



**WYETECH
LABS**

Owner's Manual

Pearl Preamplifier



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Introduction

Thank you for purchasing the Wyetech Labs Pearl 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 then only with the highest all around matching components. To come so close while reducing the cost by one third represents a monumental achievement. All this was accomplished while maintaining our high standards of parts and construction.

Circuit Description

This line amp 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 cathode follower is provided with two RCA output jacks to accommodate bi-wiring or bi-amping. All stages are DC coupled and only one capacitor is used in the output stage for DC blocking. No feedback is used and mirror image circuitry is implemented using a separate circuit board for the audio section. This circuit, like the Opal, maintains an exceptional bandwidth that extends well beyond 500,000 Hz. Our primary design philosophy that LESS IS BETTER THAN MORE has been fully developed in the PEARL preamp.

Power Supply

A combination of polypropylene and electrolytic capacitors, together with shunt passive regulation, eliminates all ripple while stabilizing the 200 Volt DC power supply. The low operating voltage and power dissipation of the NOS 6SN7 tubes will ensure a life expectancy of up to 10,000 hours.

A dual pi (π) filter, consisting of two large 15 Henry chokes, a large electrolytic reservoir capacitor, several polypropylene capacitors and an array of high power zener diodes are used to provide exceptional 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) bolted to square post are used to construct the preamp chassis. This provides excellent shielding from external radio frequency fields.
- Hard gold 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 & Balance controls use precision Shallco with silver alloy contacts.

- Noiseless toroidal power transformer and NKK rugged quality toggle switches
- Non magnetic stainless steel and brass hardware is used throughout.
- All wiring to / from the PC boards use screw down terminal connections.
- Automotive high gloss paint finish.

Circuit Boards

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

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. Chips and relays are mounted in 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 future serviceability and long life. This technique will result in much faster troubleshooting and repair in the event of a failure and thereby reduce the labor and 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 a 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. The gain switches are set in the high position at the factory.

To change the gain settings, you must remove the top cover (see instructions on page 7). The analog board on the left contains the left and right channel switches to select high or low gain.

Installation / Setup

Unpacking

- Remove Owner's manual.
- Remove top foam (10" x 14½" x 2")
- Remove front & rear foam strips (21" x 3½" x 2")
- Remove side foam strips (9" x 7" x 2")
- Remove cloth covering preamp. (keep for cleaning purposes)
- Remove preamp from box by holding on to the underside of each end.
- When repackaging, make sure the bottom foam strip is centered in the box so the rubber legs of preamp fit around it allowing the bottom of preamp to lay flat on the foam surface.
- Save all materials and box for future use. (Mandatory for warranty shipping)

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 unit.

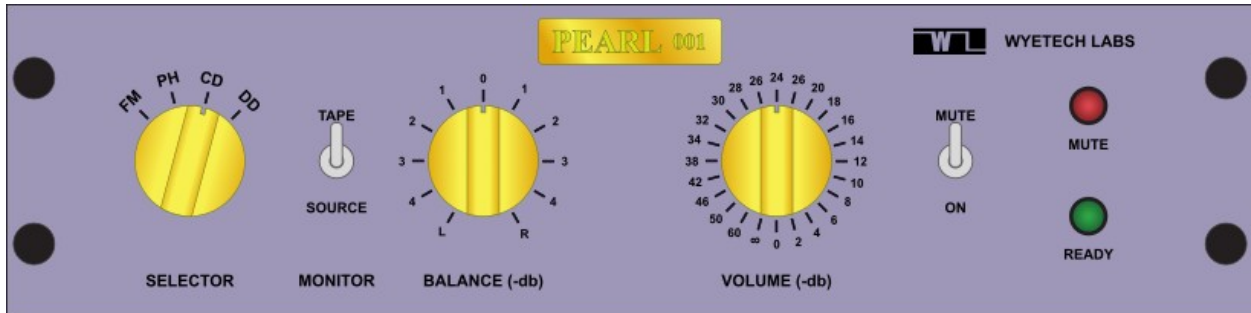
Operation

Power-Up

To power up, place power switch (on rear of unit) in up position and wait for the automatic sequence to complete. The green and red LEDs 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.

Automatic Muting

Muting of the output on power 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.



Front panel of the Pearl (left to right):
Source sector, tape/source switch, balance control, volume control, mute switch, indicator lamps.

Source selection

The four line level source inputs are labeled as such:

- FM – for tuners
- PH – phono – note the preamp does not include a phono stage, so you'll need a separate phono stage to boost the signal to line level.
- CD – for compact discs or other optical disc source
- DD – digital sources such as streamers or DACs

Tape / Source Monitor

When using an external tape or digital recorder, you can select whether to monitor the source, or the tape output.

Volume and Balance Controls

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

A Shallco rotary switch allows for fine balance control in 1 dB steps (+/- 0.05 dBs) while a second Shallco switch is used to select one of four inputs.

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.

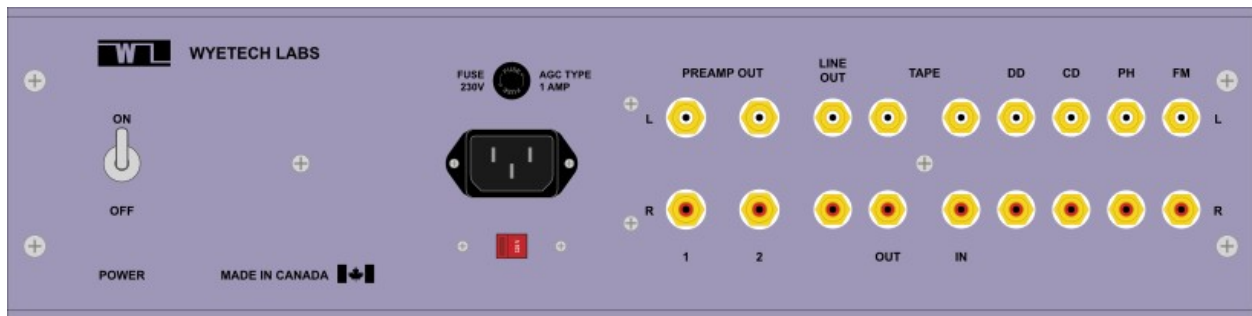
Muting switch

The muting switch can be used to completely mute the sound output. 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.

Back panel

The back panel of the Pearl has the on/off power switch, the fuse, the power cable connector, the voltage selection switch (60hz/115V or 50Hz/230V), and a bank of RCA connectors.

The connectors include: two preamp outputs, a line level out, a tape input and output, and four line level source inputs.



Do not connect or disconnect any cables while the preamplifier is on, even if the muting switch is engaged. Doing so may cause loud noises and/or speaker damage.

Periodic Maintenance

Cleaning the surfaces

A soft lint free 100% cotton flannel cloth is supplied with unit for cleaning and dusting. This 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.

Removing top cover

You will need to remove the top cover to access the tubes and the gain control switches. Using a Phillips #2 screwdriver, remove the 8 screws & washers holding the top cover. Keep screws and washers in a container for safe keeping (a magnetic screw holder is useful, and can be found at most hardware stores). Carefully lift off the cover and place carefully on your work surface.

WARNING

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

Replacing tubes

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 ensure that the large reservoir capacitors in the 200 Volt supply have completely discharged.

To install tubes, align guide pins with the tube socket until it falls into the socket then press straight down until seated.

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.

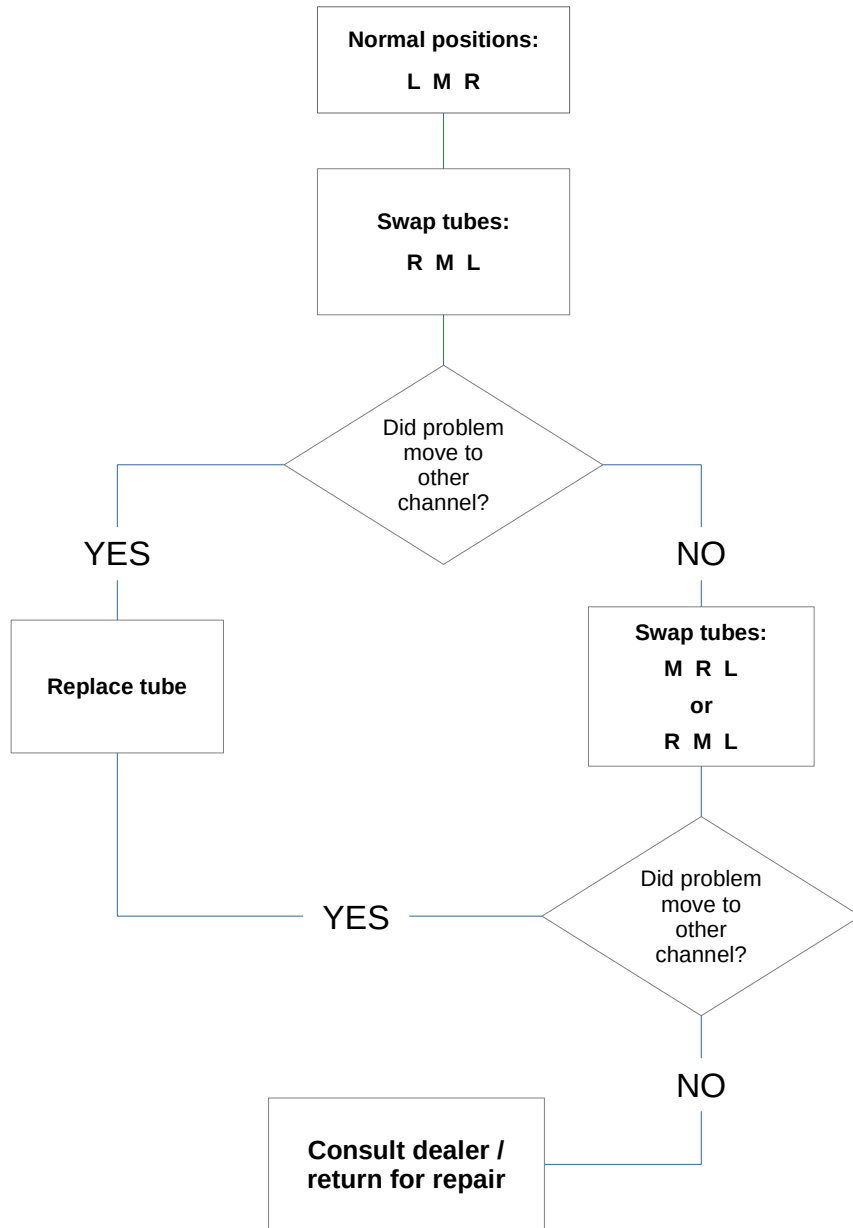
Diagnosing problems with signal tubes

Your unit is supplied with NOS 6SN7WGTA USA made tubes of exceptional 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 of the same type.

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

Troubleshooting – Tube Swap Sequence



Specifications

Tube Complement	3 - 6SN7WGTA NOS Phillips Dual Triode - USA made
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
Gain Control Settings	LOCATED INSIDE CHASSIS – FACTORY SETTING IS HIGH - 13 dB (4.4 x) LOW - 5.5 dB (1.85 x)
Input Impedance	50 Kohms minimum
Absolute Phase	non-inverting
Channel Balance Control	11 position for +/- 5 dB in 1 dB steps
Attenuation	24 position stepped volume control (-60 dB to 0 dB)
Gain Control	HIGH = 13 dB LOW = 5.5 dB Switches set in the high position at 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
Net Weight	18.7 lbs / 8.5 kg
Shipping Weight	24 lbs / 11 kg
Dimensions	Width: 17" / 43.18 cm Depth: 14 ¼" / 36.195 cm Height: 4 ¼" / 10.795 cm

Limited Warranty

Tubes - 1 year parts

Components - 5 years parts & labour

Warranty applies to the original purchaser of this product for home use. This warranty does not extend to any defect, malfunction or failure caused by misuse, abuse, or negligence on the part of the purchaser.

This is the only warranty expressed or implied and 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.