

# LS 100 Tube Preamplifier

## Owner's Manual



Manufactured by ModWright Instruments, Inc.  
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USA  
[www.modwright.com](http://www.modwright.com)

## **CAUTIONS:**

**When removing the lid screws ONLY remove the screws on the side panels and the screws on the top panel at the front and rear edge. The screws in the middle of the top cover are attached to nuts below and do not secure the lid in place. If these are removed, lock nuts could fall inside the pre-amp and cause damage to the unit.**

*Any source input connected to HT/BP inputs, will feed RCA Main outputs with NO VOLUME ATTENUATION, when HT/BP function is selected. It is important to ONLY use this input for signal from the front channels of a Home Theater Pre/Processor or other source WITH built in volume control. The preamp must be powered on in order for HT/BP to operate. IF A SOURCE WITH NO VOLUME CONTROL IS CONNECTED TO HT/BP INPUTS AND HT/BP BUTTON IS ENGAGED, FRONT CHANNEL AMPS WILL RECEIVE FULL OUTPUT SIGNAL LEVEL FROM HT/BP INPUT SOURCE WITH NO ATTENUATION. THIS COULD LEAD TO SYSTEM DAMAGE.*

*Do not operate or power up unit without tubes installed in tube sockets. Failure to do so will result in damage to power supply.*

**WARNING: DO NOT POWER UNIT ON UNTIL LID IS ENTIRELY FASTENED. VERY HIGH VOLTAGES ARE PRESENT INSIDE UNIT DURING OPERATION. IT IS CRITICAL THAT PREAMP ENCLOSURE NOT BE OPEN WHEN UNIT IS POWERED ON. FAILURE TO DO SO MAY RESULT IN SERIOUS INJURY OR DEATH.**

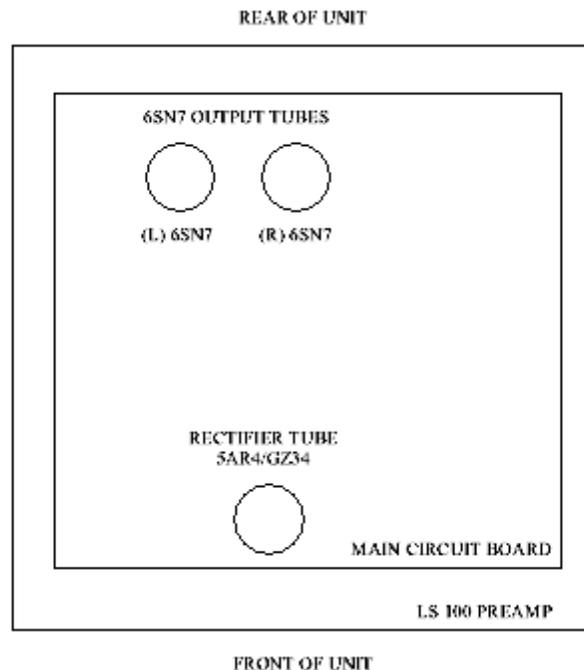
**WHEN CHANGING TUBES, POWER UNIT OFF AND DISCONNECT FROM ALL POWER SOURCES. FAILURE TO DO SO MAY RESULT IN SERIOUS INJURY OR DEATH.**

## Setup:

It is always recommended to remove all tubes before shipping the unit. Be sure that the LS 100 is NOT connected to AC power and that power plug is disconnected from unit and wall outlet. Use supplied 5/64" hex driver to remove lid screws on sides and along front and rear edges of top panel and install (2) 6SN7 signal tubes and (1) 5AR4/GZ34 rectifier tube in ceramic octal sockets. Signal tubes and rectifier may only be installed one way as they are spline-keyed. Rotate tube until pins and spline align with socket and gently but firmly press the tubes down into socket until seated.

After tubes are installed, replace lid and secure with screws. Only after this, should the power cord be connected.

**DO NOT POWER UNIT ON UNTIL LID IS ENTIRELY FASTENED. VERY HIGH VOLTAGES ARE PRESENT INSIDE UNIT DURING OPERATION AND IT IS CRITICAL THAT THE PREAMP ENCLOSURE NOT BE OPEN WHEN UNIT IS POWERED ON. FAILURE TO DO SO MAY RESULT IN SERIOUS INJURY OR DEATH.**



## Power Up:

When first powered on, blue LEDs above both power and mute switches will be lit. The unit will remain in mute for approximately 45-seconds, allowing for tubes to stabilize and gently reach operating voltage. The volume control will automatically return to the '0' position at this time. When unit is operational, mute LED will no longer be lit.

## **Introduction:**

Thank you for purchasing a ModWright Instruments product. This unit is designed to offer high performance and exceptional reliability.

The LS 100 preamplifier offers high bandwidth, low distortion, and exceptional musicality. We have designed this preamp to allow the reproduction of recordings that is accurate, transparent and musical.

**The LS 100 also includes a number of features not found on simpler linestage-only designs:**

- Remote power.
- Balance control (may be bypassed via remote or front panel controls).
- Remote volume control.
- Remote mute.
- Remote input select.
- Remote 12V triggers (2).
- Monitor input select.
- Class A discrete headphone amp - fed via tube output.
- Opt. (Upgrade Option) input for future addition of internal Phono Stage or DAC.

### **Notes:**

*Rectangular plate is installed over the Opt. input on the back panel of the unit. This is removed when installing optional Phono Stage or DAC upgrade. There is room for two RCA connectors for phono or two connectors for digital. Phono upgrade is user installable. DAC upgrade is a factory installed option only. The optional Phono Stage upgrade board fits onto a pair of 20-pin headers on the main tube board and signal input connectors are secured to back panel of preamp enclosure. Phono upgrade option is entirely user/dealer installable. Optional DAC upgrade MUST be done at ModWright Factory by ModWright Technicians.*

*Design is phase inverting and this may be addressed by reversing polarity at both speaker cables, either at amp(s) or speakers.*

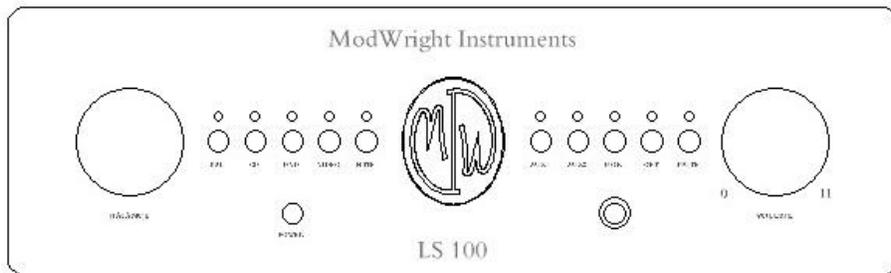
## Operation:

Controls are labeled on front of preamp from left to right: Balance, CD, DVD, VIDEO, HT/TP (Home Theater Bypass), Aux. 1, Aux. 2, Mon. (monitor input select), Opt. and Mute.

Left rotary knob is balance control (when balance function selected).

Right rotary knob is volume control.

Power button and headphone jack are located on opposite ends of the faceplate.



LS 100 has five sets of standard inputs, located on the back panel:

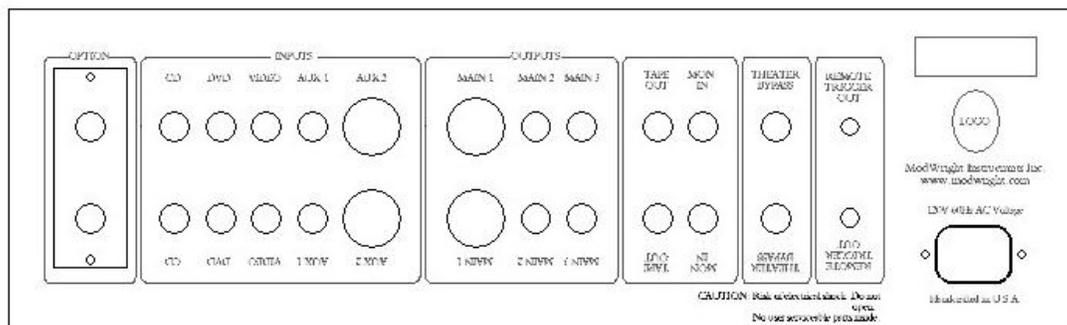
Opt. (Optional Upgrade input), CD, DVD, VIDEO, AUX. 1 and AUX. 2. AUX. 2 features XLR inputs, wired single-ended.

Three main outs include Main 1 (XLR; wired single-ended), Main 2 and Main 3 (RCA).

Monitor input may be selected via remote or front panel.

Tape Out will output whichever input is selected, with no gain or attenuation.

HT/BP (Home Theater Input) is only for preamp processor or other input with integral volume control. When activated, HT/BP input bypasses all active circuitry and volume control, directly connecting to main outputs.



HT/BP input is meant for integrating 2CH into a Multi-Channel or Home Theater system. When used in this mode, home theater preamp or processor is connected to HT/BP inputs and signal is output straight to 2CH main stereo outs. This allows direct connection to front L/R channel amp(s) with no sonic impact from LS 100 preamp.

## **Input Selection:**

Inputs may be selected via front panel or remote control.

Depressing Input button on remote control toggles through inputs in order.

Opt. (optional upgrade) input is also selected this same way, and if upgrade is not installed, there will simply be no signal when Opt. input is selected.

At power up, balance control is out of circuit, allowing for the cleanest signal path. Balance control may be activated via front panel or remote control. Once activated, left knob on front panel allows for signal balance adjustment from L to R.

Home Theater Bypass (HT/BP) input can ONLY be activated via front panel controls.

This product is fitted with an IEC input, for use with detachable power cords. Unless otherwise specified, unit is designed for use with 120V-60Hz AC power. Main fuse is located inside unit, accessible by removing top cover

**(ONLY DO SO WHEN UNIT IS POWERED OFF AND DISCONNECTED FROM ALL SOURCES OF POWER).**

Only replace fuse with 1.5A SLO-BLO type, 5x20mm, 240v.

## **Ground:**

You should **ALWAYS** use a grounded AC cord with this product. The chassis is always connected to earth ground if unit is fitted with proper grounded AC power cord.

## **Technical Specifications:**

- Tube Complement: (2) 6SN7 signal tubes, (1) 5AR4/GZ34 rectifier tube.
- Gain: ~12dB.
- Input Impedance: 38Kohm.
- Output Impedance: 300ohm.
- Frequency Response: 20Hz – 100Khz (-1dB)
- Weight: 29 lbs. (34 lb. packed)
- Dimensions: 17”W x 17”D x 5-1/2”H.

## **Basic Specifications:**

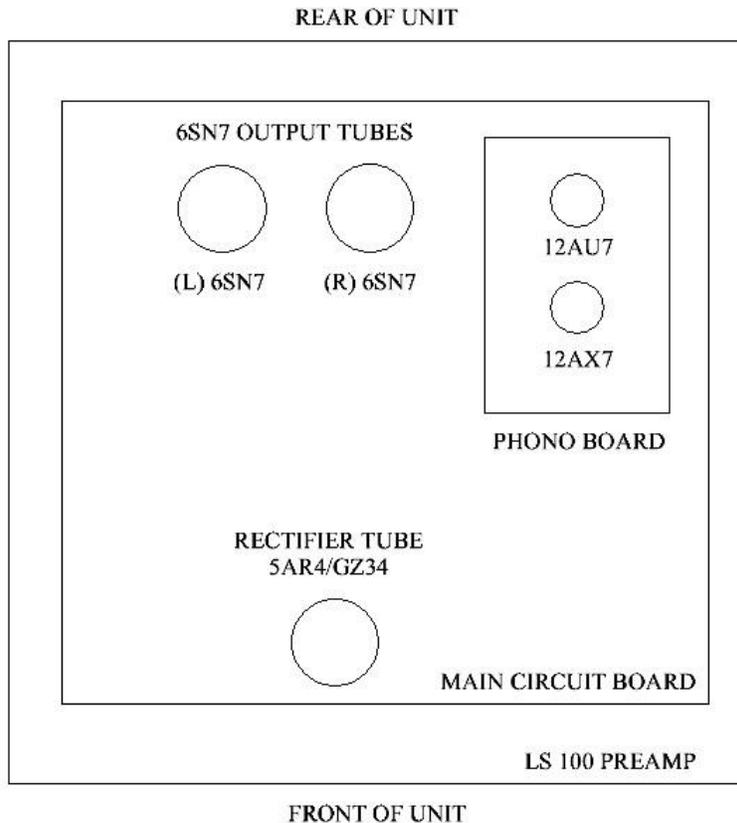
- (1) pair XLR inputs, wired single-ended.
- (4) pair RCA Inputs, wired single-ended.
- (2) sets RCA Main Outs, (1) set XLR Main Outs, wired single-ended.
- (1) pair RCA Tape Outs.
- (1) pair RCA Home Theater Bypass (HT/BP) Inputs.
- (1) pair RCA Monitor Inputs.

## **Vacuum Tubes:**

- Two 6SN7 driver tubes – may substitute ANY 6SN7/CV181 compatible tube.
- One 5AR4/GZ34 rectifier – may also substitute 5U4GB and 5V4GB.

## Optional Phono Upgrade:

If the phono board is already installed in your LS 100 when you receive it, then you only need install the tubes. Per diagram below, install 12AU7/ECC82 and 12AX7/ECC83 (**see note below about low gain setting, using two 12AU7 tubes**).



Turntable ground lead should be connected to brass grounding nut on back of LS 100. Phono input leads from turntable connect to RCA inputs labeled 'Opt.' on rear panel.

Cartridge loading is achieved via internal dip-switches. Factory setting is 100 ohm, zero capacitance.

Two 6-row dip switch banks are located on the board. Loading is as follows:

- Dip Switch 1 up = 100 ohm; Dip Switch 2 up = 100 ohm.
- Dip Switch 1 & 2 up = 50 ohm.
- Dip Switch 3 up = 1K; Dip Switch 4 up = 1K.
- Dip Switch 3 & 4 up = 500 ohm.
- Dip Switch 5 up = 47K; Dip Switch 6 up = 100pf.

Total gain of phono and LS stages combined equals 70dB, adjustable via preamp volume control.

**Note: Installing a second 12AU7 in place of the 12AX7 will reduce gain by 15dB, making it**

**more suitable for higher gain cartridges. If you find that your cartridge has too much gain and is overloading the phono stage, then it is recommended to power down the unit, remove power cord and replace the 12AX7 tube with a 12AU7.**

## **Upgrade Installation:**

If you are installing the phono upgrade in an existing unit, first remove the two screws and nuts that hold the OPT. plate to the back of the enclosure. Install the brass ground screw in the top hole, by inserting the screw from the inside of the chassis, out. There should be a small nut tight to the head of the screw. The other small nut will be threaded to the outside end of the screw, on the external portion of the chassis. This secures the screw to the chassis. Then the 'Thumb Nut' or grounding lug, is threaded onto the brass screw. You may put one of the 6-32" screws and nuts back into the remaining hole in the chassis and tighten, to fill the other hole that was used to secure the OPT. plate in place.

Carefully align the phono board with the two 20-pin male headers on the tube board. Once all pins are properly aligned, firmly but gently push down until phono board is firmly seated on headers.

You will also need to secure the provided 4-40 size screw, in a hole in the phono PCB, threading into a standoff on the main tube board. Tighten with provided 1/16" allen tool.

Lastly, install the Left (Black washers) and Right (Red Washers) RCA's in the back panel of the unit. Washers should isolate RCA body from metal enclosure.

At this point, please refer to previous page for location of tubes and tube loading options.

Thank you and enjoy the ModWright Phono upgrade for the LS 100.

## **Warranty:**

ModWright agrees to warranty product for a period of 5 years from the date of purchase from a factory authorized ModWright Instruments Dealer.

Warranty covers parts and labor for repairs due to equipment failure not related to customer abuse and/or neglect. Customer is responsible for shipping costs to and from ModWright Instruments or authorized service center.

*Warranty is non-transferable to second party.*

## **Contact Information:**

If you have any questions about ModWright Instruments products or ModWright modifications or products, please do not hesitate to contact us via phone, e-mail or conventional mail.

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Thank you for purchasing a ModWright Instruments product.

Dan Wright,  
President, Owner  
ModWright Instruments, Inc.

