



*TS100 Tube Power Amplifier*

Pure tube warmth was the objective in designing the TS100 Stereo Tube Power Amp. With an all-tube circuit path, this objective has been met. A total of four 12AX7's tubes and four EL34 power output tubes deliver 50W per channel or 100W bridged of power to the speakers. From the mirrored chrome front panel, to the double sided, mil-spec FR4 circuit board, this amplifier offers total quality. Whether used as a guitar amplifier or as a home stereo amplifier, the tube purist can enjoy the sounds of the TS100.

#### **GETTING STARTED QUICKLY**

If you are like most players, you probably want to plug in your new amp and get started playing it right away. You can read the rest of the manual later to learn the finer points of operating your amp. You will need the TS100 amplifier, power cord, speaker cabinet, speaker cord and a signal source with cables. Plug the pre-amplifier output into the Channel 1 amplifier input. Plug the Channel 1 speaker output of the amplifier into the speaker cabinet. Select the correct impedance on the rear panel to match the speaker impedance. With the power and stand-by switches in the "OFF" position, plug the amplifier into the wall outlet. With all volumes down, turn on the pre-amplifier power and then the amplifier. After the tubes warm up, which takes about 30 seconds, turn on the "stand-by" switch. Increase the volume of the pre-amplifier and Channel 1 until desired loudness is reached.

#### **RECEIVING INSPECTION—read before getting started**

INSPECT YOUR UNIT FOR ANY DAMAGE which may have occurred during shipping. If any damage is found, please notify the shipping company and CARVIN immediately.

SAVE THE CARTON & ALL PACKING MATERIALS. In the event you have to re-ship your unit, always use the original carton and packing material. This will provide the best possible protection during shipment. CARVIN and the shipping company are not liable for any damage caused by improper packing.

SAVE YOUR INVOICE. It will be required for warranty service if needed in the future.

SHIPMENT SHORTAGE. If you find items missing, they may have been shipped separately. Please allow several days for the rest of your order to arrive before inquiring.

RECORD THE SERIAL NUMBER on the enclosed warranty card for your records. Keep your portion of the card and return the portion with your name and comments to us.

USA customers register online at: [www.carvin.com/registration](http://www.carvin.com/registration)

All other countries register online at: [www.carvinworld.com/registration](http://www.carvinworld.com/registration)

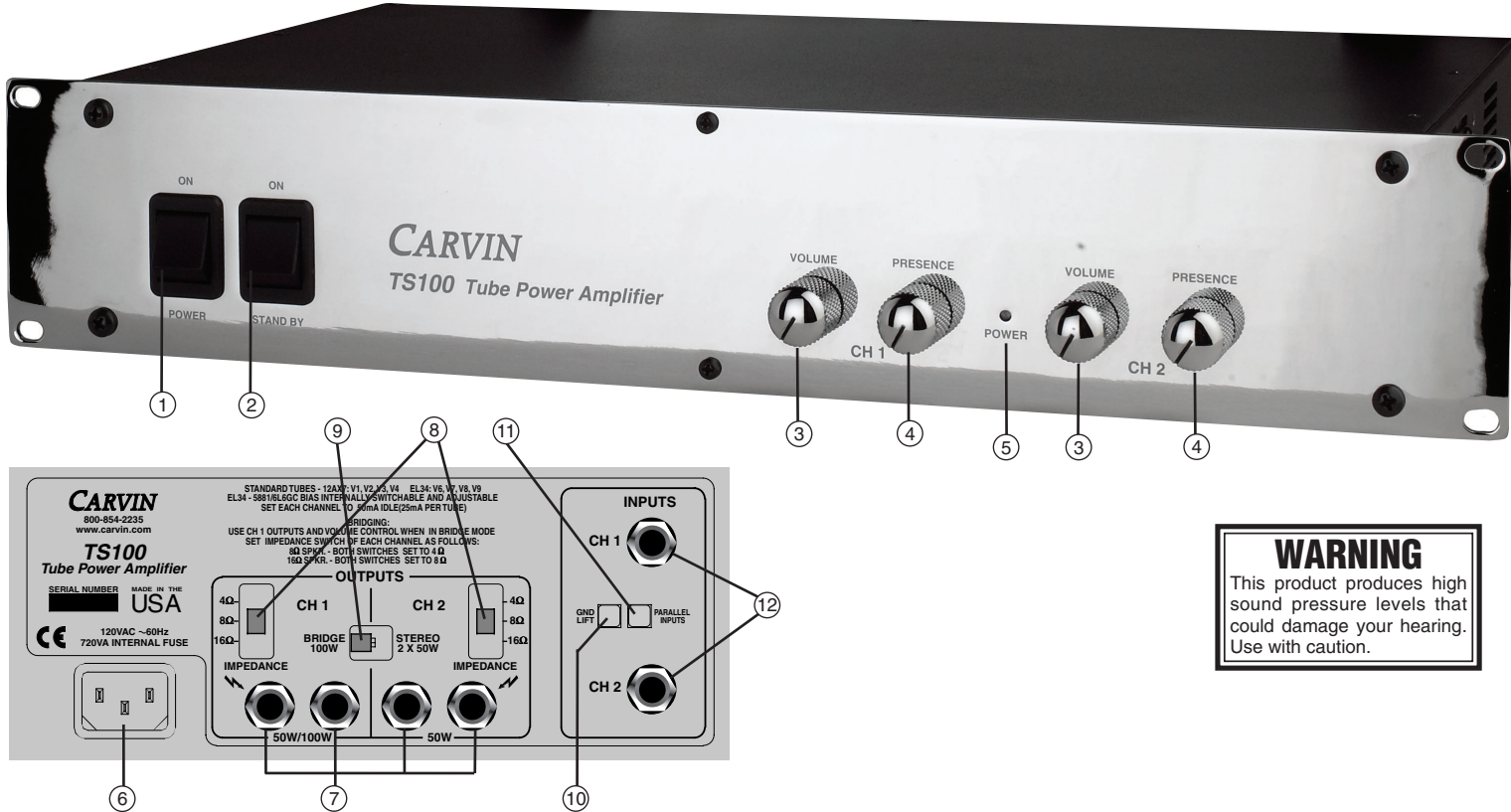
#### **TS100 TUBE POWER AMPLIFIER SPECIFICATIONS:**

<b>RMS Power:</b>	50W per channel or 100W bridged
<b>Output Impedance:</b>	4Ω, 8Ω, or 16Ω each channel (8Ω min. bridged)
<b>Channel Sensitivity:</b>	1V for full output (full volume per channel)
<b>Preamp Tubes:</b>	2 – 12AX7 (input buffer) 2 – 12AX7 (phase inverter)
<b>Power Amp Tubes:</b>	4 – EL34 (2 per channel switchable to 5881/6L6)
<b>USA Model:</b>	120VAC, 300VA
<b>Export Model:</b>	230VAC, 300VA
<b>Dimensions:</b>	3.5" High x 19" Wide x 10" Deep (2 rack spaces) 8.9 High x 48.2 Wide x 25.4 cm Deep
<b>Net Weight:</b>	26 lbs (11.3 Kgs)
<b>Warranty:</b>	1 Year (tubes 90 days.)

# CARVIN



# FRONT & REAR PANEL CONTROLS



## FRONT PANEL

### 1. POWER

Turns on power to the unit.

### 2. STAND-BY

Turns on high voltage to the tubes. Usually, this switch should be off when the amp is initially powered on until the tube filaments warm up (30 seconds, or more). The amplifier should be switched to stand-by whenever the amp will not be used for a short amount of time (like a set break) to increase tube life.

### 3. VOLUME

Controls the amount of signal sent to the power amp, which controls the output level. Start with this control all the way down. Make sure the preamplifier is connected and turned on and it's level turned up. Bring the amplifier volume up to the desired loudness. Experimentation will be needed to get the correct volume balance between the preamplifier output and the amplifier output level. The amplifier should be turned up at least one half with the knob indicator lines running vertical. Note: When the amp is in bridge mode, Channel 1 will be the master volume control - Channel 2 volume will not function.

### 4. PRESENCE

Controls the amount of clarity or crispness in the 6kHz range. When this control is all the way down, the frequency response will essentially be flat. Bringing this control up will create a "bump" in the upper frequencies. Note: In bridge mode, track both Channel 1 and 2 presence knobs to the same position.

### 5. POWER LED

The blue LED indicates that the power supply has been turned on.

## REAR PANEL

### 6. AC POWER AND FUSE

The detachable AC power cord is designed to operate with one type of voltage. Check the rear label above the AC connector for the proper voltage. Make sure the AC cord is securely inserted. If not, the power amp could become intermittent. Plug the AC cord into a grounded 3-prong power source. No attempt should ever be made to defeat, or use the amp without the ground connected. The fuse is internal to the unit. Replace only with the same type and rating.

### 7. SPEAKER OUTPUT JACKS

Two 1/4" speaker output jacks are provided for each channel. Each pair of jacks are wired in parallel. Set the impedance switch accordingly for each channel. The total impedance for each channel should not be less than 4Ω. Note: when in bridge mode, only Channel 1 output jacks will work and the impedance switch for each channel must set to half of the total speaker load impedance.

### 8. IMPEDANCE SELECTION SWITCH

Use the impedance switch to match the speaker load to the output transformers. This switch should be set to the equivalent load connected to the speaker outputs of each channel or loss of output power will result. The speaker output jacks are in parallel so if two 8Ω speakers are connected the total impedance would be 4Ω for that channel. Likewise if two 16Ω speakers are used, then move the impedance switch to 8Ω.

Note: when in the bridge mode, the impedance switch for each channel must be set to one half the total load impedance. This means for two 16Ω or one 8Ω speaker, set each channel to 4Ω. If you are using one 16Ω speaker, then set each channel to 8Ω. The minimum impedance for the TS100 in bridged mode is 8Ω.

### 9. BRIDGE/STEREO SWITCH

For mono 100W output, set this switch to "BRIDGE". If using the bridge mode, use the speaker outputs from Channel 1 only and use the Channel 1 volume control. If stereo operation is desired, set to "STEREO" mode. In this mode, both channels operate as separate 50W amplifiers and each channel's controls can be adjusted independently. Make sure the impedance switch is properly selected for each channel.

### 10. GROUND LIFT SWITCH

Many times amplifiers and preamps are connected in such a manner as to cause a grounded loop with the inputs which results in audible hum. To activate, press this switch in to lift the ground. If the hum has not been reduced, then try installing a Carvin MTF55 "Ground lifter" between the amplifier input and the signal.

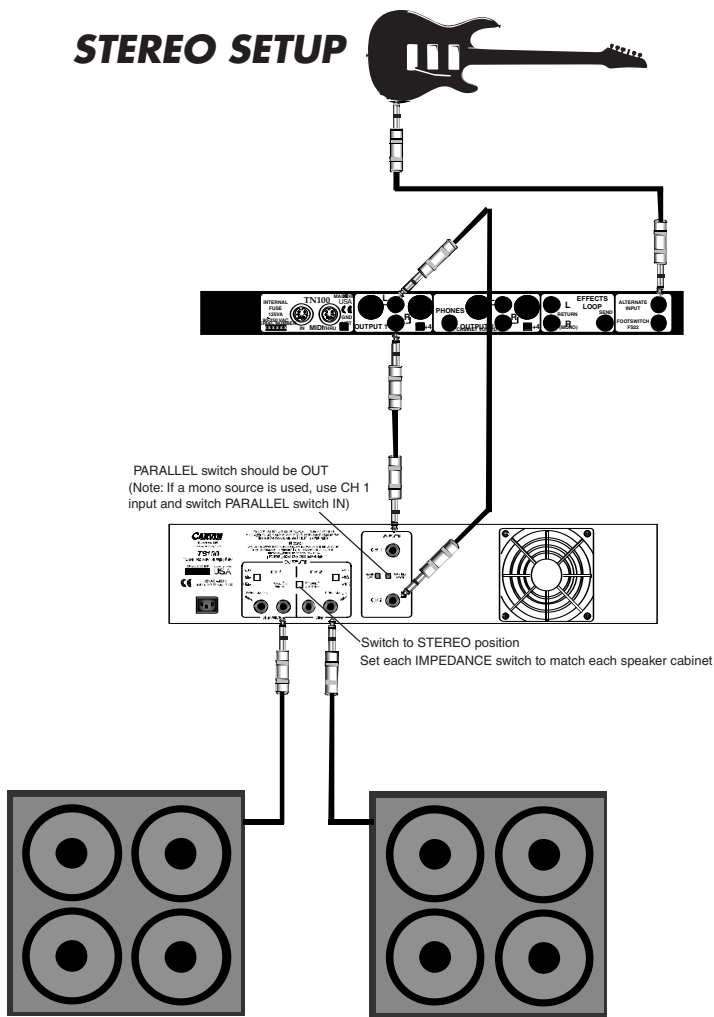
### 11. PARALLEL INPUTS SWITCH

Pressing this switch in will split the signal that is plugged into the Channel 1 input to both Channel inputs. Channel 2 input will no longer function when this switch is activated.

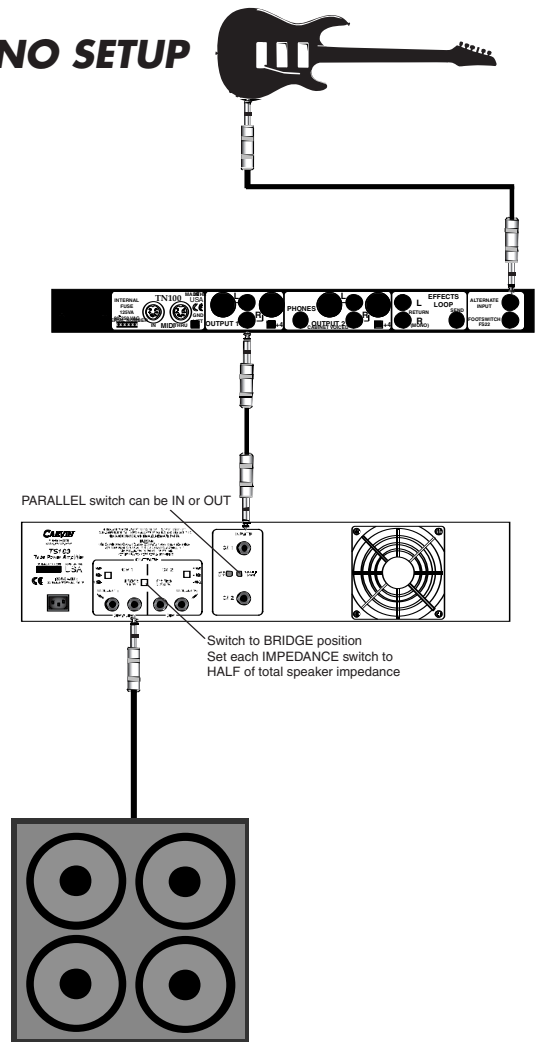
### 12. CHANNEL INPUTS

A 1/4" unbalanced jack is used to deliver signal to each of the amplifiers channels. If it is desired to use the amplifier for home audio, an RCA to 1/4" adapter (Carvin #AD66) will most likely be needed. The amplifier can accept a wide range of signal levels.

## STEREO SETUP



## MONO SETUP



## POWER TUBE BIASING

(Note: Biasing should be left to a qualified technician due to the fact that lethal voltages near 500 volts are present inside the amplifier).

The TS100 can be set up to use either EL34's or 5881's (6L6GC) in each channel. If different tube type are used in each channel, the amp should only be used in STEREO mode

Inside the amplifier, on the component side of the power tube printed circuit card, are switches to select the tube type for each channel. Above those switches are markings that indicate the different tube types. Bias potentiometers are also near those switches for fine-tuning. Each side of the amplifier must be biased with ALL four power tubes installed.

a) Remove from the printed circuit board the red wires connecting from the output transformers to QC2 and QC16.

b) Two milliamp meters will be needed. Insert a milliamp meter in series with each of the red wires to the printed circuit board. Current can now be measured through both of the output transformers while no input signal is present. Make sure the leads don't touch anything such as the chassis, each other, or you- VERY HIGH VOLTAGES ARE PRESENT!

d) Make sure the bias select switch is in the correct position for the tube type and the meters are set to "mA" or milliamps.

e) Power up the amplifier – switch the stand-by switch on. Adjust the bias pots accordingly to obtain a 50mA reading on each of the milliamp meters. Leave the amp on for a few minutes making sure the readings don't change. Turn the amp off, leaving the standby switch on and let the residual high voltage bleed down. Remove the milliamp meters from the series connection and re-attach the red wires directly to QC2 and QC16 again. The amp is now correctly biased. CAUTION: The power supply capacitors will remain "charged" for a period of time after the amp has been turned off with voltages near 500 volts.

(If only volt meters are available, an alternate method of biasing can be used by substituting 1Ω, 1/2 watt resistors where the milliamp meters would be as described above. The voltage across each resistor should read 50mV corresponding to 50mA. The rest of the procedure outlined above is the same.)