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Sonic Farm Xcalibur/Xcalibur JC

Pentode Preamplifier and Saturator

USER MANUAL

Dear Audio Professional,
Thank you for purchasing the Xcalibur. We hope it will deliver exceptional recordings for many years into the future.
Please take the time to read this manual. It describes Xcalibur's design philosophy as well as its most important functions.

DESIGN PHILOSOPHY

Several years after launching our Creamer and Berliner tube preamps, an idea arose to build something special, a preamp that could sound both pristine clean but could also be pushed "over the edge" to add some grit when it was needed to help otherwise pail tracks cut through the mix. In today's modern music production, the boundaries between "normal" and "twisted" are increasingly getting blurred.

Back in the 60's, when the Beatles recorded the White Album, George Martin used a lot of distortion on tracks to breathe a new life into those songs. The Redd 47 preamps built into the mixing console yielded the guitar fuzz on the "Revolution". But by today's standards those sounds are way too thin and piercing. We wanted to make a preamp with a smooth and creamy overdrive that could be tailored to suit different instruments and then blended in with the clean signal in the precise amount needed. It had to sound more organic than the many DAW plugins used for that same purpose. We did a lot of experimentation and finally came up with a combination of a pentode with a FET transistor that made the tube clip in an even more pleasing way. Thus, Xcalibur was born.

Like the Creamer, Xcalibur is a pentode preamp with no feedback loop. It uses the same EF86 tubes. But unlike the Creamer that has 2 tube modes, it always works in the pentode mode. Because the tube bias circuit is different than the Creamer's, it allows for a 3+1=4 switched gain settings (this is explained a bit later in this manual). This first stage provides clean gain only, but even if it's overdriven, it still clips very gradually to avoid any harshness. In general, Xcalibur's clean sound is almost identical to Creamer's pentode mode tone. "Almost", because due to a different biasing circuit Xcaliburs run on an effectively higher plate voltage (320V) than Creamers (285V), so there's maybe a tad more "juice".

After passing through an adjustable high pass filter, the signal is applied to the second tube to overdrive it to the level dependent on the "drive" control setting. Finally, the "OD" control blends this harmonically saturated signal back with the clean one. The importance of the OD filter, however, cannot be overemphasized: when set correctly, it can yield a whole range of useful saturation, from a thick vocal that no one would suspect contains distortion to trashy psychedelic drums and grinding bass. Or miked guitar cabs treated for a more refined overdrive. You can in fact run your stereo busses through it, drum tracks or even the main mix.

Xcalibur uses the same oversized Cinemag transformer as the Creamer. The instrument input goes directly to the tube, where it sees an input impedance similar to that of a tube guitar or bass amp.

The output mode on the Xcalibur can, like with all of our preamps, be switched between solid-state balanced and transformer-driven.

The standard output transformer has a Ni-Fe alloy core, but Xcalibur can be also ordered with 100% Fe transformers. Those can even be combined on the 2 channels. The transformer will impart more "weight" to the signal when desired, as opposed to the transparency and higher definition of the solid state mode. (Tip: If you prefer a softer high end, try a 100% Fe output transformer.)

The Xcalibur JC was introduced in early 2018 in collaboration with Joe Chiccarelli, a Los Angeles based producer/engineer. He was checking out the original Xcalibur at his Sunset Studio in Hollywood and requested a few mods to make the unit more suitable for his way of work: A master pot replaces the 3-way attenuator switch, OD gain (marked OD+) now has 3 stages (mid/low/high), and there's an additional 3-pos post-drive Low Pass filter (marked ODf2)

SOME REMINDERS REGARDING TUBES

Tubes work with very high supply voltages. There are points inside Xcalibur that measure in excess of 350V DC. If touched, those voltages could be lethal!
Make sure that no pointed objects (especially metal) or liquids penetrate the inside of the unit through its cooling grilles or otherwise. If that accidentally occurs, immediately pull the plug out of the power socket and wait for the unit to discharge. Xcalibur must not be operated if moisture penetrates inside.
Before opening the unit (to change tube, wipe off moisture, etc) one must disconnect the mains cord and then wait several minutes for the internal capacitors to discharge.
When mounting in a rack enclosure, always leave an empty space above the Xcalibur to ensure proper cooling.
Please do not replace the mains fuse with one of a higher value: use only 600mA@115V (500mA also works fine) (250 to 300mA@220-240V)

Legal Disclaimer: Neither Sonic Farm nor anybody associated with it can take any liability for damage to persons or property caused by either use, modification or servicing this unit.

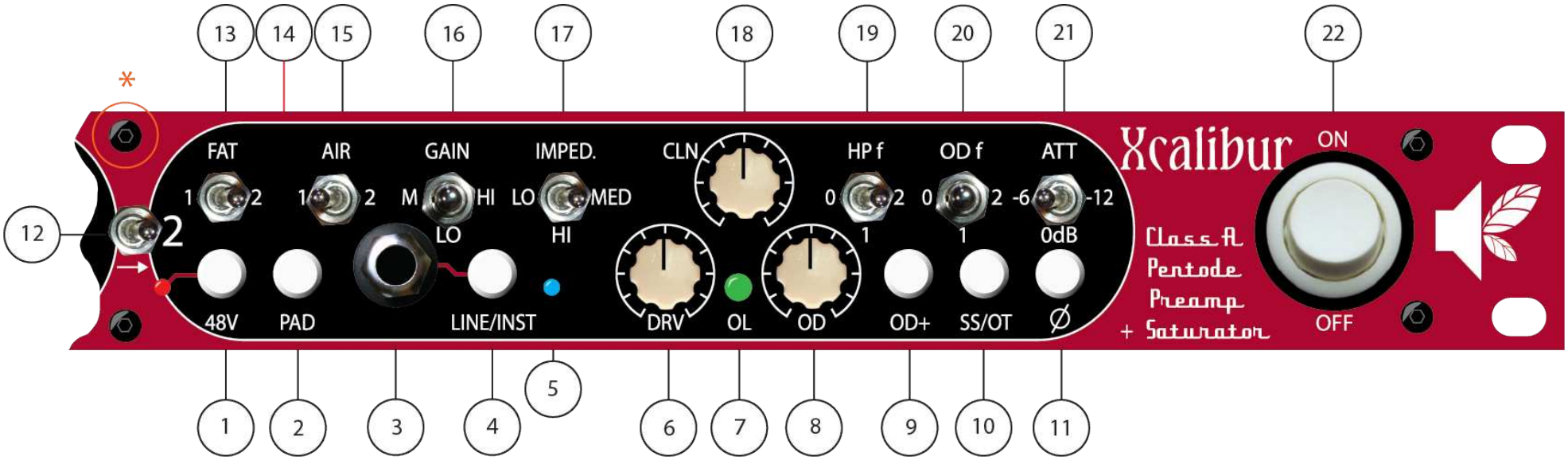
HOW TO CHANGE TUBES

This only applies to a functional unit. Please entrust any repairs to qualified service personnel.
Only an EF-86 (or equivalent, like 6267, 6CF8 or Russian 6J32P) pentode can be used.
Pull out the power cord. Wait for at least 10 minutes for all the capacitors to discharge.

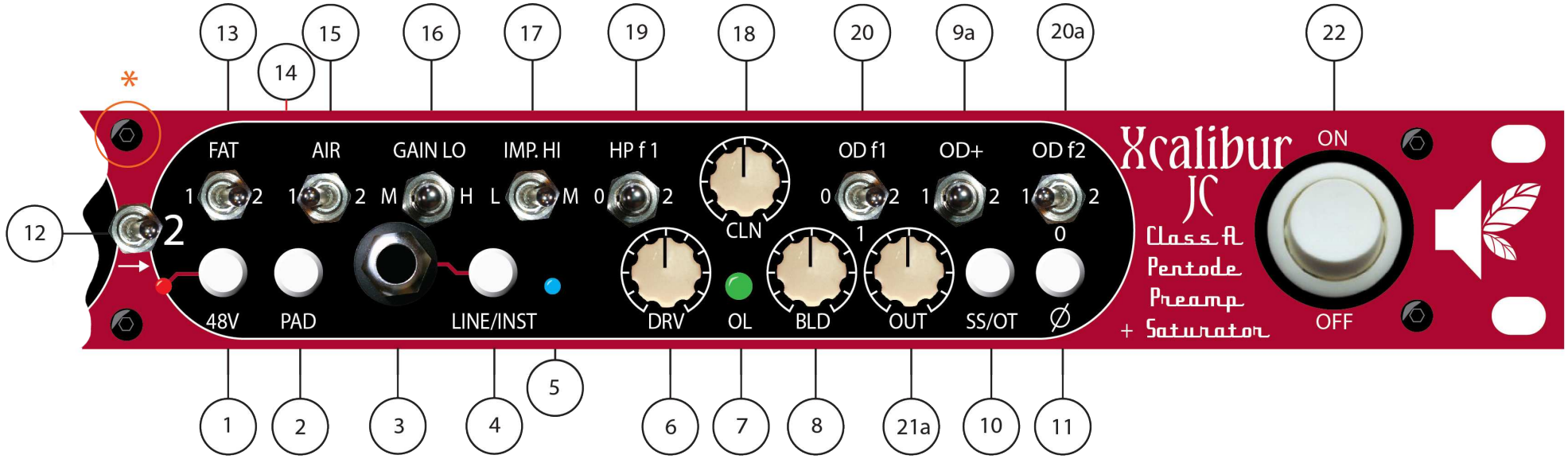
Remove Xcalibur's cover by loosening screws encircled red and marked with an asterisk (3 on the rear panel and one on the front one) as well as all side screws (4 M4 screws on either side). You will need an allen wrench (some models will have Phillips screws).

While pressing on the edge of the vertical PC board (the one containing tubes) with one hand, pull out the tube with your other one.
Small, but fast forward-reverse motion may be needed to loosen the tube from a tight socket. Do not bend the tube much out of the axis because you can break the pins or cause air to enter the tube and destroy it. Paying attention to the pin alignment, push the replacement tube into the socket using same motions but in the opposite direction. Make sure it goes in all the way.
Due to electric shock danger, testing the preamp with the lid removed is not recommended. Screw the cover back in place and you're done.

XCALIBUR'S FRONT PANEL CONTROLS



XCALIBUR JC:



1 Phantom power switch with the corresponding light. Xcalibur's soft phantom circuit eliminates the annoying audible "crack" with MOST microphones. However, some rare microphones, due to their circuit design, will still cause a loud pop a few seconds AFTER the phantom voltage is switched off. With those, you will still need to mute or lower your monitoring level.

2 Input attenuation 15dB pad, pre-transformer. Also lowers mic input impedance.

3 1/4-inch unbalanced instrument input. Good for guitar, bass or keyboards. The input impedance is 2.2MΩ.

4 Line/Instrument input selector: push in to activate the line or instrument input. Xcalibur has a dedicated Line input with a separate 1:1 transformer. Great to insert into a master buss (or any individual track) for tonal coloration. With nothing plugged into the front panel ¼" jack, the rear panel XLR line inputs will be active. To use the instrument input, simply insert a ¼ plug into the front panel jack with this switch pushed in.

5 Power on blue LED indicator.

6 Drive control to control the distortion intensity of the second tube. The OD+ switch will also influence the drive gain (see 9/9a).
An "advanced" use of this control when recording clean: with the Blend control **(8)** at zero, Clean **(18)** adjusted as needed, and the air switch **(15)** in the middle (off), try turning up the Drive control **(6)**. Although theoretically nothing should change, because of the capacitive leakage between the stages, one can hear a subtle boost of extremely high frequencies ("air"). In fact, this sounds really cool on vocals and some other stuff. Try it! The OD+ switch should be out (Xcalibur standard) or to the left (JC).

7 Bi-color LED (green/red) signal presence/overload indicator. Red indicates clipping distortion. To eliminate it, make sure the "FAT" switch is not in the right (gain maxed) position, and/or reduce the gain using the gain switch. The last resort is the pad.

8 Overdrive (OD) blend level. This signal is summed together with the clean one (see control **18**) to constitute the output signal.

9 (Xcalibur standard) Push this switch to engage the second, FET based overdrive stage, for more saturation and harmonics. It's a good idea to reduce the OD blend (**8**) first because the loudness will go up quite a bit.
9a (Xcalibur JC) 3 position overdrive gain switch: mid (left), low (middle) and high (right). Again, use together with **(8)**.

10 Output select: low-distortion solid-state IC or transformer. Solid-state mode will sound somewhat cleaner,
and the transformer rounder and fatter. Xcalibur "A" has Ni/Fe (50/50), and Xcalibur "B" 100% Fe transformers. B sounds more vintage.

11 Phase reverse (at the very output of the preamp). Affects mic, line and instrument inputs.

12 Channel cascade switch. When pushed to the right, it routs the first channel's output into the second channel's line input. Both outputs on the rear panel will still be active. In order to combine the saturations of both channels, the 2nd channel obviously needs to be in line mode. Be very mindful of the gain structure when doing this, as the levels quickly get very high. But sometimes, this kind of an extreme setup is what

your track requires. (hint: for flexibility, keep ch1 clean, engage the cascade switch and run ch2 in OD only, no clean. Record both outputs to separate tracks and later in the mix blend in as much dirt as you want within your DAW).

13 Fat shelving preset boost and gain max switch. **Left position (Fat)**: Low frequency shelving boost starting at 300 to 1000Hz, depending on the gain switch (**16**) setting with lower gain corresponding to higher corner frequency and consequently more bass boost. This filter does not use a separate stage; rather, it utilizes the clean tube gain stage. The boost level can be adjusted by the left of the 2 trim-pots, accessible from the top lid, between the boost switches and about an inch in from the front panel (**14**, marked by a red pointer). The maximum boost you can get also depends on the gain switch: the lower the gain, the more bass boost is available, up to about 12dB. 6dB/octave slope. Low boost uses a real inductor for a fat tone. **Mid position** is flat.
Right position maxes the preamp gain and defeats both the Fat and Air filters.

14 Trim pots, accessible through the cover, can be used to adjust the amount of "Fat" and "Air" boost. Use a mini slot (.098"/2.5mm Ø, .031"/0.8mm wide) or hex (.104"/2.64mm hex x .055"/1.4mm deep) screw driver to adjust pots.

15 **Left and Right position**: High frequency shelving boost starting at 1 to 8kHz, depending on the gain switch setting with lower gain corresponding to lower corner frequency and consequently more treble boost. The left position has the corner frequency lower by about 1.5 octaves vs. the right one. This filter also acts at the clean tube gain stage. Use the right trim pot to adjust the boost (see **14**). This function also also interacts with the gain switch: the lower the gain, the more "Air" boost is available, up to about 12dB. 6dB/octave.
Mid position is flat.

16 Clean tube gain control switch. 3 positions: Lo, Mid and High. When "High" is not enough, max the gain by pushing switch (**13**) to the right.

17 Microphone input impedance. The lower the impedance, the more of a load will the preamp input present to the microphone. Standard values will be 10kΩ for the middle position (HI), 900Ω for the left (LO) and 2400Ω for the right (MED). The "PAD" switch will also influence the resultant mic input impedance value. Changing input impedance is more likely to influence the tone of dynamic mics, to some degree ribbons, and to a lesser degree or not at all condensers. Lower impedance values will roll off some high end.

18 Clean output level. The sum of clean and OD blend does not affect tube gain or overload level, just determines how hard the output buffer, transformer, and ultimately the load is driven. The Xcalibur may drive your next unit (Compressor, EQ, Converter, Mixer) into clipping even though the red light doesn't indicate any distortion. In that case, reduce Xcalibur's output level (clean and OD proportionally). Its always better to start with lower output level and then increase it as much as your audio chain allows, as distortion can occur at more than one point. Attenuation switch (**21**) (or the master level control **21a** for JC) can also be used for this purpose.

19 (marked HP f1 for the JC version) High-pass filter cutoff frequency. 160Hz (pos. 1) or 80Hz (pos. 2), 6dB/octave. Affects clean signal only.

20 (marked ODf1 for Xcalibur JC) ODf/ODf1 is a pre-overdrive stage high pass filter that can be handy when too much bass or low mids hit the OD tube and create mud. You can then roll off the undesired bass or mids with this 6dB/octave mild slope filter. The positions are: full on (left); bass and low mids rolled off (middle) and only bass rolled off (right). Try the center position when you only want to add presence to the vocals, snare drum, even bass guitar. Experimentation is the best approach here.

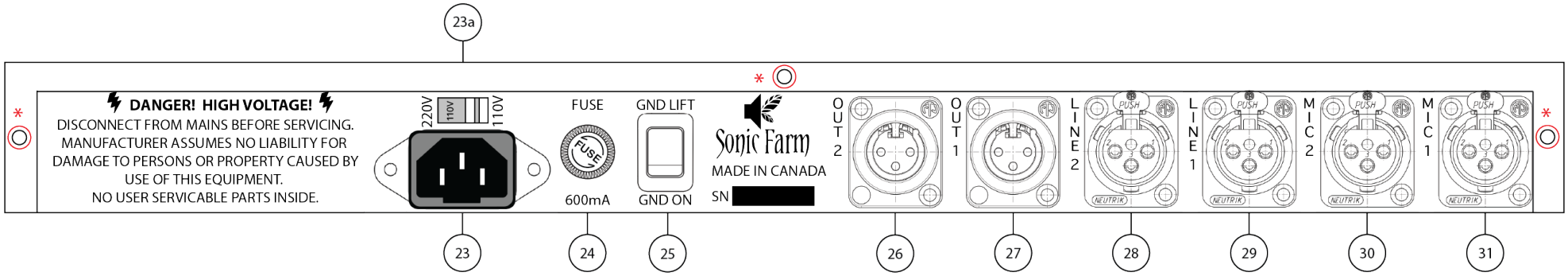
20a (JC version only) ODf2 is a post-drive, pre-blend low pass filter. 3 positions: 5.5kHz, 12dB/octave (left); 18kHz (middle) and 1kHz, 6dB/octave (right). The first position can be used to roll off buzzy distortion that can occur when processing some signals. The middle one is virtually a bypass. The right position is useful when blending in some saturation to make something sound bigger and fatter but without distortion being too apparent.

21 This switch (Xcalibur Standard only) attenuates the final output mix (clean plus OD). It will be useful when working with hot signals to avoid clipping the next processor in chain (like compressor, EQ or A/D converter). The settings are: -6dB (left), 0dB (middle) and -12dB (right).

21a (Xcalibur JC) Master output level pot, post blend.

22 Power switch.

XCALIBUR'S REAR PANEL CONTROLS:



23 AC power receptacle. Always operate the unit on the mains voltage it was set for (110-120VAC or 220-240VAC, 50-60Hz). Slide the operating voltage selector switch (**23a**) to the right for 110-120VAC (the left side of the red switch body will then read 110V), or to the left for 220-240VAC (the right side of the red switch body will show 220V). Wrong voltage setting can cause a lot of damage to the unit.

24 Mains fuse. Please replace it only with the one of value indicated. (600mA@115VAC, 300mA@220-240VAC)

25 Ground lift switch. It should normally be kept in "Gnd On" position. However, if you encounter hum when the unit is patched into your system, switch it over to "Gnd Lift". This will remove hum due to ground loops only; it will not help eliminate hum that comes in with the signal! Do not disconnect the ground wire on your 3-prong mains plug!

26 and **27** Outputs. Balanced connection only! (XLR pin connection: 1=GND, 2=HOT, 3=COLD).

28 and **29** Line level inputs. Balanced connection only! (XLR pin connection: 1=GND, 2=HOT, 3=COLD)

30 and **31** Microphone inputs. Balanced connection only! (XLR pin connection: 1=GND, 2=HOT, 3=COLD)

TECHNICAL SPECIFICATIONS:

2 channels
Variable input impedance (for mic input only)
Frequency response: 10Hz-50kHz +/- 3dB
Maximum clean gain: 68dB (mic), 48dB (inst. And line)
Harmonic distortion (with no OD blend): <2% before clipping level, quickly decreases if driven less.
Maximum output level: 32dBu
Minimum output load: 600Ω
Connectors: XLR's for mic, line and output, balanced only
Instrument input: 1/4" unbalanced, mono
Power consumption: 30W

WARRANTY INFORMATION

Sonic Farm gives a one-year warranty on parts and labor from the date of purchase.
Should you need to send in your unit for warranty covered service, please contact us for an RMA number first.
We will also tell you where to send the unit.
Any Modification of the unit voids the warranty.

CONTACT INFORMATION:

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