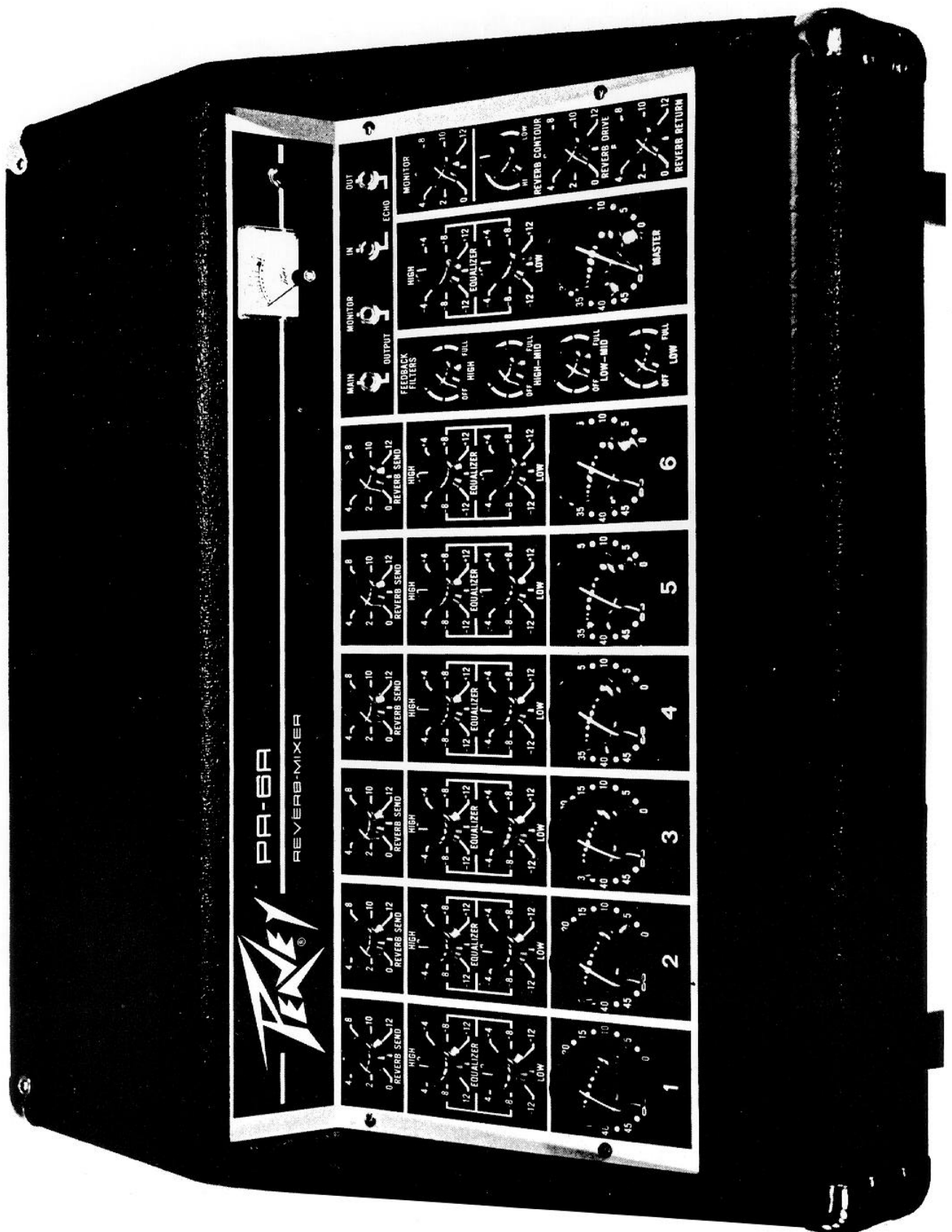


PA-6A OPERATION MANUAL



The PA-6A represents the latest developments in the state of the art of public address amplification, utilizing operational amplifier technology to give outstanding performance equal to the most expensive studio consoles. The noise, distortion, and frequency response of this unit meet and is comparable with the standards which up until now were found only in top quality non-portable

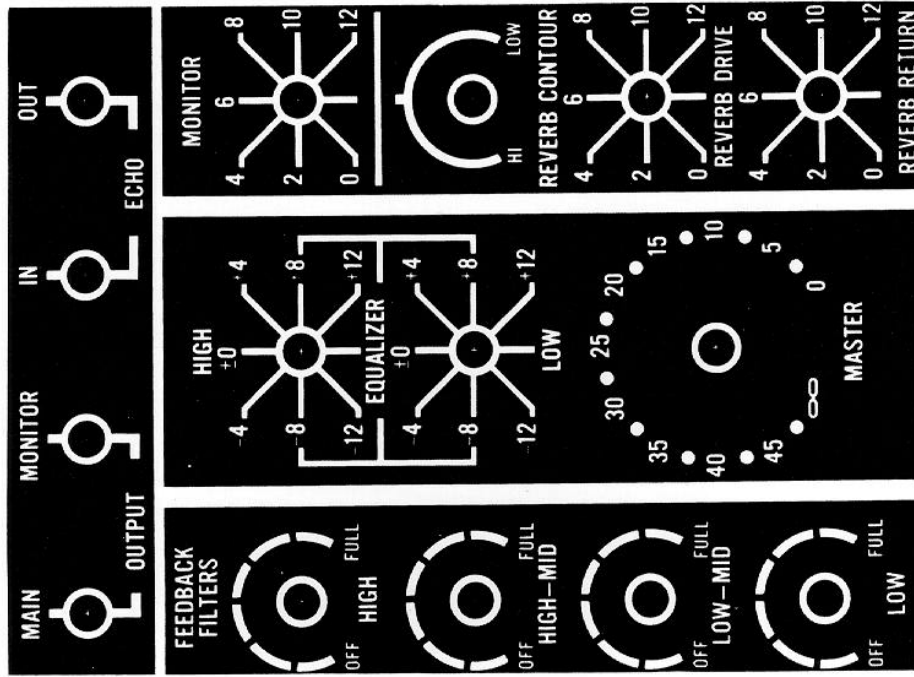
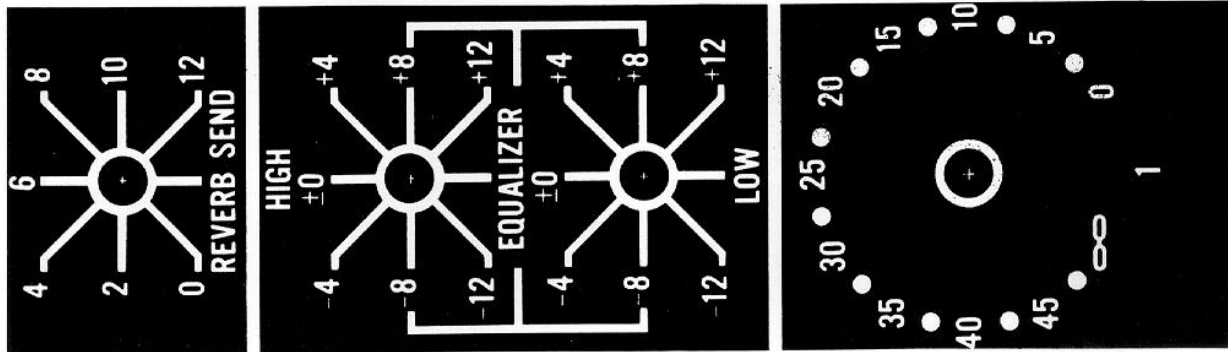
recording installations. The PA-6A offers maximum flexibility and makes possible professional public address mixing and amplification in a portable package. To insure that you receive the best possible performance from your PA-6A, we suggest that you read thoroughly the explanation of each feature and become familiar with the operational characteristics of the unit.

The PA-6A incorporates six input channels whose controls are arranged vertically. The controls for each of the six channels are identical. The large knob at the lower edge of each input channel is the volume level control for that particular channel. This control varies the amount of negative feedback in the input stage thus controlling volume. The benefit of using this type of level control is that it allows maximum performance from the input circuit by actually varying the amount of amplification instead of resistively dividing the signal as conventional circuits do. The volume level control is calibrated in decibels of attenuation as is the standard practice in studio consoles. This is the reason the numerals appear in reverse of the standard volume control. Rotation of the volume level control fully counter-clockwise yields no volume, and fully clockwise yields full volume.

THE VOLUME LEVEL CONTROL ON CHANNELS NOT IN USE SHOULD BE TURNED OFF.

The smaller knobs immediately above the volume control, labeled High and Low Equalizers, control the tone. Low is a bass control and High is a treble control. High and low equalizers are included in each input channel module to allow for tonal balance in each channel. These equalizers work differently from standard tone controls found in the usual PA amplifier. Each control works as a volume control for the particular range of frequencies it governs, allowing both a boost OR cut for each frequency range. Conventional tone control circuits tend to give more bass by eliminating some of the treble, or more treble by eliminating a portion of the bass. PA-6A equalizers actually comprise an electronic crossover enabling the operator to blend any combination of high and low frequencies desired. These equalizer controls are calibrated in boost (clockwise) and cut (counter-clockwise), and should be regarded as volume level controls for each respective frequency range. For proper tonality these controls should be adjusted in conjunction with the volume level control for each channel.

The reverb system on the PA-6A consists of the reverb send controls, the reverb drive, reverb return and reverb contour. The reverb send is located at the top of each channel and controls the amount of reverb on that particular channel. The reverb drive, return, and contour act as "Master" controls for the mixed signals from each channel. The content of the reverb signal is regulated by the reverb send control on each channel to obtain the desired "Mix" in the reverb circuit. Proper setting of this control plays an important part in obtaining a natural or balanced reverb in each channel. The reverb send control follows and is dependent upon the volume level control in each channel. A lower setting of the channel's volume control will automatically lower the signal to the reverb send control and subsequently to the master controls.



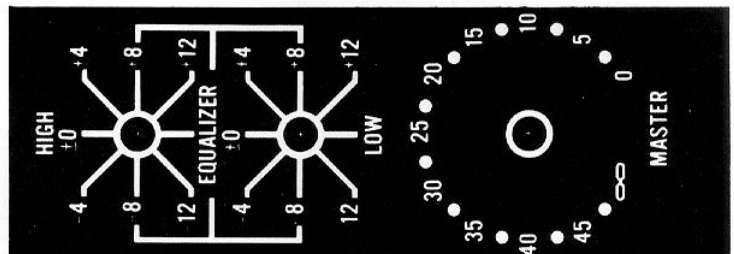
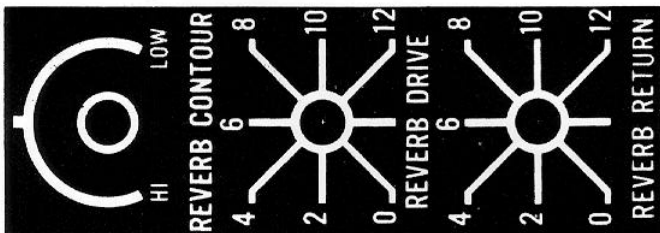
The PA-6A has a complete master control panel located on the right hand side of the unit. The signals from each channel are fed into the main mixing amplifier which utilizes a new technique called "Active Mixing". The master controls use the same operational amplifier/feedback type circuitry as the input stages. Active mixing allows greatly improved noise and overload characteristics.

The reverb drive, return, and contour controls serve as master or overall controls which actively sum the reverb signals from each channel and feeds the delay line. The reverb drive control determines the level at which the mixed reverb signal will be fed to the reverb unit. The reverb contour follows the drive control and is a bass or treble CUT equalizer. This control is most useful in elimination of reverb as the source of annoying feedback. Often the proper blend of reverb is difficult to achieve without causing feedback, and the use of the contour equalizer will enable feedback to be minimized.

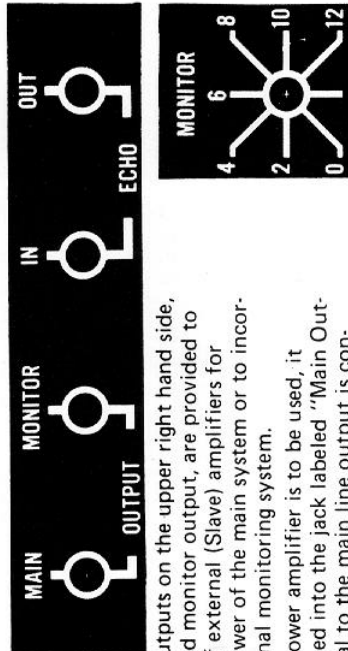
The reverb return control is provided to control the amount of the delayed reverb signal that is fed back into the main mixing bus. This control works in conjunction with the reverb drive control. The drive control controls the signal going into the reverb unit or delay line and the return control controls the signal coming out of the delay line. Both the reverb drive and return controls must be turned up before any reverb will be heard in the output signal. Balancing these controls will yield many combinations of reverb delay, tonality, and sustain. A footswitch may be plugged into the ECHO OUT jack to cut the reverb on and off.

The large knob located in the lower center portion of the master control panel is the overall volume level control. This control is calibrated and functions the same as the level controls on each channel except that it controls the volume of the entire system.

Overall frequency balance is controlled by the master equalizers which give the operator optimum blend control. Proper selection of low and high cut or boost enables the main output signal to be adjusted for the best reproduction of the program material. These equalizers are similar to those used on each individual channel and can be considered to be master level controls for their respective frequencies. It is suggested that they be run from +0 to +12 to get the best performance because the counter-clockwise positions will actually cut the level of the frequency range involved.



The PA-6A console is equipped with a simple and effective system for controlling acoustic feedback. The feedback filters located immediately to the left of the master volume are actually another set of equalizers which enable the operator to vary the level of any of the four frequency ranges. These ranges have been selected by field experiments to determine the most troublesome frequencies at which feedback occurs. The operation of these equalizers will yield the same results as the use of "Graphic Equalizers." These feedback filters are also level controls for their particular frequency bands and should be operated **ONLY IF NEEDED** to obtain tonal balance without feedback. The equalizers are off in the fully counter-clockwise position and provide more and more cut of the particular frequency band as the knob is rotated clockwise. Normally, these filters should be off if not needed. Each location has its own particular acoustical characteristics and only through experimentation will the operator find the proper control settings which will allow maximum volume and penetration without undue feedback.

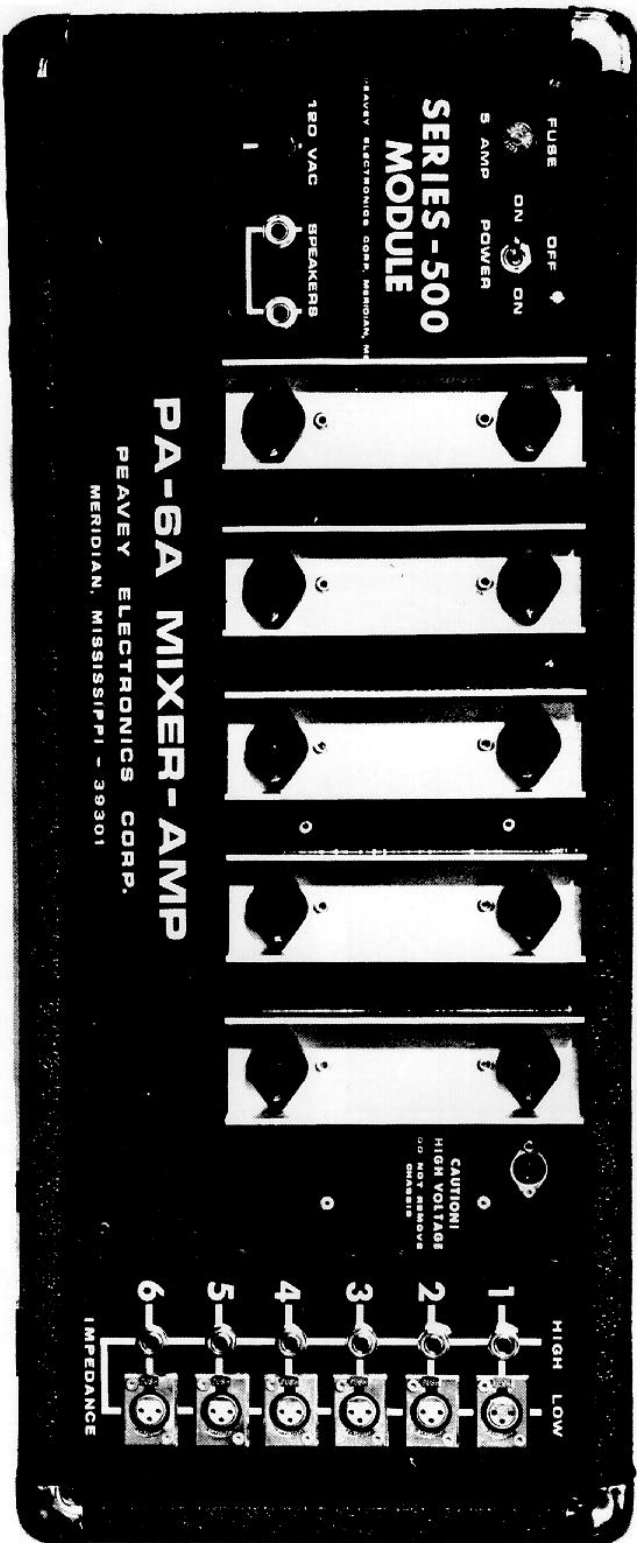


The line amp outputs on the upper right hand side, labeled main and monitor output, are provided to allow the use of external (Slave) amplifiers for boosting the power of the main system or to incorporate an external monitoring system. If an external power amplifier is to be used, it should be plugged into the jack labeled "Main Output." The signal to the main line output is controlled by the master volume level control.

If you wish to monitor your system, you must have an external amplifier and speaker system. This external monitoring system can be controlled from the console by plugging the monitor amplifier into the MONITOR OUTPUT jack. The output of the monitor jack is controlled by the monitor level control labeled "MONITOR." **DO NOT PLUG SPEAKERS INTO MONITOR OUTPUT JACK.** The output available from both the MAIN and MONITOR outputs is 2 Volts R.M.S. with an output impedance of 2,000 ohms. High impedance (2,000 ohms or greater) headphones may be used in either output line jack. To connect an echo divide to the PA-6A, simply patch the Echo Out to the echo unit's INPUT and the echo IN to the echo unit's OUTPUT.

The rear apron of the PA-6A has provisions for dual impedance inputs for either high or low impedance microphones. By plugging the mic into the appropriate jack, the input circuit automatically sets up the proper load to match the microphone. It is most important that the proper impedance input be used because plugging into the incorrect mic input will result in poor or erratic performance. The inputs for high impedance mics are standard ¼" phone jacks that accept the standard (PL-55) type two circuit phone plug as used on nearly all high impedance units. For low impedance mics, use the "Cannon" type plugs. DO NOT USE BOTH HIGH AND LOW IMPEDANCE INPUTS OF ANY SINGLE CHANNEL AT THE SAME TIME. DO NOT USE HIGH IMPEDANCE MICS IN LOW INPUT OR LOW IMPEDANCE MICS IN HIGH INPUT.

The smaller three connector "Dir" socket on the power module is an additional output that can be used for recording, monitoring, etc. Its output impedance is approximately 10,000 ohms at .5 volts R.M.S. The speaker jacks are located on the left side of the rear panel and are internally connected in parallel. Total speaker system impedance (LOAD) should be no lower than 2 ohms total. Speaker cable lengths should be kept to a minimum because long cables (over 20 feet) will tend to choke down the power from the amplifier and degrade the performance. The power switch is of the reversing type with one of the two ON positions giving less hum from the power line. The position with less hum should be used. Be sure to observe the proper fuse ratings.



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