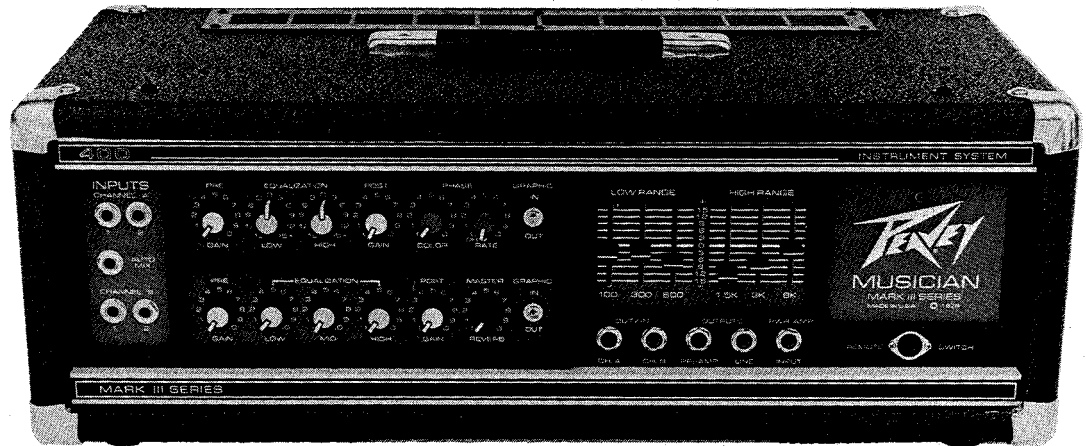


Mark III Series MUSICIAN OPERATING GUIDE



GENERAL DESCRIPTION

The new Peavey Mark III Musician represents the fourth generation of this series which has proven to be one of the most popular ever introduced to the musical market. The Mark III Series brings our many years of manufacturing and playing experience together in a **totally** redesigned electronics chassis and package. Much engineering time has been devoted to all the minute details that combine to create an effective instrument amplifier capable of producing the various dynamics, harmonics and tonal textures so vital in contemporary music. Particular care has been exercised in the design of our preamp and equalization circuitry. The Musician preamp features Peavey's exclusive pre and post gain controls enabling total control over the dynamics and gain of each input preamplifier. The pre gain control functions as the normal gain control, while the post gain control operates as individual "master controls" for each channel. This feature is tremendously important when using the Musician in the AUTOMIX mode. The relatively weak guitar pickups of ten years ago have given way to the new generation pickups that feature extremely high output and require absolute maximum performance from the amplifier's signal processing circuitry. Our efforts to satisfy the demand for the proper "texture" and overload characteristics have made it necessary for Peavey to completely and totally redesign the electronic circuitry from the input jack through to the output jack.

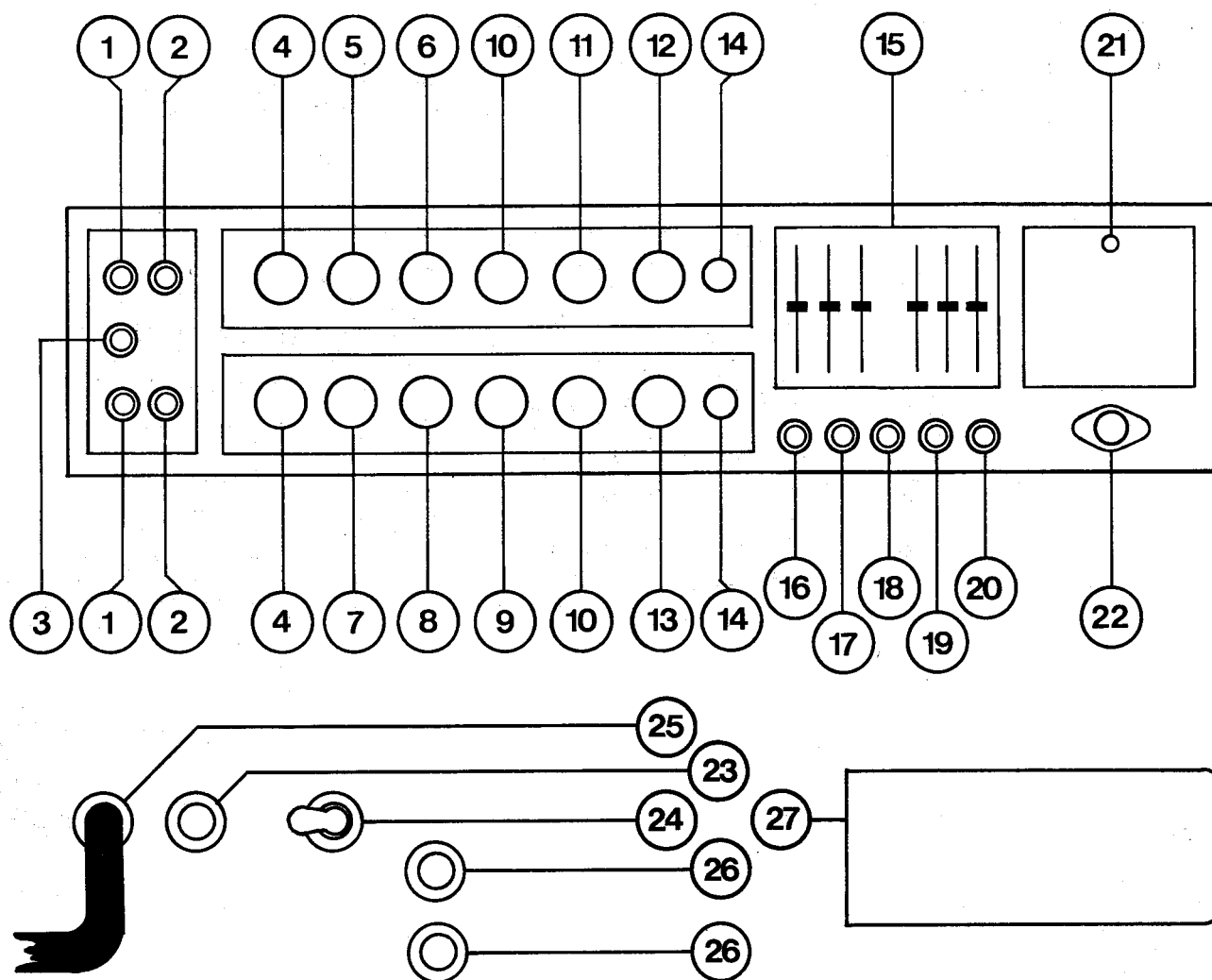
To further complement this "all new" unit, we have designed a totally new series of color-coded knobs that not only provide function identification by color, but also feature greatly improved visibility and "touch indexing" capability.

The Mark III Musician utilizes the latest BI-FET and CMOS devices to enable signal processing and features that would have been totally "out of reach" for all but the most sophisticated recording studios just a short time ago. Totally new circuitry utilizing the latest advances in semiconductors and design techniques provide the versatility built into the new Musician. Our exclusive AUTOMIX function has been made considerably simpler and more efficient using LED indicators, combined with active CMOS analog switches. Each channel of the Musician is voiced slightly differently, with Channel A having active equalization, while Channel B offers passive equalization. Each channel features an equalizer assign switch to enable "pre-programming", either through or around the six-band graphic equalizer. These equalizer assign switches are extremely effective when using the AUTOMIX feature of the amplifier since they allow one channel to be routed through the graphic, with the other channel routed around the graphic, thus yielding a tremendous tonal variation when switching from channel to channel. Our new phasor circuit utilizes new engineering techniques that avoid the many problems associated with the older FET-based designs and the phasing effect and the timing oscillator circuitry combine to form what we feel is the most effective phasing unit ever incorporated into a musical instrument amplification system. The reverberation unit is driven by a fully complementary circuit that uses the reverb coil itself in the feedback loop to electronically maximize the performance of the Hammond Type IV delay line. The Musician also features a complete and versatile patching facility capable of driving any known power amplifier or line level effects device. This patch panel includes stereo capability with the outputs from Channel A and B brought out separately, as well as a specially compensated line output that delivers a signal that closely matches what is heard from the amplifier's speaker system, making effective direct patching into mixers, etc., practical for the first time. Each output is capable of driving 600-Ohm loads to better than 2-Volt levels.

The power output section of the Mark III Musician is based on eight high-voltage, ultra-fast output devices bolted to a massive aluminum heatsink. This power section also includes a built-in matching transformer to allow optimum performance with either 8- or 4- Ohm loads and includes adequate capabilities to effectively drive loads as low as 2 Ohms. Reduced damping factor assures tube-type overload qualities and tonal color.

Overall, the Musician represents one of the most sophisticated musical instrument amplifiers ever made and represents what we feel is a quantum jump in musical instrument amplifier technology. Experimentation with the many features of this new unit and comparison with other units will illustrate the many advantages of this new Mark III Series amplifier.

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



FRONT PANEL INPUT JACKS 1 AND 2

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

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

NOTE!

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

AUTOMIX JACK (3)

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

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

PRE GAIN (4)

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

EQUALIZATION

The equalization circuitry of the Musician is extremely versatile, as well as reasonably simple to operate. Channel A features the latest active circuitry, while Channel B is designed around somewhat conventional passive circuitry. Some knowledge and operating experience is necessary to obtain maximum benefit from this versatile feature.

CHANNEL A EQUALIZATION

LOW ACTIVE EQUALIZATION CONTROL (5)

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

HIGH ACTIVE EQUALIZATION CONTROL (6)

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

CHANNEL B EQUALIZATION

LOW EQUALIZATION CONTROL (7)

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

MIDDLE EQUALIZATION CONTROL (8)

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

HIGH EQUALIZATION CONTROL (9)

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

POST GAIN CONTROLS (10)

The post gain controls are the "master gain" controls for the respective channels. The action of these controls is conventional and experimentation will illustrate their function. Please be aware that extremely low settings of the post gain controls will require extremely high settings of the pre gain controls with subsequent loss of dynamic range in the input preamp. This may be desirable in some situations to create overload/distortion effects in the input circuitry. When a "clean" response is required, it's generally desirable to maximize dynamic range in the input preamp because of the strong output signals generated by most modern pickups. Optimum dynamic range occurs when the preamp is operated with lower settings of the pre gain and full clockwise settings of the post gain controls.

PHASOR

Phasing is a rather interesting effect that involves the introduction of a variable frequency notch in the amplifier's passband that produces very characteristic sounds. Many phasor circuits have been offered as an integral part of musical instrument amplifiers. We have designed a unique phasing system into the Musician. This phasor is capable of producing an extremely wide range of phasing effects, including tremolo/vibrato effects. When used with a touch of reverberation, it can closely approximate other popular sound effects such as those produced by rotating speakers, etc. We have designed an extremely wide-range oscillator circuit that is capable of very slow rates, as well as progressing to high rates closely associated with tremolo, as well as rates produced by rotating speakers. We have also built in a range of effects that vary from a very distinct "swooshing" phase to a very mild and subtle variation. Experimentation will show the extreme versatility of this built-in phase circuit.

COLOR CONTROL (11)

The phase color control is the element that determines the amount of internal feedback that sets the level of the phasing effect. In the counterclockwise position, very subtle changes may be heard, while extremely deep phasing effects with the accompanying characteristic "swooshing" sounds are obtained at the extreme clockwise setting. Because of the unique action of this control, some degree of regeneration is introduced into the circuit in the extreme clockwise ("8", "9", "10") positions and you will note the most effect in the last quarter turn.

RATE CONTROL (12)

The rate control determines the speed of the built-in phase oscillator. You will note that the speed is variable from extremely slow to extremely rapid, covering a far greater range than conventional phase or tremolo oscillators, in fact, effectively covering the operational range of both types. Counterclockwise settings will produce an extremely slow speed, with advancing speed as the rate control is rotated clockwise. Please note that the rate control features an integral switch which is cut off in the full counterclockwise position to allow the phase circuitry to cut completely out of the circuit from the front panel of the amp and without the footswitch. Please note that the phase circuitry will not work nor can it be controlled by the remote switch if the circuit is cut off with the switch on the rate control which takes precedence over the remote footswitch. NOTE: BECAUSE OF THE MODULATING ACTION OF THE PHASOR, IT IS A GOOD IDEA TO KEEP THE PHASE CIRCUIT CUT OFF WHEN NOT IN USE EITHER BY USE OF THE FOOTSWITCH OR WITH THE FRONT PANEL SWITCH ON THE RATE CONTROL TO AVOID MODULATING THE RESIDUAL NOISE FROM THE INPUT PREAMP; I.E., CUT THE PHASOR OFF WHEN NOT IN USE.

REVERB (13)

To allow additional flexibility, the new reverb system in the Musician is arranged in such a way that it works on both channels. Any signal coming from the post gain control of either channel is sent to the reverb drive circuitry, which in turn drives the reverb spring. The signal return is amplified and remixed with the clear signals of both channels and is applied to the power amplifier which drives the loudspeaker.

The reverb control determines the amount of gain in the reverb return amplifier. Because of the extremely strong reverb drive system, you will find that adequate reverb can be obtained at relatively low settings. We have provided significantly more pickup reverb gain in order to enable deep reverb effects that might be desirable from time to time, especially when using the reverb for coloration and enhancement of the phase effect. (Very interesting combinations can be found by using varying degrees of reverb when the phase circuit is operational. When the external footswitch is plugged in, the reverb return signal can be turned off or on by the reverb switch.)

GRAPHIC EQ ASSIGN SWITCH (14)

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

GRAPHIC EQUALIZER (15)

The Musician amp features a very effective six-band active EQ circuit. Each band has been carefully selected for the proper frequency points, combining characteristics, and precise bandwidth ("Q") to most effectively handle the spectrum covered by the guitar. This sophisticated equalization system has been created using the latest computer-aided design techniques and has resulted in a circuit that is not only exceptional in performance, but provides remarkable consistency across its frequency range. This equalizer is capable of a 30 dB range; i.e., 15 dB boost or 15 dB cut in each of the six bands.

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

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

PATCH PANEL

A full patch panel has been included to enable patching effects devices "in line" and also to provide a frequency compensated low impedance output to drive recording or P.A. consoles directly without need of a "direct box" or other amp/mixer interface device. The Musician also features separate out/in jacks from each channel, thereby providing the capability for "stereo" operation or additional "in line" patching capability in each channel.

PREAMP OUT (18) / POWER AMP IN (20)

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

LINE OUT (19)

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

OUT/IN CHANNEL A (16) / OUT/IN CHANNEL B (17)

The out/in channel jacks are stereo type (ring, tip and sleeve) with internal switching capability. The output of each channel is available at the tip; the return input is available at the ring; and, of course, the sleeve or frame is ground. An internal switching function provides the normal feed-through signal for each channel.

If an individual preamp output is required, a standard (tip and sleeve) guitar type patch cable can be inserted into the out/in jack of the channel desired. This will automatically disconnect the channel from the remaining circuitry (graphic, if in; reverb; power amp). This output can now be patched to an external power amplifier/speaker system, and together with the internal power amp/speaker system, a complete "stereo" guitar system is achieved. Interesting effects can be accomplished using the AUTOMIX functions. Since the AUTOMIX switching takes place in each preamp, either channel of this stereo arrangement can be switched off remotely, provided the AUTOMIX circuitry is activated by a blank ¼" plug inserted into the AUTOMIX jack. In addition, if a standard guitar is patched into the AUTOMIX jack, output can be remotely directed to either system or both.

"In line" patching of effects units can be achieved by using a special stereo patch cord consisting of two single conductor shielded cables connected to a stereo plug. One cable is connected from the tip and the sleeve and should be patched to the effects unit's input. The other cable is connected from the ring and the sleeve and should be patched to the effects unit's output. This "in line" patching capability can be eliminated anytime by simply removing the stereo plug. Details of this special stereo patch are included in the Musician block diagram.

PILOT LED (21)

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

AUTOMIX REMOTE SWITCH SOCKET (22)

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

REAR PANEL

FUSE (23)

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

POWER SWITCH (24)

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

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

LINE CORD (25)

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

SPEAKER OUTPUTS (26)

The speaker outputs utilize standard 1/4" phone jacks and we have provided both 8-Ohm and 4-Ohm taps from the output transformer to enable this amplifier to be used with an extremely wide range of speaker systems. In addition, deliberate mismatching of impedances, together with a built-in damping factor reduction, will produce overload characteristics and tonal color exactly matching that of a tube amplifier. Experimentation with various speaker combinations, together with impedance selection, will achieve the desired sound. One should be aware that a higher than 8-Ohm load will result in somewhat less power. Operating this unit from the 8-Ohm tap into 4 Ohms or from the 4-Ohm tap into 2 Ohms is acceptable if proper ventilation is provided.

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

When operating below 4 Ohms on an 8-Ohm tap or below 2 Ohms on a 4-Ohm tap, the internal voltage/current limiting circuit will limit the dissipation of the output devices and continuous operation in this overload condition will activate the automatic thermal protective circuitry. This thermostatically controlled thermal protective circuitry is automatically resetting and will reactivate as soon as the junctions of the silicon output devices again reach safe operating temperatures.

LINE (MAINS) CORD RETAINER (27)

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

SPECIFICATIONS

OUTPUT POWER:

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

SENSITIVITY:

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

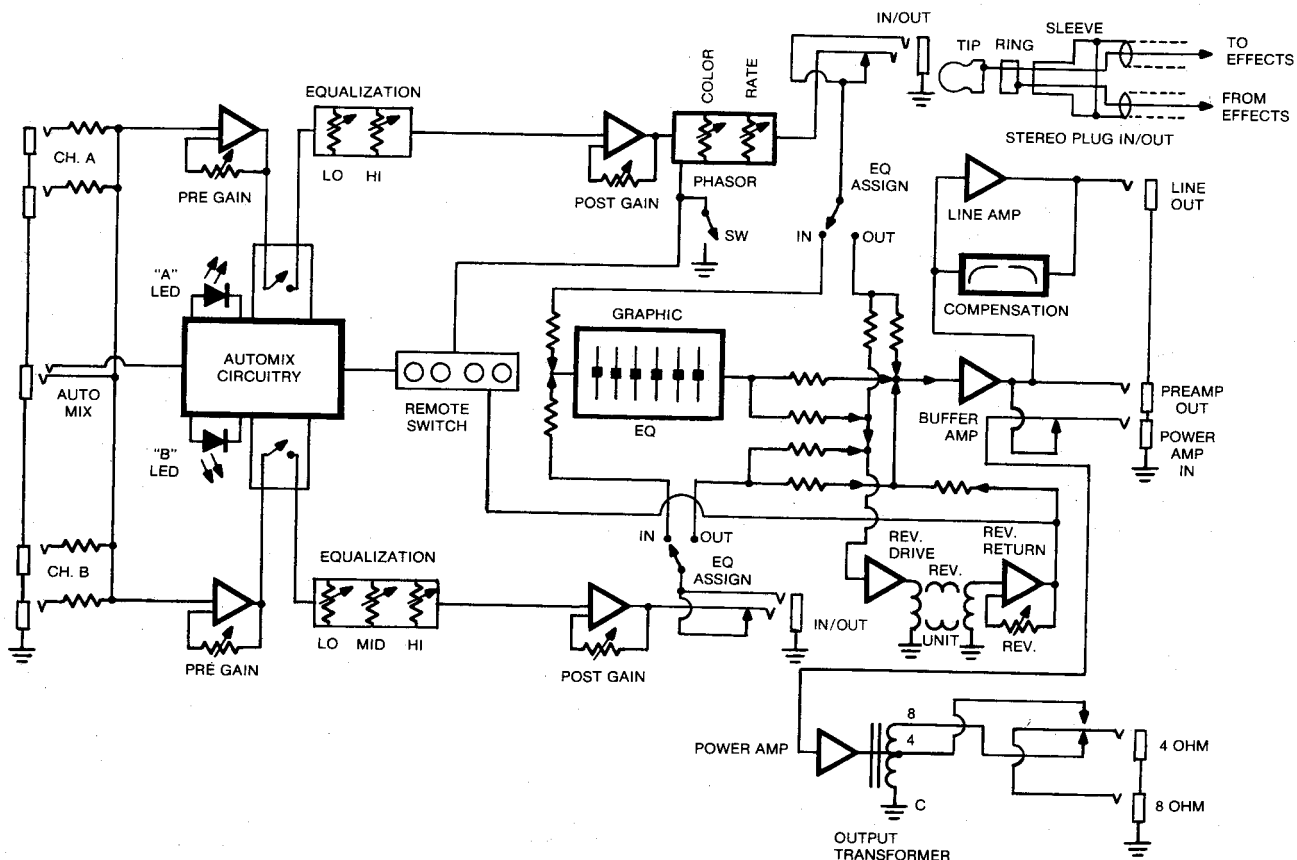
INPUT IMPEDANCE:

220 K ohms

SIGNAL-TO-NOISE RATIO:

70 dB (50 K ohms source impedance)

Due to our efforts for constant improvement, specifications are subject to change without notice.



MUSICIAN BLOCK DIAGRAM

DANGER
EXPOSURE TO EXTREMELY HIGH NOISE LEVELS MAY CAUSE A PERMANENT HEARING LOSS. INDIVIDUALS VARY CONSIDERABLY IN SUSCEPTIBILITY TO NOISE INDUCED HEARING LOSS, BUT NEARLY EVERYONE WILL LOSE SOME HEARING IF EXPOSED TO SUFFICIENTLY INTENSE NOISE FOR A SUFFICIENT TIME.
THE U.S. GOVERNMENT'S OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) HAS SPECIFIED THE FOLLOWING PERMISSIBLE NOISE LEVEL EXPOSURES:

DURATION PER DAY IN HOURS

8
6
4
3
2
1½
1
½
¼ or less

SOUND LEVEL dBA, SLOW RESPONSE

90
92
95
97
100
102
105
110
115

ACCORDING TO OSHA, ANY EXPOSURE IN EXCESS OF THE ABOVE PERMISSIBLE LIMITS COULD RESULT IN SOME HEARING LOSS.

EAR PLUGS OR PROTECTORS IN THE EAR CANALS OR OVER THE EARS MUST BE WORN WHEN OPERATING THIS AMPLIFICATION SYSTEM IN ORDER TO PREVENT A PERMANENT HEARING LOSS IF EXPOSURE IS IN EXCESS OF THE LIMITS AS SET FORTH ABOVE. TO INSURE AGAINST POTENTIALLY DANGEROUS EXPOSURE TO HIGH SOUND PRESSURE LEVELS, IT IS RECOMMENDED THAT ALL PERSONS EXPOSED TO EQUIPMENT CAPABLE OF PRODUCING HIGH SOUND PRESSURE LEVELS SUCH AS THIS AMPLIFICATION SYSTEM BE PROTECTED BY HEARING PROTECTORS WHILE THIS UNIT IS IN OPERATION.

CAUTION

THIS AMPLIFIER HAS BEEN DESIGNED AND CONSTRUCTED TO PROVIDE ADEQUATE POWER RESERVE FOR PLAYING MODERN MUSIC WHICH MAY REQUIRE OCCASIONAL PEAK POWER. TO HANDLE OCCASIONAL PEAK POWER, ADEQUATE POWER "HEADROOM" HAS BEEN DESIGNED INTO THIS SYSTEM. EXTENDED OPERATION AT ABSOLUTE MAXIMUM POWER LEVELS IS NOT RECOMMENDED SINCE THIS COULD DAMAGE THE ASSOCIATED LOUDSPEAKER SYSTEM. PLEASE BE AWARE THAT MAXIMUM POWER CAN BE OBTAINED WITH VERY LOW SETTINGS OF THE GAIN CONTROLS IF THE INPUT SIGNAL IS VERY STRONG.

1. Read all safety and operating instructions before using this product.
2. All safety and operating instructions should be retained for future reference.
3. Obey all cautions in the operating instructions and on the back of the unit.
4. All operating instructions should be followed.
5. This product should not be used near water, i.e. a bathtub, sink, swimming pool, wet basement, etc.
6. This product should be located so that its position does not interfere with its proper ventilation. It should not be placed flat against a wall or placed in a built-in enclosure that will impede the flow of cooling air.
7. This product should not be placed near a source of heat such as a stove, heater, radiator or another heat producing amplifier.
8. Connect only to a power supply of the type marked on the unit adjacent to the power supply cord.
9. Never break off the ground pin on the power supply cord. For more information on grounding write for our free booklet "Shock Hazard and Grounding."
10. Power supply cords should always be handled carefully. Never walk or place equipment on power supply cords. Periodically check cords for cuts or signs of stress, especially at the plug and the point where the cord exits the unit.
11. The power supply cord should be unplugged when the unit is to be unused for long periods of time.
12. Metal parts can be cleaned with a damp rag. The vinyl covering used on some units can be cleaned with a damp rag, or an ammonia based household cleaner if necessary.
13. Care should be taken so that objects do not fall and liquids are not spilled into the unit through the ventilation holes or any other openings.
14. This unit should be checked by a qualified service technician if:
 - A. The power supply cord or plug has been damaged.
 - B. Anything has fallen or been spilled into the unit.
 - C. The unit does not operate correctly.
 - D. The unit has been dropped or the enclosure damaged.
15. The user should not attempt to service this equipment. All service work should be done by a qualified service technician.

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