

BRYSTON

10B
CROSSOVER
OWNER'S MANUAL

for Models
10B-STD, 10B-SUB & 10B-LR

INTRODUCTION:

The 10B crossover is available in three stock versions; 10B-SUB incorporating frequencies more suitable to sub-woofer applications (40Hz to 500hz), 10B-STD which is more applicable to speakers requiring frequency control in the mid-band and tweeter areas (70Hz to 4500Hz) and the 10B-LR, which uses plug in resistor programming cards to set the crossover frequency. Both the 10B-SUB and 10B-STD crossovers include a mode called Mono Low Pass (see below) which replaces the Two Way Mono (Linkwitz-Riley) mode in older model 10B's. The Two Way Mono mode (see below) is retained in the 10B-LR allowing for very steep (non Linkwitz-Riley) 8th order filters.

MONO LOW PASS MODE (10B-SUB AND 10B-STD ONLY):

The 10B-STD and 10B-SUB crossovers generate a summed low pass output signal by first summing or adding together the left channel and right channel input signals to form a left plus right (L+R) signal. If the MODE switch (located on the rear panel) is in the Mono Low Pass position then this L+R signal is fed into both of the low pass filter sections (Left and Right) available in the 10B. As a result, the common low pass output can be taken from either of the two low pass (LP) outputs; either left LP out or right LP out. These outputs are designated as Left and Right for convenience only. If the low pass output used is the one designated as the left channel, then the crossover frequency and slope (or filter order) switches on the left side of the unit's front panel (as viewed from the front) will control the low pass filter parameters. Likewise, if the right channel low pass output is used, then the right channel switches will control its filter parameters. There is no interaction between the two sets of controls. If one of the two low pass filters is not used, then settings of its crossover frequency and slope switches are irrelevant and will have no affect on the performance of the other filter sections of the crossover. The two high pass filter sections (left and right) operate independently in Mono low Pass mode.

STEREO MODE:

As in the older versions of the 10B, the stereo mode provides two, two way crossovers wherein the left input is fed into a separate low pass filter and a separate high pass filter, both of which are independently adjustable from the front panel controls. Likewise, the right input signal is fed into a separate low pass filter and a separate high pass filter, both of which are independently adjustable from the front panel controls. All four filters have separate output connectors on the rear panel. There is no interaction whatsoever between left and right channels or between low pass and high pass filters.

THREE WAY MONO MODE (10B-LR ONLY) :

Available only in the 10B-LR (Linkwitz-Riley filters), this mode is the same as in the older model 10B. The four filter sections (two low pass and two high pass) of the 10B are combined to form a single channel three way crossover providing one low pass, one mid or band pass and one high pass filter. The mid (or band pass) filter is formed by combining the left channel high pass and the right channel low pass filters into a single filter wherein the lower end of the pass band is determined by the left channel high pass controls and the upper end of the pass band is determined by the right channel low pass controls

Only the LEFT channel input is used in Three Way Mono mode. The left channel low pass output provides the low pass output. The mid or band pass output is taken from the right channel low pass output connector and the high pass is taken from the right channel high pass connector. All filter slopes are 24dB per octave, Linkwitz-Riley alignment.

PROGRAMMING THE 10B-LR CROSSOVER:

The crossover points in the 10B-LR are set by inserting small programming boards (4 per channel) each containing 2 resistors. See illustration "10B LINKWITZ-RILEY STEREO CROSSOVER" and on page 7 and document "10B-FREQ-RES-TABLES.doc"

POWER AMPLIFIERS:

When power amplifiers of different power capabilities are used, the woofers will likely be driven by the most powerful amplifier and the tweeters by the least powerful amplifier since the woofers can generally be expected to be less efficient. When power amplifiers of equivalent power capabilities are used in a bi-amped system, and when the power amps employ totally separate power supplies for each channel (as all Bryston power amplifiers do) it is desirable to place each power amplifier as close to its speaker as possible and use one channel to drive the woofer and the other to drive the tweeter. Please note that if the power amps being used do not employ totally separate power supplies for each channel, some envelope distortion between channels may occur since the power drawn from the low frequency channel driving the woofer will usually be considerably greater than from the higher frequency channel driving the tweeter.

POWER AMPLIFIER PLACEMENT:

Where there is a considerable distance between the audio signal source and the speakers, it is preferable to reduce the distance between the power amplifiers and the speakers at the expense of increasing the distance between preamp and crossover or crossover and power amplifier. The low impedance across the speaker lines is more likely to affect signal quality with distance than is the higher impedance across the preamp to crossover, or crossover to power amplifier cables.

BALANCED VERSUS UNBALANCED CABLING:

If the distance between the power amplifier and crossover or crossover and preamplifier is greater than 30 feet, it may be desirable to use balanced cables to interconnect the two distant pieces of equipment as this may reduce noise pickup. To facilitate this, the 10B crossover is available with balanced inputs and outputs (PRO versions) using 3 pin XLR connectors (outputs use male connectors, inputs use female connectors). Pin 3 is the positive (non-inverted or Hot) signal, pin 2 is the negative (inverted or neutral) signal and pin 1 is ground.

Where a long run of balanced cable is used to interconnect the preamplifier to the crossover, and the crossover is placed within a few feet of the power amplifier there is no advantage in using a balanced interconnection between the crossover and power amplifier. Balanced cabling does not reduce noise; it merely reduces the ability of the cable to pickup noise. The balanced output of a 10B Pro crossover can easily be used as an unbalanced output by using XLR pin 3 (positive) as the HOT line and XLR pin 1 as the ground line.

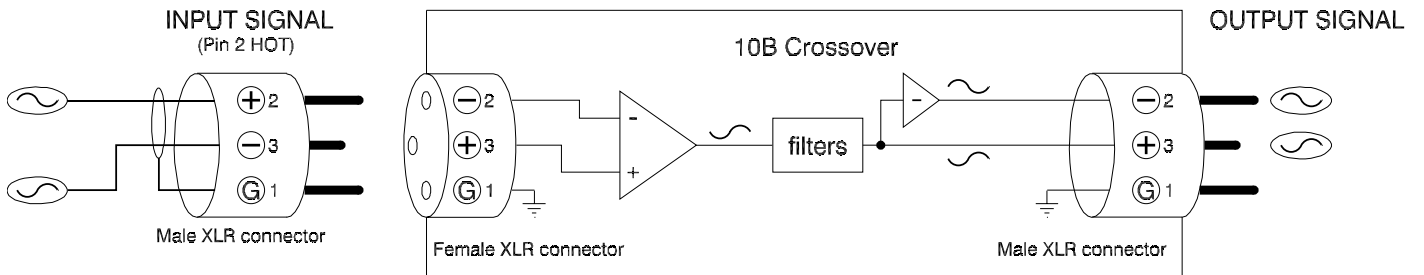
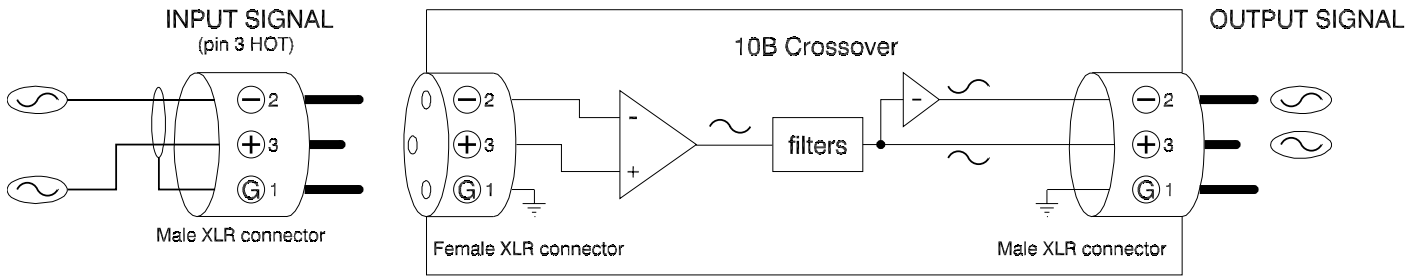
Since there is no phase inversion in the 10B, the negative XLR output pins (#2) can be used in the same way to achieve the same effect and the output will remain un-inverted with respect to the input. In other words, any signal that enters the negative XLR input pin (#2) will exit the negative XLR output pin (#2) un-inverted with respect to the input. Similarly any signal that enters the positive XLR input pin (#3) will exit the positive XLR output pin (#3) un-inverted with respect to the input. It is for this reason that the 10B has not been changed to comply with the AES adopted XLR pin configuration for balanced signals (pin 3 negative, pin 2 positive and pin 1 ground) and retains its original XLR pin-out of pin 3 positive, pin 2 negative and pin 1 as ground.

Note, however, that Bryston's current production power amplifiers do follow the AES convention. As the above illustrations indicate, however, the 10B PRO models do not introduce any phase inversion and thus can be used with either pin 2 hot or pin 3 hot balanced cable systems without changing the phase relationships of the system.

CABLES:

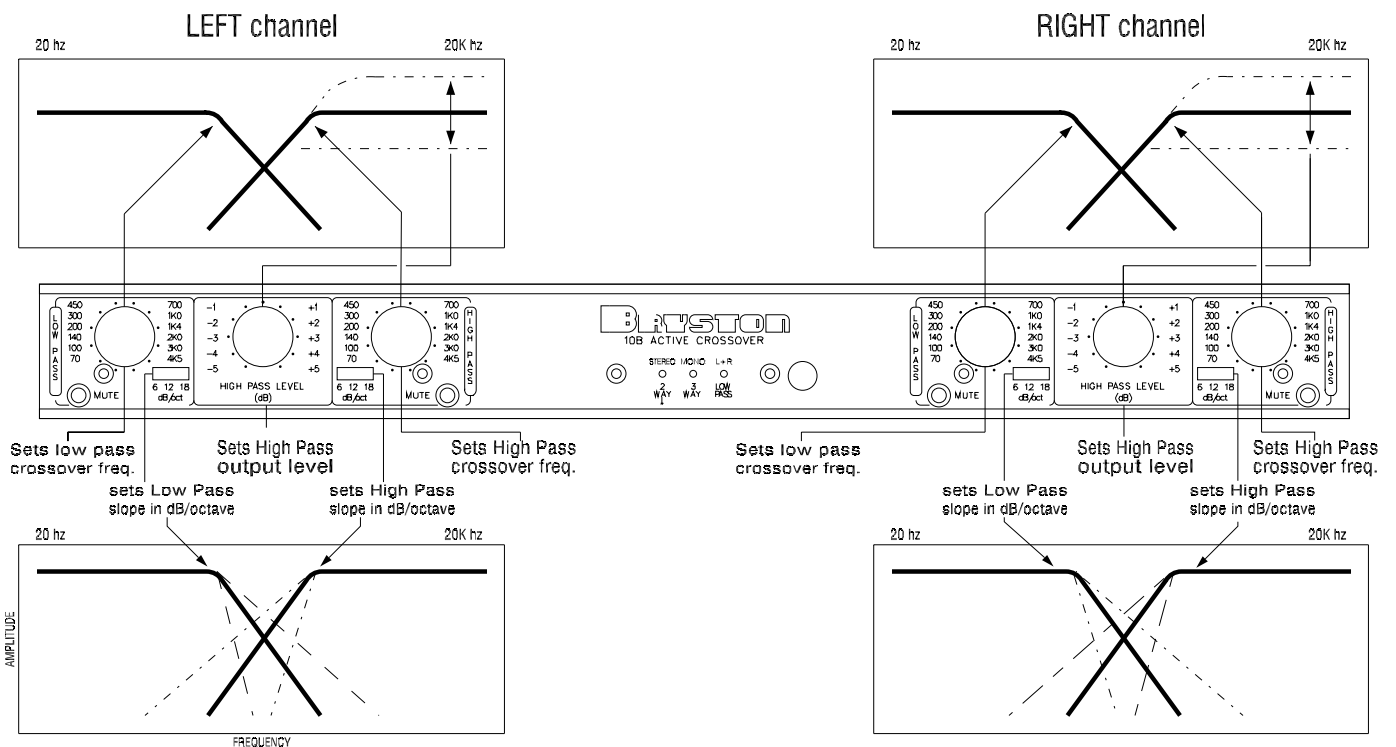
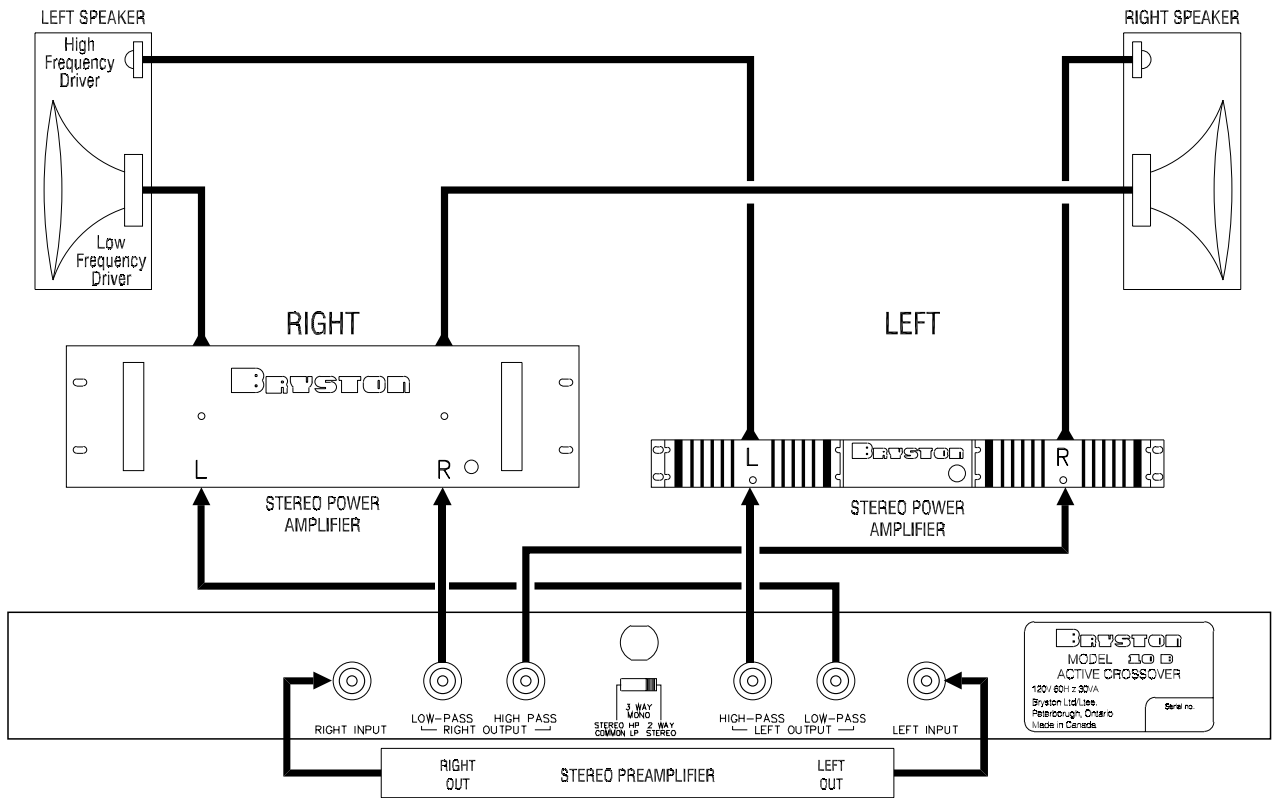
Bryston supplies a variety of stock audio interface cables and will supply reasonably priced semi-custom cables (including adapter cables and cables with custom printed identification sleeves) upon request. Bryston's balanced cables employ double insulated, 100% shielded twisted pair cable with

24g stranded, tinned copper conductors and locking XLR connectors with metal shells and gold plated contacts. Unbalanced cables use single conductor shielded co-axial cable with gold plated male phono (RCA) plugs in metal shells.



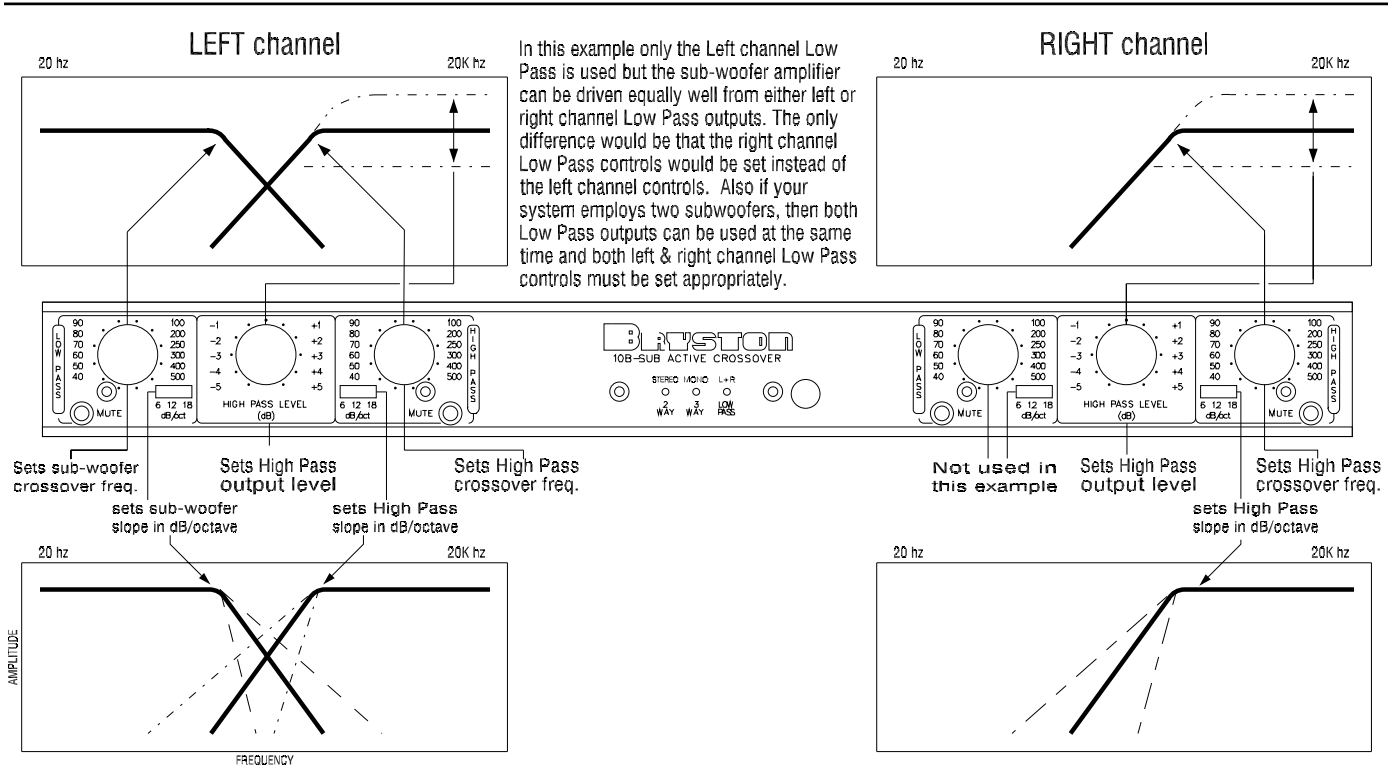
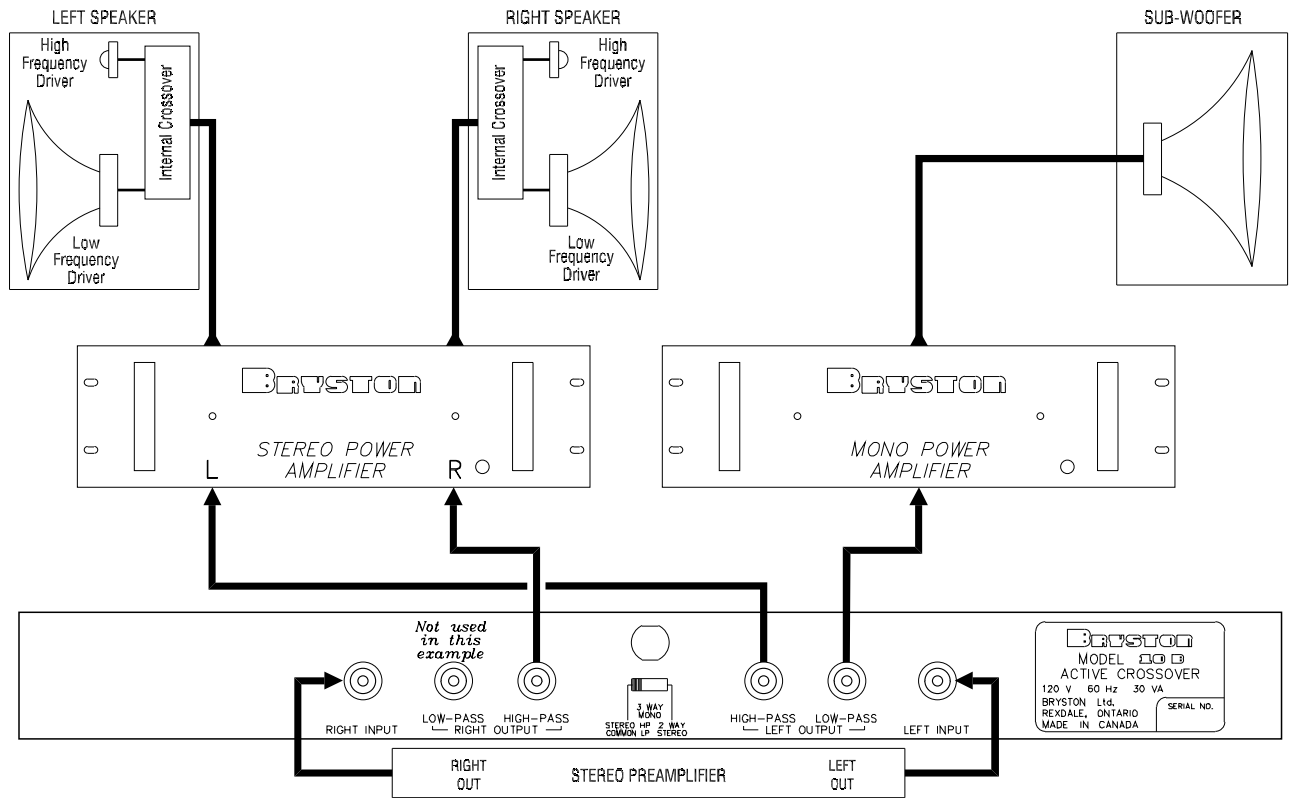
BRVSTON 10B CROSSOVER

HOOKUP EXAMPLE for TWO WAY STEREO MODE



BRYSTON 10B CROSSOVER

HOOKUP EXAMPLE for using a COMMON (L+R) SUB-WOOFER

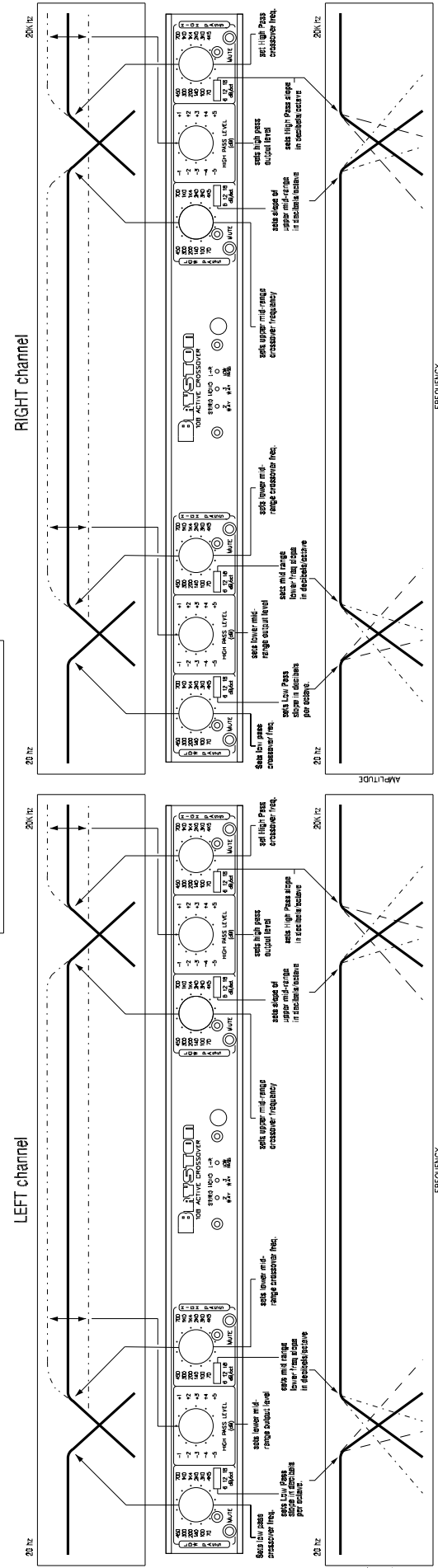
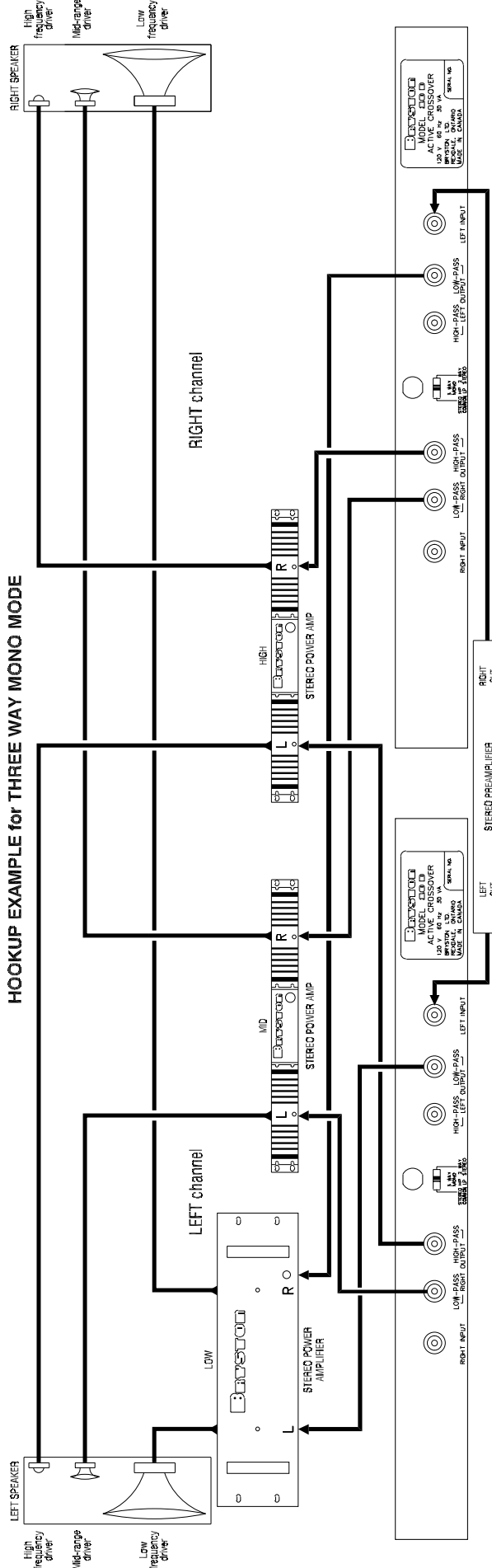


In this example only the Left channel Low Pass is used but the sub-woofer amplifier can be driven equally well from either left or right channel Low Pass outputs. The only difference would be that the right channel Low Pass controls would be set instead of the left channel controls. Also if your system employs two subwoofers, then both Low Pass outputs can be used at the same time and both left & right channel Low Pass controls must be set appropriately.

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10B CROSSOVER

HOOKEUP EXAMPLE FOR THREE WAY MONO MODE



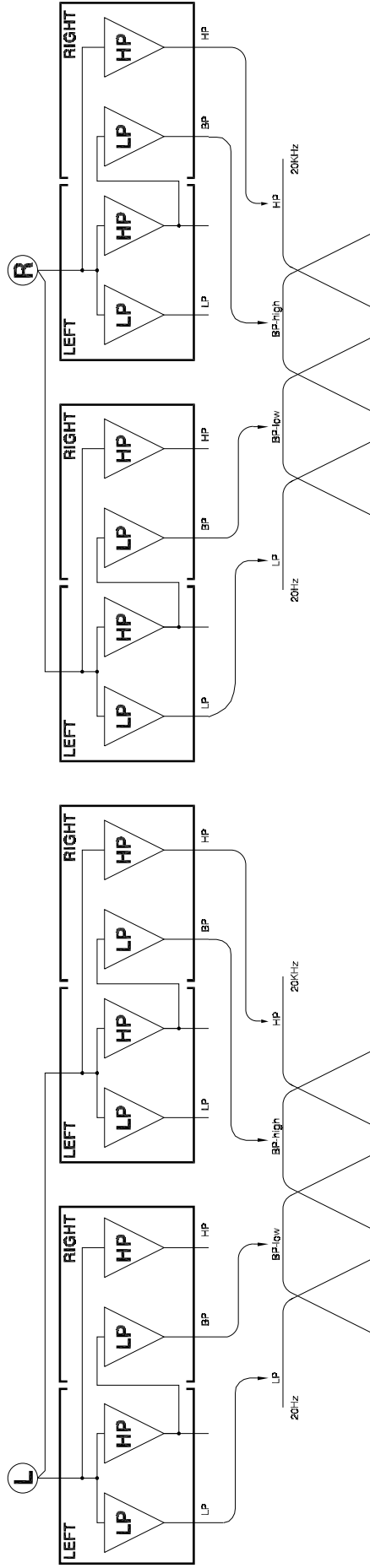
CONNECTING 10B CROSSOVERS IN A STEREO 4-WAY CONFIGURATION

CROSSOVER #1
10B-LR, 10B-STD or 10B-SUB
3-Way Mono mode

CROSSOVER #2
10B-LR, 10B-STD or 10B-SUB
3-Way Mono mode

CROSSOVER #3
10B-LR, 10B-STD or 10B-SUB
3-Way Mono mode

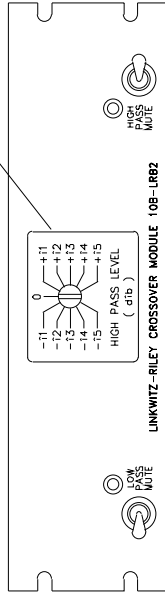
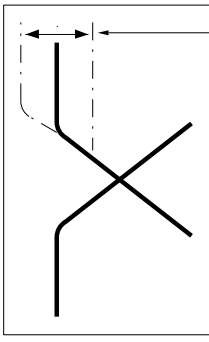
CROSSOVER #4
10B-LR, 10B-STD or 10B-SUB
3-Way Mono mode



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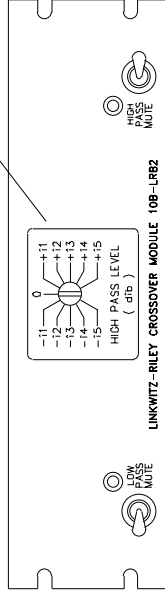
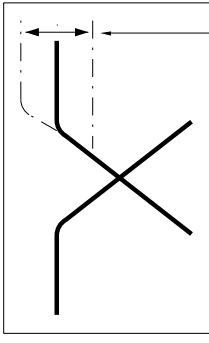
10B-LR PROGRAMMABLE LINKWITZ-RILEY STEREO CROSSOVER

20 hz Left Channel 20K hz

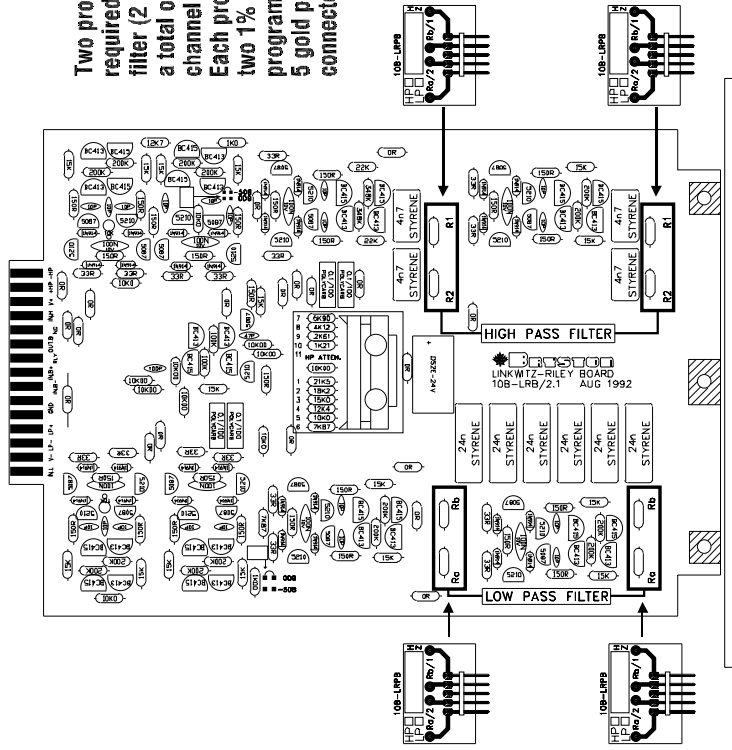


Crossover modules slide out from the front of the chassis to allow convenient access to programming boards and sockets.

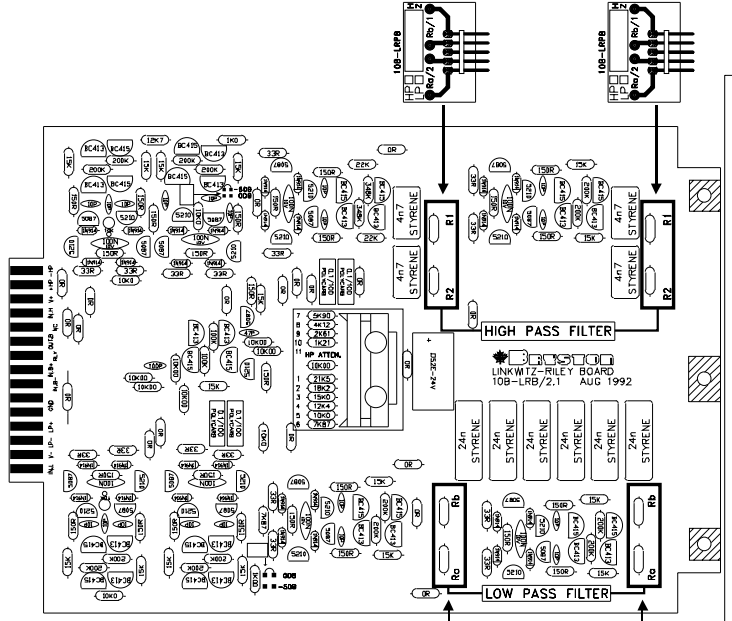
20 hz Right Channel 20K hz



Only this LED should be lit indicating that the unit is in Stereo, Linkwitz-Riley mode.



Top view of Crossover module/board



Top view of Crossover module/board

Two programming boards (10B-LRPB) are required to set the crossover points for each filter (2 for the Low & 2 for the High pass) for a total of four programming boards for each channel or eight for the entire stereo unit. Each programming board or module contains two 1% metal film resistors. Each programming board/module is equipped with 5 gold plated pins that plug into gold plated connectors mounted on the crossover board.

IMPORTANT SAFETY INSTRUCTIONS



The lightning flash with arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of un-insulated “dangerous voltage “ within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.

DO NOT EXPOSE THIS EQUIPMENT TO DRIPPING OR SPLASHING AND ENSURE THAT NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, ARE PLACED ON THE EQUIPMENT.

TO COMPLETELY DISCONNECT THIS EQUIPMENT FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE.

THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE.

BRYSTON LIMITED WARRANTY

Bryston analog audio circuits are warranted to be free from manufacturing defects for twenty (20) years from the original date of manufacture. The warranty includes parts and labour.

Bryston Digital circuits and cables are warranted for five years from the original date of manufacture. The warranty includes parts and labour.

Bryston products having motorized moving parts, excluding motorized volume controls, are warranted for three years from the original date of manufacture. The warranty includes parts and labour.

Bryston will remedy the problem by repair or replacement, as we deem necessary, to restore the product to full performance. Bryston will pay shipping costs one way (usually the return portion) during the first three years of warranty coverage.

In the event of a defect or malfunction, contact Bryston’s repair centers for return authorization. Products must be returned using original packaging material only. Packing material may be purchased from Bryston if necessary. This warranty is considered 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 fully comply with Bryston operating instructions voids the warranty. This warranty gives you specific legal rights and you may also have other rights which may vary from province to province and country to country.

As of 2006-02-22 Bryston will only warranty Bryston products purchased through authorized Bryston dealers. Bryston products with a date code of 0608 or higher (date code format is “yyww”, where “yy” is the two least significant digits of the year and “ww” is the week of the year) must be accompanied by a copy of the bill-of-sale from a Bryston authorized dealer to qualify for warranty service. The warranty is transferable from the original owner to a subsequent owner as long as a copy of the bill-of-sale from the original authorized Bryston dealer accompanies the re-sale. The copy of the bill of sale to any subsequent owner need ONLY include the Name of the Bryston Authorized Dealer and the Model and Serial number of the Bryston product. The warranty will only be honored in the country of the original purchase unless otherwise pre-authorized by Bryston.

BRYSTON SERVICE in CANADA:

Postal address: **PO. BOX 2170, Stn. Main
PETERBOROUGH, ONTARIO
CANADA K9J 7Y4**

Courier address: **677 NEAL DRIVE
PETERBOROUGH, ONTARIO
CANADA K9J 6X7**

PHONE: 705-742-5325
FAX: 705-742-0882
E-mail: cdnser@bryston.ca

BRYSTON SERVICE in the USA:

**79 COVENTRY ST., Suite 5
NEWPORT, VERMONT
U.S.A. 05855-2100**

PHONE: 802-334-1201
FAX: 802-334-6658
E-mail: usaser@bryston.ca

BRYSTON SERVICE outside Canada and the USA:

contact your local distributor or

CHECK OUR WEB SITE:
E-MAIL BRYSTON DIRECTLY:
FAX BRYSTON DIRECTLY:
PHONE BRYSTON DIRECTLY:

www.bryston.ca
cdnser@bryston.ca
01-705-742-0882
01-705-742-5325