

# **CERIATONE**

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## **A M P L I F I C A T I O N**

**JCM51**

**"All Access"**

# User Manual

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### 1) About the JCM51 All Access

In the guitar playing world, the names Plexi and JCM800 are extremely well known. Countless records and hits were recorded on these amps by many artists.

Ceriatone has been offering these amps for a long time, and their popularity endure.

We were looking to “modernize” these models, not by changing the soul that made them great, but by adding useful features that make the amp more versatile, and more in line with current needs of guitar players.

Then, the most logical thing hit us – the circuits on these amps are very similar, and it is actually possible to have both in one amp, selectable with a footswitch!

What a realization! Duhh!

Thus the JCM51 All Access is born – a Plexi and JCM800 in one amp, that you can select with a footswitch. Not only that, the JCM51 also comes with modern features such as Post PI Master Volume, Buffered Loop, and several other voicing switches to make it versatile!

We always strive to make you buy 1 amp, but actually get 2, plus some! Isn't that value?

Rock on!

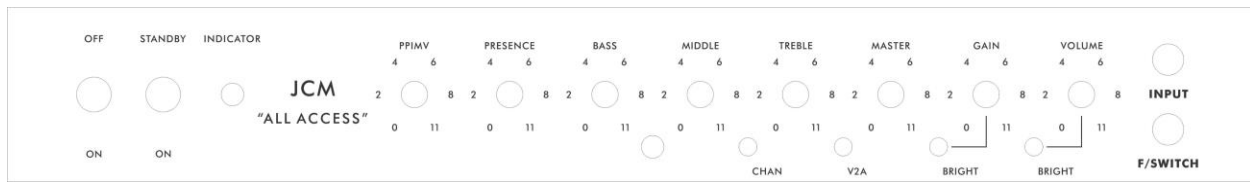
- Nik S Azam

## 2) QUICK SETUP (for instant gratification)



- 1) Plug your guitar using a 1/4" instrument cable into the upper I input on the right of the front panel
- 2) Plug a suitable power cable from the rear panel MAINS cable inlet to your wall power receptacle
- 3) Plug the amp into your speaker cabinet using 1/4" speaker cable
- 4) Set the IMPEDANCE SELECTOR to the match the impedance of your speaker cabinet
- 5) Set all rotary tone and gain controls on the front panel to 12:00 (clock face)
- 6) Set VOLUME controls at just above minimum, with PPIMV set to full
- 7) Set front panel POWER switch in the ON position (with adjacent STANDBY switch in the "STANDBY" mode) for 60 seconds to allow tube filaments to warm up.
- 8) Set front panel STANDBY switch to "ON" mode
- 9) **ROCK!!!!!!**

## 2) FRONT PANEL CONTROLS



From left to right:

- 1) **POWER** 2-way toggle switch
- 2) **STANDBY** 2-way toggle switch
- 3) **INDICATOR** Pilot Light
- 4) **POST PHASE INVERTER MASTER VOLUME (PPIMV)** control
- 5) **PRESENCE** control
- 6) **BASS** control
- 7) **CHAN LED** – channel indicator
- 8) **CHAN** 2-way toggle switch
- 9) **MID** control
- 10) **TREBLE** control
- 11) **V2A** 2-way toggle switch
- 12) **MASTER** control (JCM800)
- 13) **GAIN** control (JCM800)
- 14) **BRIGHT** 3-way toggle switch (JCM800)
- 15) **VOLUME** control (Plexi)
- 16) **BRIGHT** 3-way toggle switch (Plexi)
- 17) **INPUT** jack
- 18) **FOOTSWITCH** jack

**POWER** two-way toggle switch powers the amp on and off.

**STANDBY** applies high voltage to the vacuum tube anodes (and screen grids) during use of the amp. To ensure long tube life, first power the unit on with the amp on STANDBY for approximately 60 seconds.

**INDICATOR** will illuminate when the amp is powered by turning the front panel POWER toggle switch to the ON position. If INDICATOR does not turn on, check your power cable connections, and then the fuse on the rear of the unit.

**POST PHASE INVERTER MASTER VOLUME (PPIMV)** is a master volume control that acts after the phase inverter. This allows you to still have preamp and phase inverter distortion, but at lower volumes. When this control is maxed, the PPIMV is bypassed, thus it will be like a stock circuit.

**PRESENCE** adjusts the high frequency response of the power amplifier using negative feedback. Use this control to add sparkle and clarity to your tone.

**BASS** adjusts low frequencies

**CHAN LED** The LED turns red when you are in the JCM800 channel

**CHAN** This switch manually switches between Plexi and JCM800 channels, without use of the footswitch

**MIDDLE** adjusts the mid frequency response

**TREBLE** adjusts the high frequency response

**V2A** is a 2 way switch which selects whether the V2A (cathode follower stage) tube has a bypass capacitor (0.68uF), or not.

JCM800s do not have this bypass capacitor, while for Plexi, certain years do have it, while others do not.

With V2A bypass capacitor selected (Left), the amp becomes gainier with more mids emphasis.

**MASTER** This is the preamp master volume in the JCM800 circuit. It sets the output level of the preamp, going into the Phase Inverter stage.

**GAIN** This is the gain/volume control for the JCM800 circuit.

**BRIGHT** is the Bright Switch for the JCM800 channel's Gain control. It is 3 way - Left is 4700pF, while Right is 1000pF (stock JCM800 value), while Middle is without bright capacitor.

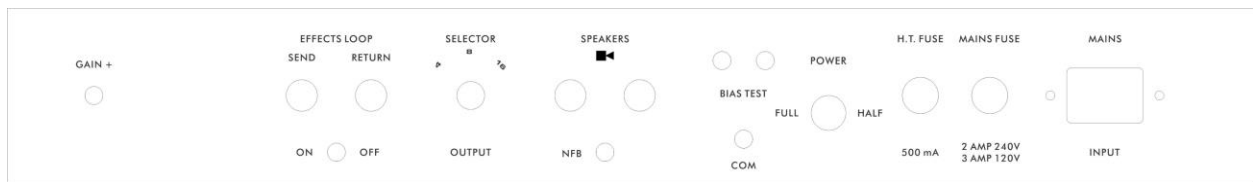
**VOLUME** is for volume/gain of the Plexi channel.

**BRIGHT** is the Bright Switch for the Plexi channel's Volume control. It is 3 way - Left is 1000pF, while Right is 100pF (while Middle is without bright capacitor. Plexi circuits have various values of bright capacitors, do adjust to taste!

**INPUT Jack** Plug your guitar in here.

**FOOTSWITCH Jack** Plug the footswitch here to select Channels

#### 4) REAR PANEL CONTROLS



From left to right:

- 1) **Gain+** 2 way toggle switch
- 2) **SEND** 1/4" instrument jack
- 3) **LOOP ON OFF** switch
- 4) **RETURN** 1/4" instrument jack
- 5) **IMPEDANCE SELECTOR** three-way rotary selector
- 6) **SPEAKERS** 1/4" speaker jacks (x2)
- 7) **NEGATIVE FEEDBACK (NFB)**
- 8) **BIAS TEST** probe jacks (x2)
- 9) **COM** probe jack
- 10) **FULL / HALF** 2-way toggle switch
- 11) **HT FUSE**
- 12) **MAINS FUSE**
- 13) **MAINS** IEC cable inlet

**Gain+** is for the JCM800 channel. It's 2 way, and when turned On (Up), it provides more gain than stock JCM800 circuit.

**SEND** is the Send jack of the effects loop, which is a SOLID STATE BUFFERED type, in this amp. A ¼" instrument cable is used, to the Input of your effects.

**LOOP ON OFF** switch is to turn the Buffered Loop on or off.

**RETURN** is the RETURN jack, accepting the Output from your effects, using ¼" instrument cable.

**IMPEDANCE SELECTOR** three-way rotary selector. Set to the position that matches the impedance of your speaker cabinet.

***NOTE** – if you are using two speaker cabinets in parallel (ex – two 16 Ohm cabinets), set the impedance selector to half that of a single cabinet (in this case, 8 Ohms).*

**SPEAKERS** ¼" speaker cable jacks. Use a ¼" speaker cable to connect your speaker cabinet to the amplifier using these jacks. If you use one speaker cabinet, either jack is acceptable.

***NOTE** – never turn your amplifier to OPERATE mode ("1" / DOWN position on STANDBY) without connecting the amplifier to a speaker cabinet or suitable dummy load! Failing to do so may damage your amplifier!*

**NEGATIVE FEEBACK (NFB)** is a 3 way switch to select different NFB resistor values: Middle (100K) will be least NFB, so your amp will sound gainiest/loudest at this setting. Left would be most NFB, while Right would be an in between value. JCM800s usually have 100K NFB resistor, while Plexis can vary, from 27K to 100K.

**FULL / HALF** switches the power output of the power amp. HALF mode configures the power tubes to run in triode operation, and this negates any need to reconfigure the IMPEDANCE SELECTOR.

Please turn the amplifier to STANDBY before toggling this switch

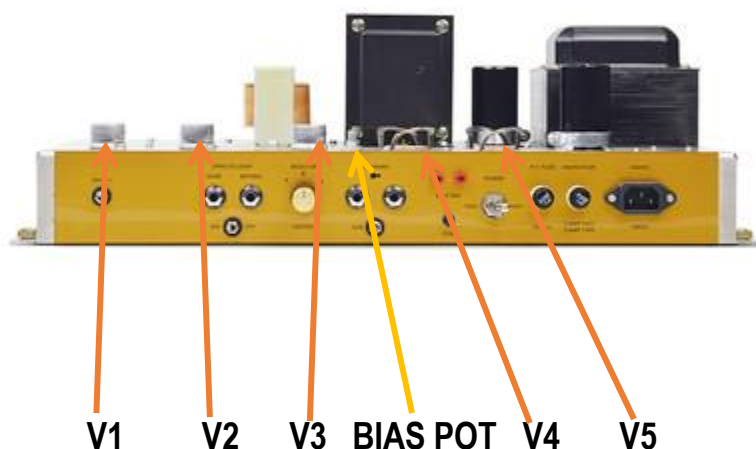
**BIAS TEST** and **COM** multimeter probe jacks – use this for external bias current measurements (see Section 5)

**HT FUSE** 0.5A SLO BLO fuse – used to protect your amplifier from voltage spikes or excessive current draw. Replace only when necessary.

**MAINS FUSE** SLO BLO fuse – used to protect your amplifier from voltage spikes or excessive current draw. Replace only when necessary. 3A is used for amplifiers used with a 120VAC country supply, and 2A is used with 240VAC.

**MAINS** IEC cable inlet – plug a suitable IEC power cable into this inlet to power your amplifier

## 5) TUBE COMPLEMENT AND BIAS ADJUSTMENT



From left to right:

V1: 12AX7/ECC83 (Input stage Bright and Normal channels)

V2: 12AX7/ECC83 (stage 2 and tonestack cathode follower)

V3L: 12AX7/ECC83 (phase inverter for power amplifier)

V4-V5: EL34 (power tubes)

To measure your power tube bias, carefully follow these steps ***with the amplifier in OPERATE, MASTER at minimum, and connected to a speaker load*** (not doing so may damage your amplifier!):



- 1) Turn on a digital multimeter (DMM), and set it to read millivolts (mV) in the 100mV range (this will vary from DMM to DMM)
- 2) Plug a black probe into the color-coded jack on your DMM, and do the same for a red probe
- 3) Insert the black probe tip into the COM probe jack. This is GROUND in the amplifier.
- 4) Insert the red probe tip into the V4 probe jack on the left. This measures bias for V4. Write down your measurement
- 5) Repeat step 4 for V5, Write down your measurement for each

To calculate bias, there are two pieces of information you need to know: your amplifier's power tube plate voltage, and the published value for maximum plate dissipation for the power tubes used in your amplifier. To save you some time and energy, here are those two values:

- Approximate V4 and V5 plate voltage for JCM51 All Access amp  
= 430 VDC with Solid State Rectifier chosen
- Maximum plate dissipation for EL34s  
= 25W

...and now some math. The formula for calculating bias is as follows:

$$\frac{\text{maximum plate dissipation}}{\text{amplifier plate voltage}} \times \text{percent of maximum dissipation} \times 1000 = \text{bias current (mA)}$$

In most cases, amplifiers are biased between 50% and 75% dissipation. We bias the the amp to approximately 38 mV on a DMM, which is about 65% dissipation.

An example is as follows:

$$\frac{25W}{400VDC} \times 65\% \times 1000 = \text{about } 38 \text{ mA}$$

You might wonder why your DMM is set to millivolts and not milliamps – simply, we have a 1 Ohm resistor placed between your probe jacks and ground to convert a current reading to a voltage reading. That way, a bias current of 38mA measures as 38mV on your DMM.

**NOTE** – Only set your DMM to mV for measuring bias on the amplifier. Not doing so may damage your DMM.

Now that you know how to calculate bias, all you need to do is:

- 1) Follow steps 1-5 on page 9
- 2) Calculate what bias voltage reading you will set your tubes to (in this case, we will use 38mV)
- 3) Place your red probe in the LEFT **BIAS** jack, and the black probe in the **COM** jack.
- 4) Turn the bias potentiometer shaft SLOWLY until your DMM reads 38mV
- 5) Wait 1 minute
- 6) Recheck all power tube bias measurements
- 7) Readjust bias potentiometer shaft if necessary

#### *A FEW COMMENTS ON BIASING*

Due to the nature of vacuum tube amplification, there are inherent risks when biasing your amplifier. Extremely high-voltages are present, and vacuum tubes reach high temperatures during use.

The risk of electrical shock and/or skin burns should ALWAYS be kept in mind. Therefore, bias at your own risk, and only while paying attention and taking all precautionary measures.

Biasing should only be done on a clean workbench with no distractions. Do not wear loose clothing or any jewelry. Take your time, and think carefully before each step.

Again, bias at your own risk. Ceriatone Amplification is not responsible for any damages or injuries resulting from user biasing.

## 6) FREQUENTLY ASKED QUESTIONS

*How do I hook up this thing?*

- See Section 2, beginning on page 3.

*Is the FX loop series or parallel? Active or passive?*

- The FX loop is series, and is a buffered solid state type

*Can I substitute different tube types?*

- Although you can try 12AT7s, 12AU7s, 5751s without any harm, the design is optimized for 12AX7s, and are therefore the only recommended tube in the preamp positions.
- Please use only GZ34/5AR4 for the tube rectifier
- Please use only EL34s for power tubes. While other tubes might work, knowledge, and mods might need be required. Please consult a qualified technician for any mods.

*Do I need to use a matched and balanced phase inverter?*

- It is not necessary. Feel free to experiment with different tubes (of the same type) in your amp, though!

*I've read that the components used in this type of amplifier are really important. What is inside my amplifier?*

- We use a combination of parts custom-made for us to our specifications (power transformer, output transformer, choke, high-temperature / low-ESR electrolytic capacitors) and those used in our British series (1/2W carbon composition resistors, 1W carbon film resistors, TAD Mustard capacitors, high-voltage silver mica capacitors, Belton tube sockets, and Alpha potentiometers, Cliff jacks). Finally, we occasionally use NOS components from our vast surplus parts collection in locations they work well and complement the voicing or enhance the performance of the amplifier.

## 7) How to achieve the Sounds in the JCM51 All Access?

### For Plexi Sounds:

The Plexi channel must be selected. The Channel LED will turn off, when the Plexi channel is selected.

While in Plexi channel, the Gain and Master Volume controls will have no effect. Neither will Gain+ switch at the back.

- a) **VOLUME** – this will control the Gain and Volume of your Plexi channel
- b) **BRIGHT** – this will be the bright switch. 4700pF (Left) will be very bright and gainy, especially at low volumes.  
100pF (Right) will be more manageable, especially for cleand.  
Or set to the middle for no bright cap.
- c) **V2A** – Plexi amps differ over the years, with some having the bypass capacitor on the cathode resistor of V2A tube, while some do not.  
With V2A on, the sound will be gainier, with more higher mids.  
Do adjust to taste, depending on your needs.
- d) **NFB** – Plexi amps usually have lower valued NFB resistor, 47K usually for Lead circuits. This can be achieved by selecting Right on the NFB switch  
You can have higher NFB resistor by selecting Middle (100K) and Left (65K) for gainier/louder/more raw sounding amp
- e) **PPIMV** – Set PPIMV to full, and it'd be bypassed, and you will have stock circuit. It is useful for you to have preamp and phase inverter distortion, but not pushing the power tubes, resulting in distortion/crunch at lower volumes.

### For JCM800 Sounds:

The JCM800 channel must be selected. The Channel LED will turn On, when the JCM800 channel is selected.

While in JCM800 channel, the Volume control of the Plexi channel will have no effect.

- a) **GAIN** – this will control the Volume and Gain of the JCM800 channel

- b) **BRIGHT** – this will be the bright switch. 1000pF (Right) will be stock value of most JCM800 amps. 4700pF (Left) will be bright at lower settings of GAIN, but should help in getting more distortion/crunch sounds.  
Middle is without any Bright capacitor.
- c) **MASTER** – this will set the output level/volume of the JCM800 channel, going into the Phase Inverter.
- d) **V2A** – JCM800 usually does not have a bypass capacitor on the cathode resistor of V2A tube. Set to Right for stock.  
With V2A on (Left), the sound will be gainier, with more higher mids.  
Do adjust to taste, depending on your needs.
- e) **GAIN+** - The stock JCM800 value is when it's turned off (Bottom). When turned Up, it will provide an increase in gain.
- f) **NFB** – JCM800 amps usually have 100K as the NFB resistor. Set the switch to Middle.  
Left and Right positions would have lower NFB resistors, thus less gain/volume to the sounds.
- g) **PPIMV** – Set PPIMV to full, and it'd be bypassed, and you will have stock circuit. It is useful for you to have preamp and phase inverter distortion, but not pushing the power tubes, resulting in distortion/crunch at lower volumes.

You can also mix and match these settings, to create your own sounds! Enjoy!

## 8) Settings templates

Please resize, and print the templates below, to make your settings templates

