



Line 2B SE Stereo Line Preamplifier

User's Manual

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Mapletree Audio Design
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Introduction

The Mapletree Audio Design *Line 2B SE Stereo Line Preamp* is part of the MAD Modular Series of preamp/power supply components. It offers the audiophile a number of desirable features:

- ? ? Compact chassis layout for use with separate power supply for low noise.
- ? ? Exclusive use of NOS 12SN7GT octal tubes, known for low distortion and musicality.
- ? ? Heater voltage switch for use of 6SN7GT tubes if desired.
- ? ? Low output impedance (less than 500 Ohms).
- ? ? Parallel output jacks.
- ? ? User-specified gains of from 0 to 22 dB.
- ? ? Premium *Auricap* polypropylene film signal coupling capacitors.
- ? ? *Alps* volume control.

Power Supply Connections

The Mapletree *Line 2B SE* consists of a preamplifier chassis with a separate power supply. This allows separation between the two units and eliminates induced hum originating from power supply circuitry and components. The Mapletree *PS 2* or *PS 2a* power supplies provide 12 VDC (regulated) at 0.6 A for the heater supply and +200 VDC at full load (12 mA) for the B+ plate supply. The *PS 2a* has dual power outputs that allow the *Phono 3* phono preamp to share the power supply with the *Line 2B*. The power connections to the preamplifier chassis are made through a special power cord that plugs into jacks located on the rear panels of the power supply and preamplifier chassis. This manual refers to the *PS 2* power supply. Operation with the *PS 2a* is identical.

CAUTION: Do not operate the power supply when it is not connected to the preamp. Damage of components may result.

Once the interconnecting power cord is securely attached between the two chassis and the line cord is plugged in, the toggle switch on the front panel of the *PS 2* is used to activate the power supply. The pilot lamp indicates that the unit is on. It takes about 30 seconds

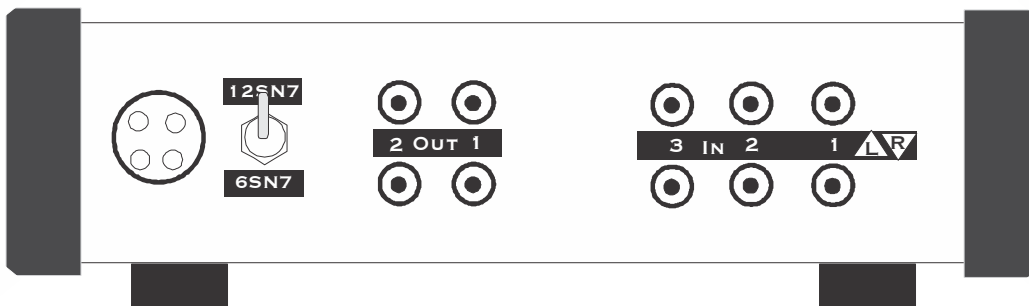
for the tubes to reach operating temperature ready for use. During operation, is it normal for the power supply chassis to become warm to the touch.

The power supply is protected by a 1 A/250 V fast-acting fuse located inside the power supply chassis. Under normal conditions, it should not be necessary to replace the fuse. If power fails to come on, you can check the fuse and replace with a spare if necessary. Wait 60 sec with the unit unplugged before removing the bottom cover. If the fuse blows a second time, you should not try to operate the unit. Contact Mapletree Audio Design for information regarding service.

Input/Output Connections

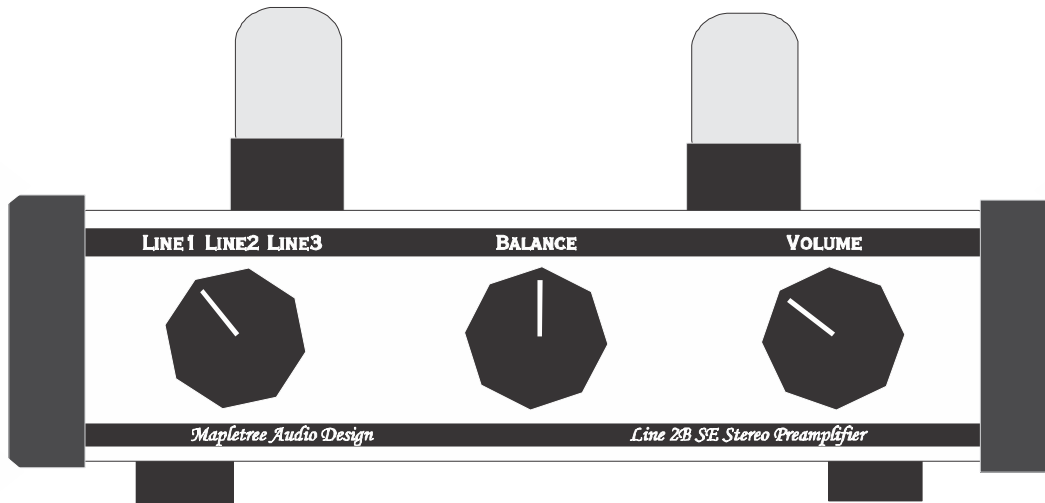
The signal input/output jacks are located on the rear panel of the preamplifier chassis. RCA jacks are provided for three stereo line inputs, and two stereo line outputs. Depending on how you ordered your *Line 2B SE*, the line input gains may be different. The standard configuration is 10 dB for all inputs. Consult the invoice included with your shipment to verify the gains for your unit. The upper jacks are the left channel. The line input impedance (resistance) is normally 100 k Ω , which provides minimal loading of any line source such as CD/DVD player, tape deck, tuner, or PC sound card. If one or more inputs have been configured for other than the 10 dB standard gain, the input impedance will be affected. See the schematic diagram for details. The line output impedance is less than 500 Ω which is suitable for connection to a power amplifier through cables up to 10 ft in length.

The heater voltage switch located next to the power input jack allows you to accommodate either 12SN7GT (supplied) or 6SN7GT tubes in your *Line 2B*. ***Note that operation in the 12SN7 position with 6SN7 tubes installed will most certainly damage the tubes.***



Preamp Controls

The front panel controls of the preamplifier include a three-position source selector switch to select between one of the three line inputs, balance control, and volume control that acts on both channels.



Tubes

The vacuum tubes supplied are new-old stock (NOS) and have been pre-tested. A burn-in period of several hours may be needed to achieve the best sonic performance. Tube life should be thousands of hours. Aging tubes may result in a reduced gain in one or both channels or an increase in noise levels. Infrequently, a heater may burn out which is indicated by total loss of sound. Replacement tubes can be obtained from several suppliers in the U. S. and Canada. Mapletree Audio Design will attempt to provide replacement tubes to customers at cost plus shipping. Some listeners enjoy trying different brands and variants of tubes. The highly regarded 12SX7GT is equivalent to the 12SN7GT. The heater voltage switch permits the use of 6SN7GT tubes including the 5692 variant and currently manufactured types.

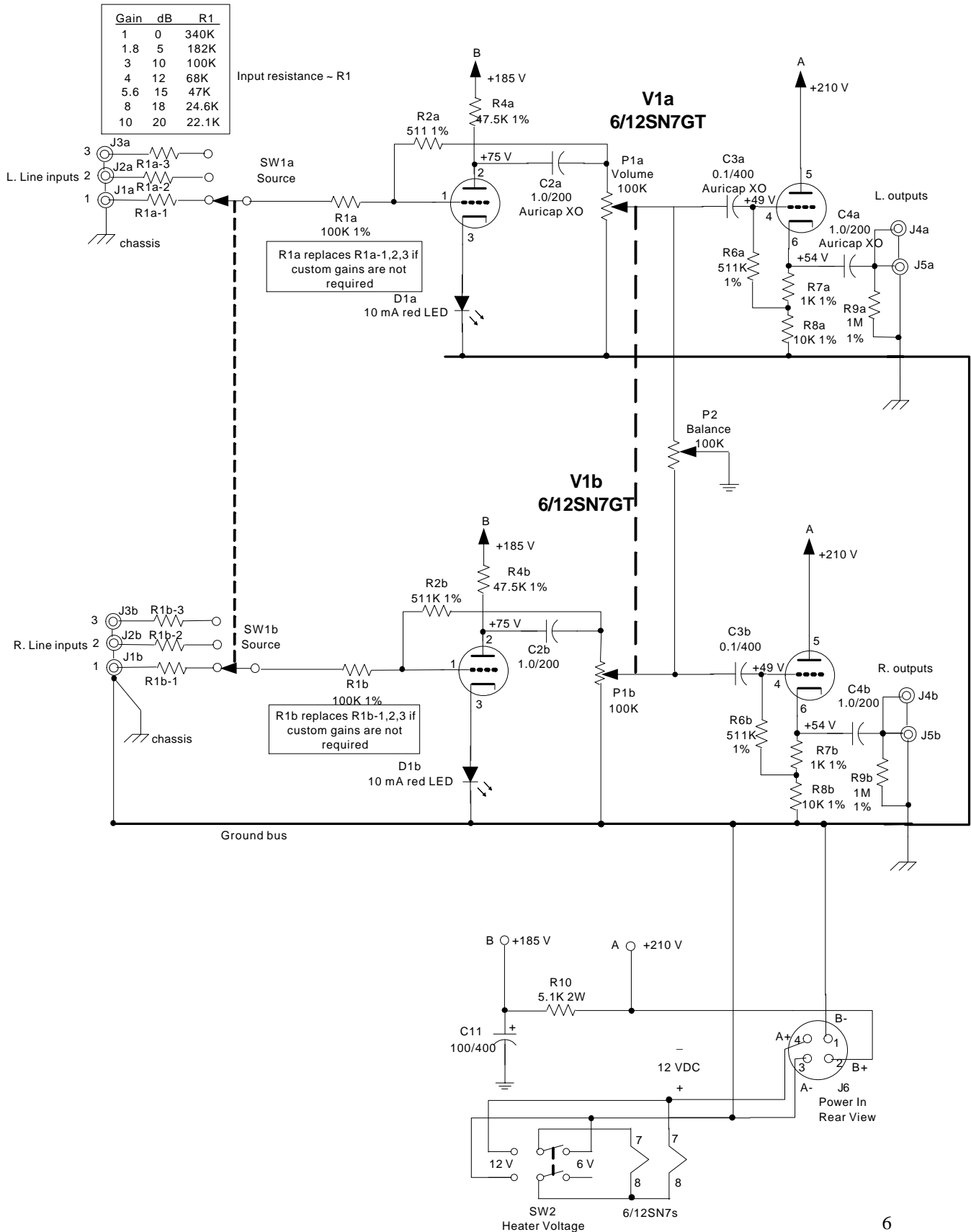
Parts List

Part No.	Description
C2a,b, C4a,b	1.0uF/200 V polypropylene film capacitor
C3a,b	0.1uF/400 V pp film cap.
C5	100uF/400 V electrolytic cap.
D1a,b	10 mA red LED
J1a,b–J5a,b	RCA gold plated phono jack
J6	chassis jack (power in)
P1a,b	100K dual audio potentiometer (Alps)
P2	100K linear potentiometer
R1a,b	100K 0.6 W 1% metal film resistor for 10 dB gain (see schematic)
R2a,b	511K 0.6 W 1% metal film res.
R4a,b	47.5K 0.6 W 1% metal film res.
R6a,b	511K 0.6 W 1% metal film res.
R7a,b	1K 0.6 W 1% metal film res.
R8a,b	10K 0.6 W 1% metal film res.
R9a,b	1M 0.5 W 1% metal film res.
R10	5.1K 2 W metal oxide film res.
SW1	3 position, 2-pole rotary switch
SW2	DPDT toggle switch (heater voltage)
V1a,b	12SN7GT tube

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Circuit Operation

Both channels are identical as shown in the schematic diagram. Operation will be described for the left channel. The selector switch (SW1) selects from one of the three line inputs (jacks J1–J3). Series resistors (R1) determine the gain of each line input. The maximum gain, with zero resistance, is approximately 22 dB. The selected signal is applied to the grid of the first section of the 12SN7GT which is configured as a common-cathode voltage amplifier with current feedback. The output from this stage is capacitor coupled through C2 to the top of the volume control potentiometer P1. The signal at the wiper of the level control is capacitor coupled through C3 to the grid of the output stage comprising the second section of the 12SN7GT configured as a cathode-follower stage. The grid bias voltage is established by R7 and the plate voltage by the sum of R7 and R8. The operating conditions are chosen to provide the maximum possible output voltage swing (around 13 V rms). The output voltage is taken from the cathode of this stage, capacitor coupled to the output jacks J4 and J5 through capacitor C4. The gain of this stage is less than unity but the output impedance is sufficiently low (less than 500 Ω) to enable driving capacitive interconnect cables without high frequency loss.

Specifications

Frequency response (100 k Ω 50 pF load, 1 V output): 10 Hz–20 kHz –0.2 dB

Maximum input voltage: 5 V (rms)

Voltage Gain (100 k Ω load, 1 kHz): 10 dB (standard configuration)

Output impedance (1 kHz): 450 Ω

Input impedance (1 kHz): 100 k Ω for 10 dB gain configuration

Hum and noise at output (max volume): less than 200 μ V rms

Phase: Inverting

Power consumption: 30 W

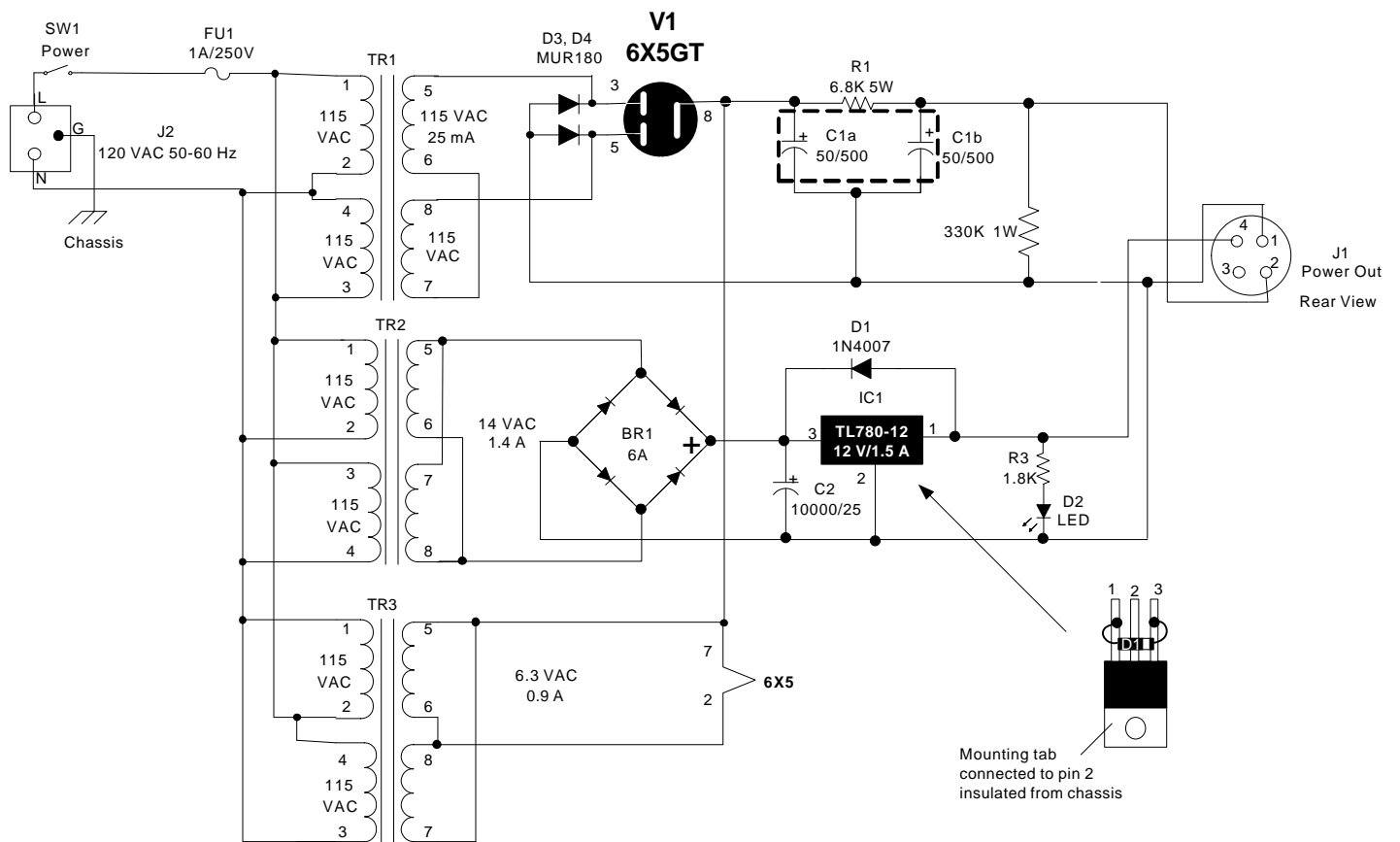
Warranty

Assembled MAD components are warranted for 2 years to the original purchaser for failure of parts (excluding tubes) and workmanship. Tubes are warranted for 90 days exclusive of shipping cost. Service, including parts and labor (but excluding shipping), is free within the warranty period.

Mapletree Audio Design Preamplifier Power Supply PS 2

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Rev. Nov 18/13



Power Supply Parts List

Reference No.	Description
BR1	6A/200V diode bridge
C1a,b	Dual 50uF-50uF/500V electrolytic capacitor
C2	10000uF/25V electrolytic capacitor
D1	1N4007 diode
D2	10 mA LED
D3, D4	MUR180 high speed diode (800 V)
FU1	1A/250V fast action fuse
J1	3-pin chassis jack
J2	IEC ac line receptacle
IC1	TL780-12 voltage regulator
R1	6.8K 5W 5% wire-wound resistor
R2	220K 1W 5% metal oxide resistor
R3	1.8K 1W 5% carbon film resistor
SW1	SPST power switch (250 V rated)
TR1	230 VAC/25 mA power transformer
TR2	14 VAC/1.4 A filament transformer
TR3	6.3 VAC/0.9 A filament transformer
V1	6X5GT rectifier tube