

Ceriatone

Joyful Music!

**100W all-tube
guitar amplifier**

User's Manual

Thank you for the purchase of your Ceriatone JM50/JM100 Joyful Music! guitar amplifier!

Here, we hope to explain how best to use your new amp.

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1) About the Joyful Music! 100W and 50W amplifiers

The release of our Overtone series of amplifiers has been overwhelmingly popular, and the support of customers such as you has instigated the release of currently over ten different versions within the series. In addition, we have released the Kleinulator and C-lator effects loop interfaces specifically for use with our Overtone amplifiers. We have been pleased to provide many players access to our unique take on these legendary amplifiers.

A few years ago, we finally released our flagship in the OTS series – the SSS. Around the time of this amplifier release, we became swamped with requests to offer a version of a certain artist’s signature amplifier, which has many similarities in design to the SSS. However, the said amplifier was known for a rounder, more relaxed tone that compressed ever so sweetly. This compression and roundness made for a different playing experience than the SSS. Unfortunately, the signature amplifier was made in limited supply and was nearly unobtainable.

Years later, we finally were able to release our version of this sweet amplifier. Compared to the SSS, it is smoother, less loud, and has a bouncier, vintage sound and feel. The SSS is all about power, headroom, and responsiveness. While each has overlap, their strengths are truly different than one another.

In order to produce the most sonically faithful recreation possible, we continued to pour additional time, manpower, and money into many custom parts specifically for this amplifier. In our humble opinion, the result of our labors is truly sublime and an entirely unique circuit compared to our OTS series. Most of all, we hope the JM fills the gap you have been searching for and becomes an integral part of your tone equation to exhilarate your playing and music.

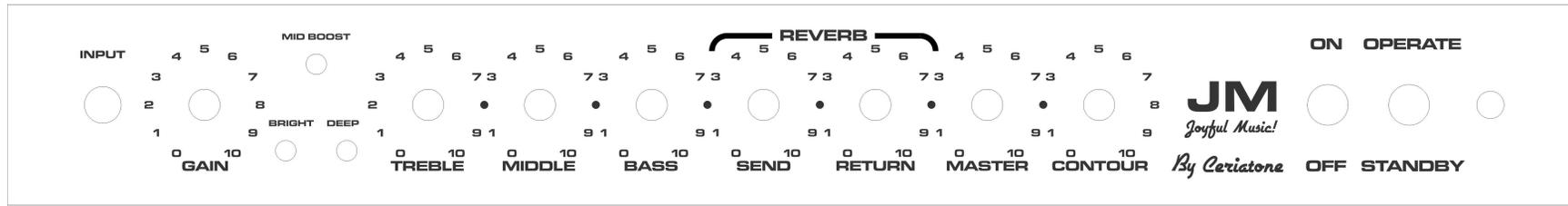
Rock on!

- Nik Azam

2) QUICK SETUP *(for instant gratification)*

- 1) Plug your guitar using a 1/4" instrument cable into the INPUT on the left of the front panel
- 2) Plug a suitable power cable from the JM's rear panel A.C. MAINS cable inlet to your wall power receptacle
- 3) Plug the JM into your speaker cabinet using 1/4" speaker cable
- 4) Set the IMPEDENCE selector to match the impedance of your speaker cabinet
- 5) Set all rotary controls on the front panel to 12:00 (clock face)
- 6) Turn MASTER control to about 9:00 (clock face)
- 7) Set front panel BRIGHT and MID BOOST switches in the middle position
- 8) Set front panel DEEP switch in the down position
- 9) Set front panel POWER switch in the ON position (with adjacent switch to STANDBY) for 30 seconds to allow tube filaments to warm up
- 10) Set front panel OPERATE / STANDBY switch to OPERATE
- 11) **ROCK!!!!!!**

3) FRONT PANEL CONTROLS



From left to right:

- 1) **INPUT** 1/4" instrument jack
- 2) **GAIN** control
- 3) **BRIGHT** three-way toggle switch
- 4) **MID BOOST** three-way toggle switch
- 5) **DEEP** two-way toggle switch
- 6) **TREBLE** control
- 7) **MIDDLE** control
- 8) **BASS** control
- 9) **SEND (REVERB)** control
- 10) **RETURN (REVERB)** control
- 11) **MASTER** control
- 12) **CONTOUR** control
- 13) **ON / OFF (POWER)** two-way switch
- 14) **OPERATE / STANDBY** two-way switch
- 15) **INDICATOR LED**

INPUT is a ¼” jack for instrument cables. Plug your guitar in here.

GAIN adjusts the signal strength coming out of the tonestack, and going into the second tube stage. Think of this as a traditional gain control in a primarily clean amplifier.

BRIGHT is a high-frequency boost that can be used to add sparkle to your tone in both clean and overdrive modes. This high frequency boost is more prominent as VOLUME is turned down. With the toggle switch in the UP position, BRIGHT is on and at a maximum level. In the middle position, BRIGHT is off. The bottom position is BRIGHT on and provides mid-level bright tone.

MID BOOST is a midrange-frequency boost. You can use this to add fatness to your tones, or even make single coil guitars sound thicker and less scooped. With the toggle switch in the UP position, MID BOOST is on and at a maximum level. In the middle position, MID BOOST is off. In the DOWN position, MID BOOST is on and provides a mid-level midrange boost.

DEEP is a bass-frequency boost. You can use this to add subharmonics and girth to your tones. Engaging this switch with single-coil guitars will produce an absolutely stunning piano-like response on the lower strings. With the toggle switch in the UP position, DEEP is on. In the DOWN position, DEEP is off.

TREBLE adjusts the high frequency response for both clean and overdrive modes. At near-maximum settings, you may also notice an increase in gain.

MIDRANGE adjusts the mid frequency response for both clean and overdrive modes.

BASS adjusts low frequencies in your amplifier for both clean and overdrive modes.

SEND (REVERB) controls the amount of signal fed into the unique three-tube reverb circuit in the Joyful Music! amplifier. The SEND control will impact the nature of the decay of the reverb, as well as the overall intensity of the reverb circuit. Generally, turning the SEND control clockwise will increase the time of the reverb trail, creating a longer, more “springy” reverb quality.

RETURN (REVERB) controls the amount of signal from the three-tube reverb circuit as blended back into the preamp circuit. The RETURN control will generally increase the prominence of the reverb signal compared to the dry signal. Turning the REVERB control clockwise will make the reverb sound louder compared to the dry signal, creating a more wet, effected sound.

MASTER sets the overall volume of your amplifier.

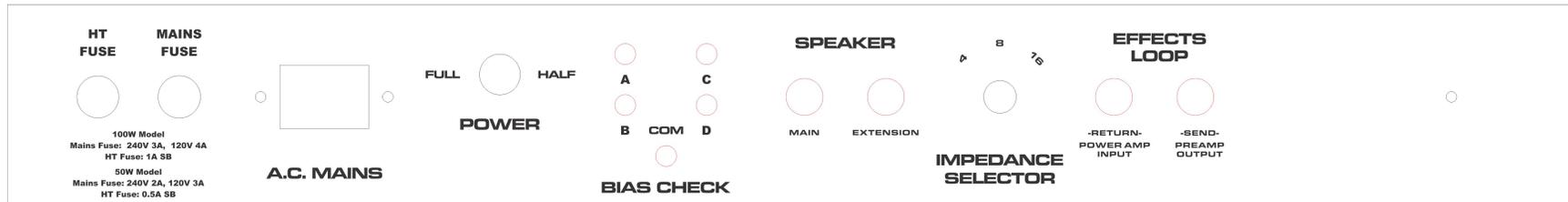
CONTOUR is an active high frequency control WITHOUT using negative feedback. This is a more effective control than a traditional presence control. At noon, the power amp is essentially flat. Counter clockwise reduces high frequencies, as well as increases bass response. Clockwise increases high frequencies. Use this control to add sparkle and clarity to your tone.

ON / OFF (POWER) two-way toggle switch powers the Joyful Music! on and off. With the toggle switch in the UP position, the JM is ON. In the DOWN position, the JM is OFF.

OPERATE / STANDBY applies high voltage to the vacuum tube anodes (and screen grids) during use of the JM. To ensure long tube life, first power the unit on with the toggle switch in STANDBY position for approximately 30 seconds. Then switch to OPERATE to use the JM. With the toggle switch in the UP position, the Joyful Music! is in OPERATE mode. In the DOWN position, the Joyful Music! is in STANDBY mode.

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

4) REAR PANEL CONTROLS



- 1) **HT** slow-blow fuse
- 2) **MAINS** slow-blow fuse
- 3) **A.C. MAINS** IEC cable inlet
- 4) **HALF POWER** two-way toggle switch
- 5) **BIAS CHECK** multimeter probe jacks
- 6) **SPEAKER OUTPUT** 1/4" speaker jacks
- 7) **IMPEDANCE** three-way rotary selector
- 8) **EFFECTS LOOP RETURN** 1/4" instrument jack
- 9) **EFFECTS LOOP SEND** 1/4" instrument jack

HT slow-blow fuse – used to protect your amplifier from voltage spikes or excessive current draw. Replace only when necessary. 100W model uses 1A, and the 50W uses 0.5A.

MAINS slow-blow fuse – used to protect your amplifier from voltage spikes or excessive current draw. Replace only when necessary. 100W model uses 4A with a 120VAC country supply, and 3A is used with 240VAC. 50W uses 3A with a 120VAC country supply, and 2A is used with 240VAC.

A.C. MAINS IEC cable inlet – plug a suitable IEC power cable into this inlet to power your amplifier

HALF POWER two-way toggle switch. Use this switch to reduce the output power of the amplifier from 100W to 50W. Doing so will slightly reduce volume, and change the feel and response of the amplifier slightly. Experiment for best results!

BIAS CHECK DMM probe jacks – see **Section 5 (page 9)** for a thorough explanation on their use and biasing

SPEAKER OUTPUT 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, use the jack labeled MAIN. If you want to run two cabinets in parallel, connect the second cabinet to the amplifier using the jack labeled EXTENSION.

***NOTE** – never turn your amplifier to OPERATE mode without connecting the amplifier to a speaker cabinet or suitable dummy load! Failing to do so may damage your amplifier!*

IMPEDANCE three-way rotary selector. Set this selector 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).*

EFFECTS LOOP RETURN ¼” instrument jack can be used to directly interface the power amp of the Joyful Music!, thereby bypassing the preamp and using the amplifier as a power amplifier. Conversely, this is usually used as the RETURN of the effects loop. Plug the output of your effects unit, or interface device (ex – C-lator, Klein-ulator) into this jack using ¼” instrument cable. The effects loop in the Joyful Music! amplifier is all passive.

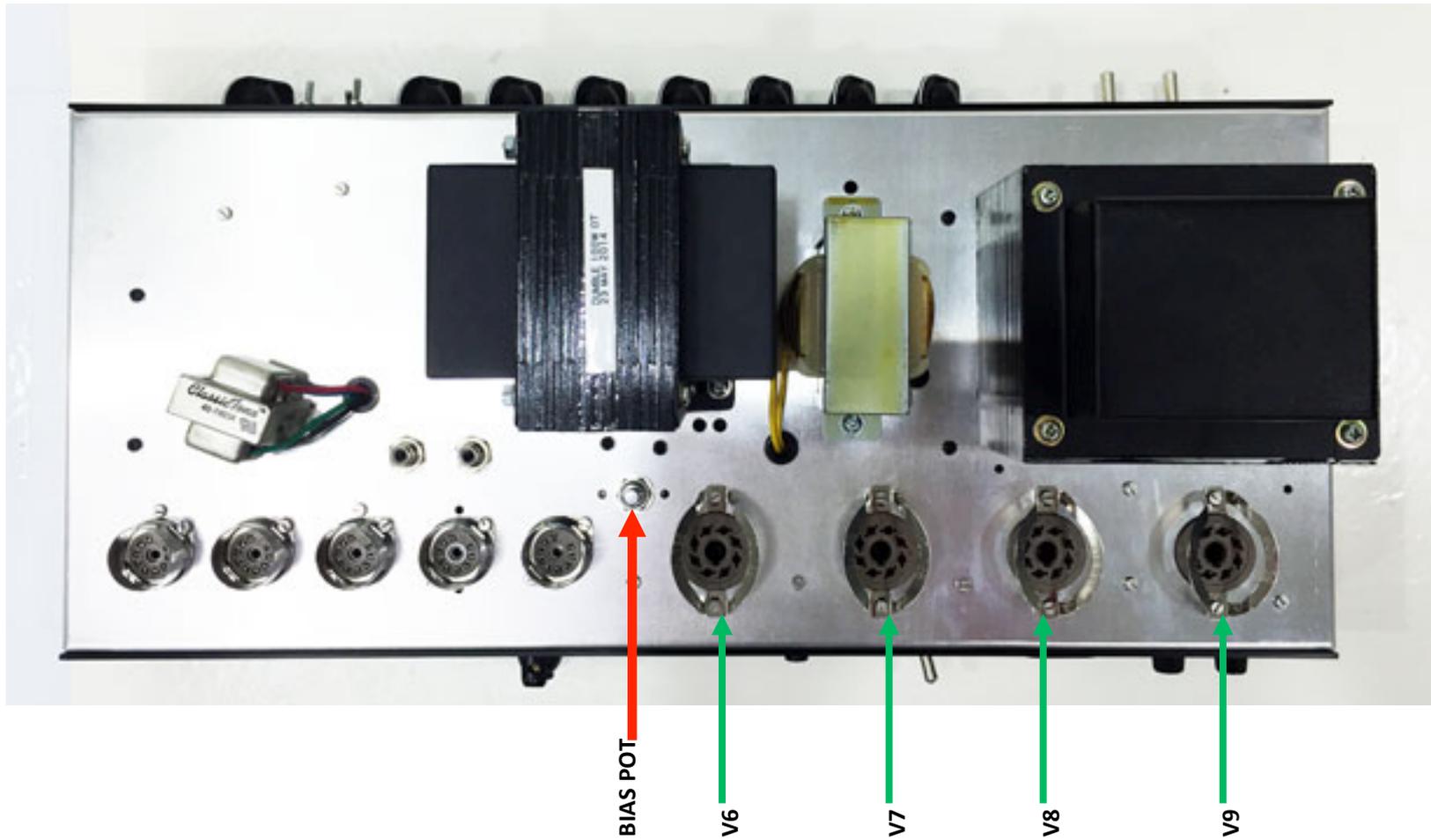
EFFECTS LOOP SEND ¼” instrument jack can be used to directly interface the preamp of the Joyful Music!, thereby bypassing the power amplifier and using the JM as a preamp. Conversely, this is usually used as the SEND of the effects loop. Plug the input of your effects unit, or interface device (ex – C-lator, Klein-ulator) into this jack using ¼” instrument cable. The effects loop in the JM amplifier is all-passive. If only using the preamp of the Joyful Music!, the amplifier still must be connected to a suitable speaker or passive load.

5) TUBE COMPLIMENT AND EXTERNAL BIAS JACKS AND ADJUSTMENT



From left to right:

- V9, V8, V7, V6 – 6L6GC power tube
- V5 – 12AX7 / ECC83 (phase inverter)
- V4 – 12AX7 / ECC83 (reverb / preamp mixer)
- V3 – 12AT7 / ECC81 (reverb driver)
- V2 – 12AX7 / ECC83 (reverb send / return)
- V1 – 12AX7 / ECC83 (preamp gain stages)



NOTE : V6 = BIAS CHECK "D", V7 = BIAS CHECK "C", V8 = BIAS CHECK "B", V9 = BIAS CHECK "A"

To measure your power tube bias, carefully follow these steps **with the amplifier in OPERATE 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 black probe jack labeled COM on the rear of the amplifier. This is GROUND.
- 4) Insert the red probe tip into the red probe jack "A". This measures bias for V9. Right down the value your DMM reads. You might expect a value between 35mV and 45mV.
- 5) Repeat for the next red probe "B" (V8) again the red probe jack "C" (V7), and finally the red probe jack "A" (V6).

Okay, now I've measured my bias. Now what?

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 plate voltage for Joyful Music! amplifiers = 450-460VDC
- Maximum plate dissipation for 6L6GCs = 30W

...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 Joyful Music! at approximately 35mV-40mV reading on a DMM.

An example is as follows:

$$\frac{30W}{455VDC} \times 55\% \times 1000 = \textit{about 35 – 40mA}$$

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 35mA measures as 35mV on your DMM.

NOTE – *Only set your DMM to mV for measuring bias on the Joyful Music! amplifiers. 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 11
- 2) Calculate what bias voltage reading you will set your tubes to (in this case, we will use 35mV)
- 3) Insert your red probe in the probe jack of the power tube reading somewhere in the middle bias measurement of your power tubes (variation in bias measurements from tube to tube is to be expected, so selecting one measuring in the middle will approximate bias for all tubes)
- 4) Turn the bias potentiometer shaft SLOWLY until your DMM reads 35mV
- 5) Check the other tubes by plugging into the other red probe jacks and ensure they are within a reasonable range
- 6) Wait 1 minute
- 7) Recheck all power tube bias measurements
- 8) 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.

Even though the bias test points and adjustment are external to reduce risk of electrical shock, all precautions must be taken while biasing.

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.

When I plug effects into the effects loop, my tone noticeably changes. Sometimes the effects don't sound quite right. What's the deal?

- Generally, what you're hearing is a significant mismatching of impedances, and/or an overloading of the effect unit itself. Most rack-mount units have different input impedance than pedals, and thus can *sometimes* function fine without a buffer before them. In addition, *some* of these rack-mounted effects can pad the volume they receive, preventing it from overloading. Pedals do not have proper input impedance or padding ability, and therefore do not play nicely.
- For best results, an effects loop interface like the C-lator or Klein-ulator should be used with the Joyful Music! amplifier. These units prevent impedance mismatching, as well as provide the ability to pad down the volume sent to the effects units hence preventing any overloading.

Can I substitute different tube types for the 12AX7/ECC83s or 6L6GCs?

- 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. Usage of other power tubes (ex – modern 6V6s like Electro-Harmonix, JJ) may be possible, but please first consult Ceriatone Amplification or your local competent amplifier technician. **ONLY USE A 12AT7 / ECC81 IN V3!!!!**

What settings do you recommend?

- Try setting all controls at 12:00, and adjust MASTER to a suitable volume.

Do I need to use matched power tubes?

- Although not necessary, matched power tube sets are recommended for best results.

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 JM, though!

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

- We use a combination of parts custom-made for us to our specifications (power transformer, output transformer, choke, high-temperature / low-ESR electrolytic capacitors, inductors, custom Alpha potentiometers) and those used in the original amplifiers (Vishay/Dale RN65 precision metal film resistors, 1W carbon film resistors, SBE 6PS polyester film capacitors, high-quality ceramic disc capacitors, Belton tube sockets, Alpha potentiometers). We prefer high-quality enclosed Cliff (built in the UK) jacks to the open-style Switchcraft jacks used in the originals and many clones. 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.

I like to use rack-mounted multieffects units. What is the output level straight from the EFFECTS LOOP SEND jack, -10dB or +4dB?

- While not exact, -10dB is a better approximation than +4dB. The actual output level will depend on your settings, particularly the volume controls. +4dB is usually reserved for recording/P.A. equipment with balanced connections.