

"If it sounds right; it is right"

Joe Meek 1964

THE JOEMEEK MEEQUALIZER INSTRUCTION BOOK CONTENTS

THE JOEMEEK MEEQUALIZER - WHAT IT IS AND WHY:

In the late 1920s when sound was first being added to films, the film studio sound engineers found that they had a big problem with the quality of sound of speech on film. The difficulty was in making the speech sound as though it was coming from the actor on the screen. The director obviously wanted the microphone out of shot, but this meant that for different scenes, the microphone distance from the actor was different; and consequently, the sound varied enormously. The answer to the dilemma was to use an 'equaliser' and this is where the name came from. So the early equalisers were designed to alter the frequency contour (by using phase shift networks) to 'equalise' the different film shots.

In the 1950s as quality sound recording became more commonplace, these equalisers found their way into sound recording studios and were used to improve the sound image in normal sound recordings.

Some clever engineers of the time analysed what the equaliser was doing and decided to produce some 'better' devices with 'more modern' specifications. The resultant disasters are with us today.

All changes to sound in nature are fairly gradual and are caused by well understood laws of physics; ie, as a sound gets further away, the high frequencies get quieter sooner than the low frequencies (the extreme example is the sound of lightning). The absorption of sound in the air and by building materials also effectively causes phase shift (lag) in the high frequencies. The human ear is used to this and so can interpret a phase shift as a distance shift.

BUT, for this very reason, equipment that produces changes in spectral shape (an equaliser) but without the correct phase shifts that go with them, will not sound right: And that's the problem with the majority of modern equalisers; including many fitted to sound mixing desks.

My (often quoted) opinion is that equalisers as we know them today should be banned (or binned), or at best used only as an extreme non-musical effect. If a real sound source requires an 'equaliser' to make it acceptable, then the wrong microphone or recording technique was used in the first place. However; there are very often times when a little sweetening is an advantage and this is usually attempted with the equaliser controls on the console. Sometimes the console designer got it right and produced some contouring circuits that sound right; but more often than not, the effect sounds more like a mangle.

Joe Meek the engineer knew about equalisers, he used a very simple 'treble and bass' circuit in conjunction with an inductive mid sweep control. The controls were simple and the effect produced was eminently musical.

We have recreated the exact treble and bass circuit used by Joe Meek, including a true discrete gain make-up amplifier which is a factor in the warm musical sound. The 'mid' circuit is a modern emulation of the old sweep circuit but created without the use of a 'gyrator'; the circuit technique that can cause the wrong sort of distortion.

Two of these circuits sit comfortably in a 1U rack case and they can be used individually as

separate devices with balanced inputs and outputs, or as inserts into JOEMEEK front ends (VC1, VC2, VC3, VC6 and also the SC3 digital compressor).

Why 'Meequalizer'? Because the circuit owes a lot to those used by Joe in his Holloway Road studio in 1963. He built little circuits in tobacco tins and used them connected in to his equipment by twisted wires. These circuits altered the frequency contours of the musical signal. There are no rapid changes to the shape of the waveform, the processing is gentle and emulates (or counters) natural filtering effects such as room overdamping or bass loss through too small a studio. It can introduce presence and liveliness (particularly when used with a JOEMEEK Enhancer) or change the apparent distance back of a signal.

CURVES.

The idealised frequency response curves published by other manufacturers bear little resemblance to the real performance of the MEEQUALIZER. Our performance curves are not published; it's meant to sound right, not look right.

WHAT'S IN IT

It's best to think of the MEEQUALIZER as three separate sections:

- 1) The Input amplifier.
- 2) The Equaliser.
- 3) The Output amplifier.

1) THE INPUT AMPLIFIER.

The input amplifier takes balanced or unbalanced audio signals from a high level source (1/4 inch jack socket),

It is a precision balanced input stage.

2) THE JOEMEEK EQUALISER.

The equaliser can change the sound of an instrument or voice by altering the high, mid or low frequencies separately, but at the same time, making those changes musically. The controls not only add or subtract volume in the three frequency bands called 'treble', 'mid' and 'bass', but also alter the phase relationships of these frequency bands. This is a major factor in the 'musicality' of the equaliser. Unlike other equalisers, the actual frequencies are not specified. The reason for this is that in order to sound completely musical, there is considerable overlap between the sections so that '10KHz' actually has a great effect at both 20KHz and at 2KHz; if it didn't, it would sound bad.

3) THE OUTPUT AMPLIFIER.

A professional balanced output stage gives optimum performance for driving other equipment and any length of connection cables. An output gain control changes the overall gain of the MEEQUALIZER to correct for losses or gains due to enthusiastic use of the equaliser controls.

INDICATORS.

- A bi-colour LED indicates when the circuit is active. When the LED shows green, the equaliser section is by-passed, when the LED shows red, the equaliser is in circuit.
- Switching in and out of circuit is done with a push button switch.
- To the right of the equaliser controls, there are two LEDs.
- The green LED shows that there is audio signal in the equaliser.
- The red LED warns that the signal level is high and that distortion could occur.
- There is about 12dB overload margin in hand after the red LED comes on.

PERFORMANCE.

THE INPUT STAGE

Noise and distortion performance is up to finest laboratory standards.

The line input is designed for balanced or unbalanced circuits and will accept -30dB up to +26dB.

The nominal operating level at the 'insert' point is -10dB, but as maximum output at that point is +22dB the MEEQUALIZER can operate with any mixer or outboard equipment.

THE OUTPUT STAGE

A 2 LED 'meter' shows levels immediately before the output stage.

An output volume control gives adjustment of output volume levels. Two output jack sockets are identical

- Output is balanced 75 ohm with maximum output +26dB.

There is an in/out switch for comparisons.

Frequency response +0 -0.5dB 10Hz to 30KHz Low frequency accuracy maintained to get clear unmuddled bass sounds onto digital recorders.

Harmonic distortion less than 0.01%

Noise generally 100dB below input.

TREBLE CONTROL

Approx 18dB lift and cut at the shelving frequency of 8KHz. (fixed)

MID CONTROLS

Approx 16dB lift and cut at 600Hz to 3.5KHz sweep variable. 'Q' value of the mid frequencies varies (increases) with frequency. 'Q' at 600Hz approx 1.2 . At 3.5KHz approx 2.5.

BASS CONTROL

Approx 18dB lift and cut at the shelving frequency of 100Hz. (fixed).

GAIN CONTROL

provides 12 dB overall lift and cut.

THE POWER SUPPLY.

Power supply is internal.

The unit operates from either 230 or 115VAC. The correct voltage MUST BE SELECTED by rotating the fuseholder. (prise the fuseholder out and rotate to select voltage).

Power consumption is 5 watts.

DIMENSIONS

The VC5 occupies a 1U (19") rack space

Dims : 483 x 120 x 44mm

Maximum projection of knobs : 18mm

SAFETY.

The unit complies fully with European Cenelec requirements (CE) and may be used in all territories subject to safety approval of the power supply to local regulations. All components in the power supply are UL approved.

WARRANTY.

In the unlikely case of a breakdown, please return the unit and power supply in its original packing through the supplier. The unit will be attended to immediately and returned to your supplier.

If any breakdown occurs (excluding physical mistreatment) within 12 months of purchase no service charge will be made.

MEEQUALIZER CONTROL EXPLANATIONS.

'TREBLE' changes the audio amplification of the higher frequencies and adjusts phase. At 'zero' in the centre, the control has no effect.

'MID' changes the audio amplification of middle frequencies, its main purpose being to 'pull forward' or 'push back' sound. Increasing the mid content of a signal tends to pull the sound forward towards the listener.

'MID FREQUENCY' this control sets the centre operating frequency of the 'MID' control.

'OUTPUT GAIN' changes the overall gain of the equaliser. The control at the centre gives unity gain to the equaliser. There is a range of 12dB gain or attenuation to allow for changes in overall level when the equaliser controls are operated.

MAKING IT GO and HOW IT'S USED

There are two distinct ways of using the MEEQUALIZER.

The first is conventionally using the input and output Tip-Ring-Sleeve balanced audio connectors.

The second is to use the 'to insert' socket. This socket is arranged so that you can use a standard tip-ring-sleeve cable to connect the MEEQUALIZER to any conventional 'insert point' in either a JOEMEEK front-end unit (like the VC1, VC2 etc.) or the insert in any sound mixer. When the 'insert' mode is used, the MEEQUALIZER simply by-passes its own internal balancing amplifiers and works unbalanced at a -10dB operating level.

As with all the JOEMEEK range, the best way is to use it with confidence and not be frightened to drive the circuits hard. The equaliser controls provide effect with attitude! Don't be frightened of seeing the Red LED indicator come on. This only means that the levels in the unit are getting high; there is plenty of overload margin.

The overload margin of any outboard equipment is extremely important. Although momentary

overloads (transients) are not audible, they have an effect on the quality of the sound you hear. A high overload margin amplifier just sounds better.

Nowadays, much of this sort of thinking has been forgotten and 'quality' electronics is getting rarer and rarer. But the JOEMEEK range of channels, compressors and the Meequalizer apply professional rules and you can hear the difference!

TED FLETCHER

This instruction book was written by Ted Fletcher; the designer of the original JOEMEEK compressor and the whole JOEMEEK range of professional audio equipment. Ted worked in the studio with Joe Meek, the legendary record producer, in the mid 1960s.