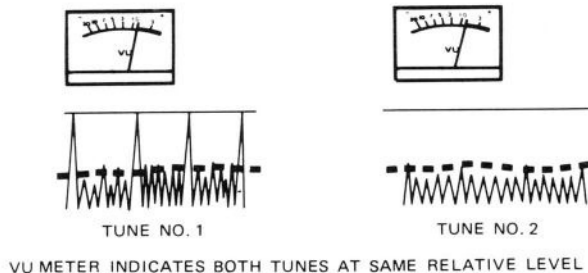
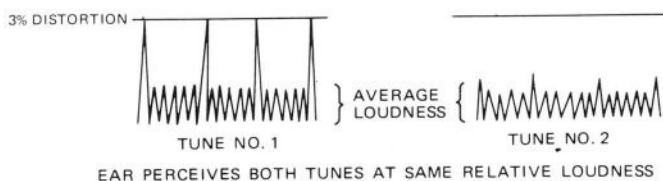
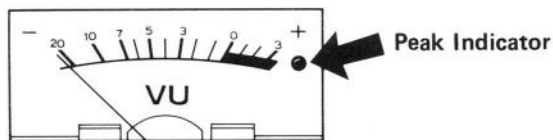


APPARENT AND ABSOLUTE VALUES

The human ear and the Portastudio perceive the same program material in very different ways. The ear deals in apparent values while the Portastudio deals in absolutes. This leads to a fundamental rule: trust your machine, the meters, OL indicators, etc. during the recording procedures; and trust your ears during the playback and remix procedures.

The METERS show both the average program level with the needle of the meter and the peak program level and transients by means of peak lights built into the meters. Percussion instruments and synthesizers that use percussive sounds can be difficult to record properly. Believe your meters! Keep your levels under control when you record these instruments. Their apparent loudness is not usually greater than other instruments, but their absolute signal value is much higher than the average level. If these levels reach your tape without being trimmed, they will cause your sound quality to go down.



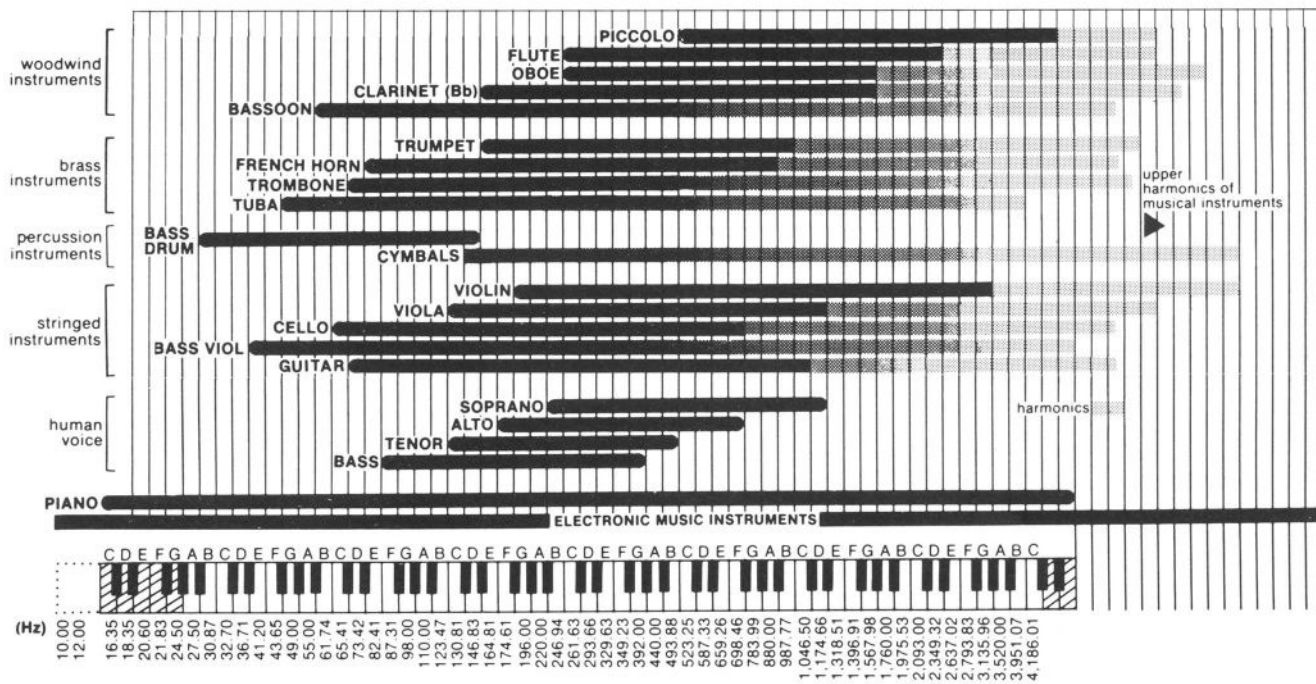
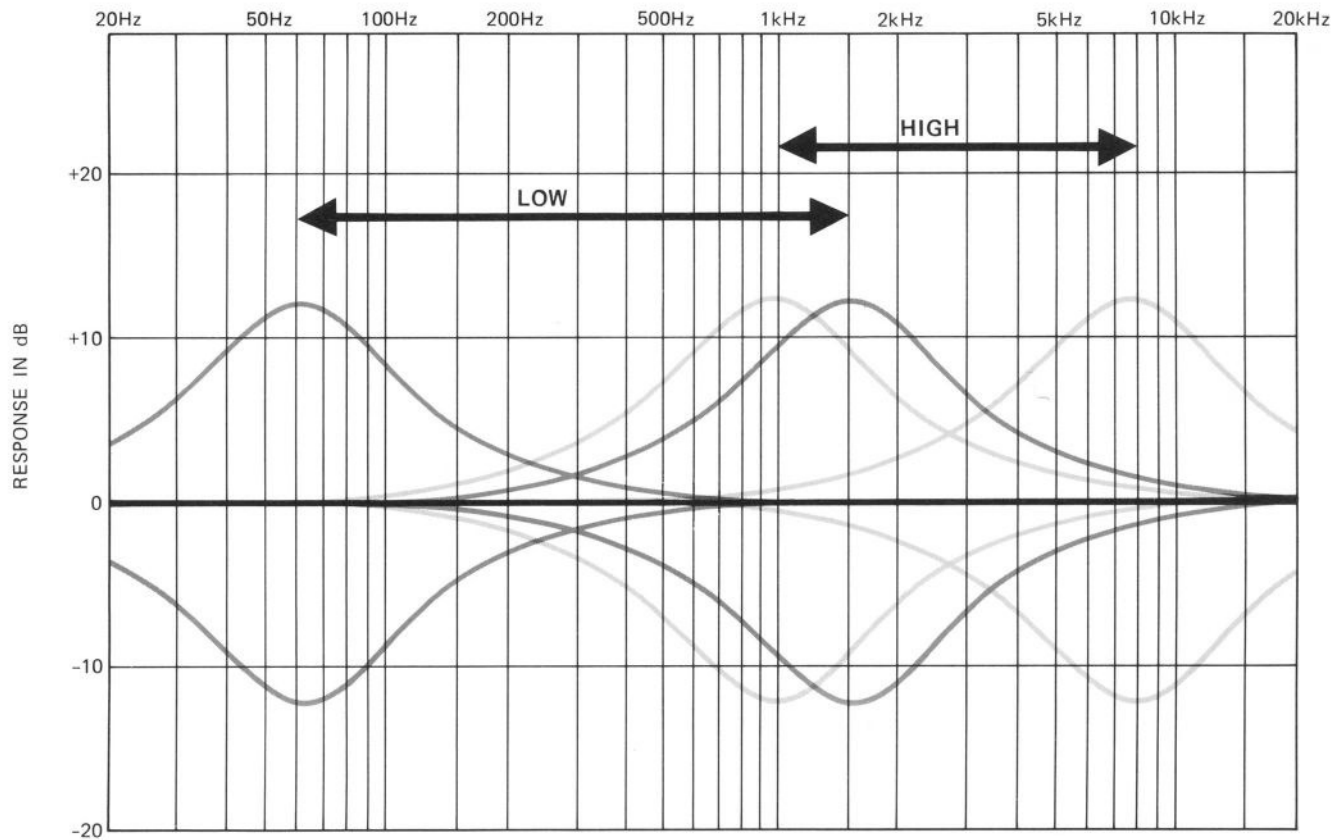
THE 246'S EQUALIZER

EQ can be used to change the tonality of an individual instrument or track. The 1 kHz to 8 kHz control affects the "brightness" or "brilliance" of the timbre of the sound passing through it. The 62 Hz to 1.5 kHz control affects the relative "boominess" or "bassiness" of the sound. You will notice that there is some overlap in the functions of the two controls in the 1 kHz to 1.5 kHz range.

There are always at least two sides to every story. The EQ story is no different. The tone or timbre of the music on any track can be altered to bring about a similar change by using either EQ control. How so? Suppose you want to change the "balance" of the timbre by accentuating the bass. Before you reach for the 62 Hz — 1.5 kHz knob and start adding bass boost, consider reaching for the 1 kHz—8 kHz control and rolling off the highs a bit. These two vital controls epitomize the team work approach to problem solving. Always consider both alternatives whenever an EQ adjustment is necessary.

The EQ system in your Portastudio is a sweepable type that uses two frequency controls and two cut/boost controls. The frequency controls are continuously variable within their outside limits. These controls let you pick the specific frequency range that you want to adjust. The cut/boost portion of the EQ controls the amount of gain (boost) or attenuation (cut) that will be performed to the selected frequency range. How do you tell the frequency range that needs attention?

Most of us can tell that Michael Jackson's voice is higher than Bruce Spingsteen's. Or, if you prefer, consider the squeak of a mouse and the roar of the lion. These examples are extreme and, therefore, distinctions are quickly made. Consulting the chart provided on next page, you can see that Michael and the mouse will be much more affected by an adjustments in the 1 kHz frequency range than Bruce or the lion would be. Bruce and the lion will get more help from a control placed in the 440 Hz range. A bass drum will be more affected by the 62 Hz control than a cymbal.



Once you have determined that 1) the signal does require EQ and 2) the proper frequency range has been identified, the final steps involve turning the proper controls. Sounds simple, doesn't it? There are still two controls to adjust in both the bass and treble (high) frequency ranges. To determine the proper frequency within the range of one of the controls, turn the Gain (boost) portion of the control to an exaggerated position, almost all the way up. Then, slowly sweep the frequency ranges by turning the frequency control from its minimum to maximum settings in a clockwise motion. As the control is turned, you will hear the change in the signal's content. When the desired frequency is isolated, set the Gain portion of the control to the necessary amount of boost or cut. Whenever possible, avoid making these changes during a performance or recording. The sweeping action can create undesirable timbral effects.

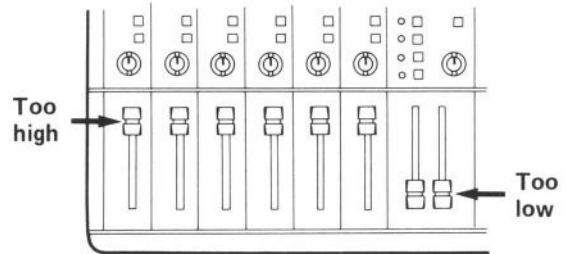
The illustration of the frequency range chart show how different instruments will be affected to differing degrees by a change in a specific range. Cymbals and flutes, for instance, would not be altered much by changes in the low frequency range. This is because these instruments have very little signal content in this range. On the other hand, the sweep capability allows you to boost or cut specific parts of signals or instruments without altering the sound of other signals. As an example, a bass drum can be brought out by carefully turning the low frequency section of the EQ until the sound of the bass drum is more prominent than other drums. The same technique can be used on vocals or any other element of a multiple mix of signals, as long as the various components occur in slightly different frequency ranges.

When EQing a track, remember that the control you use will affect all the music passing through the control's circuit. In the case that a single instrument is on a given track, this isn't a problem, but after ping-ponging, you may find that the necessary boost on one instrument also boosts another instrument on the track in an unfavorable way. Experience will help you learn the limits of the EQ process.

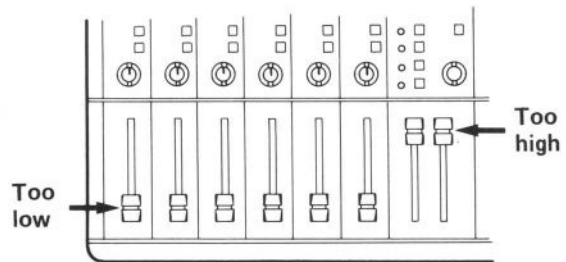
A WORD OF MIXING ADVICE

All finished tapes must be balanced for level. Do all the instruments and voices blend together in a way that is appealing? Is the lion roaring so loud that the mouse is "lost in the mix." Your signal levels will affect the entire recording and mastering process, including the EQ process. So make sure that your levels are properly adjusted when recording, ping-ponging, and re-mixing. This will let you use your EQ system to "fine tune" the music. You can't fix it if you can't find it.

If your mixer's faders end up looking like this, then you're overloading your outputs. Pull down the input channel faders and raise the program master faders.



If this is the look your mixer is projecting, then you're pushing the master too hard. Your mix will be clean and undistorted, but will have a lot of noise in it.



This picture is the reasonable compromise. It will give you the best results.

