OFF

The power on off switch is located on the upper right rear corner of the amplifier. This location helps to provide absolute minimum hum pickup by the sensitive preamplifier circuits. If the BH-420 is modified for rack mount use, the amplifier can be left on and simply energized whenever ac power is applied to its line cord. Upon application of ac power either by the on off switch or plugging in the line cord there is a built in delay of approximately 3 seconds to prevent turn on and turn off transient pops or thumps.

## OPERATING AT 100, 120, 220, AND 240 VOLTS 50/60 Hz

The BH-420 can be reset to operate at 100, 120, 220, or 240 volts to match the line voltages found throughout the world. Any qualified technician can remove the right side wood trim strip and select the two switch settings that add up to the desired operating voltage. Be sure this is done with the power cord removed from the wall outlet and the power off.

## LIMITED WARRANTY

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All products from AMP are warranted to the original consumer purchaser for ONE YEAR from the date of purchase in the U.S.A. against defects in materials and workmanship.

This warranty is VOID if the unit has been damaged due to accident; improper handling, installation, or operation; shipping damage; abuse; misuse; unauthorized repair or attempted repair or if the serial number has been defaced or removed. AMP reserves the right to make such determination on the basis of factory inspection.

All liability for any incidental or consequential damages for breach of any expressed or implied warranties is disclaimed and excluded herefrom.

Some states do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental or consequential damages, so that the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

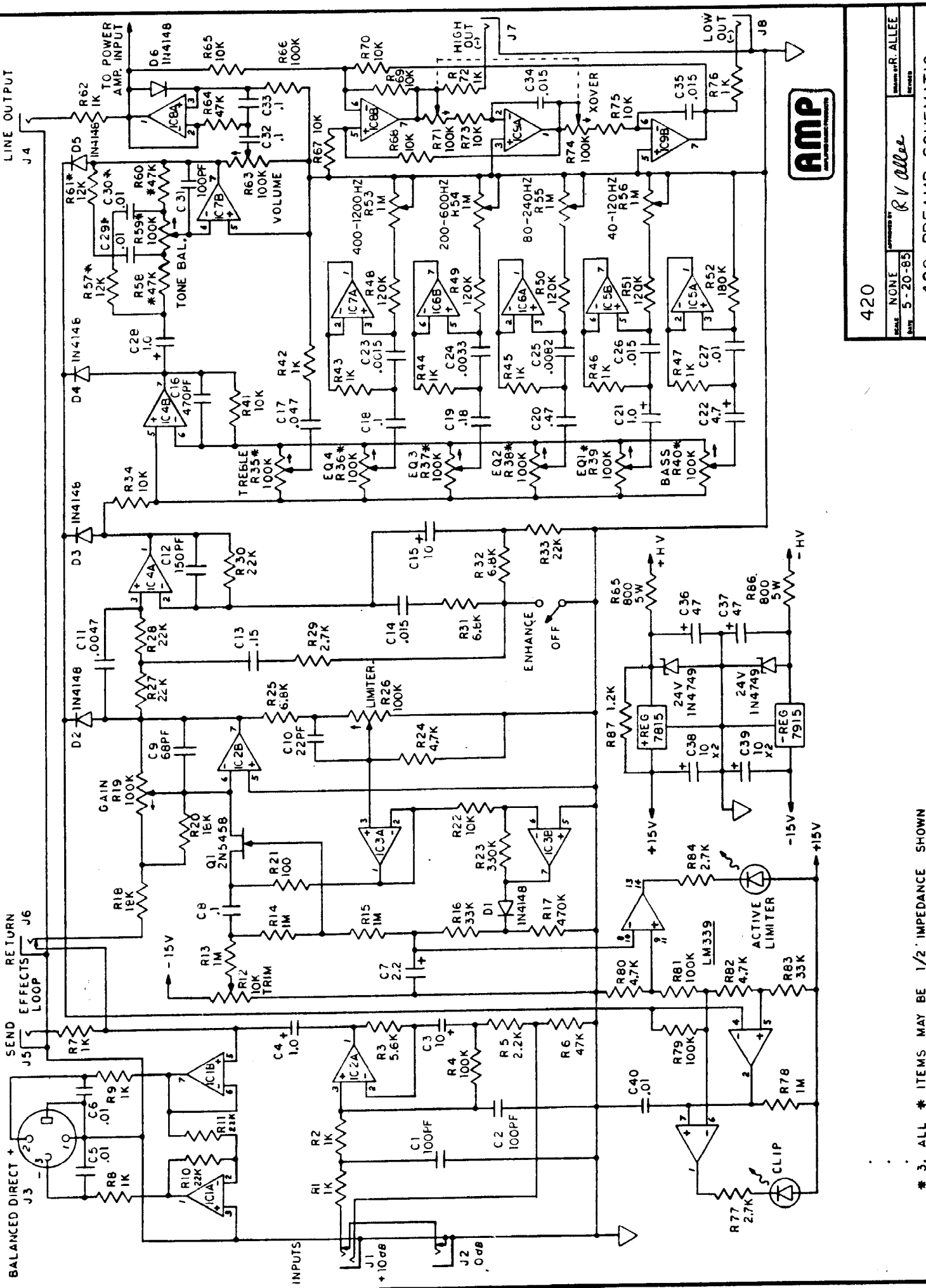
To get your AMP product repaired:

1. Locate your original bill of sale showing details of purchase including date of purchase.
2. Telephone or write us at the location shown below with a brief description of the problem and we will issue you a return authorization number (R. A. #).
3. Pack the unit carefully, include your bill of sale or copy thereof, indicate the R. A. # on the outside of the shipping carton and ship it PREPAID to the address shown below. NOTE: You are responsible for freight and insurance charges to and from the factory.
4. AMP will provide free repair (parts and labor), or replacement at our option, on units determined to be under warranty. We will return the repaired unit to you freight COLLECT.

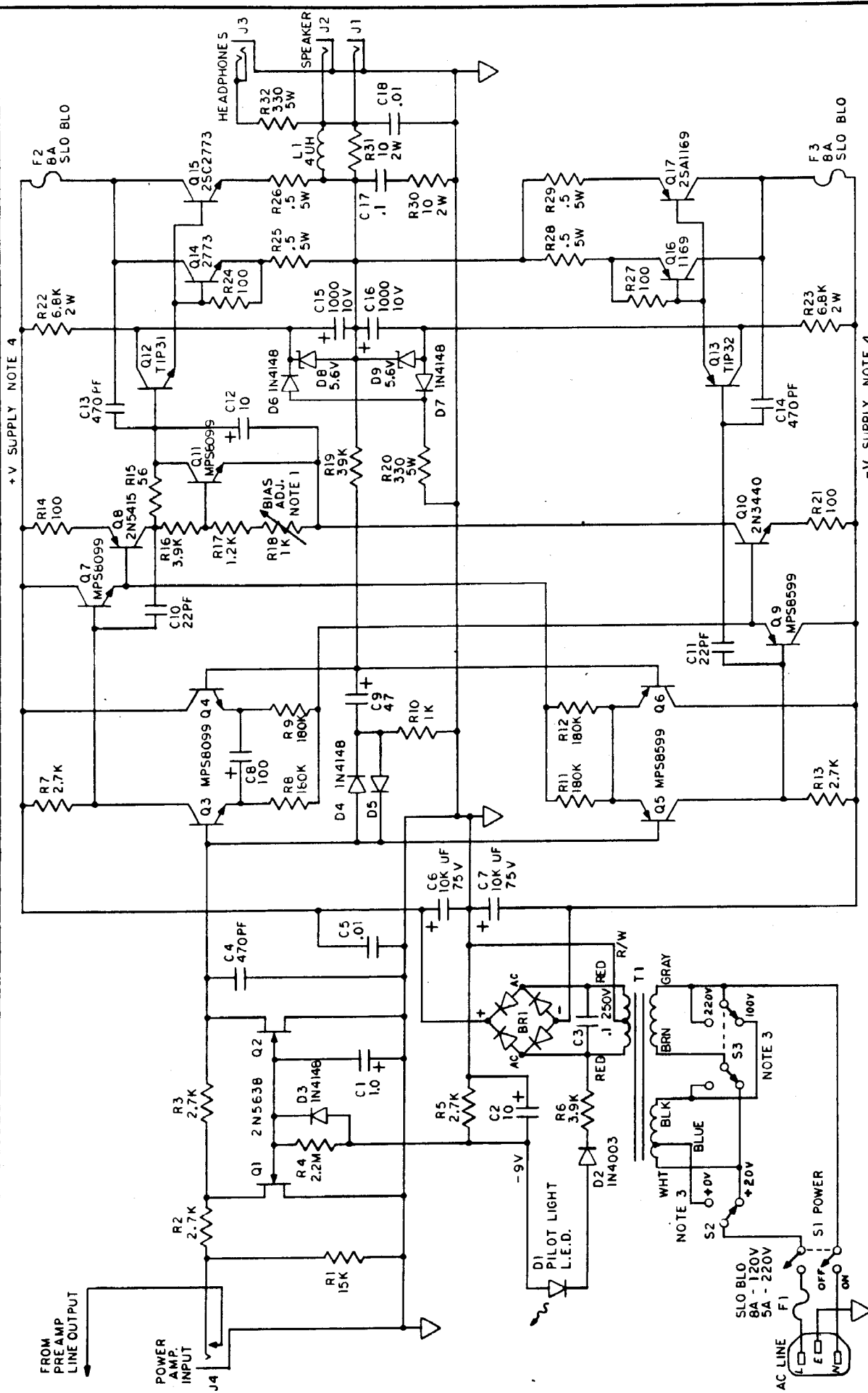
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R. A. # \_\_\_\_\_

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\* 3. ALL \* ITEMS MAY BE 1/2 IMPEDANCE SHOWN



+V SUPPLY NOTE 4

-V SUPPLY NOTE 4



SCALE NONE  
DATE 5-15-85  
APPROVED BY: Russ Allee  
DRAWN BY: R. ALLEE  
REVISED

420 / 220

LAST NOS. R32 L1 C18 F3 D9 Q17 S3 J4

- VOLTAGE GAIN X40
- SUPPLY VOLTAGES  $\pm 76V$  FOR MODEL 420 AND  $\pm 62V$  FOR MODEL 220 NO LOAD.
- SET SUM OF S2 + S3 TO MATCH LINE VOLTAGE TO BE USED. REMOVE POWER CORD BEFORE SWITCHING.
- USE F2 AND F3 ARE BLOWN BEHIND FACE AND CHECK D5, D6, D7, D8, D9, Q14, Q15, Q16, Q17, Q18 FOR SHORTS.

POWER AMPLIFIER AND SUPPLY