

3B-NRB/NPB OWNERS MANUAL

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**STEREO POWER AMPLIFIER**

## **GENERAL DESCRIPTION**

Bryston's 3B stereo power amplifier consists of two amplifier modules, each with its own  $\pm 55\text{v}$  power supply, which can be operated independently or combined (MONO mode) to form a single 400 watt amplifier ( $8\Omega$  load) in a 3 rack height chassis. Operated independently (DUAL mode) each channel can deliver 125 watts into  $8\Omega$  (or 250 watts into  $4\Omega$ ). Each of the two amplifier modules use 4 of Bryston's custom power transistors for a total of 8 output devices per 3B.

## **POWER CONSIDERATIONS**

The 3B employs truly massive power supplies which can draw prodigious amounts of current from the line when the music demands it. In addition, every Bryston amplifier contains exceedingly high quality dedicated circuitry in its power supplies to reject RF, line spikes and other power line problems. For these reasons the 3B should NOT be connected to the accessory power outlets in a preamp NOR into such devices as power bars or line conditioners. It should be plugged into its own socket in the wall outlet (with the power switch in the OFF, or OUT, position).

In general, if your preamp has a three prong grounded line cord you can avoid local ground loops which could cause hum or noise in the system by plugging the preamp's line cord into the same wall outlet next to the power amp.

## **CLIPPING INDICATORS**

The 3B amplifier uses a pair of 3 colour LEDs with green indicating *power on* and red indicating actual *overload or distortion*. Yellow appears dynamically at the threshold of clipping to indicate caution in proceeding to higher power levels. As long as the LED is green, or green and yellow with only very brief red flashes, the waveform is reaching full power only at the highest musical peaks. Once the indication contains a substantial red content it should be considered as a sign that the level is too high and may cause speaker damage if allowed to continue.

The clip-sensing circuit in the 3B uses an AC comparator to detect any source of signal distortion including clipping, short circuits in cabling, excessive DC or supersonic signals, whether at input or output, etc. Most conditions which could cause the red LED to light for more than a moment or two can be dangerous to your speakers and should be corrected immediately.

## **SPEAKER POWER HANDLING & FUSE PROTECTION**

Most speakers will safely absorb an undistorted musical signal up to the full power capability of even large amplifiers like the 3B (DUAL mode). However, once the signal starts to be clipped the distortion by-products generated by the overdriven signal can result in very high power levels fed to the smallest and most fragile of the speaker's components (it should be noted that an amplifier is quite capable of distorted power levels of twice the undistorted rating and that all the excess power goes to the high frequency driver). It is also quite possible to damage the woofer by causing it to exceed its excursion limits and impact against the back of the magnet by doing such things as turning up the bass control on a preamp and playing music quite loud. This is especially true with amplifiers which can develop full undistorted power down to extremely low frequencies as all Bryston amplifiers can. Many speaker manufacturers recommend series fuses to protect the drivers in case of accidental (or even wilful) overload. If you wish to use fuses follow the manufacturers recommendations since even what seems like a small increase in current rating on a fuse will result in large increases in power allowed. Example: A 3 amp fuse will allow about 70 watts but a 4 amp fuse will nearly double this to about 130 watts and a 5 amp fuse will allow 200 continuous watts.

**It should be emphasized that almost any amplifier is capable of inflicting damage on almost any speaker if used in a thoughtless or abusive manner and that Bryston cannot be responsible for speaker damage caused in this way.**

### **BRIDGED OPERATION (MONO mode)**

When operated in BRIDGED (MONO) mode the two internal amplifier sections are operated out of phase and the load is connected between the two HOT (RED binding post) terminals with no connection to ground. The two amplifier sections operate together to form a single push-pull amplifier with double the normal output voltage. In this mode the amplifier can generate output voltages of greater than 50v(rms) into loads as low as 8 ohms thus producing output power levels exceeding 400 watts (rms).

**N.B.** Only the left channel input is used in MONO mode.

### **INPUT CONNECTORS**

The 3B *NRB* is supplied with two pairs of input connectors: unbalanced RCA/phono and a combination - 3 pin balanced XLR (pin 1 is ground, *pin 2 is POSITIVE & pin 3 is NEGATIVE*) & 3 conductor balanced ¼" phone (TIP is positive, RING is negative & the sleeve is ground) - jack with fully discrete active input circuitry. A toggle switch allows selecting between balanced or unbalanced inputs. (The *NPB* has only the balanced XLR/¼" jacks).

All input connectors are gold plated and should be used only with quality gold plated input cable connectors as a poorly plated connector will eventually corrode through the gold flash. Bryston makes cables with appropriately heavily plated, high quality connectors, available through your dealer.

### **OUTPUT CONNECTORS**



The 3B is equipped with four binding post terminals (2 red, 2 black) which can accept either standard banana plugs or bare wire. Refer to the rear panel hookup diagram and to the descriptions of DUAL and MONO operation for details on how to connect speakers to these terminals. Since the binding posts are gold-plated we recommend gold-plated banana plugs be used for the lowest distortion.

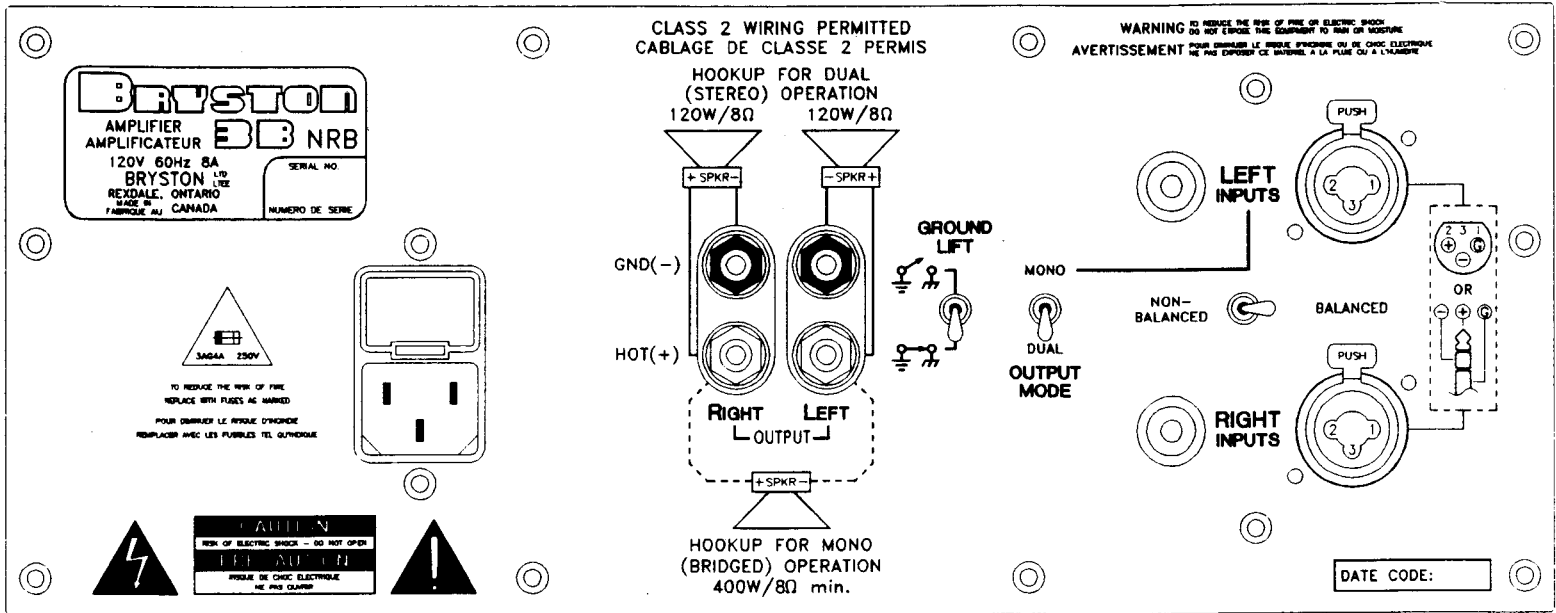
**N.B.** Do not attempt to remove the red or black connector nuts from the binding post connectors. They are not removable and attempting to force them off may break the connector or strip the threads.

### **OUTPUT CABLES**

For some time there have been available on the market special speaker cables constructed for extra high current and low loss and distortion. These cables will cause no difficulty or instability with any Bryston amplifier. In fact, we recommend that low inductance cables be used for the smallest loss of signal between amplifier & speaker.

### **GROUNDING and the GROUND SWITCH**

The left most switch on the rear panel is a GROUND LIFT switch. It is connected between the chassis ground (including the third prong on the power line cord) and the signal ground. This switch is normally left in the *connected* position . Occasionally a multi-amplifier rack installation, or an unusual grounding situation with a preamp using a three wire power line cord, will cause a ground loop between the signal ground and the chassis ground. This switch will allow the elimination of the resulting hum in such cases without resorting to a "cheater" plug by switching to the *separated* position . Note that this switch does not disconnect the chassis from the third prong on the power line cord which must be left intact for safety reasons.



## WARRANTY

Bryston products are warranted to be free from manufacturing defects for a minimum of **twenty years** from date of original purchase, including parts, labour and return shipping to the first and all subsequent owners. Warranty coverage is automatic and commences with the date of the original dealer's bill of sale (which is the sole proof of purchase date).

In the event of a defect or malfunction Bryston will remedy the problem by repair or replacement, as we deem necessary, to restore the product to full performance. Warranty service may be obtained by returning the unit to any Bryston retail dealer. If it cannot be returned to a Bryston dealer, write or call:

In Canada:

— BRYSTON LTD./LTEE. —  
 — 57 Westmore Drive —  
 — Rexdale, Ontario —  
 — M9V 3Y6 —

(416) 746-1800

In the United States:

— BRYSTONVERMONT —  
 — R.F.D #4, Berlin —  
 — Montpelier, Vermont —  
 — 05602 —

(802) 223-6159

This warranty is void if the defect, malfunction or failure of the product or any component part was caused by damage (not resulting from a defect or malfunction) or abuse while in the possession of the customer, tampering by persons other than factory-authorized service personnel, or failure to follow Bryston operating instructions.

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

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