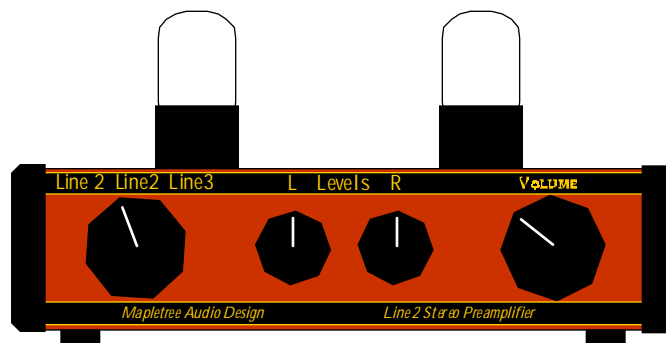




Modular Series

Line 2A Stereo Line Preamp



Users' Manual

Revised June 1/03

Mapletree Audio Design
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Introduction

The Mapletree Audio Design *Line 2A Stereo Line Preamplifier* 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 octal tubes, known for low distortion and musicality.
- ◆ Low output impedance.
- ◆ Parallel output jacks.
- ◆ User-specified gains of from 10 to 20 dB.
- ◆ Individual channel level controls.
- ◆ Optional Alps Blue Velvet volume control.

Power Supply Connections

The MAD *Line 2A* consists of a preamplifier chassis with provision for connection to a separate power supply. This allows separation between the two units and eliminates induced hum originating from power supply circuitry and components. The MAD *PS 1* power supply is recommended for the *Line 2A*. It provides 12 VDC (regulated) at 1 A for the heater supply and +200 VDC at full load (12 mA) for the B+ plate supply. The power connections to the preamplifier chassis are made through a special 3-conductor power cord that plugs into jacks located on the rear panels of the power supply and preamplifier chassis.

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 black rocker switch is used to activate the power supply. The green pilot lamp on the power supply chassis indicates that the unit is on. It takes about 30 seconds for the tubes to reach operating temperature ready for use. During operation, it is normal for the power supply chassis to become warm to the touch.

The power supply is protected by a 0.5 A/250 V fast-acting fuse which can be accessed by unscrewing the fuse holder on the rear panel of the power supply. 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. If the fuse blows a second time, you should not try to operate the unit. Contact Mapletree Audio Design for information regarding service. See the *PS 1 User's Manual* for more information.

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 2A*, the line input gains may be different. The standard configuration is: Line1-10 dB, Line2-15 dB, Line3-20 dB. 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 varies with the gain chosen for each input. For a gain of 10 dB ($R1 = 182K$) the input resistance is 220 k Ω , which provides minimal loading of any line source such as CD/DVD player, tape deck, tuner, or PC sound card. 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.

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, left and right channel level controls, and a volume control that acts on both channels. The level controls are normally both set at their maximum position (12 o'clock). Channel balance can be adjusted if necessary by reducing the level of the louder channel. These controls can also be used to reduce the overall gain of the preamp so that the volume control is near its mid position at normal listening levels. In this case, both level controls should be turned counterclockwise by the same amount or as required to achieve the desired balance.

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. Should the need arise, it is possible to re-wire the *Line 2A* to accommodate 6SN7GT tubes. Consult Mapletree Audio Design or a qualified technician.

Parts List

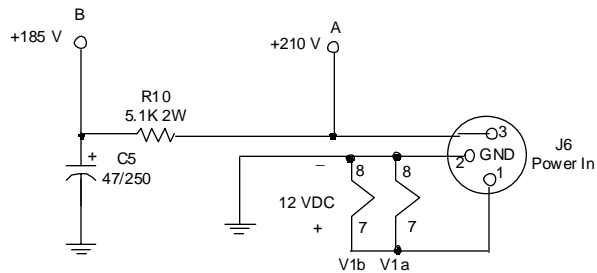
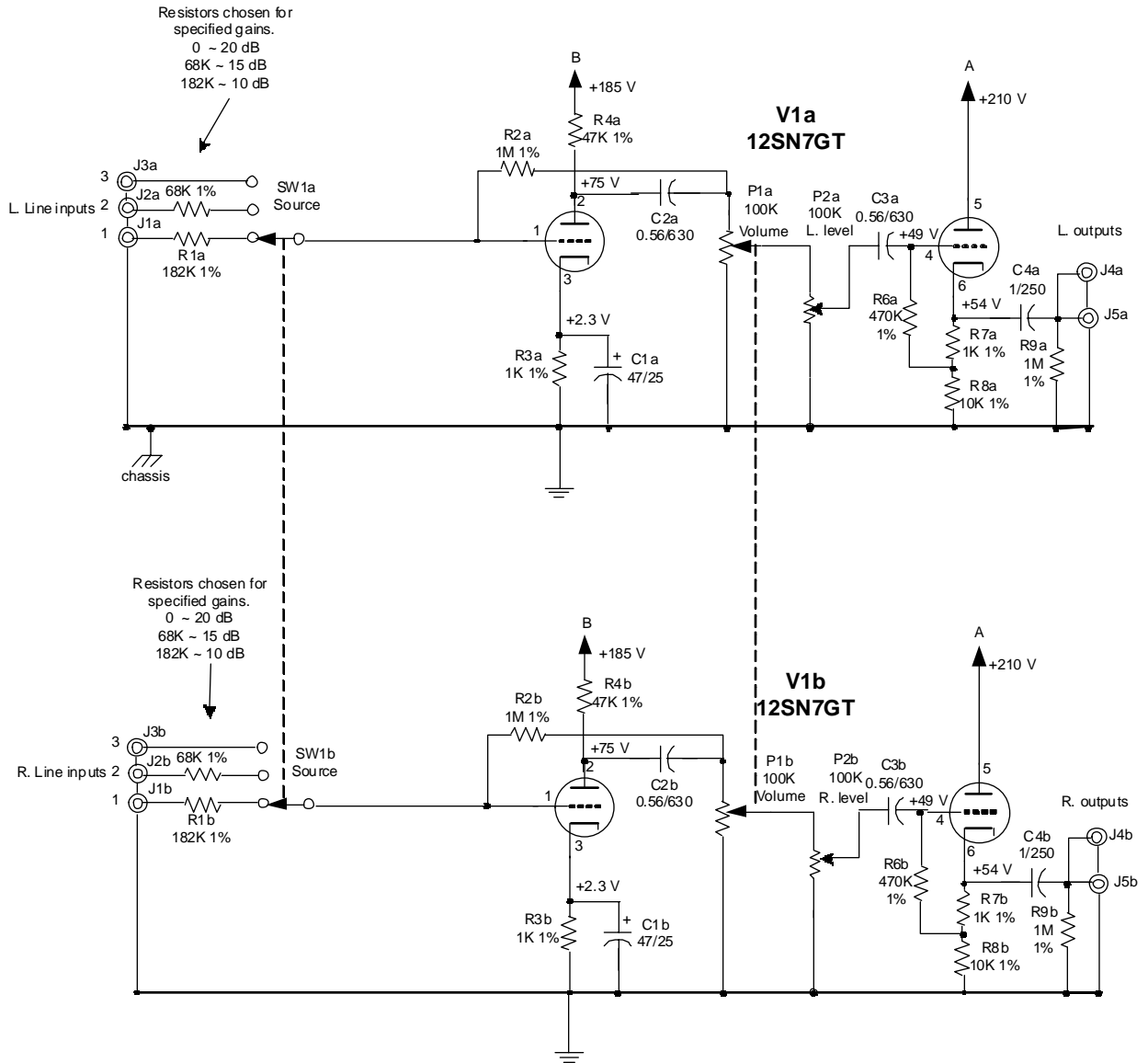
Part No.	Description
BR1	3A bridge rect.
C1a,b	47uF/25 V electrolytic cap.
C2a,b, C3a,b	0.56 uF/630 V pp film cap.
C4a,b	1 uF/250 V pp film cap.
C5	47uF/250 V electrolytic cap.
J1a,b–J5a,b	RCA gold plated phono jack
J6	3-pin chassis jack
P1a,b	100K dual audio potentiometer
P2a, P2b	100K linear potentiometer
R1a,b, etc.	182K/68K 0.6 W 1% metal film res. Other values give different gains.
R2a,b, R9a,b	1M 0.6 W 1% metal film res.
R3a,b, R7a,b	1K 0.6 W 1% metal film res.
R4	47K 0.6W 1% metal film res.
R6a,b	470K 0.6W 1% metal film res.
R8a,b	10K 0.6W 1% metal film res.
R10	5.1K 2W metal oxide res.
SW1	3 position, 2-pole rotary switch
V1a,b	12SN7GT tube

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.

MAD Line 2A Stereo Line Preamp

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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 20 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 gain is controlled by resistors R1 and R2. The output from this stage is capacitor coupled through C2 to the top of the volume control potentiometer P1, which is a dual logarithmic taper unit. The signal at the wiper of the volume control is connected to the top of the channel level control potentiometer P2. 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): 12 Hz–20 kHz –1 dB

Maximum undistorted output (100 k Ω load, 1 kHz): 13 V (rms)

Gain (100 k Ω load, 1 kHz): 10–20 dB (customer-specified)

Output impedance (1 kHz): 450 Ω

Input impedance (1 kHz): 220 k Ω for gain of 10 dB

Hum and noise at output (max volume): less than 250 μ V rms (94 dB below maximum output)

Phase: Inverting