



**WYETECH
LABS**

Owner's Manual

Jade

Line stage preamplifier

(Serial number 073 and up)



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Introduction

Thank you for purchasing the Wyetech Labs Jade line stage preamplifier. You are in possession of one of the best sounding, most ruggedly constructed preamplifiers on the consumer market. This unit has been completely hand crafted using precision quality components.

Our goal was to duplicate the sound of the Opal in a one box configuration. We have come so close that the difference can only be heard by straining one's ear in comparative listening and them only with the highest all around matching components. To come so close while reducing the cost by one half represents a monumental achievement. All this was accomplished while maintaining our high standards of parts and construction.

We know of no other company that builds amplifiers that use fixed terminals on printed circuit boards. Since our single ended circuits are of the utmost simplicity we can have very wide wiring traces that compare in gauge to that used in point to point hand wiring. The modular construction and the ability to replace components without removing these boards. This means that our products to have a "built in repairability" as opposed to the "built in obsolescence" that you find in other products.

Several important steps were taken to ensure long term stability and reliable operation. Filtered DC on the filaments as well as self-biased DC coupled operation in all amplifier stages. Further refinement led to a simpler but effective power supply that mimics the Opal in its implementation. It uses a double π (pi) LC filter for the high voltage that incorporates two large 15 Henry chokes. A combination of polypropylene and electrolytic capacitors, together with shunt passive regulation, eliminates all ripples while stabilizing the DC 200 Volt supply. The low operating voltage and power dissipation of the NOS 6SN7s will ensure a life expectancy of up to 10,000 hours.

Installation

Unpacking the preamplifier

- Remove owner's manual.
- Remove top foam (10"x14½"x2")
- Remove front & rear foam strips (21"x3½"x2")
- Remove side foam strips (9"x7"x2"
- Remove flannel cloth covering preamp, and keep for cleaning purposes.
- Remove preamp from box by holding on to the underside of each end.

Save all materials and box for future use. (Mandatory for warranty shipping)

When repackaging make sure bottom foam strip (10"x14½"x2") is centered in the box so the rubber legs of preamp fit around it. This allows the bottom of preamp to lay flat on the foam surface.

Removing or installing tubes

6SN7's in preamp

Remove (8) screws & washers (use Phillips #2 screwdriver) holding top cover to access tubes. To install tube align guide pin with the tube socket until it falls into the socket then press down until seated.

Note: All tubes are factory installed. You should wait 30 minutes after removing the AC power cord from the unit before attempting to remove cover to access tubes. This is to insure that the large reservoir capacitors in the 200 Volt supply have completely discharged.

Input power selector switch

The power supply has an AC input selector switch that can be set for 115/230 Volt 50/60 Hz operation. It will normally be set for 115 Volt 60 Hz at the factory. So if you are running on 230 Volt make sure you select the 230 V. Damage caused by incorrect setting will VOID THE WARRANTY. The switch is labeled in RED and will display the voltage it is set for in the window. To change setting use small flat screwdriver to operate slide.

Installing the AC power cable

Place Power Switch (located in the rear of unit) in the "OFF" position. Next plug power cord into the preamp before inserting the AC plug in to the wall socket.

Fuse Rating

Replace fuse with 1 amp AGC for 115 V operation or 0.5 Amp AGC for 230 Volt operation. Spare fuses are included with the unit.

Operation of the controls

Muting switch

The muting switch is used to completely mute the sound which can be used for many purposes. When deactivated it is completely removed from the circuit. The muting is done using a 2-pole relay which shorts both channel outputs to ground.

Indicator Lamps

There is a large wide angle red and green LED status indicator. The red LED indicates muting is in effect either because the muting switch is engaged or the 45 seconds power up cycle is not yet complete. The green LED shows ready status and is on from power up unless the muting switch is engaged.

WARNING - Do not remove cover with AC line cord attached and do not operate with cover removed. Remember, **HIGH VOLTAGE IS DANGEROUS!**

Power-up

To power up place power switch in up position and wait for automatic sequence to complete. The green and red LED's should immediately turn on. After 45 seconds the red LED (mute) will

turn off allowing the music to play. Remember if you left the muting switch in the on position the green LED will not come on even though the power up sequence is completed.

CAUTION - Do not connect or disconnect the interconnect cables while the preamplifier is on even if the muting switch is engaged, otherwise you may cause loud noises or speaker damage.

Automatic Muting

Muting of the output on powering up prevents any noises or thumps from reaching the speakers and it is disengaged after a 45 second time-out. The preamp remains quiet at all times.

Master Volume Control

The Volume control is a dual ganged stepped 24 position switch that allows level control in 2 dB increments over most of it's range. It uses gold-plated contacts and SMD resistors that give it a channel balance accuracy of +/- 0.05 dB.

Channel Balance

A rotary switch allows for fine balance control in 1 dB steps. (+ 0 - 5db range)

Source Selection

A rotary switch is used to select one of four inputs:

FM – used for tuners

PH – phono / turntable (note the Jade doesn't include a phono stage)

CD – Compact Disc

DD – Digital source component such as a DVD, Blu-ray or streaming media player.

Periodic Maintenance

Cleaning the surfaces

(especially the black nickel or gold knobs)

A soft lint free 100% cloth should only be used to wipe off surfaces. For finger prints or grease use only a soft cloth with a mild liquid hand soap and water. Rinse with water soaked cloth followed by a soft cloth to dry.

Octal tubes (6SN7)

To remove tubes, pull straight up while wiggling somewhat. Contact enhancers can be used on tube pins if necessary but should not be applied to tube sockets. To replace tubes insure guide pin is aligned before pushing straight down until seated.

Diagnosing problems with signal tubes

Your unit is supplied with selected low noise 6SN7 tubes of premium quality. A life span of up to 10,000 hours can be expected from these tubes since our circuit is operating them at below 50 % of their rating.

Normally a faulty tube will cause problems in only one channel. When looking at the audio board from the front of the unit they are placed in logical order. That is the tube on the left is for the left channel and the tube on the right is for the right channel. The one in the middle is for both channels and all 3 tubes can be interchanged since they must be of the same manufactured type.

To troubleshoot, you can swap tubes between positions. If problem moves to other channel you should replace the faulty tube. In the unlikely event you are experiencing other problems consult your dealer for help.

Circuit Description

This line stage preamplifier uses a grounded grid configuration, which is isolated by a cathode follower stage before and after it. All three stages are non-inverting thereby maintaining absolute phase. The grounded grid configuration is known for its extremely wide bandwidth and high speed! Each channel's cathode follower is provided with two RCA output jacks to accommodate bi-wiring or bi-amping. All stages are DC coupled and only one superb metalized Teflon signal capacitor is used in the output stage for DC blocking.

Power Supplies

A unique design for the power supply was implemented in order to eliminate all ripple & noise while maintaining a constant voltage regulation of the 200 Volt DC power line. A dual π (pi) filter, consisting of two large (15H) chokes, a large electrolytic reservoir capacitor, several polypropylene capacitors and an array of high power zener diodes are used to provide exceptional filtered power for the analog circuitry. This filter, like the OPAL, is designed using only passive components that allow the speed of the power supply to keep up with the analog circuitry. DC for the filaments is supplied using a solid state 3 terminal regulator for hum free operation.

Mechanical Construction

- Machined aluminum plates (1/4" & 1/8" thick) are bolted to square posts to construct the chassis. This provides excellent shielding from external radio frequency fields.
- Hard gold or black nickel plated solid machined brass knobs for smooth operation of switches.
- The stepped Volume control has gold plated contacts with surface mounted 0.1% precision metal film resistors. (channel balance within +/- 0.05 dB)
- Selector control is used to switch relays rated for millions of operations.
- Stepped Balance control use precision Vishay resistors for each step.
- Noiseless toroid power transformer and NKK quality toggle switches.
- Non magnetic stainless steel and brass hardware is used throughout.
- All wiring to / from the PCB boards use screw down terminal connections.
- Gold plated machined brass feet with 3M inserts.

Circuit Boards

(Hand crafted printed circuit boards using precision double turret terminal posts)

Our fixed terminal hand crafted printed circuit boards are a new technology used in construction and is a first in the industry. Wyetech Labs is always looking for ways to improve reliability and construction.

Most of the components are mounted on double turret terminal post. The octal tube sockets are also hard wired to these fixed terminals which in turn are soldered to the printed circuit board. This makes the tube sockets easily replaceable should the need ever arise. Timer 555Chip mounts in precision gold sockets, which are soldered to the board.

The double sided printed circuit board has been manufactured with the same high standards as that found in the Sapphire amplifier. It has full solder masking on both sides of it's premium glass epoxy board with white silk screening that identifies parts and there placement for fast efficient hand soldering and assembly. These boards are held elevated from the surrounding metal chassis to avoid any capacitive coupling between components

We also use WECO screw terminal connectors to fasten wires to the PC board to facilitate easier replacement of parts for a long service life. This technique will result in much faster troubleshooting and repair in the event of a failure, thereby reducing the labor cost of any necessary repair.

High quality Teflon coated silver plated OFHC copper wiring is used where appropriate to make connections to and from each board and silver solder is used throughout.

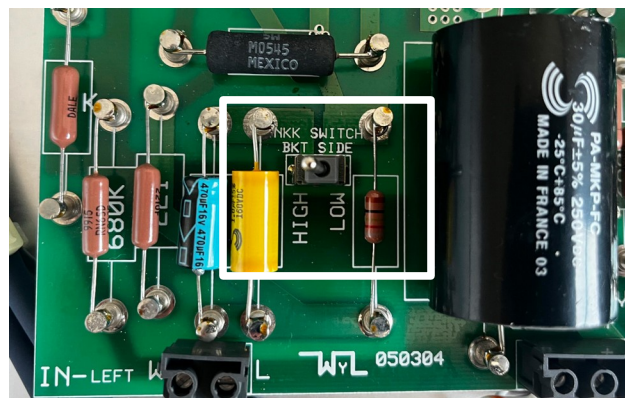
Automatic Power Sequencing & Muting

To allow circuit stabilization and quiet operation a 45 second automatic muting is activated during power up. Muting is accomplished using a 2-pole relay that shorts the preamp outputs. When disengaged the muting circuit is not in the signal path.

Selectable Gain Control

Overall amplifier gain is controlled by an internal toggle switch for each channel. It can be switched between high (13 dB / 4.4 x) and low (5.5 dB / 1.85 x) gain.

To change the gain settings, you must remove the top cover. The analog board on the left contains the left and right channel switches to select high or low gain.



Technical Specifications

Tube Complement	3 – 6SN7WGTA NOS Phillips dual triode 3 – Spares included 6SN7GTB Tung Sol
Frequency Response	(reference to a sine wave at 3.5 Vrms output) +/- 0 dB flat – 15 Hz to 200 kHz + 0 dB/ -1 dB – 7 Hz to 350 kHz + 0 dB/ -3 dB – 3 Hz to 725 kHz
Input Impedance	50 Kohms minimum
Absolute Phase	non-inverting
Channel Balance Control	11 positions for +/- 5 dB in 1 dB steps
Attenuation	24 position stepped volume control (-60 dB to 0 dB)
Gain Control	HIGH = 13 dB / 4.4 x LOW = 5.5 dB / 1.85 x Internal switches are set in the high position at the factory.
Slew Rate	Greater than 25 Volts per microsecond
Output Impedance	600 Ohms maximum
Rated Output	3.5 V _{RMS} (maximum = 8.5 V _{RMS})
Outputs	2 pre-amp outputs, 1 tape output, 1 line level output.
Inputs	4 line level inputs, 1 tape input.
Power Requirements	Switch selectable 115/230 Volt 50/60 Hz 35 Watts
Weight (Net)	20 lbs (9 kg)
Weight (Shipping)	25 lbs (12 kg)
Dimensions	17" W x 14 1/4" D x 4 1/4" H

Limited Warranty

Tubes: 1 year parts

Components: 5 years parts and labor

Wyetech Labs warrants to repair or replace any part which proves to be defective through normal use, (except external finishes), for a period of 5 years (1 year on tubes) from the date of purchase. This warranty does not extend to any defect, malfunction or failure caused by misuse, abuse, or negligence on the part of the purchaser.

This product is warrantied only for home use. This is the only warranty expressed or implied. There are no other valid warranties and no one is authorized to assume any liability on behalf of Wyetech Labs or impose any obligation on it, in connection with the sale of any equipment other than as stated in this warranty and outlined above.

In no event will Wyetech Labs be responsible or liable for other than is stated herein, such as incidental or consequential damage, interrupted operation or other causes.

This warranty is to the original purchaser only and is non-transferable.