



**WYETECH
LABS**

Owner's Manual

Topaz 572B

Single ended triode (SET)
stereo amplifier



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Introduction

Thank you for purchasing a Wyetech Labs Amplifier. You are in possession of what we are inclined to believe will become known as one of the best sounding, most ruggedly constructed amplifiers to appear at the turn of the millennium. This unit has been completely hand crafted using some of the most reliable and sonically neutral parts available at this turn of the century.

Our goal was to design the best sounding amplifier that technology together with our knowledge would permit. Some of the time-honored methods we have chosen to use in this amp are indeed expensive and will not be found in any other valve amps being built today. It is a no compromise totally engineered product. The built in obsolescence that is prevalent in today's marketplace, will not be found in this product.

We would like you, the owner, to be proud of possessing this superbly crafted work of art. We want your enjoyment of this product to actually increase with age, as you would expect from a fine wine. We desire to re-establish that pride of ownership that consumers felt about products in the beginning era of high fidelity.

In order to attain this level of satisfaction several important steps had to be taken. For one, the complete elimination of all adjustments was necessary to ensure long term stability and reliable operation. This required using filtered DC on the filaments of the large output tubes as well as self-bias operation in all amplifier stages. Further refinement resulted in the use of a sequenced power activation that occurs in four stages in order to maximize tube life by preventing cathode emission deterioration. It also allows stabilization of the input stages for completely quiet operation on powering up or down. Low frequency response has been greatly enhanced by using very large signal capacitors and larger than normal output transformers. These outputs each weigh in at 20 lbs. and eliminate any possibility of core saturation! These combined attributes reduce overall distortion at higher power levels and give an overall impression of a much more powerful amplifier than what the specifications would suggest.

Installation

Unpacking

1. Remove hard white foam from top of box (20"x26")
2. Remove 2½" X 16" gray stripe foam wedged between tube boxes and output transformers.
3. Remove the two large tube boxes, the two foam covered smaller tube boxes and the plastic bag that contains the line cord and spare fuses.
4. Remove soft gray foam from front and back (6½"x16")
5. Remove hard white foam both sides (8½" X 26")
6. Remove flannel cloth (used for buffing chrome and gold) covering output transformers
7. TAKE NOTE of how the 4 pieces of 1"x2" X16" foam covered wood strips is placed in the front and rear of unit with one above and below the protrusions. This is mandatory for shipping. [the amplifier must also be placed into proper position in the box for shipping to prevent damage in transit]
8. Have one person grab one handle with other hand holding the WBT speaker connectors and the other person grab the other handle.
9. Slowly lift unit out of box.
10. Save all materials and box for future use. (Mandatory for warranty shipping)
11. Follow these procedures in reverse order if you need to ship this unit.

TAKE NOTICE: If you ever need to ship the amplifier, it is mandatory that the box contains the shock watch labels in order to identify if the box has been dropped, so that it may be inspected for damage in case of insurance claims. Contact Wyetech Labs for shock watch labels.

Installing The Tubes

Octal front end tubes

On the bottom of the tube base in the center of the 8 pins is a protrusion guide ridge to align the pins for insertion. When guide pin is aligned with the tube socket it will fall into the socket somewhat at which point you press straight down.

Output 572-10 tubes

The Svetlana is a large 4-pin tube with ceramic base. (Check bottom of tube pins for inking containing a "L" for left channel and a "R" for the right channel), install these as noted to obtain the best channel balance (gain) between channels. To install line up the two large pins and the two smaller pins with their corresponding female socket. The logo will point towards the front corners. **Do not force** - a gentle push on top of tube should seat it firmly in place.

Warning

Do not use this amplifier in the presence of small children unless it is beyond their reach. These output tubes are equivalent to a 110 watt light bulb in heat output. They will cause 3rd degree burns to any hands that touch them when turned on!

Do not connect or disconnect the interconnect cables while the amplifier is on unless the power switch is in the down position [standby] > otherwise you may cause speaker damage. The speaker cables may be connected or disconnected while the amplifier is on since the Topaz is stable without a load.

Installing the AC Power Cable

Next connect the AC cord to the amplifier's IEC filter input connector. Ensure the power switch is in the off position (middle or neutral) and connect the AC plug to the wall outlet. It is advisable to plug the amp into the same wall outlet or power strip as the pre-amp to preempt any possibility of an AC related ground loop.

Use of the standby position on the power switch

The standby position allows you to keep the tube filaments lit without depleting tube life. In standby the output tubes stay warm but do not conduct DC current. This position is used to discharge lethal voltages inside the amplifier before removing the bottom cover for warranty servicing or if you want to take a short break between listening sessions.

Power-up

To power up, place power switch in up position and wait for automatic sequence to complete. Once the green LED comes on you may begin to play music immediately. Warm up time of about ½ hour is required for the best sound reproduction.

Indicator Lamps

There is a large wide angle red and green LED status indicator. The red LED comes on about 30 seconds into the power up sequence to indicate the power cycle is proceeding normally. After 60 seconds the red LED turns off and the green LED turns on indicating that the unit is ready to operate.

Automatic Muting

Muting of the output on powering up prevents any noises or thumps from reaching the speakers. The amp remains quiet at all times.

Load Impedance Selector Switches

These switches allow selection between 4 and 8 ohm speakers. Using a lower setting than the rating of the speakers increases the damping factor which may increase the performance depending on the speaker being used. In general the best overall setting is usually what the speaker is rated for. Insure both switches are in either the 4 or 8 Ohm position.

Perforated Transformer Cage Cover

The perforations in the cover is to allow heat to escape. The covers purpose is to enhance the visual appearance of the amplifier. We do not recommend you remove this cover, since you may find it difficult to place it back on. The design of this unit is such that it is actually pulling the cover to the chassis under pressure. The reason for doing this was to insure a mechanically strong vibration free enclosure.

Reinstalling Transformer Cage Cover

Reinstalling this cover may require putting some pressure on the top end to hold firmly in place while installing screws. Do not apply pressure on cover except on the ends, otherwise you will bend the screen.

Periodic Maintenance

Cleaning the surfaces

(especially the mirror finish on the output transformers)

A large piece of cotton flannel is supplied with unit. Use the supplied cloth, or a soft lint free 100% cotton cloth to wipe off surfaces. For fingerprints or grease, use only a soft cloth with a mild liquid hand soap and water, followed by a dry soft cloth to dry.

Front end tubes (6SN7, 6BX7)

To remove tubes, pull straight up while wiggling somewhat. Contact enhancer can be used on tube pins if necessary. To replace insure guide pin is seated before pushing straight down.

Output tubes (572-10)

To remove pull straight up. To install line up the two large pins and the two smaller pins with their corresponding female socket. The logo will point towards the side of the unit and the narrow side of the carbon plate will face the front-to-rear.

Do not force - a gentle push on top of tube should seat it firmly in place.

Take note that it is not obvious which female pins are the large and which are the small ones. If it does not want to insert then rotate tube 180° and it should insert with very little force.

Diagnosing problems with output tubes

The useful life span of a transmitter tube can be upwards of 10,000 hours depending on circuit design. Our circuit runs these at about 75% of their rated power dissipation and should therefore last a very long time.

- A Svetlana 572-10 tube glows cherry red in the dark – this is normal operation
- Fuse blows just as the green LED comes on at power up time – this can be caused by shorted output tube or defective fuse. First try replacing fuse.
- Any noise or other erratic behavior that occurs in only one channel – swap output tubes between the two channels to see if problem moves to other channel.

Diagnosing problems with front end tubes

The front end tubes are extremely rugged and reliable and should also be good for about 10,000 hours in this circuit. Catastrophic failure is not likely. A gradual aging eventually will occur but it will be very difficult to hear any degradation in sound. If you are a heavy user (over 4 hours per day) then replacement every 5 years will bring peace of mind if not improvement in sound.

Fuse Rating

The Topaz 572B stereo amplifier should use a **5 amp AGC Bussman fuse**.

Note that the back of the unit says to replace fuse with 2.5 amp - this is in error and should read 5 amp AGC Bussman fuse (slow blow was originally intended but fast blow was found to be better suited).

Extra fuses are supplied with the unit, inside the power supply cord package.

WARNING: Do not use any other type fuse otherwise you could void the warranty.

Burn in procedure for new output tubes

If you receive these tubes from Wyetech Labs, they will already be tested and burned in. Otherwise, plug them in and play immediately. You may notice a subtle improvement over time, but nothing very dramatic, since these tubes do not need an extended burn-in period. If you have received these from an outside source then you should check the bias voltage using a voltmeter. The reading should be within 5% of 78 Volts DC. If more than 10% off then tube is most likely defective and prone to early failure.

Design Goals

Audio Circuits

In our pursuit of the benefits of each circuit topology we ended up coming full circle to what is the simplest possible circuit. (Single ended in each stage) To our own amazement, this produced an exceptional front end bandwidth that extends outward to beyond 250,000 hertz. The next step was to carefully choose the supplier for the output transformer, which is the most critical component for any single ended amplifier. Our custom outputs are exclusively built for us by Audio Note using oxygen free copper wire, while the enclosures were designed and implemented in house by us.

Power Supply

Single ended amps are more susceptible to power supply aberrations than push-pull amps. For this reason we have split the front end from the output by using completely separate power supplies including separate power transformers. This eliminates power supply feedback non-linearity.

There are many ways to design good power supplies. However, our goal was to insure a maintenance free, rugged and durable amp while maintaining the highest level of purity of sound as well. The only real choice with these goals in mind came down to choosing between using paper-in-oil or polypropylene capacitors. So we set about building both to determine if any sonic differences existed. We could not detect any sonic advantage of one over the other, so we opted for polypropylene. Combined with the six large choke filters we employ and you end up with a pure power source of the highest caliber.

In the 572B stereo version we are employing polypropylene in oil capacitors that double the capacitance [of the 1200 Volt supply] over that used in the 211A stereo version. Polypropylene caps [as opposed to electrolytic] give the amp a very fast and solid control over the speakers. This gives the sensation of a much more powerful amplifier than the 23 watt rating would suggest.

As a final step we have employed double and triple insulation on all high voltage DC lines. (Teflon on the first two layers and a PVC tubing over all) This prevents leakage and sporadic discharge from occurring which can be picked up by the sensitive audio circuitry.

Parts Quality

We use precision quality parts throughout. Our fixed terminal hand crafted circuit boards, while costing many times more than an equivalent printed circuit board, are well worth the expense and labor to assemble them. The sonic improvement alone warrants the expense. The ease of replacing parts and the tenfold increase in lifetime durability are added benefits that satisfied our design goals. Silver solder and stainless steel hardware is used throughout as well as Teflon insulated, silver plated OFHC copper in critical areas. Output transformers are by Audio Note, and the circuit board blanks are from Vector Corporation.

Circuit Description

Tube Complement

- 1 octal base 6SN7GT dual triode
- 1 octal base 6BX7GT dual triode or optional 6BL7GT for increased sensitivity
- 2 SV-572-10 Svetlana large triode rated for 125 Watts plate dissipation

1st & 2nd stage

The large octal based triodes have lower microphonics and improved resolution over their smaller 9-pin counter parts. Our exclusive use of exceptionally large value Solen polypropylene coupling capacitors is one of the reasons for our extended low frequency response.

Output Stage

Single ended and self-biased, each Svetlana directly heated triode [DHT] drives its own Audio Note output transformer to get 23 Watts [RMS] of pure CLASS A1 power output. Improved low frequency response, lower distortion, greater clarity and resolution are the result of the improved dynamic headroom offered by these heavier outputs. Individual selection of speaker load impedance [4 + 8 Ohms] is accomplished via dual contact high current switches. [50 Amp rating]

All Stages

All stages operate in class "A1" single ended and contain automatic self-biasing circuitry. No feedback of any kind is required from our low distortion linear amplification.

Power Supplies

Dual output toroidal power transformer for 572-10 filaments is full wave rectified and DC filtered separately for each output triode using a pi (π) LC choke filter. This provides superior performance that eliminates adjustments by reducing ripple to 0.002 Volts. Each filament draws 4 Amps of current.

Separate power transformers and filters provide total isolation between the input and output stages. The INPUT High Voltage power supply (+450V) uses a double pi (π) LC filter network to obtain complete immunity from power supply induced signal aberrations. The 1st stage is further isolated from the 2nd stage using an RC filter network. The output high voltage power supply (+1200V) uses a full wave rectifier configuration feeding a double pi (π) LC filter network for excellent regulation as well as superb ripple and noise rejection! It also contains polypropylene in oil capacitors that have double the storage capacitance over that used in the stereo Topaz 211A model.

A total of six large chokes and 7 polypropylene type capacitors are employed in the two high voltage power supplies. This uniqueness makes this a purist power source of the highest caliber!

Mechanical Construction

- Extremely rugged (12 gauge) all welded steel chassis was implemented to further reduce any possibility of vibration induced signal aberrations.
- Highly polished showcase chrome and black nickel plating on brass is used to accentuate the chassis styling on this unit.
- Very high quality pearl enamel baked on finish to further enhance the artistry.
- Rugged solid brass handles with nickel finish are implemented for ease of handling.
- A fine mesh screen covers the high voltage transformers and chokes.
- Tubes are left uncovered to enhance the visual arts.

Circuit Boards

The components are mounted on Vector boards which contain swaged terminal post. These posts are divided into two areas. The wiring used is laid out on both top and bottom of the board and is soldered to the bottom layer of the terminal post. This point to point wiring allows the highest possible component density while maintaining the shortest possible signal path. The components are then soldered into place on the top layer of the terminal which allows the replacement of any part without removing the circuit board. High quality Teflon coated Silver plated OFHC copper wiring is used where appropriate and silver solder is used throughout.

Auto Sequencing

Power on cycle completes in 60 seconds.

Three time-delay relays provide proper power sequencing for stabilized circuitry before use and to provide extended tube life.

Standby Sequence

Allows filaments to reach operating temperature before applying high voltage. Can also be invoked manually via the POWER SWITCH.

Power Sequence

- Applies high voltage to input stages and allows circuit elements to stabilize before next sequence.(red LED lights)
- Applies high voltage to output stage. (Green LED lights--red LED turns off)
- A few seconds later the auto-mute is disengaged completing the turn-on sequence.

Power Switch Settings

A 3 position toggle provides the following functions:

TOP ON (auto-sequencing)
MIDDLE OFF
BOTTOM STANDBY (sequence 1 only)

Impedance Matching

Two high current toggle switches enable setting for 4 and 8 ohm speakers and can be switched while in operation.

Connectors

High quality teflon Gold plated RCA input connectors and solid WBT gold output connectors are employed in this construction.

Technical Specifications

Frequency Response	(reference to a sine wave at 5 watts RMS / 8 Ohm output) 1. +/- 0 dB FLAT 100 Hz to 10 KHz 2. + 0 dB/ -1 dB 20 Hz to 25 kHz 3. + 0 dB/ -3 dB 16 Hz to 37 kHz
Input Impedance	200 KOhms
Absolute Phase	Non-inverting
Gain	27 dB (0.55 VRMS maximum for full output)
Power Output	23 Watts RMS per channel (short duration peaks of greater than 65 Watts for extended dynamic headroom)
Dynamic Headroom	3 dB (for short duration music peaks)
Noise & Distortion	below audibility
Stage Width	wide open
Stage Depth	exceptional layering
Perceived Sound Field	precise imaging
Clarity	crystal clear
Power Consumption	375 Watts
Weight (Net):	102 lbs / 47 kg
Weight (Shipping):	117 lbs / 53 kg
Dimensions:	16" W x 22" L x 10" H 41 cm W x 56 cm L x 26 cm H