

JOEMEEK

COMPRESSION

Pro Channel VC3 v2



**THE PROFESSIONAL LINK BETWEEN
MUSICIAN AND STUDIO**

User's Guide

The PROCHANNEL VC3 is a piece of precision electronics designed 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

INSTRUCTION BOOK CONTENTS

The JOEMEEK Pro Channel	
- What it is	3
What's in it	
- The Input Amplifier	5
- The JOEMEEK Compressor	5
- The Enhancer	6
- The Three parts in combination	7
Pro Channel Control Explanations	8
Making it go	
- Connecting your VC3	9
- VC3 Inputs and Outputs	10
- Using the Input Amplifier	11
- Using the Compressor	11
- Using the Enhancer	12
- Sample settings	12
Common problems	14
Technical performance	15

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.

THE JOEMEEK PROCHANNEL



WHAT IT IS

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

It has 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 that 'big' sounds can only be produced if the lower frequencies in an input amplifier are kept absolutely flat and under control. To achieve this, the JOEMEEK PROCHANNEL 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!

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 Studio channels and the PROCHANNEL apply 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 JOEMEEK PROCHANNEL has a specialist approach, it uses a super quality transformerless input stage in

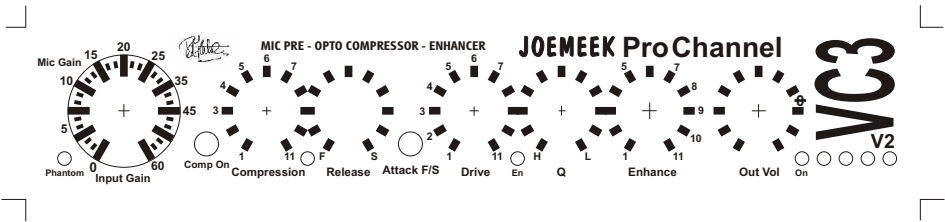
VC3 v2 Pro Channel - User's guide

combination with a low-noise line amplifier; the overall design produces a virtually unburstable input stage with excellent low noise characteristics.

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

As well as giving the best performance with keyboards, guitars and basses, the ProChannel 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 JOEMEEK PRO CHANNEL as three separate pieces of equipment:

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

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 (rear panel 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.

THE JOEMEEK COMPRESSOR

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

It can pull voices forward, control recording volume levels, help with internal mix balance, and add 'presence' to your sound.

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 JOEMEEK 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 JOEMEEK PROCHANNEL is unique; it is a recreation of an early photoelectric compressor in use in the mid 1960's. 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!

The ENHANCER

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

The enhancer in the JOEMEEK PROCHANNEL 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 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.

THE THREE PARTS IN COMBINATION

The 'order' of the parts of the ProChannel 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. 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 ProChannel can drive into any sort of mixer or power amplifier.

PROCHANNEL CONTROL EXPLANATIONS.

'INPUT GAIN' changes the audio amplification of the input amplifiers of the ProChannel. 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 ProChannel 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' (push button) sets the time that the compressor takes to act. pressed in (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 attack (button out) is used where the compression needs to be less obvious.

'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.

'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.

'Q' is a control for a tuned circuit which 'resonates' the enhanced effect.

'ENHANCE' is the control that sets the amount of enhancement effect that is mixed back into the main audio signal path.

'OUT VOL' is simply a volume control for the output of the ProChannel. It operates after the LED VU meter so does not affect the overload margin of the ProChannel.

VC3 v2 Pro Channel - User's guide

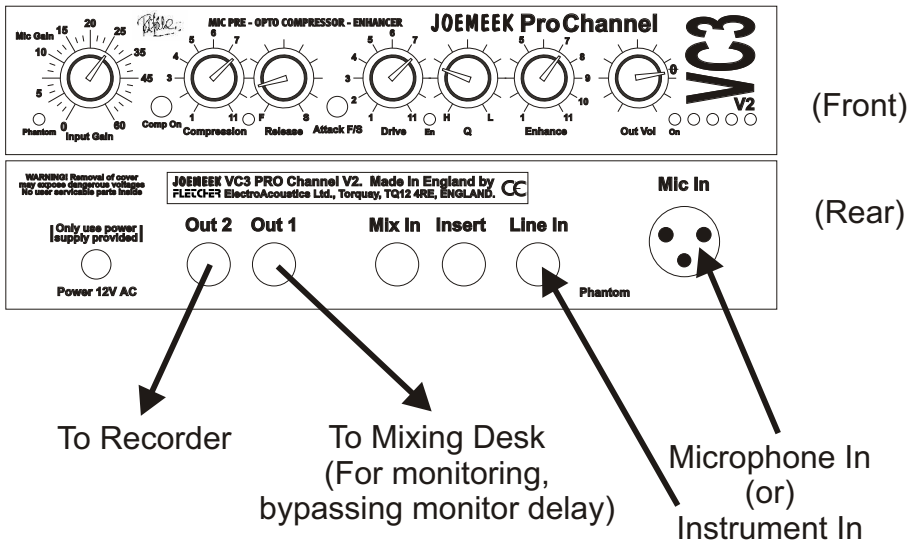
MAKING IT GO

CONNECTING YOUR VC3

The VC3 can be used in many applications, from recording to live work. This section will help you get connected as well as explaining the connections on the VC3 to help you get the most from your Pro Channel.

Sample recording set up

Here, we are using the VC3 as a replacement front end for a mixing desk/ hard disk recording setup. This configuration may be used for a performance vocal or instrument source in the studio to get richer sounds on disk, as well as eliminating and digital delay when monitoring.



The mix input may be used to add additional sources at the performance, and the insert point may be used to add effects by diverting the line level signal through and external processor (i.e. reverb unit or amp simulator).

This use of the VC3 will improve the quality of sound recorded by its high performance mic/instrument amplifier. Also, the compressor will significantly improve the impact a sound.

Note that the compressor and enhancer may be added to a track after it has been recorded by using the line input from recorder group output.

VC3 INPUTS AND OUTPUTS

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/ LINE INPUT - This input is a high impedance unbalanced 1/4 inch jack input suitable for any line or instrument level audio signal.

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

This input is for line level unbalanced signals from instruments or equipment. It's 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. 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 ProChannels when overdubbing voices! It can also be used as a mixed second input for musical instruments.

OUTPUTS - The two output sockets are 1/4 inch jack balanced low impedance, and are connected in parallel. The output is auto balancing and may be unbalanced without affecting output level. One can be used as a recording output while the other is used for monitoring/PA.

POWER - Power input is 12Volt AC only. **POWER THE PROCHANNEL ONLY FROM THE JOEMEEK POWER SUPPLY PROVIDED. USE OF OTHER POWER SUPPLIES WILL DAMAGE THE PROCHANNEL AND WILL INVALIDATE ALL WARRANTIES.**

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 (or instrument) input.

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 second yellow LED (the next-to-highest light) lights occasionally.

USING THE COMPRESSOR

First, get a sound going through the PROCHANNEL so that the LED meter is flickering.

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. Switch the Attack to F (fast) or S (slow) 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 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 JOEMEEK 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!

VC3 v2 Pro Channel - User's guide

USING THE ENHANCER

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

Turn up the 'ENHANCE' control until it sounds right.

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!

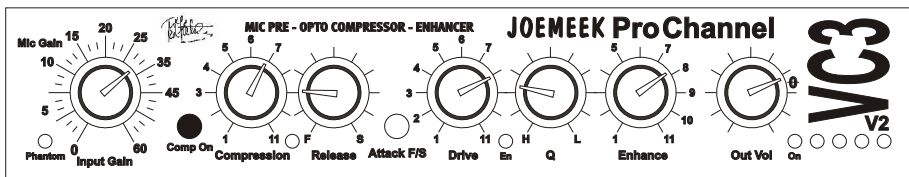
SAMPLE SETTINGS

This section is aimed at providing a good starting point for getting good results. While these settings do not guarantee a good sound, they do work in most situations. The correct level of the input gain and output gain cannot be predicted. This depends on your source and monitoring equipment. Always try to run these as high as you can without creating any audible distortion.

Switches : denotes pressed IN. denotes OUT.

- RECORDING VOCALS

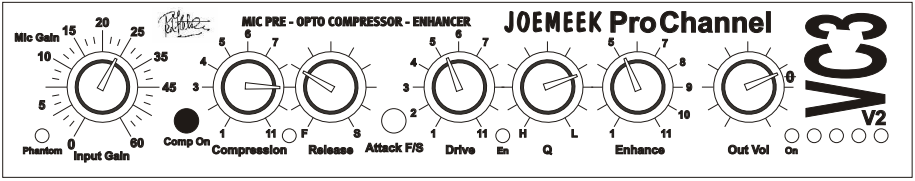
Medium compression, slow attack, medium release, enhancement (bright and light).



VC3 v2 Pro Channel - User's guide

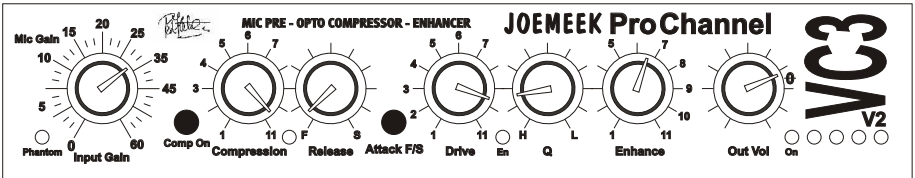
- Mike'd acoustic guitar

Heavy compression, slow attack, medium release, aggressive enhancer.



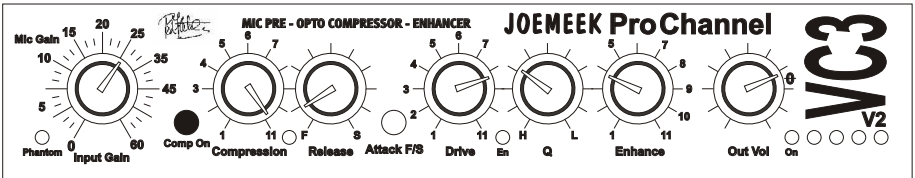
- Electric guitar

Heavy Heavy compression, fast attack, short release, bright enhancer.



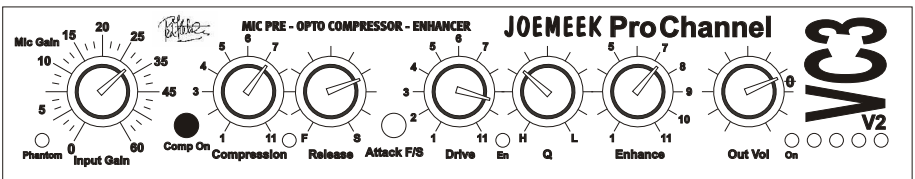
- BASS

Heavy Heavy compression, slow attack, short release, slight enhancement (good with slap styles)



- Cymbals

Compression, slow attack, slow release, bright enhancer.



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).
 - Is the output volume control up?

- 2) Got signal going through, but no compression.
 - Is there enough signal?
 - Is the compressor push-button engaged.
 - Have you turned the COMPRESSION control high enough?

- 3) It's noisy.
 - The ProChannel 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 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 setting of the COMPRESSION control is quite critical.

- 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 switching the attack to F (fast) and the release to minimum, then with the compression control near full up turn up the input gain control.

TECHNICAL PERFORMANCE

THE INPUT STAGE

The 'front end' is an entirely new 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.

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

THE OUTPUT STAGE

An LED 'meter' shows levels immediately before the output stage. An output volume control gives the choice of output volume levels. The two output jack sockets are identical. Output is balanced 75 ohm with maximum output +26dB. Noise is approx. -80dB.

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 attack is switched 1mS and 10mS.

The release is variable from 250mS up to 3secs. 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.

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.

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 second yellow 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)

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)

THE POWER SUPPLY

An external 12V AC power supply provides the power for the unit. DO NOT ATTEMPT TO POWER THE UNIT FROM ANY POWER SUPPLY OTHER THAN THE ONE SUPPLIED WITH THE UNIT. Circuitry inside the unit converts the 12V AC into 14.5-0-14.5V and 48V DC supplies for the amplifiers and the phantom power.

Power rating is 5 watts.

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.

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.

VC3 v2 Pro Channel - User's guide

LOOK OUT FOR OTHER JOEMEEK PRODUCTS!

The JOEMEEK C2, OPTICAL STEREO COMPRESSOR, to get final mixes with BIG sounds! Great for any digital recording system as a way to get results that sound warmer and with more 'punch'. Also great for tracking!



THE JOEMEEK STUDIO CHANNEL VC1

Amazing transformer based mic amp + compressor and enhancer.



The JOEMEEK Stereo compressor SC2.2

Classic compression at a low cost for great stereo mixes



THE JOEMEEK **Meequalizer** VC5

The 70's discrete equaliser with attitude!

Manufactured by; FLETCHER ElectroAcoustics Ltd.
Quay House, Quay Road, Newton Abbot, Devon TQ12 2BU
Tel : +44 1626 333948 Fax : +44 1626 333157
e-mail : sales@joemeek-uk.com

DECLARATION OF CONFORMITY.

This analogue audio processing equipment conforms to the standards and requirements of the European Economic Community.

The EC Harmonised standards that have been applied are;

- a) Electrical equipment (safety) Regulations 1994 (S.I. 1994/3260)
- b) Electromagnetic Compatibility Directive (89/336/EEC) incorporating (S.I. 1992/2372)

"If it sounds right; it is right"

Joe Meek, 1964

www.joemeek-uk.com