

Cathode Follower Vacuum Tube Preamplifier

sound valves™

Owner Operation Manual



VTP-101 Vacuum Tube Preamplifier

sound valves™

"100% Conceived, Designed & Built in the USA."

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SERIAL NUMBER

060067

THIS NUMBER SHOULD BE MENTIONED IN ALL COMMUNICATIONS CONCERNING THIS EQUIPMENT.

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Owner's Manual v1.2

SPECIFICATIONS VTP-101

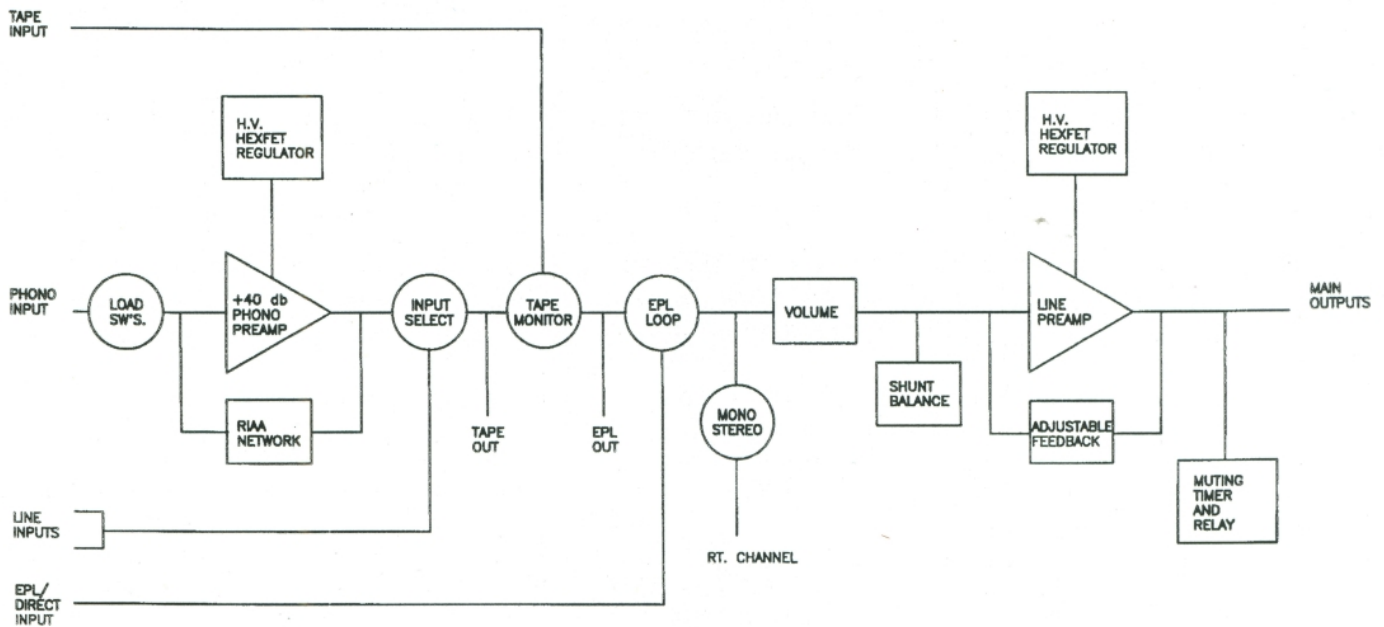
Phono Preamp Section: Maximum Output: 10 Vrms, 20-20kHz at recording output; THD: Less than .015% 1 kHz, 2 Vrms; RIAA Equalization Accuracy: +0, -0.1dB, 20-20kHz; Full Power Bandwidth: -3dB, 5Hz-70kHz; Sensitivity: 5 millivolts for 0.5V at recording output; Maximum Input Signal @1kHz: 200 millivolts [ref 2V @20kHz]; Gain: 40dB @1kHz; Input Impedance: 47k ohms in parallel with 220pF (standard); Signal-to-Noise, weighted: >75dB below 2.0V output; Slew Rate: 12V per microsecond. Externally selectable phono cartridge loading accomodates either moving magnet (MM) or moving coil (MC) cartridges.

Line Amplifier Section: Rated Output: 5Vrms, 10Hz-80kHz; Maximum Output: 15Vrms, 20Hz-20kHz; THD: Less than 0.010%, 1kHz, 2Vrms; Frequency Response: +0, -0.1dB, 20Hz-20kHz; Full Power Bandwidth: -3dB, 2Hz-180kHz; Sensitivity: 50 millivolts for 0.5V rms output; Maximum Input Signal [1kHz]: 14 Vrms; volume control -20dB; Gain: 20dB; Input Impedance: >80,000 ohms; Signal-to-Noise Ratio (weighted): >95dB below maximum output; Slew Rate: 12 volts per microsecond; Rise Time: 2.5 microseconds maximum, Phono In/Line Out, 10 Vp-p, 1kHz square wave, load is 10,000 ohms in parallel with 10nF; Crosstalk: down 80dB, any input to any output, terminated; Separation: greater than 80dB 1kHz, greater than 65dB @20kHz; Gain Tracking Error: less than 0.5dB. Output Impedance: 300 ohms.

General Specifications:

Inputs: Phono, Tuner, Compact Disc, Video, Auxiliary, 2 Tape Recorders, EPL/EQ. Outputs: 2 Tape, 2 Line, EPL (external processor loop)/EQ. Controls: A-Taper detent Volume; Bal; Input Sel; Monitor; Mono/Stereo; EPL; Pwr; Mute.

AC Supply Voltage: 100-130 and 200-260 VAC, 50/60Hz. Power Supply Capacitance: (3) 150 mfd @450V / 6,800mfd @35V. Power Consumption: 20W. Dimensions: 17"W x 3.75"H x 10.25"D. Shipping Wt: 14-lbs. Net Wt: 13-lbs. WARRANTY: 3-years limited parts & labor. MADE IN THE USA.



INTRODUCTION

Congratulations on your purchase of the SOUND VALVES™ VTP101 preamp. Your VTP-101 has been designed and built to deliver the highest combination of value and quality of any tube preamplifier available today. Your VTP-101 is 100% CONCEIVED. DESIGNED & BUILT IN THE USA.

Though priced far less than other tube preamps, the VTP-101 includes as 'standard' a true state-of-the-art phono preamp section. (Sound Valves does not believe in severing music lovers from, or charging extra for, the ability to play phonograph records.) This kind of flexibility and full-featured styling is without parallel in affordable vacuum tube preamps.

Different sonics in different systems is an issue routinely raised by the audio press when reviewing tube preamps of other manufacture. In this regard, the VTP-101 really shines. Consistent results in combination with other components becomes a reality with the VTP-101. Interactive ill-effects are dramatically reduced due to its low output impedance. Frequency response and distortion aberrations, resulting from the input impedance of associated equipment, are practically nonexistent.

CIRCUIT DESIGN NOTES

The VTP-101, like its predecessor, the VPT-100, uses gain circuits similar to many of the "old classic" preamps from the golden age of American audio. The "single ended" plate-loaded gain stage is known for its smooth, sweet sound. In this configuration two stages of 10 db gain each are followed by a *proprietary cathode follower/buffer inside the feedback loop*. This unique hookup reduces distortion from the follower and lowers output impedance—to interface with long cables and multiple amplifier loads while maintaining solid stability and low phase shift at all frequencies. *All stages run pure class A.*

Like the line section, the delicate phono gain stages are isolated from loading effects with a cathode follower. Response is not affected by tape decks or the internal loads of the 250K conductive plastic volume control and RIAA equalization network. In both phono and line, each half of the dual section triode tube handles the same function for both the left and right channels, insuring equal characteristics over the normal life of the tube.

The minimal use of negative feedback lowers output impedance, distortion and noise, extends frequency response and adds stability. The standard gain of +20 db can be easily decreased to +10 db by the use of an internal jumper plug similar to those used by computers. This setting will sometimes match high sensitivity amplifiers better than the standard gain setting.

The *control section* of the unit features sealed, silver plated switch contacts (which actually have lower contact resistance than gold plating—many audiophiles believe silver plating to be sonically superior to gold plating). *Volume control* is a miniature Alps conductive plastic—its 250K ohm rating keeps input impedance high enough to prevent cable loading. The shunt type *balance control*, located after the volume, is not in the signal path.

Line and phono stages each have their own high speed, low noise, Hexfet regulated power supplies. These supplies are fed by *high speed soft recovery diodes*. The high efficiency low field *power transformer* was custom designed with audio use in mind. This allows for ultra quiet operation in a "single box" design. Tubes are treated gently with *soft start high voltage supplies*, and *current limited DC supplies* for the heaters. The *Russian 12AX7WXT tube* was selected for its rugged reliability—with low noise, distortion, and microphonics. *Heaters* are run at 3 to 5% below nominal to extend tube life without affecting the sound.

Turn on transients from the preamp and upstream components are muted for 45 seconds with an *automatic relay circuit*. The front panel has a *manual muting switch* that overrides the automatic release, indicated by a two color LED.

Extensive use of epoxy sealed 1% metal film resistors, polypropylene and polystyrene capacitors, generously derated, and *low ESR electrolytic caps* in the power supply, all contribute to the smooth, yet fast and extended sound of this preamplifier. Careful circuit layout, keeping signal paths short and direct, and *star grounding* on the mil-spec FR-4 circuit board allow this preamp to be even quieter than it's solid state counterparts!

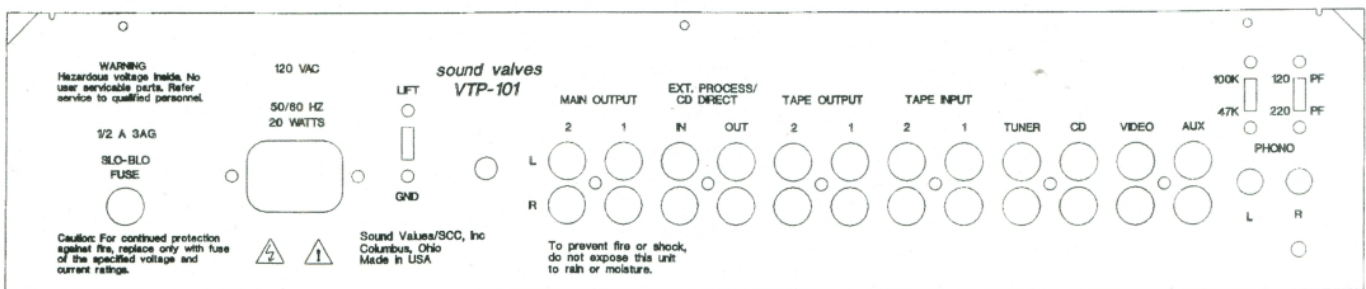
USING YOUR PREAMPLIFIER

At the center of a high quality audio system, your VTP-101 preamp serves to coordinate the signals between your sound sources: compact disc, tape recorders, record player, FM (and video) tuners, and the power amplifier which drives your loudspeakers. The ideal preamp should be attractive and easy to use, yet flexible enough to accommodate a wide range of system configurations. It should contribute a minimum of noise or distortion while providing adequate signal amplification (gain).

The VTP-101 achieves these objectives handily, providing gold plated back panel RCA jacks for record player with magnetic cartridge (PH), two tape recorders (TAPE FUNCTION), a tuner (TUN), and three additional high level stereo inputs for a compact disc player (CD), video audio (VID), and auxiliary (AUX). It also includes inputs and outputs for an external signal processor (EPL) such as a graphic equalizer, time delay device, or noise reduction unit. The performance of the VTP-101 preamp is exemplary, and its discrete components are of high quality to ensure long life and ongoing musical pleasure. The VTP101 does the world class tube preamps one better — noise is essentially inaudible in the absence of a signal, and distortion of all types, both steady state and transient, is at or near the threshold of the finest test equipment.

Sonic transparency and inner musical detail of the VTP- 101 will be immediately obvious to listeners. The VTP-101 excels in its freedom from music “traffic jams”—where detail and identity of individual instruments and voices is severely blurred or lost in a sense of congested undifferentiated sonic chaos (particularly during loud passages). Credible recordings played through your VTP-101 (with good companion equipment) will reveal detail and nuances you likely didn't realize were present in your source material.

Exceptional interchannel balance at all frequencies is maintained with close tolerance components, and RIAA phono equalization is engineered to very narrow limits, maintaining accurate phase relationships and correct spatial perspectives, as well as exceptional unit-to-unit manufacturing consistency. The components in the VTP101 have been selected for their superb audio performance as well as for their reliability.



POWER CONNECTIONS

As assembled, units are normally configured for 120 VAC, 50-60 Hz, as in the USA, unless they are specially identified otherwise on the carton and on the rear of the chassis. However, the standard power transformer supplied with the VTP-101 is a multi voltage 120/240V [50/60Hz] international type.

The “stiff” power supply regulation of the VTP-101 provides full performance even in situations when line voltages from your power company vary from normal. For safety and convenience, power is supplied to your preamp by way of a modern plug-in style IEC power cord. While this cord is already the standard in computer terminals and monitors, Sound Valves is one of a relative few audio manufacturers to provide the consumer with this modern and easy way to adapt his audio system for use worldwide. In minutes it is possible to change the voltage and fit your unit with an IEC cord terminated with the plug you require.

GROUND LIFT SWITCH

The rear panel has a switch that either connects or disconnects (lifts) the analog circuit ground from the AC and chassis ground. Normally, the unit is grounded. However, other equipment in the system, such as remote amplifiers or CABLE TV may have different ground points to earth, and the “lift” position will yield lower noise operation of the system.

INPUTS—PHONO

As shipped, “phono” is provided with a compensation capacitor of 220 picofarads. This value will accommodate most moving magnet (MM) and moving coil (MC) cartridges. These have output levels intended for normal phono inputs (0.5 millivolts per centimeter or higher). Some high output moving coil design cartridges are not sensitive to capacitive loading, so they may be used with this input also. Though some phono cartridges are comparatively free of loading sensitivity, if the cartridge manufacturer specifies the proper load capacitance (which is the sum of the preamps internal capacitance, and the cables you use, as well as the above described capacitor), the most accurate sound will be obtained by following that recommendation.

PHONO CARTRIDGE LOAD SWITCHES & PHONO GROUNDING

Cartridge manufacturers usually specify the optimum ‘load’ or termination for the cartridge. The required capacitance is expressed in picofarads (pf) and resistance in kilo ohms (Kohm).

The VTP-101 is equipped with switches to alter the capacitive and resistive loading to optimize a wide variety of cartridges. The standard setting of 47K and 220pf will accommodate the majority of available MM and high output MC cartridges. (Note: most moving coil cartridges do not require a specific capacitance setting.)

The *100 pf switch position* should be used if cartridge specs vary from the standard and/or if long cables are used (i.e., most cables have 10 to 50 pf per foot capacitance; check manufacturer’s data). The optional *100K ohm switch position* is available when cartridge specs vary, or the system would benefit from an increase in high frequency response.

In the lower right hand corner of the rear panel is a *ground terminal*. This thumbscrew is provided for connection of a separate ground wire often provided on turntables, or as part of the turntable's audio cables. This “chassis ground” may sometimes reduce the hum level of a system when it is connected to an earth ground, such as a cold water pipe, or the ground wire of 3-wire house wiring. However, the need for such connection varies with individual situations. After the system is operative, using a phono source, experiment with and without an earth ground to determine which provides the lowest hum, and use that.

INPUTS—TUNER, CD, VIDEO, AUX

These are line level signals from FM, AM or TV tuners, compact digital audio disc, video disc, or VCR players.

INPUTS—TAPE 1 and TAPE 2

These are at line level and impedance. They connect to Tape Play outputs on the tape deck, and monitor the tape during play or record. **CAUTION:** Do not use the Tuner, CD, Video, or Aux input to monitor a tape deck that has its record inputs connected to the preamp. This can cause an output to input feedback loop which can damage your amp and speakers.

RECORD OUTPUT

These jacks connect to the line inputs of tape decks for recording a source plugged into the preamp. The two pairs of outputs are connected in parallel and are buffered with a 100 ohm resistor to prevent loading the source when the tape decks are off. Thus two tape recorders receive identical signals from the input selector switch. Signals at these outputs are at line level (phono signals are amplified and equalized first), and are unaffected by the external processor loop or the volume, balance and mono controls.

LINE OUTPUTS

Two pairs of parallel outputs are provided for your power amplifier connection.

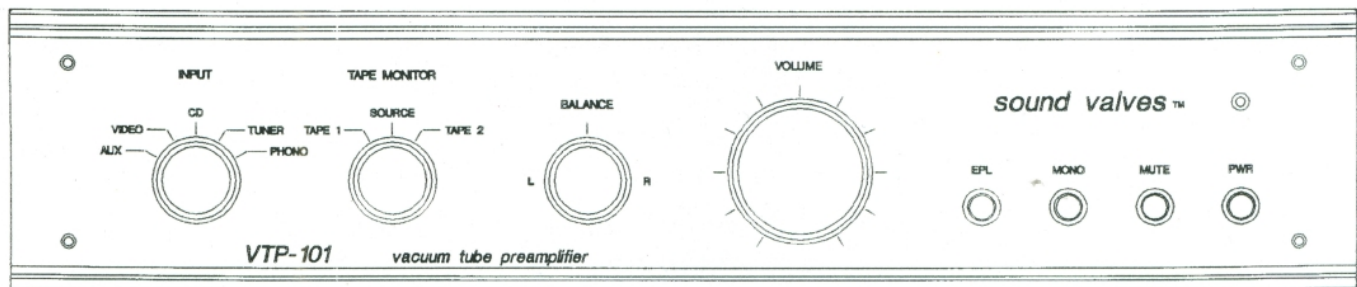
EPL/EXTERNAL PROCESSING LOOP (EQ)

“OUT” is an output at line level for the purpose of driving an external signal processor such as an equalizer, time delay, or noise reduction unit. “IN” is an input from the signal processor at line level.

CD DIRECT INPUT OPTION

The EQ/EPL input on the rear panel is also labeled “CD Direct”. This nomenclature indicates another possible line source input that is “more direct” (less switching) than the standard line inputs. Slight improvements in signal clarity and separation are realized using the EPL input jacks in this fashion. However, the signal won’t be available at the tape record output jacks or the EPL output jacks.

OPERATION



When the *power switch* is depressed, the *two color LED* should light red—indicating power is on and auto-mute/soft-start has begun. After the preamp has become operational, the LED will turn green automatically, provided the manual muting switch is in the out position. It is advised that the volume control be kept at a minimal level until startup is complete.

ON/OFF MUTING

Note that your VTP-101's tubes require 30 to 40 seconds for the tubes to become operational. The auto muting is set for 45 seconds before allowing sound from the main output jacks.

At turn off, the muting relay immediately closes to kill transients from the preamp and upstream equipment and

protect the amplifiers. It is advised that, as a rule, amplifiers should be turned off when connecting or switching AC to upstream components to protect your speakers.

“INPUT” SELECTION

Your choice of signal sources is usually indicated by the INPUT Switch. This switch passes line level signals to the Recording Outputs and the EPL via buffering resistors. Either or both tape recorders may record this source.

TAPE MONITOR SWITCH

To facilitate tape recording with tape decks which provide an independent monitoring facility, the VTP-101 provides this second selection function. When it is OFF, the regular Selector switch determines what signals are heard. When the Monitor switch is turned to either Tape 1 or Tape 2, the line amplifier is disconnected from the signal being recorded, and is connected to the tape playback instead. This enables direct comparison of the signal source with the taped replica, without affecting the recording process. Tape decks which do not provide separate record and playback heads are not able to utilize this comparison.

The following controls affect all signals which are heard through speakers. They have no effect on the signals to the recording outputs.

MONO SWITCH

When this button is IN, left and right channel information is combined, and the composite signal is fed to both left and right outputs. In this mode the sound image should appear to be centrally located between the loudspeakers. This switch is useful when listening to monophonic program material. It cancels the unwanted vertical phonograph modulations which are heard as noise from monaural records.

EPL/ (EQ) SWITCH

This is the External Processor Loop (EPL). Engaging this switch enables a signal processing device to be inserted in the preamplifier signal path. Such devices include equalizers, time delays or ambience simulators, expanders, compressors, and noise reduction systems.

The EQ/EPL input on the rear panel is also labeled “CD Direct”. This nomenclature indicates another possible line source input that is “more direct” (less switching) than the standard line inputs. Slight improvements in signal clarity and separation are realized using the EPL input jacks in this fashion. However, the signal won't be available at the tape record output jacks or the EPL output jacks.

BALANCE CONTROL

This adjusts the proportion of left and right channel signals to the Line outputs. In its center position the channels will be matched to ± 0.5 dB. Only the Left signal will be heard with the control fully counterclockwise, and only the Right signal at the other extreme. The ideal situation would find symmetry in room acoustics and in the, electronics, but this realization is rare. Stereo reproduction is, at best, a splendid illusion, and the function of the Balance control is to optimize this illusion in the listening space. Sound wave reflections from walls, furniture and people can unbalance the stereo “stage”. With judicious application of the balance control, much of the attendant distortion of stereo imaging can be overcome.

SYSTEM INTERFACE NOTES

MINIMIZING NOISE IN THE SYSTEM

Your choice of separate components is the way to secure the best performance from a music system, but the wide-band characteristics and complexity of the best systems may also introduce ground loops, hum, and noise—especially RFI (radio frequency interference). With exceedingly high quality equipment we may become conscious of distractions that would be ignored on a lesser level. Careful interwiring practice will greatly reduce the likelihood of such problems. To insure best results use connecting cables of high quality (gold is recommended), and treat them with care. Unplug cables by grasping the connector—not the cord—to maintain good connections. Make sure that the surfaces are free from grease, fingerprints, or contaminants that may prevent a firm and complete connection.

GROUNDING THE SYSTEM

Below the right channel phono jack is a thumb screw meant for connecting the ground wire from the turntable. A bad connection here will be a cause of hum when using the phono input. Hum will also be heard if the left or right channel RCA plugs are not firmly seated on the jacks. If hum is still heard on phono only, try reversing the AC plug on the turntable.

Connecting component chassis to “earth ground” or to each other does not usually reduce noise in the system. Good grounds are hard to find, and such connections often make the situation worse, particularly where there is high RF interference.

Systems with components that have 3 prong grounded power cords may need special attention to avoid “ground loops” (parallel paths) between the unbalanced signal ground and AC ground, causing signal degradation and hum. This is especially aggravated when different AC outlets or circuits are used to power the equipment. (part of the audio signal return path may actually go through the AC breaker box!) Systems may benefit from a single component’s power cord being taken to AC ground. We recommend the preamp be the central grounding point as all other components are connected to it.

Sound Valves products equipped with detachable IEC power cords also have a “ground lift” switch on the rear panel to isolate the audio circuit ground from the AC and chassis ground. When lifted, the audio ground is kept at the same potential (with a capacitor) but low frequency AC current is blocked. This allows easy trial of different grounding configurations without turning equipment off, while maintaining the safety of a solidly grounded chassis.

Cable TV feeds use a separate ground stake (required for lightning protection) and will cause noise if the audio system is also grounded to the house wiring through a 3 prong power cord. If such a problem occurs, the entire audio system will need to be isolated from ground via a standard 3 prong grounded plug to unground outlet adaptor. The system will still be grounded through the cable TV box.

The quality of the AC power has become a significant problem in the recent past due to increasing numbers of non-linear loads both inside and outside of the home. Be aware of other loads on the circuit used by your audio system, such as air conditioner, refrigerator, or other heavy draw, switched loads. Use of transient surge suppressors and/ or AC filters is recommended to protect the equipment, and improve the sound in some cases.

MISCELLANEOUS

Multiple amplifiers/ speakers:

The low output impedance of the VTP-101 allows use of several amplifiers or signal processors on the output without signal degradation. However, care should be taken to avoid the grounding problems outlined above, and do not run signal wires parallel to AC power wires. Satellite/ subwoofer combinations can be most simply implemented by adjusting the subwoofer's output and frequency to match the natural rolloff of the satellites, wired for full frequency response.

Surround sound processors hookups:

Using processors to enhance movies or create hall ambience usually compromises the performance of the main speaker channel. It is advised that provisions for bypassing the processor be included in the system layout. If the surround processor is in the EPL loop, the processor becomes the master volume control, with the preamp's volume control set to match other levels. If the processor comes after the preamp, the preamp's volume control could be the master. Be careful to not overload the inputs of the processor.

DISASSEMBLY

WARNING! Hazardous voltages inside!
Refer servicing **ONLY** to qualified technicians.

Top cover removal:

1. Remove (3) #6 sheet metal screws from top rear of cover.
2. Remove (4) #6-32 machine screws, (2) from each side panel.
3. Lift cover straight up.
4. When replacing cover, make sure side edges of rear panel are inside the cover. Likewise, front edge of the cover is over the subpanel front edge.

Front panel and subpanel removal:

1. Remove top cover.
2. Remove rotary control knobs and hardware.
3. Remove (1) #4-40 front panel screw holding the LED connector board.
4. Remove (2) front feet and (1) #6 sheet metal screw from bottom of unit.
5. Carefully slide front panel assy. away from controls.
6. To reassemble, reverse procedure.

Circuit board removal:

Most of the components on the circuit board can be replaced without removing the circuit board. Remove the component by heating the solder and lift out. Clean solder from the hole. Bend and trim component leads to allow insertion without shorting (approx. 1/8" below bottom of board).

To remove circuit board:

1. Remove top cover and front panel assy.
2. Remove (8) #4-40 screws holding rear panel switches and AC receptacle.
3. Remove (6) #6-32 screws holding circuit board to chassis and (2) #6-32 screws holding transformer.
4. Pull circuit board 1/2" out then either tip up to access bottom, or desolder phono jack conductors for complete removal.

CARE AND CLEANING

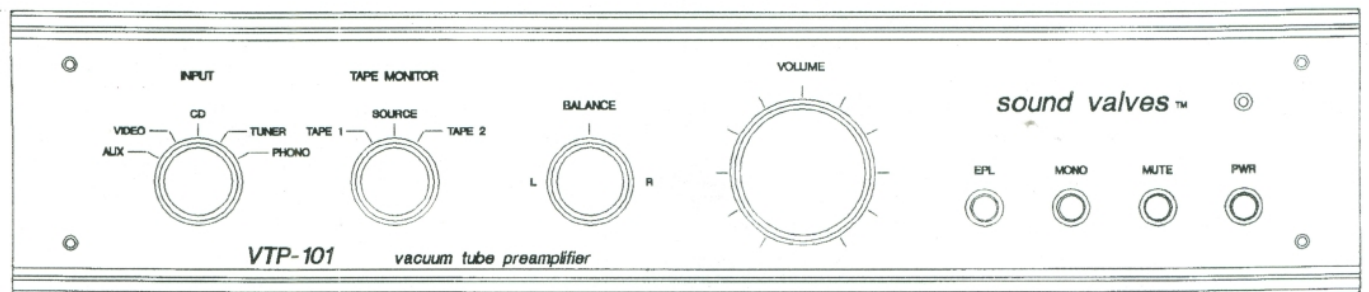
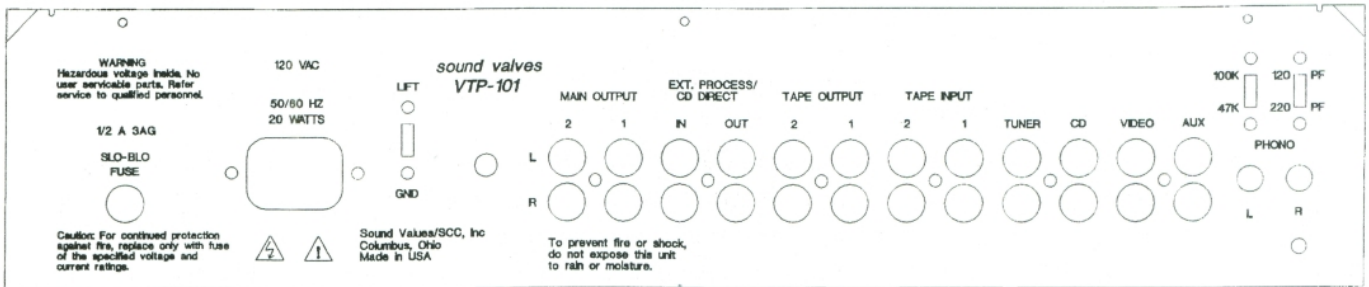
WARNING! Hazardous voltages inside!

Your VTP-101 preamplifier requires very little maintenance. To clean, first unplug unit. Gently wipe cover and faceplate with a damp (not wet) soft cotton—preferably lint-free—cloth and wipe dry. (“409” cleaner is an excellent choice.) Never use abrasives or harsh chemicals. Circuit board may be cleaned with compressed air or a clean, soft bristle paint brush, being careful to not disturb any components.

CHANGING TUBES

WARNING! Hazardous voltages inside! Refer servicing to qualified technicians.

The SOVTEK® 12AX7WXT tubes should last between 3000 and 10,000 hours. They have been selected for low noise, distortion, and microphonics. To change tubes, unplug unit and wait 5 minutes. Remove top cover. Grasp tube and pull straight up. Before inserting new tube, make sure the pins are straight and properly aligned with the socket. Facing the front of the unit, the 3 tubes for the line stage are in the center, with signal path front to back. The 3 phono section tubes are to the left, with signal path from back to front.



LIMITED WARRANTY

For 3 YEARS from the date of purchase (1 YEAR TUBES) Sound Values / Sound Valves will repair for the original owner any defect in materials or workmanship that occurs in normal use, without charge for parts or labor.

Your responsibilities are to use the amplifier or preamplifier according to the instructions supplied, to provide transportation to the authorized Sound Valves service representative who will perform warranty service, and to present proof of purchase in the form of your dated sales slip when requesting service.

Excluded from this warranty is damage that results from abuse, misuse, accidents, shipping, or repairs or modification by anyone other than an authorized Sound Valves service representative. This warranty is void if the serial number has been removed or defaced.

This warranty gives you specific legal rights, and you may also have rights which vary from state to state.

If service is required, contact the dealer from whom you purchased the amplifier. If that is not possible, write: Sound Values / Sound Valves, providing us:

Your name and address

The amplifier or preamplifier's serial number

When and where you purchased it
(copy of sales slip)

Make and model of your amplifier

Description of the problem

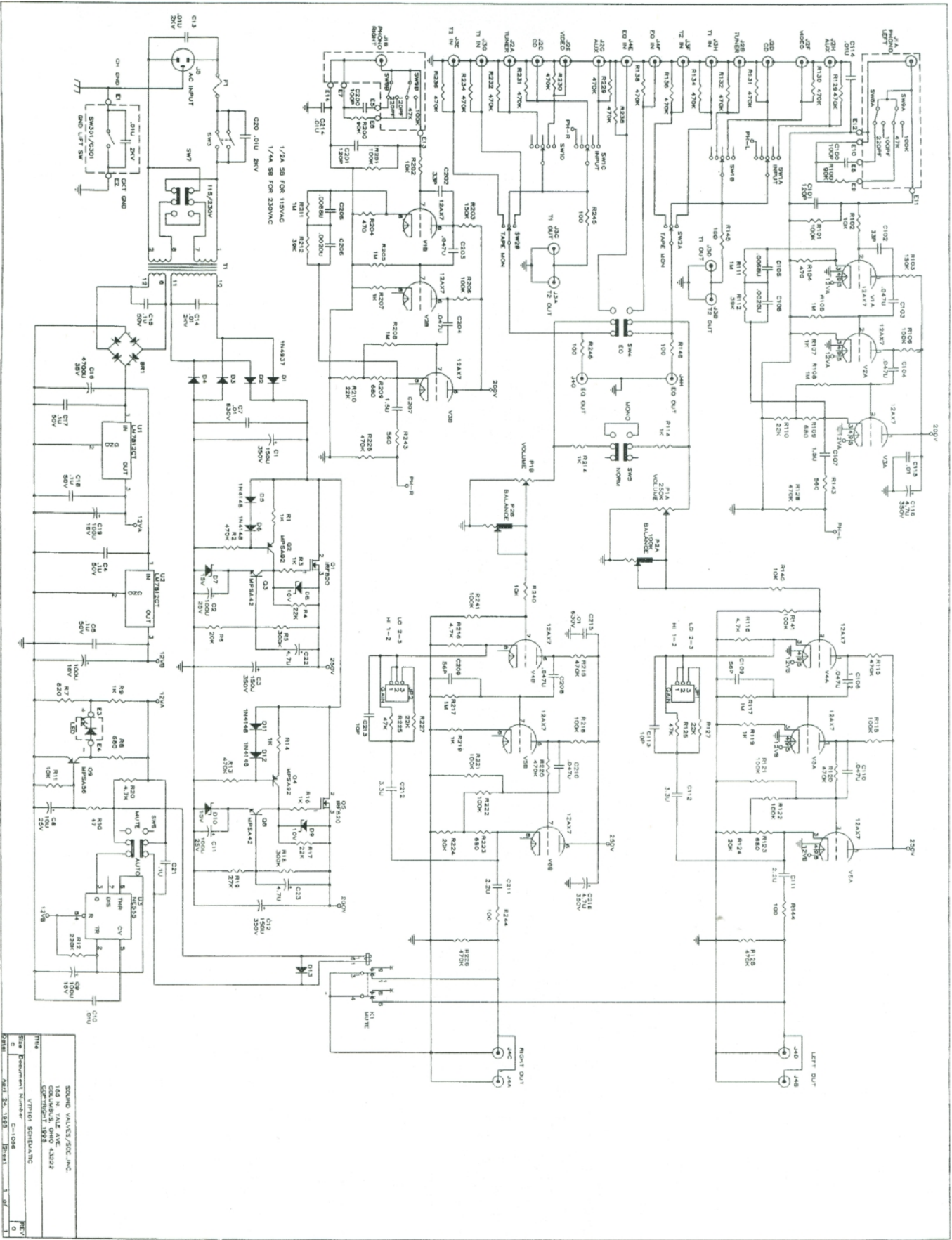
Whether you have the original carton and packing or need new ones

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