AAE EQU SPECIFICATIONS

AAE Inductor based passive equalizer.
Mainly used in instrument preamplifiers but also in a single tube amplifier stage in the studio with any pre recorded material.

Various different versions of this EQU have been built; it can be trimmed to produce different specifications i.e. for different applications.

These are the specifications for one particular EQU in the **AAE Complete Modular System.** This circuit is the basis of all AAE guitar preamps, but the specifications vary slightly from preamp to preamp.

By setting the BASS and TREBLE in the middle position, the mid range control varies the 300…400Hz frequencies by approx. ± 6dBs. This equalizer contains a midrange switch, and by pressing it, this variation increases by ± 2dBs. The frequency range extends down to 200Hz. This setting is better for bass guitars. By turning the midrange control fully anticlockwise very little midrange is left and the bass becomes very responsive. This will result in a full, round and bassy sound especially if the treble is turned down a bit and the bass is turned up.

With the midrange in the middle position the bass control will give approx. a ± 8dBs variation in the low frequencies. This variation increases below 100Hz progressively. If however the midrange is turned all the way down, the variation increases ± 12dBs for frequencies up to 150Hz, ± 10dBs at 200Hz and ± 6dBs at 300Hz approx.

The treble control affects frequencies from 800Hz and higher, with midrange set in the middle: ± 3dBs/800Hz, ± 6dBs/2kHz, ± 10dBs/3kHz, ± 11dBs/4kHz, ± 15dBs/6kHz, ± 20dBs/8kHz. With the midrange turned down there is an extra ± 2dBs/1kHz.

The ± sign is a relative concept here, this is provided some preamplification has taken place to overcome the loss that this passive EQU introduces. Also, there is very little interaction between bass and treble controls but they both interact with the midrange control.

AAE Active Three Way Equalizer.

This has the approximately the following characteristics:

LOW: 40Hz ± 17dBs, 80Hz ± 13dBs, 100Hz ± 12dBs, 150Hz ± 8dBs

MID: 300Hz ± 4dBs, 500Hz ± 8dBs, 1kHz ± 10dBs, 2kHz ± 8dBs, 3kHz ± 7dBs
4kHz ± 6dBs

HIGH: 1kHz ± 4dBs, 2kHz ± 9dBs, 3kHz ± 11dBs, 5kHz ± 15dBs, 8kHz ± 19dBs,
20kHz ± 21dBs

There is some interaction between MIDRANGE and BASS controls and between MIDRANGE and TREBLE controls but hardly any between BASS and TREBLE controls. This is a hybrid stage using the triode section of the PCL86 valve as a voltage amplifier and a solid state signal current driver.

AAE Parametric EQU: Variable Frequency Booster
A unique type of EQU using both sections of a 12AU7 valve and it works on the WIEN BRIDGE OSCILATOR principle.

It can introduce high boost/narrow bandwidth at various midrange frequencies. It can emphasize harmonics generated in the previous stage (or unit) but it could also generate harmonics if overdriven.

A frequency can be selected by using a VARIABLE SHIFT control which will be boosted by a certain amount. The range of midrange frequencies to be selected by this control is split in two sections by a switch.

Section 1. LOW MID : 250Hz + 9dBs, 400Hz + 14dBs, 600Hz +19dBs, 800Hz + 22dBs, 900Hz + 23dBs

Section 2. HIGH MID : 400Hz + 10dBs, 600Hz + 14dBs, 800Hz +17dBs, 1kHz +20dbs, 1.3kHz + 24dBs, 1.7kHz + 27dBs

These are the maximum boosts.

The actual amount of boost can be adjusted by varying the BOOST control from 0 to the maximum values for each frequency.

AAE Parametric EQU: Variable Frequency Booster (similar to above) **for bass frequencies**

Originally designed for bass sound. By setting the sweep control fully anticlockwise the minimum centre frequency is approx. 30Hz. As this control is turned clockwise the frequency is being increased, until it becomes approx. 400Hz (fully clockwise).

This is a high Q band pass active filter with the following levels of boost; 12dBs or 22dBs depending on which position the BASS BOOST switch is set. This switch also slightly lowers the centre frequency so that the SWEEP control may have to be readjusted. The BOOST LEVEL control sets the amount of boost from zero to max (12 or 22dBs). This filter causes phase shifts in very narrow bands of frequencies too.

If the SWEEP control is varied continuously from 30 to 100Hz and a mix of drum and/or bass is played through, the bass will sound as if it’s being moved from one side of the room to the other.

When the SWEEP control is moved from 100Hz to 400Hz the phase shifts mentioned introduce short time delays, an echo effect can then be heard.

A LIMITER ensures that the signal that enters the EQU is never higher than approx. 1.8V peak to peak. It comes into action though a bit earlier just before the signal reaches 580mV RMS.

This is a hybrid high voltage circuit designed around either the PCL86 or 12AX7 tube (depending on the unit).

Distortion and harmonics similar to the previous **variable frequency booster** but in the bass frequencies.

AAE Active High Pass/Low Pass Filter System.
Although this EQU was originally designed using tubes it has been recently converted into a solid stage low voltage design which costs considerably less.

High Pass Filter (HPF) continuously variable. With a SWEEP control fully anticlockwise it is approx. 170Hz. At this setting the output at 40Hz is approx 26dBs down from what it is at 500Hz.

Fully clockwise the corner frequency becomes 1.7 kHz, and the output at 400Hz is 26dBs down than the one at 4 kHz. This is a second order filter.

Low Pass Filter (LPF) – again a second order filter. With the SWEEP control to its fully anticlockwise position, the response remains flat up to 400Hz. It then starts falling, and at 200Hz (i.e. cut off frequency) the response is -3dBs. At 1 kHz it is -20dBs. Similarly, with the control fully clockwise the response remains flat up to 500Hz – 3dBs at 2 kHz.

One of the applications, is after a guitar preamp; by connecting the HPF before the LPF and setting the HPF to roll off frequencies less than approx. 1….1.5 kHz (SWEEP control in the middle). A faster and sharper response will result. This kind of emulates a guitar speaker, but it could also be used after a distortion unit, or spring reverb driver.

The LPF sweep control can be set around the fully clockwise position, this rolls off the top end i.e. the bad, shrill sounding harmonics generated in any guitar preamp.

NOTE: These settings are only a recommendation. They depend a lot on the type of guitar use, the amount of overdrive and the operators choice of sound.

If the two filers are set so only a narrow band of frequencies are getting through, or if the LPF sweep is set below the HPF sweep, strange but interesting sounds may result.