



Sonic Farm Xcalibur JC

Valve Preamplifier & Saturation Processor

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The amazing technical progress of the last 25 years or so has delivered audio equipment that's reached an incredible level of accuracy and transparency, which is great for all of us. But hand in hand with that goes the loss of what are often musically attractive distortions, and so all manner of plug-ins and hardware devices have appeared to allow saturation and distortion to be applied in a more controllable way. But sometimes it's just more inspiring to add this coloration at source, and that's very much the *raison d'être* of Canadian company Sonic Farm.

Sonic Farm have consistently impressed me with their musically involving range of mic preamps, and their Xcalibur pentode-valve 'saturation preamp', launched at Summer NAMM 2016, was designed from the ground up specifically to provide a broad range of controllable distortion while tracking. This big two-channel preamp, which weighs a hefty 6.6kg and extends 33cm behind the 1U rackmount ears, is still available but Sonic Farm recently released a slightly more elaborate version, the Xcalibur JC. This

With its ability to deliver anything from super-subtle saturation to downright despicable distortion, could this be the only valve preamp you'll ever need?

upgraded model, which is reviewed here, has a couple of extra features and a slightly modified signal path, all of which are the result of suggestions from celebrated engineer/producer Joe Chiccarelli.

Overview

The Xcalibur JC's primary purpose is to add character but it is fundamentally a clean-sounding, two-channel, transformer-coupled mic preamp. The primary gain stage is based around an EF86 pentode valve, in a topology that omits negative feedback — so broadly similar to the company's Creamer (reviewed in *SOS* May 2013: <https://sosm.ag/sonic-farm-creamer>) but with a higher anode/plate voltage (320V, compared with the Creamer's 285V).

According to the specifications, around 68dB of gain is available for the mic input, and both channels also feature rear-panel balanced line and front-panel unbalanced instrument inputs, with up to 48dB of gain on tap. The mic and line

inputs are all transformer coupled, but the instrument input is connected directly into the pentode's control grid; the circuit topology and 2.2M Ω input impedance are intentionally very similar to those of a traditional guitar amp. All four input transformers are made by Cinemag, with CMMI-10Cs for the mic inputs and CMLI-15Bs for the line inputs.

The output section shares the facilities of most other Sonic Farm products, with switches to select a solid-state, op-amp-based output driver or a Cinemag output transformer. Also like other Sonic Farm products, when ordering the Xcalibur you can opt for a slightly softer-sounding 100-percent iron-cored transformer instead of the standard CML13104 Ni-Fe alloy model.

What sets the Xcalibur apart from the company's other preamps is the addition of a second amplifier stage that's dedicated to creating saturation/distortion. This is based around another EF86 pentode but it works in concert



Sonic Farm Xcalibur JC £2200

PROS

- Plenty of gain for mic, line and instrument inputs.
- Can be used as an effects processor and for reamping.
- Ability to use both channels to record clean and distorted outputs simultaneously.
- Helpful filtering and EQ options to shape the tonality.
- Transformers on all inputs and outputs, with option for a pure-iron output transformer.

CONS

- Inconsistent switch positions and labelling mean there's definitely a learning curve.
- The overdrive section is very sensitive, making it tricky to control.

SUMMARY

The Xcalibur JC is another unusual but impressive valve mic/line/instrument preamp from Sonic Farm, and it's capable of creating all manner of distortion effects, from the subtlest saturation to full-on fuzz.

Two further toggles, labelled Fat and Air, provide tonal variation. The Fat switch introduces a low-frequency shelf-boost courtesy of an inductor-based EQ circuit, while Air is a high-frequency shelf boost. The boost amount depends on the selected preamp gain (lower gain gives more boost) and the settings of a couple of user-adjustable trim pots under the lid. I measured +9dB for the Fat mode, and nearly +20dB at 20kHz for both Air options. The middle position of both switches provides a flat response, while the Air switch introduces boost from a lower frequency if pushed to the left, so affecting a greater proportion of the signal. The Fat switch introduces LF boost >>

with a FET which affects the way in which it approaches clipping; the arrangement is optimised to produce rich, smooth and 'creamy' distortion. There's also an adjustable high-pass filter to determine which parts of the source's spectrum actually generate distortion harmonics, and a Blend control adjusts the amount of distortion that is mixed with the preamp's clean signal, greatly extending the subtlety and range of effects on offer.

The Xcalibur is built to high standards. Ceramic sockets for the four Svetlana EF86 valves are mounted on vertical daughter cards, which sit on PCBs for each channel's electronics. A separate power supply board provides a number of separate regulated DC voltages for various aspects of the circuitry.

On the rear, four female XLRs accept the two channels' mic and line inputs, while a pair of male XLRs provides the line outputs. Mains power is via the usual IEC inlet, which is switchable for 110 or 220 Volts AC, and there's a ground-lift switch to separate the audio circuitry's ground reference from the chassis and mains safety earth in case of ground loops. A mains on/off switch is on the front.

Total Control

The front panel is a complex profusion of toggle switches, knobs and buttons (there

are 36 controls in all). Most will be familiar to those who've used other Sonic Farm gear, but their unconventional format and labelling can be a little bewildering to anyone encountering them for the first time; it's well worth spending some time to understand precisely what the controls do.

Starting with the easily recognisable bits, four white buttons enable phantom power (with a red status LED), engage a 15dB input pad (located ahead of the input transformer to avoid unintended overdrive), select the line/instrument inputs (the latter take priority), and invert polarity at the output. A fifth white button, SS/OT, selects the solid-state or transformer output. Curiously, the blue LED by the input selector lights to indicate power-on; the mains on/off switch is over on the right-hand side of the panel.

The mic input's impedance can be changed with a toggle switch whose Lo, Medium and Hi options equate to 900Ω, 2.4kΩ, and 10kΩ, but these values are all reduced if the pad is also engaged. The preamp's gain is controlled with another toggle offering Medium, Lo and Hi options. These provide 54, 47 and 61.5 dB of gain respectively for the mic input, and 32.5, 25.4 and 34.3 dB for the line/instrument inputs.

» only when pushed left; when pushed right it bypasses the EQ circuitry, allowing the maximum overall preamp gain, which I measured as 69.3dB for the mic input, (regardless of the gain switch position) and 34.5dB for the line/instrument input.

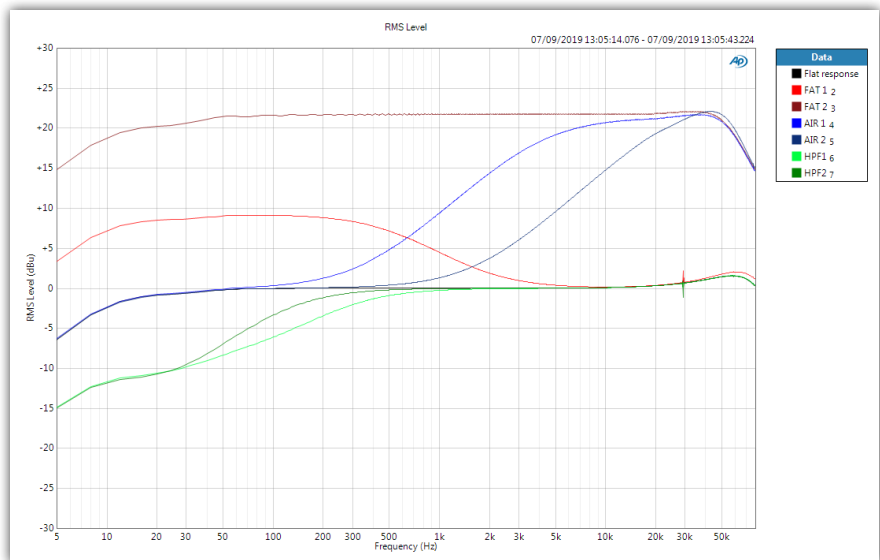
The Xcalibur JC has no output level metering as such, but a bi-colour LED between the rotary controls monitors the output of the clean preamp stage, illuminating green for signal-present and turning red if the signal level approaches clipping. As a rough-and-ready starting point, unity gain for a line input is obtained with the gain switch in the M position and the CLN and OUT knobs both at 12 o'clock. For a mic input, leaving the knobs in the same position but flipping the gain switch to Hi gives a +4dBu output with -25dBu at the input, which is typically about right for close and loud vocals into a high-output capacitor mic, but there's still around 15dB of gain in hand on both rotary controls.

Two more toggle switches introduce a pair of first-order (6dB/octave) high-pass filters. The first (HPf1) affects the clean preamp stage, with the flat position to the left and notional corner frequency options of 80Hz (middle) and 160Hz (right), though my testing suggested the -3dB points are actually higher than that, at around 100 and 200 Hz. This filter provides the usual rumble and mud-removal function. The second (ODf1) only affects the signal going into the overdrive section, with the left position again being flat, a high corner frequency (about 800Hz) in the middle, and a lower frequency (400Hz) to the right. The idea is to control which fundamental tones in the source contribute to the saturation/distortion.

A third low-pass filter, exclusive to the JC, is controlled with another toggle switch (ODf2). This sits after the distortion stage and the notion is intended to tame the strength and extent of the distortion harmonics, to reduce any tendency to 'fizz'. The middle (18kHz, and effectively the bypass) and right (1kHz) positions use 6dB/octave slopes, while the left (5.5kHz) one has a 12dB/octave slope.

The amount of signal fed into the overdrive

On the rear panel there are separate balanced XLR inputs for mic and line sources.



A set of Audio Precision measurements of the clean preamp stage. The black trace is the natural frequency response (note the extended frequency scale). The red trace shows the bass boost of the FAT1 mode, while the brown line shows the maximum gain provided by FAT2. The light and dark blue lines show the two Air boosts, and the two green curves show the high-pass filter settings. (The slight bump in the extreme high-frequency response is due to the very high measurement load impedance, which under-damped the output transformer. This would be flat in more conventional installations!)

section is adjusted with the DRV (Drive) rotary control. The standard Xcalibur has a button to engage the distortion section but the JC dispenses with that, instead featuring a toggle switch labelled OD+ that adjusts the overdrive section's gain, the options being mid (+5dB), low (0dB) and high (+15dB), with corresponding amounts of distortion which can be varied from around 0.01 up to several percent, and onto square waves! The distortion section's contribution to the line output is adjusted using the second rotary control, labelled BLD (blend), while the level from the clean part of the preamp is set with the top rotary control, labelled CLN (clean). By balancing these controls, very fine adjustment of the strength of the distortion effect is possible, and the overall level of the mix is controlled with the last rotary control, labelled OUT. Again, the standard Xcalibur lacks this rotary control and instead has a toggle switch to pad the output down by 0, 6, or

12 dB. Either way, an output level control is required because this box can happily generate up to +32dBu!

One last toggle switch, tucked between the two channels' controls sections, only applies to channel 2. When operated, channel 1's line output is sent directly into channel 2's line input. This allows you to generate an extreme saturation/distortion effect if you wish, but it's also useful in allowing the first channel to be operated as a clean preamp; that way, the clean signal is available at channel 1's output, while the second channel adds saturation to that clean signal and provides the distorted version at channel 2's output — if you record both outputs simultaneously, any blend of clean/saturated signal can be decided upon later when mixing.

In Use

As with all Sonic Farm's products, the Xcalibur JC is a very musical-sounding

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» preamp, and it really is a lot of fun to use. It can certainly sound pretty clean if you want it to, though it's not designed to compete with modern, ultra-transparent preamps. Instead, this is a device that's intended for adding character, but with the controllability to generate anything from the gentlest hint of presence or edginess, right up to full-on fuzz — and everything you can think of in-between. The filtering options allow really helpful shaping of the distortion character, too, and the low-pass filters are particularly useful in this respect, allowing you to tame any unwanted brittle fizziness.

Not surprisingly, the overall distortion character and intensity depends most on the controls that affect the second-stage gain; specifically the DRV and OD+ facilities. The BLD, CLN and OUT pots are more about setting the amount of distortion and the overall output level, although they do also affect how hard the output stage is being driven (another source of character in its own right). The high- and low-pass filtering variations, and the Fat and Air EQ options all affect the sound in different ways, as well, of course, and some do so more subtly than others.

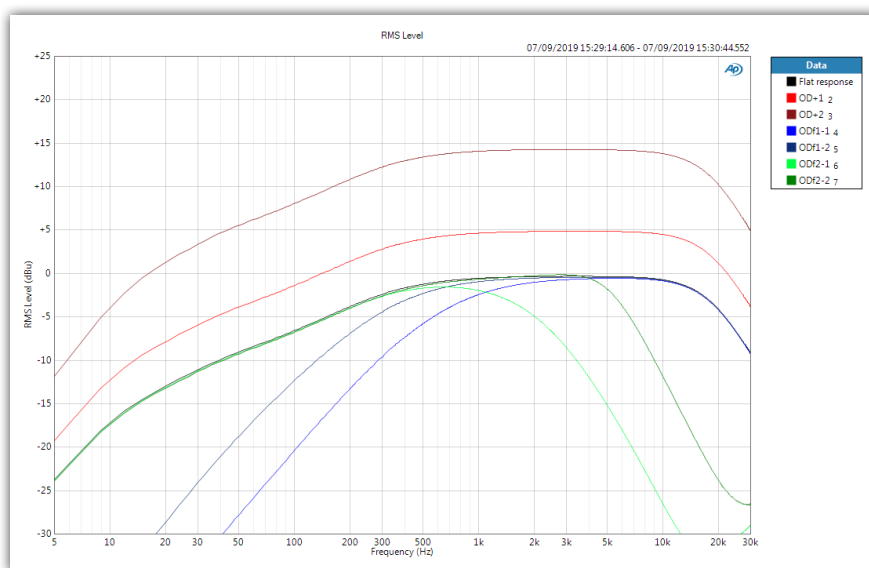
There's something of a learning curve. In particular, becoming familiar with all the controls and the subtleties of their operation, interaction and application can take a little while, not least remembering which toggle positions provide the flat or bypass conditions — different toggles have their off/neutral settings in different positions, and for some reason these positions aren't all labelled.

If I were to be critical of anything else, it would be that I found the DRV control to be much too sensitive. Most of the more subtle (and, for me, usable) effects are with the DRV control somewhere between off and nine o'clock, and it would be helpful if the fader law could be tweaked to spread this useful range out a bit. Also, experimenting with the different gain switch options can produce rather dramatic level changes; some new settings can get surprisingly loud, if not damaging, and I soon developed a habit of backing off the Out controls before trying something different.

But none of that detracts from what

Alternatives

I can't think of anything that does the same thing as the Xcalibur JC... other than the standard version of the Xcalibur!



This set of responses was obtained from the Saturation section, with the basic response shown in black. The falling low-end response is because the high-pass filter was left in for the preamp stage. The additional gain introduced by the OD+ switch is shown by the red (+5dB) and brown (+15dB) traces, while the two high-pass (blue) and two low-pass (green) responses are also illustrated.

the Xcalibur can do. It's capable of some truly lovely, subtle effects given care, and I found that bringing in just small amounts of saturation distortion with the BLD control injected a real sense of presence and proximity into otherwise flat-sounding vocals — without it being perceived as distortion at all. When working with solo instruments (guitars, basses and keys) the distortion can be applied with more enthusiasm, and the rewards are lovely thick, creamy and musical sounds. I found the Xcalibur JC was very effective on synth and bass lines, in particular, while my guitarist friends all seemed to like what it could do for them, too. I also passed some pre-recorded stereo drum stems through it, gaining a lot of energy and drive — a bit like overdriven analogue tape, but without diminishing the transient attacks. The Fat and Air boosts also brought welcome weight and crispness to all sources.

The Xcalibur JC's balanced line inputs make it easy to integrate with a console or interface as a send-return effects processor, where it can be used for 'ampless' reamping, or for adding some character to pretty much anything at all. In fact, my earlier tape comparison is apt; running a stereo mix from the DAW through the Xcalibur introduces some really nice analogue warmth and presence, helping to gel the mix together, while also seeming to open out the mid-range. It's a broadly similar quality to bouncing through analogue tape at high

level, and it quickly becomes addictive!

That cascade switch is also really useful, and I liked the ability to record both clean and distorted outputs simultaneously — knowing you'll have the opportunity to fine-tune when mixing can make you less hesitant to experiment with the processing when tracking. However, it would be helpful to have a status LED for that switch; more than once I found myself wondering why Channel 2's line input didn't work!

Verdict

While there's some potential for confusion in the varying default control positions and I found some controls over-sensitive, the Xcalibur JC really is a very impressive and versatile bit of kit. It's a preamp processor that delivers some very attractive character and musicality, ranging all the way from the barely noticeable to full-on grunge. Whether used on an individual instrument, a stereo stem or a full mix, the Xcalibur always sprinkles 'fairy dust' on everything passing through it. Those who have read many of my SOS reviews will know that I'm not always the biggest fan of distortion processors, but I grew to really love what this high-quality and versatile box can do! ■■■

£ \$2950 CAD (about £2200 including VAT and duty when going to press).

W <https://sonicfarm.com>