



JOEMEEK MeekBox VC6

THE PROFESSIONAL LINK BETWEEN MUSICIAN AND STUDIO

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The MeekBox VC6 is precision electronics in the style of Joe Meek, the first independent record producer in the 1960's bringing humanity and individuality back to sound recording at the millenium. It's there to get the absolute best performance out of musical instrument, microphone, recorder and the final mix. Read the instructions carefully; they have been written as a result of practical experience.

Ted Fletcher

THE JOEMEEK MeekBox VC6 -WHAT IT IS AND WHY:

The MeekBox is an input conditioner. A microphone or musical instrument preamplifier designed to bridge the gap between the performing musician and the recording studio.

It's been designed specially to be easy to operate, yet will give the finest professional 'glitter' to the sound; but without hours of tweaking knobs and switches with unrecognisable names!

QUALITY AND BIG SOUNDS

It's my theory (and was Joe's) that 'big' sounds can only be produced if the lower

and have extreme ranges. Attack is variable from 0.5 to 5 milliseconds and the release from 250ms to 6 seconds. There is an in/out switch for comparisons. The compression control is rotary. The compression ratio varies from 1.5 to 1 up to 7 to 1 depending on musical content and the setting of the 'slope' control.

d) THE ENHANCER.

The enhancer adds harmonics to the musical signal making it richer and more exciting.

The 'drive' control takes parts of the signal and feeds them to a separate compression processor. The compressed harmonics are 'tuned' by the 'Q' control and then mixed back into the musical signal by the enhance control. The whole effect is highly subjective and technical performance specifications are not helpful.

e) THE METER.

The first green LED of the meter array stays on all the time to show that power is on.

- The second green LED lights at an output level of -12dB
- The first yellow LED lights at an output level of -6dB
 - The orange LED lights at an output level of 0dB
 - The red LED lights at an output level of +8dB

(these levels refer to the output when the output control is at maximum)

f) OVERALL PERFORMANCE.

Frequency response +0 -0.5dB 10Hz to 50KHz Low frequency accuracy maintained to get clear unmuddled bass sounds onto digital recorders.

Harmonic distortion less than 0.01% except where compression affects low frequency wave shape.

Noise generally 100dB below input (125.5dB below input on mic at more than 50dB gain)

g) DIMENSIONS

The VC6 occupies a 1U (19") rack space

Dims : 483 x 120 x 44mm

Maximum projection of knobs : 18mm

h) THE POWER SUPPLY.

Mains AC power is connected through the IEC main power connector.

The fuseholder rotates to select either 230VAC European power or 115VAC USA power.

The internal power supply will operate correctly and safely in all territories provided that the voltage selection (115/230) is correct. If the mains power is 230V be sure that the fuseholder indicates '230' before turning the MeekBox on.

Power rating is 5 watts.

i) SAFETY.

The unit complies fully with European Cenelec requirements (CE) and uses components approved by Underwriters Laboratory in USA.

WARRANTY.

being fed into the unit, or something is still turned up far too high.
Start turning things down.

4) It distorts.

No it doesn't! Distortion inside the compressor is virtually impossible, however it is possible that the microphone amplifier is overcooking; turn down the **COMPRESSION** control and readjust.

Too much enhance can sometimes sound like distortion.

5) I can't make the compression gentle enough!

It takes practice. The settings on all the controls is critical. Start with compression at 3/4 full. Ratio at near full clockwise, Attack near full anticlockwise, and release near full anticlockwise. This represents fairly punchy compression, to soften it try increasing attack and release times.

6) I can't make it compress hard enough!

Is the 'Comp on' switch in?

Again it takes practice; generally you are not pushing it hard enough. Try adjusting the ratio to 'hardest' (full clockwise) and turning the attack faster and the release to minimum, then with the compression control near full up turn up the input gain control.

TECHNICAL PERFORMANCE

a) THE INPUT STAGE

The 'front end' is a revolutionary design using 5 complete stages of amplification controlled by a single volume control. The design gives (microphone) input headroom of more than 30dB; the input is floating balanced and will easily accept microphone levels from -70dB up to more than 0dB. Phantom power is provided for capacitor microphones.

Noise performance is up to finest laboratory standards (125.5dB below input 20Hz to 20KHz 200ohm input termination).

The line input is designed for unbalanced circuits and will accept -30dB up to +24dB. (nominally -10dB)

The nominal operating level at the 'insert' point is -10dB. but as maximum output at that point is +24dB the MeekBox can operate with any mixer or outboard equipment.

b) THE OUTPUT STAGE

An LED 'meter' shows levels immediately before the output stage. An output volume control gives the choice of output volume levels. Two output jack sockets are identical but buffered from each other.

Output is unbalanced 400 ohm with maximum output +24dB. Noise is approx. -80dB.

c) THE COMPRESSOR.

The built-in JOEMEEK compressor is slightly different from the big studio unit so that it is easier to use with musical instruments. The 'ratio' or slope is variable to make very sensitive adjustments possible. The attack and release are variable

NOTE; plugging in a line (or instrument) signal disables the XLR mic input.

These inputs are for line level unbalanced signals from instruments or equipment. They are not normally used for microphone inputs but can be suitable for some high output unbalanced microphones (such as battery powered Electret types).

INSERT POINT.

This is used to insert another effect or outboard equipment into the ProChannel (like the Meequalizer). The input amplifier output appears on the tip of the 1/4 inch jack socket, the 'ring' is the return input. When no jack is inserted, the socket is 'normalled' (internally linked).

MIX INPUT.

This is an auxiliary 1/4 inch jack line input which mixes with the normal mic or line. Its main use proves to be for stacking up MeekBoxes when overdubbing voices! It can also be used as a mixed second input for musical instruments that have their own volume controls.

OUTPUTS.

The two output sockets are 1/4 inch jack unbalanced low impedance, and are resistor buffered from each other so that they are independent. One can be used as a recording output while the other is used for monitoring/PA.

COMMON PROBLEMS.

1) The microphone doesn't work!

Have you got something plugged into the line input? (this disables the microphone input)

Is the phantom power on? (capacitor microphones).

If there is indication on the VU LED, is the output volume control turned down?

2) Got signal going through but no compression.

Is there enough signal? Use plenty of drive.

Is the compressor push-button engaged.

Have you turned the COMPRESSION control high enough?

3) It's noisy.

The MeekBox input amplifier and compressor are extremely quiet, but by definition compressors raise the level of quiet passages, and 'enhance' can contribute high frequency hiss if overused; this also means that if there is noise in the microphone channel, there will be more noise on the compressed and enhanced signal. It's a compromise so try reducing compression and enhance. If you still have excessive noise, either there is serious noise in the input signal

volume of the louder sounds in a particular way that fools your ears into thinking that the sound is actually louder than it really is! There is always the danger (particularly with the smooth response of the JOEMEER compressor) of increasing the input gain too far and causing excessive noise or even distortion; it's easy to apply 20dB of compression without realising it!

USING THE ENHANCER.

Once a signal is going through the MeekBox, turn up the 'DRIVE' control until the Enhance LED just starts to flicker on loud peak sounds. (The LED may stay slightly on all the time; this is normal)

Turn up the 'ENHANCE' control until it sounds about the right intensity, then adjust the 'Q' control for the right effect. Like the Compress control, the ENHANCE control just adds the enhancement so if it is turned to minimum there is no effect.

Once the effect is audible, experiment with the three controls to get the desired sound.

- 'DRIVE' affects the depth and 'tone' of the enhancement.
- 'Q' affects the length of the high frequency harmonic after the syllable that created it.

CAUTION. If in any doubt at all, leave enhancement till the mixdown; its easy to put on but impossible to take off!

USING THE INS AND OUTS.

MICROPHONE.

The microphone input is an XLR connector. Preferably, any microphone used should be balanced 200 ohm impedance although with dynamic (not phantom powered) microphones this is less important.

Connections are Pin 1 is ground or screen.

- Pin 2 is positive phase or 'hot'
- Pin 3 is negative phase (or ground for unbalanced).

To avoid deafening 'clonks' try to remember to plug in capacitor microphones before turning on the phantom power.

INSTRUMENT OR LINE INPUT.

These inputs are high impedance unbalanced 1/4 inch jack input suitable for any line or instrument level audio signal.

attack times coupled to fast release times.

- 'DRIVE' is the enhancer control that passes high frequencies to a separate compressor inside the enhancer circuitry. It controls the source of the enhancement signal. It should usually be set so that the enhance LED indicator flashes when 'essy' sounds go through.
- 'Q' is a control for a tuned circuit which 'resonates' the enhanced effect producing the particular character of the sound. It's the last one to be adjusted when setting up the enhancer.
- 'ENHANCE' is the control that sets the amount of enhancement effect that is mixed back into the main audio signal path. It's the enhancer volume control.
- 'OUT VOL' is simply a volume control for the output of the MeekBox. It operates after the LED VU meter so does not affect the overload margin of the MeekBox.

MAKING the MeekBox GO

USING THE INPUT AMPLIFIER.

Selection of 'MIC' or 'LINE' input is automatic; the microphone XLR input socket is disabled when you plug a jack-plug into the line input on the rear, or the instrument input on the front.

Turn the INPUT GAIN knob down to minimum then, If you are using a capacitor microphone, plug in the microphone into the XLR socket, then switch on the phantom power by pressing in the 'Phantom' switch. (Do it in that order)

CAUTION. When using UNBALANCED MICROPHONES, DO NOT USE PHANTOM POWER; it could damage the microphone and will certainly cause noise on the output. An LED light shows on the front panel as a warning that the phantom power is turned on.

Turn up the INPUT GAIN until sound into the microphone registers on the LED VU meter . Adjust the level so that the orange LED (the next-to-highest light) lights occasionally.

USING THE COMPRESSOR.

First, get a sound going through the MeekBox so that the LED meter is registering well; use plenty of level, even up to the red LED.

Press the 'COMP. ON' button and turn up the 'COMPRESSION' control so that the compression LED starts to flicker on audio peaks. You should now be able to hear the compression effect. adjust the slope and attack controls as required by the type of sound. Adjust the compression release control to set the time for the compression to 'die out' and increase the input gain control to get more compression.

When using the compressor, remember what it is doing; it's pulling down the

exciting without some of the other hissy effects you get from simply turning up the HF equaliser.

It is the supreme 'suck-it-and-see' device. Used properly it can create beautiful sounds. Overused it can be horrible.

In the original Joe Meek studio in London, He used an over-driven inductive narrow band equaliser to give this same effect; it was almost impossible to use and Joe spent hours trimming and adjusting to get the sound. The modern enhancer is still not that simple to use (it's easy to overcook a sound) but it's a big improvement over the equipment of Joe's day.

THE THREE PARTS IN COMBINATION

The 'order' of the parts of the MeekBox is logical; first the input stages, either microphone or line (instrument) input. This is followed by the 'INSERT' where the audio can 'loop' through other outboard equipment; a Mequalizer for example.

The next stage is a mixer stage where the input from 'insert' mixes with the 'mix in' jack-socket. There is no volume control on this 'mix' input. This is followed by the JOEMEEK compressor and then the Enhancer.

The output stage buffers the output of the enhancer so that the MeekBox can drive into any sort of mixer or power amplifier.

CONTROL EXPLANATIONS.

- 'INPUT GAIN' changes the audio amplification of the input amplifiers of the MeekBox. Too little gain and the sound will be too quiet and electronic background noise from various sources could become a problem; too much and the MeekBox could become overloaded and distorted.
- 'COMPRESSION' simply adds gain to the compression sidechain and so increases compression. In simple terms this changes the 'threshold' of the compression although with this compressor the 'threshold' is not clearly defined; the compression starts very gradually and the compression ratio changes with programme content and volume. For practical purposes, winding up the compression control increases the amount of compression. In use you will find that musically, all controls are interrelated.
- 'ATTACK' sets the time that the compressor takes to act. Fully clockwise (fastest) it's possible to make it 'overshoot' on some percussive programme material: This means that the compression electronics are driven hard before the gain has been controlled by the light cells. The cells catch up and over-compress momentarily giving a tiny dip immediately following the start of the 'note'. This is best demonstrated when recording drums. Used sparingly this can contribute to musical drive. Slower attacks are used where the compression needs to be less obvious. The setting of the attack control is very critical to the compression sound.
- 'RELEASE' sets the time during which the path gain returns to normal after compression. Generally, the longer the time, the less obvious is the compression. The most exciting compression sounds are created with fast

It can pull voices forward, control recording volume levels, help with internal mix balance, and add 'presence' to your sound. It was the single most important factor in the success of Joe Meek productions in the 60's.

To get the best use out of the compressor it is necessary to get technical; so even if you're not technical, read the next bit carefully and get to be a compressor Guru!

A **LIMITER** is a device which stops the output of a signal path going above a predetermined level. It is mainly used to protect amplifiers and recorders (and radio transmitters) against overload. The sound of a limiter is a bit like compression but it tends to be flat and uninteresting.

A **COMPRESSOR** is a device which reduces the dynamic range of programme material. Its use is necessary to squeeze both the loudest and softest sounds onto records so that they can be listened to in all environments; ie, in the car! A secondary use of compression (and most important for us) is to introduce some artificial dynamics into sound to make it sound more exciting. This is what the **JOEMEER** compressor does best.

WHAT IS A COMPRESSOR?

A perfect compressor is an amplifier where the input/output ratio is constant: So using a 2:1 compressor, increasing the input by 2dB gives a corresponding 1dB increase in the output.

Early compressors which used variable mu thermionic tubes or photoelectric devices only approximated true compression over a limited range. They had a soft 'threshold' where compression started and held to a predictable ratio up to a certain level, then they returned to a more linear amplification allowing transients through. This is in stark contrast to modern VCA compressor/limiters where is seemed 'sensible' to combine the functions of compressor and limiter and to 'stonewall' any and all signals above a certain level; excellent for technical level control but hopeless for musical effect. Generally, (I know I'm over simplifying) modern VCA compressors sound muddy and flat, while old compressors sound lively and retain sparkle. The compressor in the MeekBox is unique; it is an accurate re-creation of Joe Meek's own compressor as used in his studio at 304 Holloway Road, London. It is capable of producing the same punchy sounds that were so characteristic of the pop records of the time: I know; I used to make them! In spite of what advertisements may say, it is not possible to replicate the complex musical effects of the **JOEMEER** compressor either with a VCA compressor or with any digital system.

3) THE ENHANCER

WHAT IS AN ENHANCER?

An enhancer (or exciter) adds a particular type of sparkle (fairy dust?) to sounds, particularly voices.

The enhancer in the MeekBox works by picking off part of the sound, compressing and distorting it, filtering off the original sound and remixing the resulting harmonics back with the signal.

It adds high frequency sparkle, making singing voices sound more present and

frequencies in an input amplifier are kept absolutely flat and under control. To achieve this, the MeekBox has an extended frequency range down well below 20Hz. This ensures that there are no sudden phase shifts in the low end. The proof of the theory is that it sounds great!

QUALITY AND OVERLOAD MARGINS.

In the mid 1970s I designed a range of mixers specifically for Independent Local radio stations and the BBC. One of the specification clauses insisted on by them was an extreme overload margin on the microphone amplifier. The reason was that 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, many of these notions have been forgotten and 'quality' electronics is getting rarer and rarer. But the JOEMEEK range of specialist electronics applies these professional rules and you can hear the difference!

The function of a microphone preamplifier is not too difficult and the microphone/input amplifiers on normal professional mixers do it quite well; BUT they cut costs and corners. The MeekBox has a specialist approach, it uses a super quality transformerless input stage in combination with a low-noise line amplifier; the overall design produces a virtually unburstable input stage with excellent low noise characteristics. Joe would have loved one of these!

An interesting fact is that the cost and quality of the parts in the MeekBox input amplifier are on a par with those used in the very highest priced professional mixers and microphone amplifier outboards.

As well as giving the best performance with keyboards, guitars and basses (Joe Meek invented the 'direct inject' method of instrument recording), the MeekBox is also designed to work well with the best capacitor microphones; it is particularly good with the Neumann range, the AKG C3000 and C414, Microtech Gefell, and Audio Technica.

WHAT'S IN IT

It's best to think of the MeekBox as three separate pieces of equipment:

- 1) The Input amplifier.
- 2) The Compressor.
- 3) The Enhancer.

1) THE INPUT AMPLIFIER.

The input amplifier takes audio signals from any microphone (XLR socket), musical instrument or high level source (1/4 inch jack socket), and amplifies them up to 'line' level; that is, from a few millivolts, up to about a volt. The phantom power supply (push-button switch) provides power to capacitor microphones.

Dynamic or ribbon microphones should be used with the phantom power turned off, then full advantage can be taken of the extreme low noise performance of this amplifier.

2) THE JOEMEEK COMPRESSOR.

And now for the part of the MeekBox that gives it character; - the compressor.

In the unlikely case of a breakdown, please return the complete unit 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.

"If it sounds right; it is right"
Joe Meek 1964

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