

dbx

Model 933
Distribution Amplifier/Mixer Module

Instruction Manual

Your new module was carefully and protectively packed at the factory. Nonetheless, be sure to examine the unit and the carton for signs of any damage that may have occurred during shipping. If there is such evidence, don't destroy the carton or packing material and notify your dealer immediately.

It's a good idea in any case to save the carton and packing should you ever need to ship the module.

In the event of initial problems, first contact your dealer; your unit was thoroughly inspected and tested at the factory.

In addition to a module and this owner's manual the carton should contain a warranty/registration card. Please fill it out and send it to us.

When choosing an installation location, try to keep the 900 frame away from heat sources (e.g., power amps), and be sure there's some space (1-1/2 to 2") above and below. If enclosed space is your only choice, put a fan on the mainframe. Avoid water, of course, and high humidity.

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DESCRIPTION

The dbx 933 Distribution Amplifier/Mixer module is a 1-channel-to-3/3-channels-to-1 module for use in the dbx F900, F900A or FS900 powered mainframe or in a custom installation. Each channel is well-isolated with full separation maintained across the audio band, and individual-channel muting as well as individual gain is instantly available. Movable plug-in jumpers on the PCB allow configuration for the 1-in/3-out Dist Amplifier or the 3-in/1-out Mixer (with a change in hookup as well). Similar internal jumpers set the output(s), too, for either single-ended or fully balanced operation. The module comes set for single-ended Dist Amp operation.

Each channel has a level control with a range of +20 to -40 dB, a Mute switch with LED, and a Clip LED. The Master level control supplies up to an additional 20 dB of gain or 40 dB of attenuation to all three channels simultaneously. Patented dbx IC VCAs (Voltage-Controlled Amplifiers) perform this control of levels, so that audio signals never go through the front panel pots. The use of VCAs also allows the levels to be controlled with external voltages, making it possible in a suitable setup to adjust the 933 from a remote location; pads on the PCB are provided for this purpose.

APPLICATIONS

A distribution amp is called for whenever a given output must feed more than one device. Broadcasting is perhaps the most obvious environment. Such a configuration in a radio or television studio might be master signal fed from console to transmitter, to studio and executive-office monitors, to archival tape deck, and on to a variety of other decks. Remote vans (whether ENG or concert site) have similar needs for getting a few channels from the same location to a range of other locations.

Sound-reinforcement applications would include any situation where a feed must be sent to different boards, rooms, power amps, tape decks, and so on. Finally, audio- or video-duplication facilities are a third prime candidate for a mainframe of 933s.

Broadcast applications for Mixer operation might be deejay mike, listener phone line, and music audio all feeding the master board. And with suitable mike preamps, a pair of 933s create a simple, clean 6-channel stereo board for "purist" recording.

SPECIFICATIONS

Frequency response	20 Hz-20 kHz ± 0.5 dB
THD	0.03%
IMD	0.2% (SMPTE)
Equivalent input noise (controls at unity gain)	-87 dBv unweighted, -90 dBv A-wtd
Input impedance	30 k-ohms balanced, 18.8 k-ohms unbalanced
Output impedance	22 ohms, designed to drive 600 ohms or greater
Maximum input	24 dBv
Maximum output	23 dBv
Gain	-40 to +20 dB for each channel, same range available beyond this for all channels
Channel mute	60 dB (38 dB in 12 ms)
Power	60 mA at ± 15 V regulated, 90 mA at ± 24 V unregulated; 7 W
Dimensions	5.25"h x 1.5"w x (card) 9.5"d

Notes

- 1) Specifications are subject to change.
- 2) 0 dBv is defined as 0.775 V regardless of load impedance. Subtract 2.2 from the dBv figure to convert to dBV (i.e., referred to 1 volt). When the load impedance is 600 ohms, this particular dBv is also called "dBm." All voltages are rms.
- 3) SMPTE IMD is measured with 60 Hz and 7 kHz 4:1.

FRONT PANEL

1 Level knobs. These adjust the outputs in the Dist Amp mode or the inputs in the Mixer mode from -40 to +20 dB.

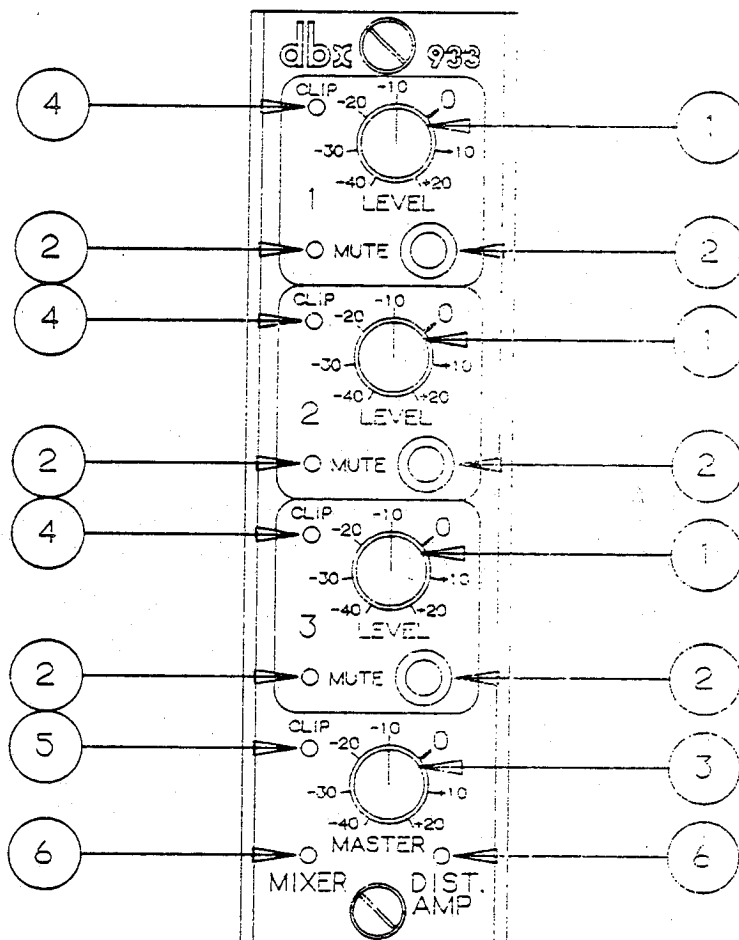
2 Mute buttons and LEDs. In either mode these attenuate the channels 60 dB below unity gain, effectively turning them off. The LEDs light.

3 Master level. This adjusts the three channels at once, over a range of -40 to +20 dB in addition to any gain adjustment from the individual level knobs.

4 Clip LEDs. Overload-sensing circuitry monitors the signal path at critical locations and will light these LEDs approximately 1.5 dB before clipping occurs anywhere in the channel. The LEDs stay on long enough to be seen even on short transients.

5 Master Clip LED. This indicates that the signal is overdriving the input when the unit is in the Dist Amp mode, or that, in Mixer mode, the sum of the three channels is overdriving the mixing stage.

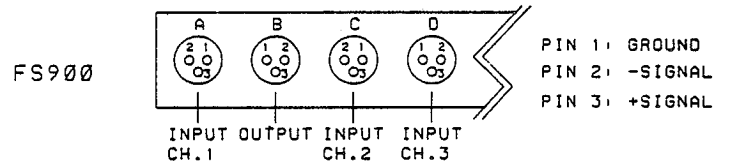
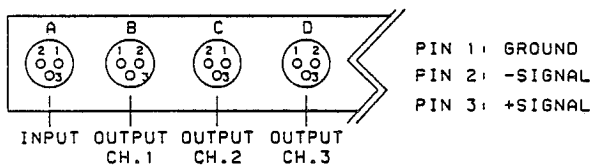
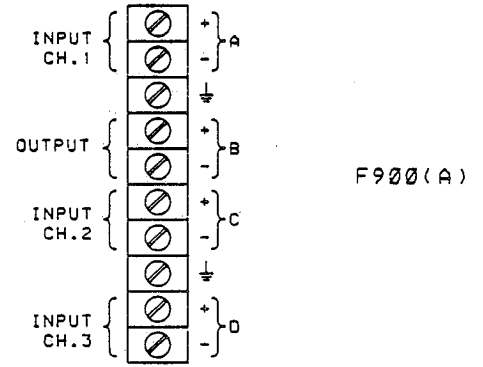
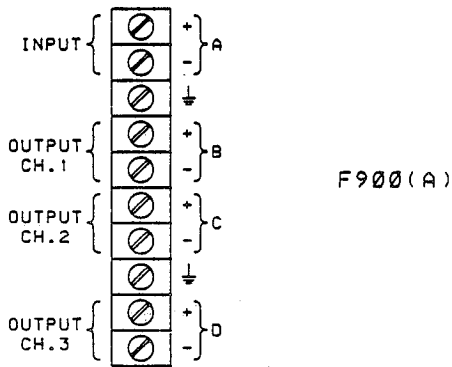
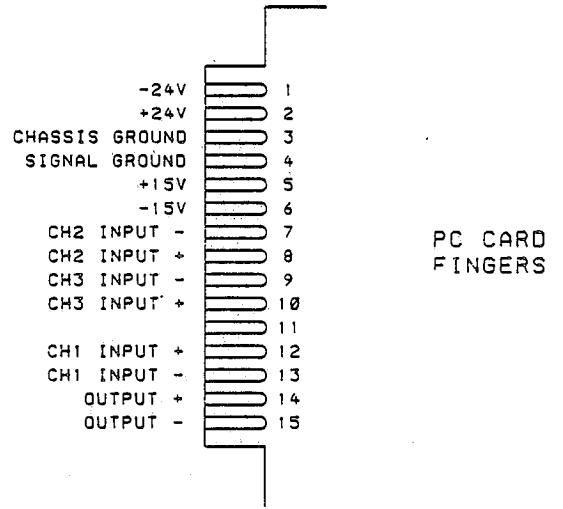
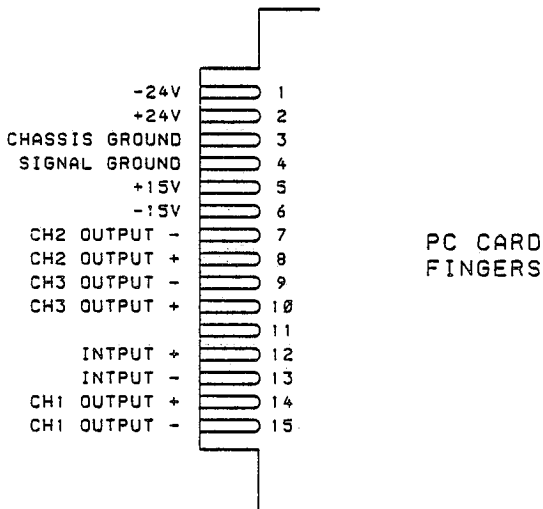
6 Mixer/Dist Amp LEDs indicate, of course, which mode the internal jumpers are set for. See next page.



HOOKUPS

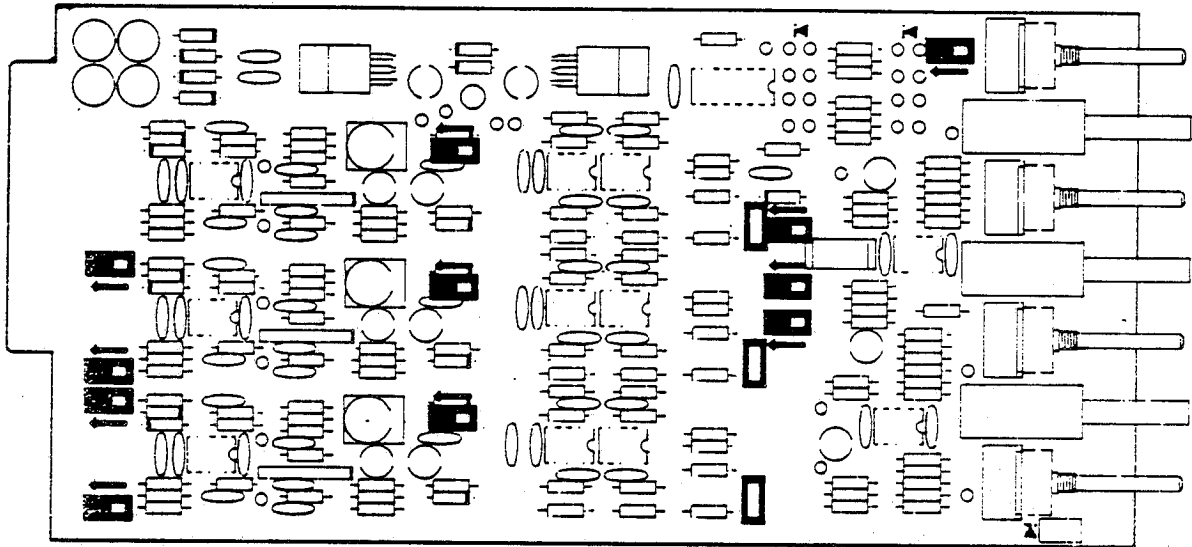
Distribution Amplifier

Mixer



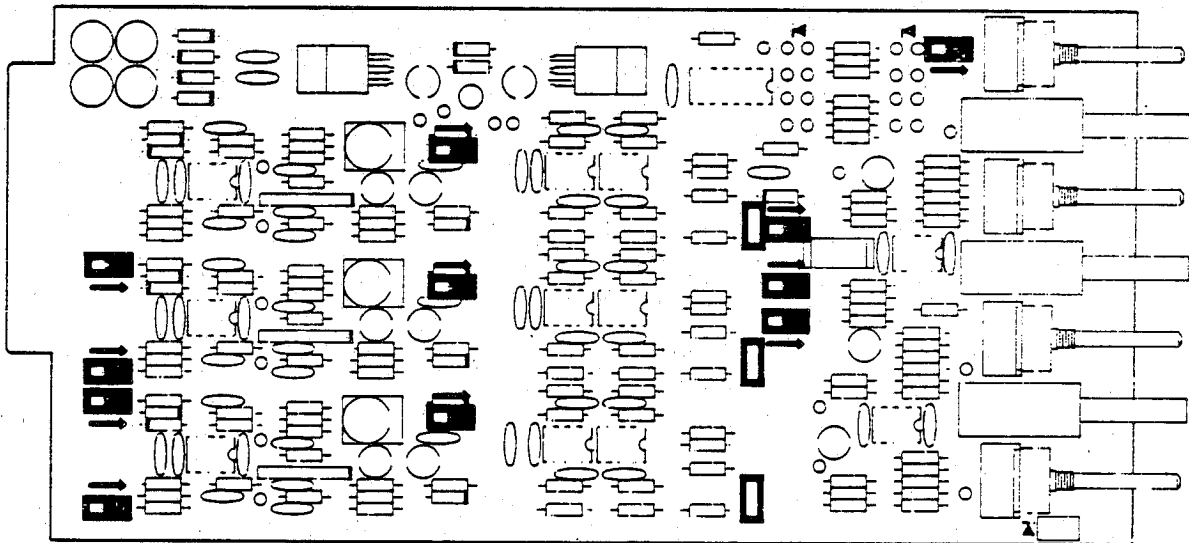
CHANGING MODES

The factory setting is for Distribution Amplifier operation, as shown here.



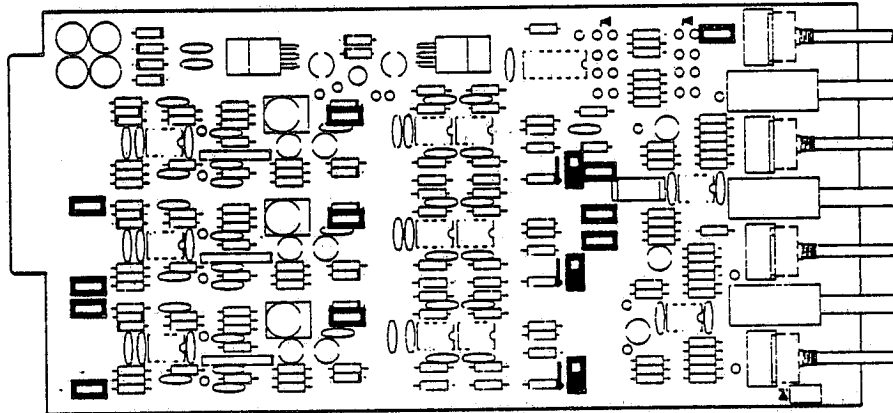
There are 11 white jumpers. All must be set to the left for Dist Amp operation.

Mixer operation



The 11 jumpers all go to the right for Mixer mode.

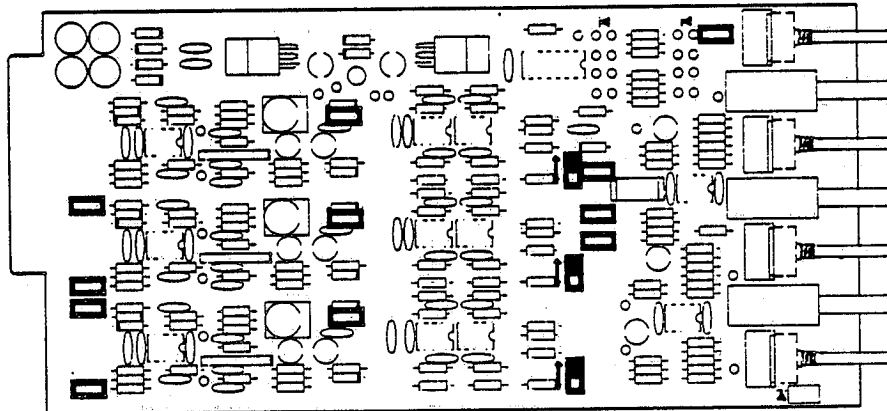
Unbalanced operation (factory setting)



BE SURE TO CHANGE ALL THREE (3) BLACK JUMPERS

These three jumpers must be toward the bottom of the board for unbalanced operation.

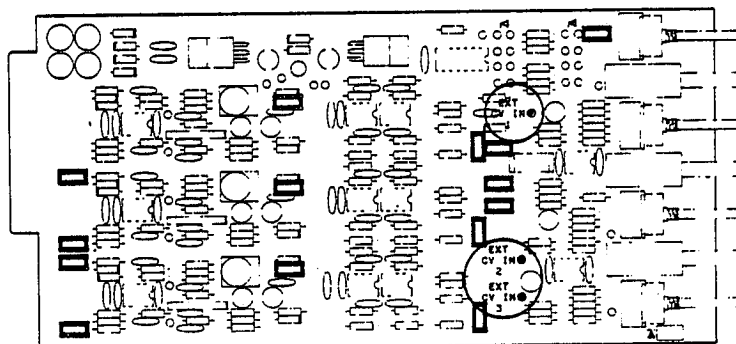
Balanced setting

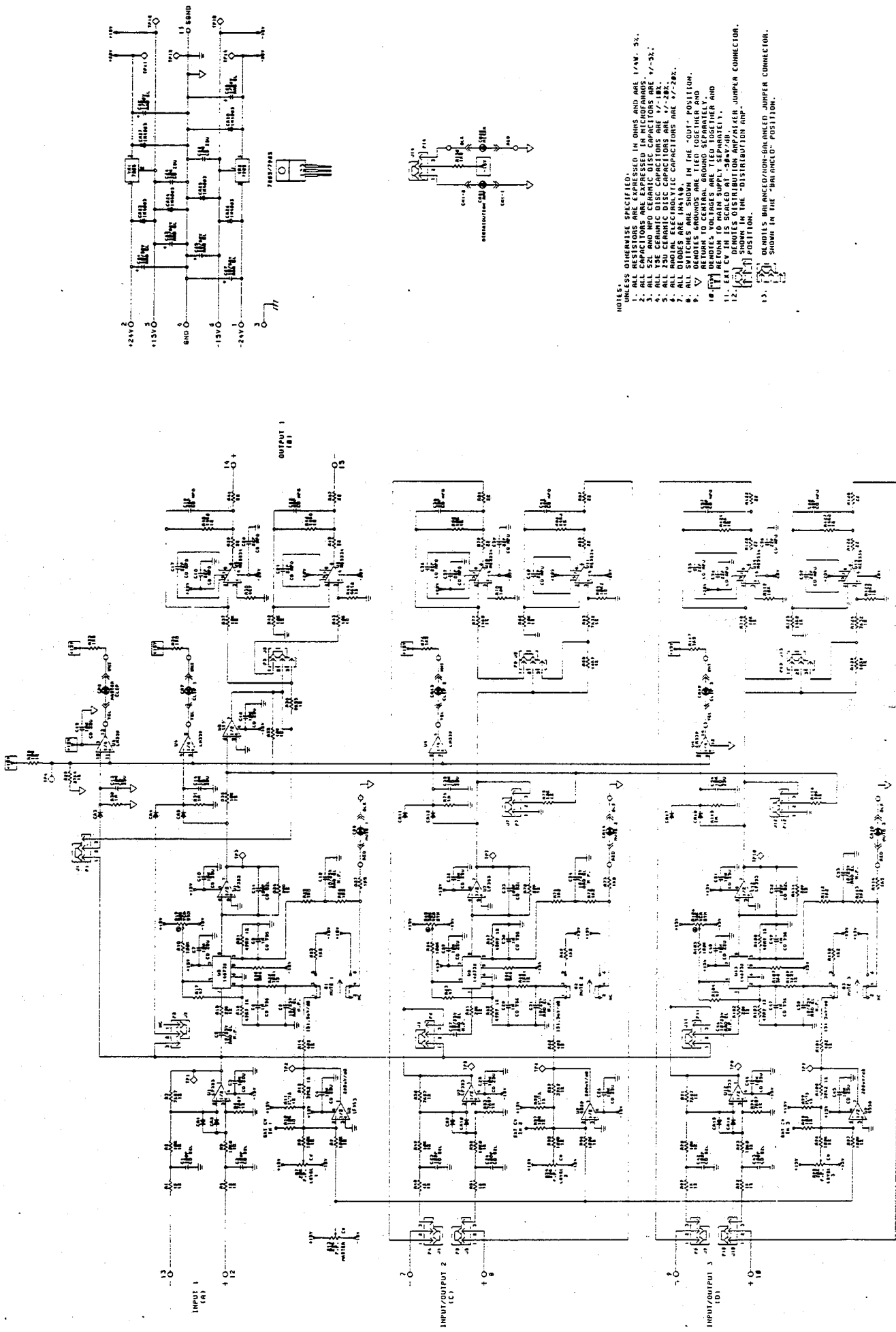


BE SURE TO CHANGE ALL THREE (3) BLACK JUMPERS

These three jumpers must be toward the top of the board for balanced operation

Connecting an external control voltage, either mode. The sensitivity is 50 mV per dB of change. Positive voltage produces attenuation, negative voltage gain.





NOTES:

1. ALL CAPACITORS ARE EXPRESSED IN OHMS UNLESS OTHERWISE SPECIFIED.
2. ALL CAPACITORS ARE EXPRESSED IN OHMS UNLESS OTHERWISE SPECIFIED.
3. ALL 52L AND NFD CERAMIC DISC CAPACITORS ARE 1/4W. 5K.
4. ALL Y5E CERAMIC DISC CAPACITORS ARE 1/2-100.
5. ALL Y5V CERAMIC DISC CAPACITORS ARE 1/2-100.
6. ALL RADIAL ELECTROLYTIC CAPACITORS ARE 1/2-200.
7. ALL DIODES ARE 1N4148.
8. ALL DIODES ARE 1N4148.
9. ALL DIODES ARE 1N4148.
10. RETURN TO CENTRAL GROUND SEPARATELY.
11. EXACT VALUE IS SCALD AT -20°C/DB.
12. DENOTES DISTRIBUTION AMP/FASEK JUMPER CONNECTOR.
13. DENOTES DISTRIBUTION AMP/FASEK JUMPER CONNECTOR.

WARRANTY and FACTORY SERVICE

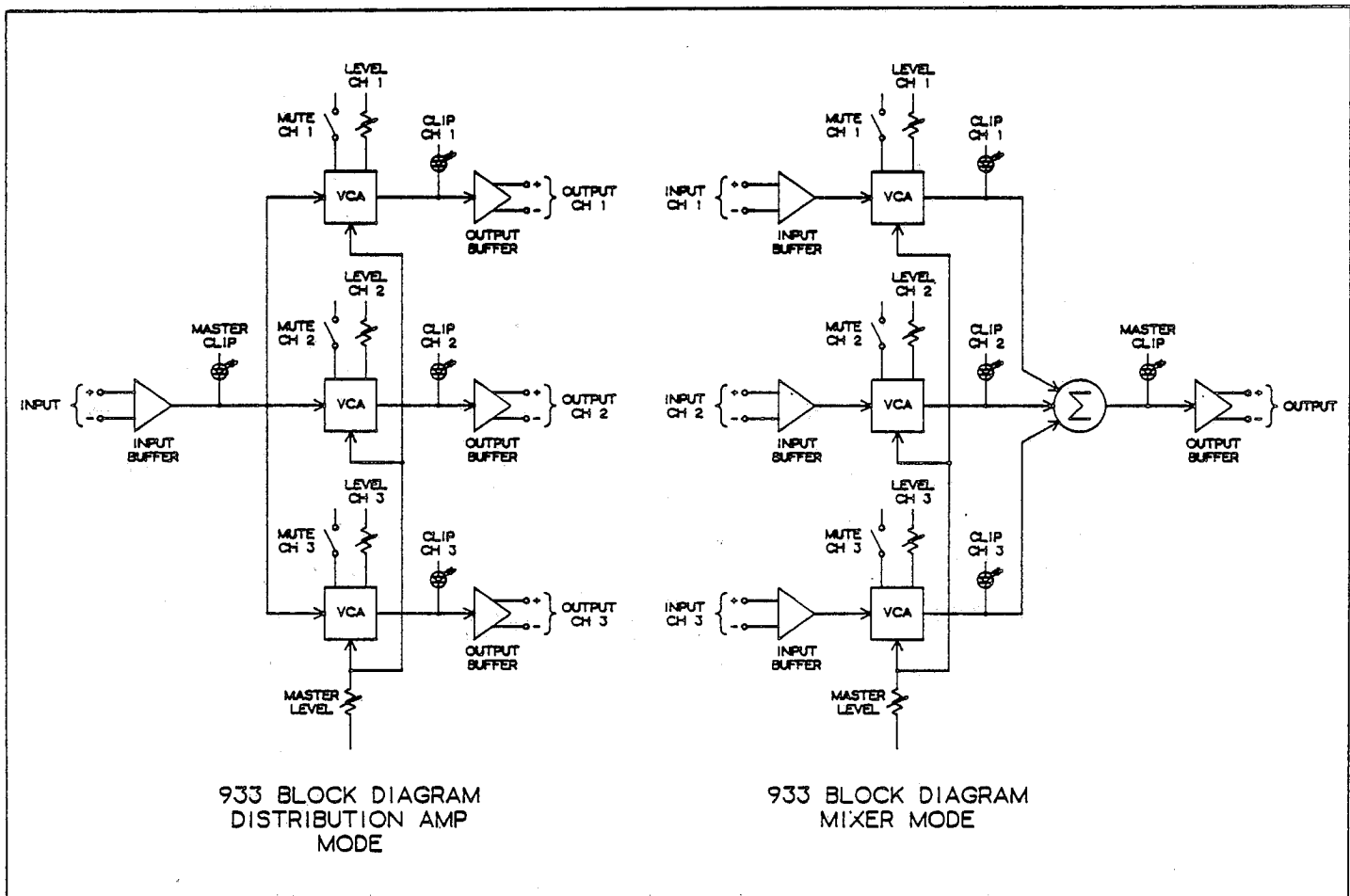
All dbx products are covered by a limited warranty (warranties for products purchased outside the USA are valid only in the country of purchase and the USA). For details, consult your warranty/registration card or your dealer/distributor.

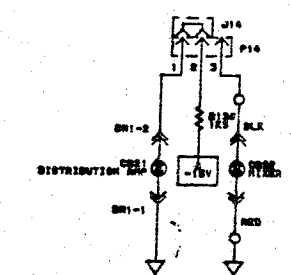
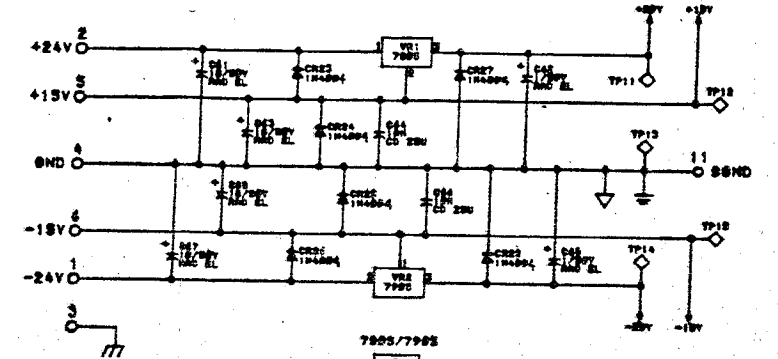
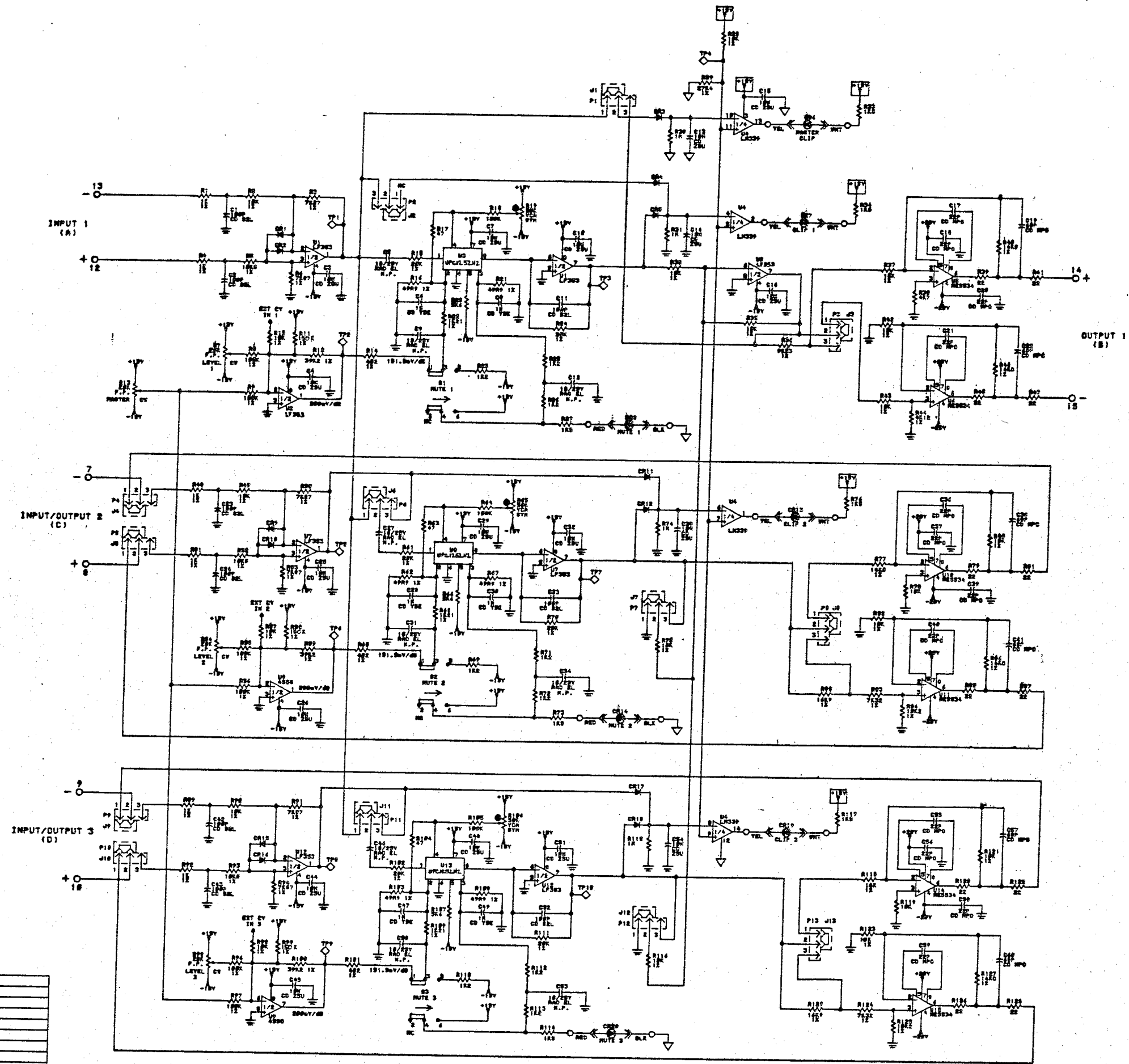
dbx Customer Service will help you use your new product. For answers to questions and information beyond what's in this manual, write to:

dbx
71 Chapel St.
PO 100C
Newton, Mass. 02195 USA
Attn: Customer Service

You also may call 617 964-3210 between 9:30 and 4:30 Eastern time (USA). The Telex is 92-2522.

Should problems arise, consult your dealer or distributor. If it becomes necessary to have your equipment serviced at the factory, repack the unit, including a note with a description of the problem, your name, address, and phone, and the date of purchase, and send the unit freight prepaid to the above street address, marking it Attn: Repairs.





- NOTES:
- UNLESS OTHERWISE SPECIFIED, ALL RESISTORS ARE EXPRESSED IN OHMS AND ARE 1/4W. 5%. ALL CAPACITORS ARE EXPRESSED IN MICROFARADS.
 - ALL S2L AND NPO CERAMIC DISC CAPACITORS ARE +/-5%.
 - ALL Y5E CERAMIC DISC CAPACITORS ARE +/-10%.
 - ALL Z5U CERAMIC DISC CAPACITORS ARE +/-20%.
 - ALL RADIAL ELECTROLYTIC CAPACITORS ARE +/-20%.
 - ALL DIODES ARE 1N4148.
 - ALL SWITCHES ARE SHOWN IN THE "OUT" POSITION.
 - ▽ DENOTES GROUNDS ARE TIED TOGETHER AND RETURN TO CENTRAL GROUND SEPARATELY.
 - ▽ DENOTES VOLTAGES ARE TIED TOGETHER AND RETURN TO MAIN SUPPLY SEPARATELY.
 11. EXT CV IN IS SCALED AT -50mV/DB.
 12. DENOTES DISTRIBUTION AMP/MIXER JUMPER CONNECTOR. SHOWN IN THE "DISTRIBUTION AMP" POSITION.
 13. DENOTES BALANCED/NON-BALANCED JUMPER CONNECTOR. SHOWN IN THE "BALANCED" POSITION.

dbx-733

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REVISIONS		APPROVAL		933-USED ON	
NO	DATE	DESIGNED	DATE	FORM	DATE
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2	11/10/68	SS	11/10/68		
3	12/10/68	SS	12/10/68		
4	1/10/69	SS	1/10/69		
5	2/10/69	SS	2/10/69		
6	3/10/69	SS	3/10/69		
7	4/10/69	SS	4/10/69		
8	5/10/69	SS	5/10/69		
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96	9/10/76	SS	9/10/76		
97	10/10/76	SS	10/10/76		
98	11/10/76	SS	11/10/76		
99	12/10/76	SS	12/10/76		
100	1/10/77	SS	1/10/77		

AKG ACOUSTICS

SCHMATIC MIXER/DISTRIBUTION AMP

SCALE: NONE SIZE: NUMBER REV