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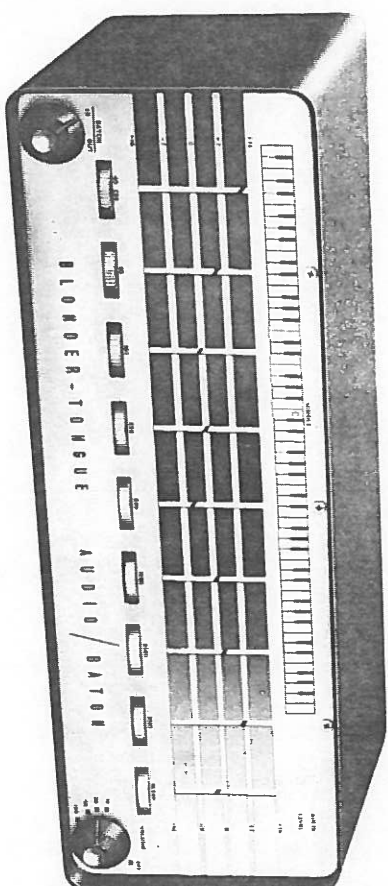
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BLONDER-TONGUE LABORATORIES, INC.

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NEWARK 2, NEW JERSEY

FIRST CLASS
PERMIT NO. 6289
NEWARK, N. J.



OPERATING MANUAL

for the

MODEL B-9B AUDIO BATON

BLONDER-TONGUE LABORATORIES, INC.

NEWARK 2, NEW JERSEY

The Audio Baton is a unique new high-fidelity instrument which can amplify or attenuate the level of each octave throughout the full audio frequency range. You have complete control of each octave, thereby giving you an infinite selection of audio frequency responses for optimum tonal balance, full listening enjoyment, and compensation for deficiencies in original sound source or reproducing equipment.

1. SPECIFICATIONS

1.1 Input: AC impedance at 1,000 cps is 100K ohm minimum shunted by a capacity of 150 uuf. Maximum input voltage is 1.5 V RMS.

1.2 Output: AC impedance is not greater than 20K ohms at 1,000 cps.

1.3 Performance: Hum and noise more than 66 db below rated output. Insertion loss: zero.

Frequency response flat, from 20 to 20,000 cps $\pm 2\frac{1}{2}$ db, with all the octave controls set flat.

With one network control varied and all others set at the zero reference level, the following responses will be effected:

160, 320, 640, 1280, 2560 cps: + 13 db and — 13 db

80 and 5120 cps: + 13 db and — 11 db

40 and 10,240 cps: + 13 db and — 6 db

1.4 Power requirements: 117 V, 60 cycles, AC, 23 watts.

1.5 Replacement tubes: 7025/12AX7A(1); 12AX7(4); 6X4(1).

1.6 Size (cabinet): 17-1/4" x 6" x 7-3/16" (W,H,D).

1.7 Shipping weight: 11 lbs.

2. INSTALLATION

2.1 Plug the line cord of the Audio Baton into a 117 volt AC outlet (regulate 60 cycle household current.)

2.2 Connections: (See examples in Fig. 1 and 2).

A Connect pre-amp (or equivalent) output to the *input* of the Audio Baton.

B Connect *output* of Audio Baton to input of Power Amplifier.

C To install with a combination Amp-Preamplifier unit, see Fig. 1.

2.3 Initial Control Settings of Audio Baton: (See Examples in Fig. 3 and 4).

A Set *Power Amplifier Sensitivity Control* (located at rear) for range which includes input sensitivity of power amplifier for maximum output. Refer to the power amplifier specifications. The Audio Baton is equipped to handle two ranges:

0.1 - 0.6 volts OR 0.6 - 1.5 volts

B Set octave controls (40/80/160/320/640/1280/2560/5120/10,240 cps to zero db reference level (center or "flat" position).

C Set BY-PASS switch on front panel to IN.

D Set *Hum Bal. Control* (located at rear) for minimum hum. Make this adjustment with no signal coming into the Audio Baton. Turn Volume Control fully clockwise. Reverse line plug to find minimum hum position.

E Set Volume Control to wattage marking (10w-20w-40w-100w) to correspond with maximum rated wattage of power amplifier.

F Set Light Level Switch (located at rear) to desired illumination on panel. Use med or low position for extra long bulb life.

2.4 Initial Control Setting of Auxiliary Equipment:

A Set Volume Control of power amplifier for maximum. (Omit this step if power amplifier does not have a volume control.)

B Set Volume Control or pre-amp (or equivalent) for comfortable listening level. (50 milliwatts.)

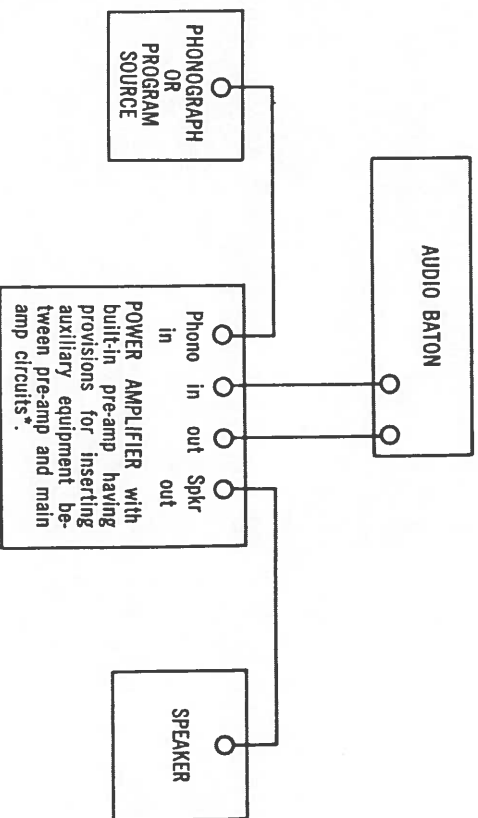


Fig. 1

Installing the "Audio Baton" with a combination Amp-Preamplifier unit



Fig. 2

A Typical Audio System with Pre-Amp and Power Amplifier on Separate Chassis

*Such as "stereo balance control" or "tape output, tape monitor" connections ("tape output" connected to B-9B input, "tape monitor" to B-9B output).

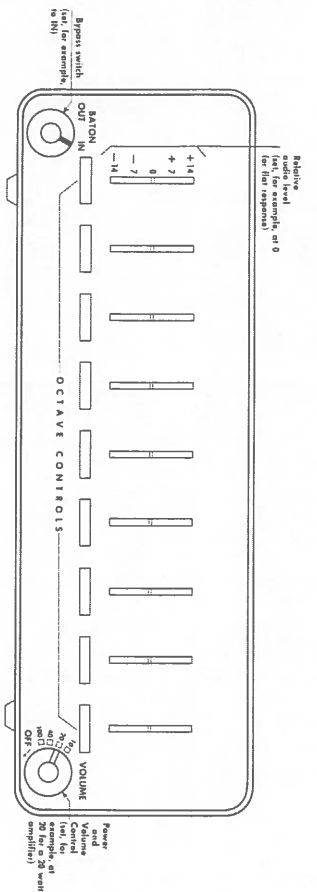


Fig. 3

Front Panel Setting

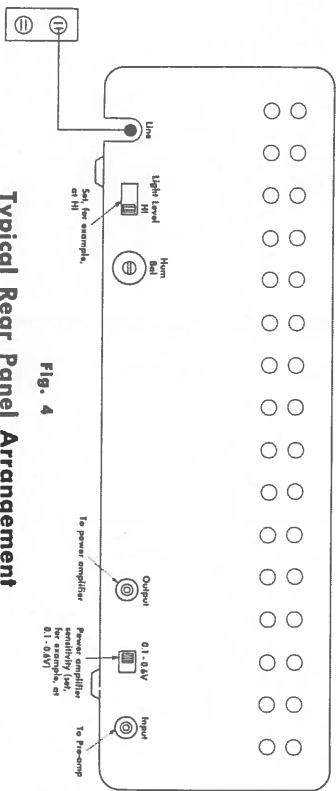


Fig. 4

Typical Rear Panel Arrangement

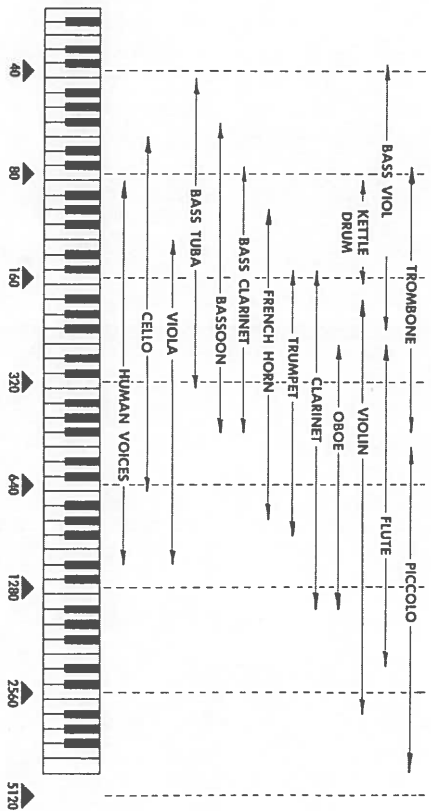


Fig. 5

Musical scale, the range of various instruments and the human voice fundamental tones

2.5 Final Control Settings of Audio Baton: (See examples in Fig. 3 and 4.)

- A Volume Control operated for any desired level.
- B Octave Controls operated as desired, or as outlined on demonstration record furnished.
- C By-Pass Switch operated as required.

2.6 Final Control Setting of Auxiliary Equipment: No further adjustments required.

2.7 Be sure to listen to the demonstration record and hear the full capabilities of the Audio Baton.

2.8 Operating Features: The Audio Baton now permits the audiophile to have complete control over the frequency response of his high fidelity system.

Some of the uses you will find for your new Audio Baton are:

- A Highlight or bring out individual instruments or voices in musical compositions.
- B Increase or reduce the presence effect; that is, cause the performer to seemingly advance from the background or recede into it.
- C Reduce distortion in the mid-frequency range without attenuating the high frequencies.
- D Correct for the non-flat response of the pick-up, record, speaker, etc.
- E Create special effects. Such as telephone sound, background music response, hollow sound, etc.
- F Increase speech clarity, especially in the presence of noise.
- G Increase the clarity of PA systems; reduce the howl effect of PA systems operated at high volume.
- H Aid the hard-of-hearing. By properly manipulating the controls of the Audio Amplifier, it is possible to hear music in high fidelity without using a hearing aid.
- I Aid in the teaching of Physics and Music courses.

2.9 How to Take Advantage of the Foregoing Capabilities:

- A Look at the musical scale chart shown in Fig. 5 and note the range of fundamental tones possible from various instruments and voices. If, for instance, a Cello is playing notes in the octave above middle C and the 320 cps control is advanced, the notes will sound louder. If no other instruments are sounding notes in the same range, the Cello will be brought out. By reducing the setting of the 320 cps knob, you will diminish the Cello sound.

B Frequencies in the 2,000 to 4,000 cps range are called the Presence Frequencies. If the amplitude of the response is increased in this range, solo performers will seem to advance from the background. The 1280 and 2560 cps controls may be used for this purpose. Reducing the settings on these controls will cause solo performers to seemingly recede into the background.

C Program material with a substantial amount of intermodulation distortion (such as might come from a well worn record, a poor loud-speaker, or an improperly aligned tuner) may be made to sound better by the attenuation of frequencies in the middle range because most of the stronger intermodulation components exist here. Reduce the settings of the 3 to 5 center octave controls to accomplish this objective.

D Improperly designed loud-speaker enclosures often cause a booming effect in the bass range. The 80 and 160 cps controls, adjusted for attenuation, are effective in reducing this boom. The 40 cps knob may be increased to restore bass response without bringing back the boom. If a particular composition has a shrill tone quality, reduce the setting of the 2560 cps knob. For a description of other tonal effects and their correction, see Fig. 6.

E Many special effects may be created using the Audio Baton. Turning all the knobs to minus 14 with the exception of the 2400 cps controls simulates a telephone type of sound. A very pleasing background music response is created by turning all knobs to minus 14 except the extreme LOW and extreme HIGH knob.

F Clear reproduction of speech requires a frequency range of approximately 200 to 2,700 cps. The Audio Baton may be used to attenuate noise components of other frequencies and improve the signal-to-noise ratio of noisy speech.

G PA system intelligibility may be increased by using the Audio Baton. This work is usually done empirically; that is, one must experiment with various settings of the several octave controls in order to obtain the most articulate speech. Feedback of sound from the loudspeaker to the microphone may cause howl. This may be reduced by finding the knob corresponding to the howl frequency and attenuating that frequency.

H Hearing Aids do two things: they increase volume of sound for the sensitivity-deficient ear and predistort the frequency response of the sound in order to compensate for the non-flat frequency response of the ear. The Audio Baton, used with a high fidelity system, may also be used to compensate for the frequency response deficiencies of an ear, permitting the hard-of-hearing person to listen to high fidelity music without an aid and yet obtain the frequency response correcting advantages of an aid.

I For student applications, it is possible to demonstrate the sound present in each individual band of frequencies.

	Extreme low below 100	Low 100-300	Lower Middle 300-800	Upper Middle 800-1500	Lower High 1500-3000	Middle Highs 3000-5000	High 5000-8000	Extreme High Above 8000
Excess	Booming	Grunt	Sock	Muddy	Solid	Dead, dull or thick	Brassy	Hard
						Shrill		
						Brassy		
						Metallic		
		Boom	Flat Sounding	Masculine	Bright			
			Body	Baritone	Brilliant			
			Mellow	Crisp			Brittle	Brittle
Normal								
				Lean	Warm		Soft	Soft
				Soprano				
				Thin				
Deficiency				Timmy				

(Reprinted by permission from AUDIO, August, September, 1950)

Fig. 6
Chart showing various subjective defects and their relation to the normal. It is also an indication of the approximate amount of correction needed.

3. MAINTENANCE AND REPAIR

3.1 Maintenance of the Audio Baton Model B-9B consists of occasional tube replacements.

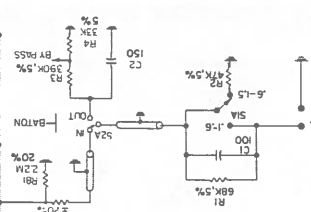
To replace a tube, remove the back cover by removing the five screws. Tube locations are indicated on the back cover.

3.2 For repairs, return unit to your dealer. If service is not available locally, pack the unit carefully and ship it prepaid to:

BLONDER-TONGUE LABORATORIES, INC.
Service Department
9 Alling Street
Newark 2, New Jersey

3.3 Schematic:

FUNCTIONAL	DESCRIPTION
R1	2.2K
R2	2.2K
R3	2.2K
R4	2.2K
R5	2.2K
R6	2.2K
R7	2.2K
R8	2.2K
R9	2.2K
R10	2.2K
R11	2.2K
R12	2.2K
R13	2.2K
R14	2.2K
R15	2.2K
R16	2.2K
R17	2.2K
R18	2.2K
R19	2.2K
R20	2.2K
R21	2.2K
R22	2.2K
R23	2.2K
R24	2.2K
R25	2.2K
R26	2.2K
R27	2.2K
R28	2.2K
R29	2.2K
R30	2.2K
R31	2.2K
R32	2.2K
R33	2.2K
R34	2.2K
R35	2.2K
R36	2.2K
R37	2.2K
R38	2.2K
R39	2.2K
R40	2.2K
R41	2.2K
R42	2.2K
R43	2.2K
R44	2.2K
R45	2.2K
R46	2.2K
R47	2.2K
R48	2.2K
R49	2.2K
R50	2.2K
R51	2.2K
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R54	2.2K
R55	2.2K
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R57	2.2K
R58	2.2K
R59	2.2K
R60	2.2K
R61	2.2K
R62	2.2K
R63	2.2K
R64	2.2K
R65	2.2K
R66	2.2K
R67	2.2K
R68	2.2K
R69	2.2K
R70	2.2K
R71	2.2K
R72	2.2K
R73	2.2K
R74	2.2K
R75	2.2K
R76	2.2K
R77	2.2K
R78	2.2K
R79	2.2K
R80	2.2K
R81	2.2K
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R84	2.2K
R85	2.2K
R86	2.2K
R87	2.2K
R88	2.2K
R89	2.2K
R90	2.2K
R91	2.2K
R92	2.2K
R93	2.2K
R94	2.2K
R95	2.2K
R96	2.2K
R97	2.2K
R98	2.2K
R99	2.2K
R100	2.2K



- Notes
1. All resistors in ohms, K=1000, M=1,000,000.
 2. All capacitors in MFD except electrolytic (MFD) K=1000.
 3. All resistors and capacitors are 10% unless otherwise specified.
 4. All paper capacitors are 500 WDC unless otherwise specified.
 5. All disc capacitors are 500 WDC.
 6. All resistors are 1/2 watt.
 7. All capacitors are ceramic unless otherwise specified by the following symbols.
 8. Capacitors with GAV notation indicates mfr, RfC and has a guarantee minimum value.
 9. LP 1,2,3 are Tung-Sol 12 or equiv. best type temp.
 10. C3 and C4 are 5.6, 10, or double section capacitors on paper capacitor.
 11. Curved shape of capacitor symbol indicates outside foil.

3.4 Circuit Description:

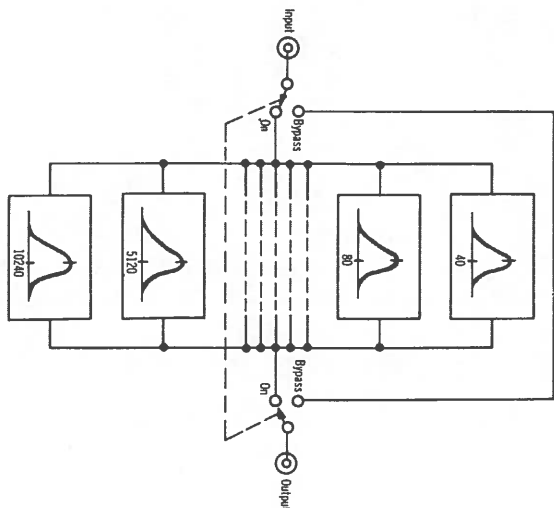


Fig. 7
Block Diagram

The 40/80/160/320/640/1280/2560/5120 and 10240 cps controls are of the band-pass type allowing only a part of the audio spectrum to pass through these stages. Each Octave Control operates as a volume control on its individual octave.

The Audio Baron splits the audio frequency range into individual octaves as shown in Fig. 7. When the outputs of all these octave control stages are added together (super-imposed), the full audio frequency range is again restored. If all controls are set to the same level, the resulting output has the form shown in Fig. 8.

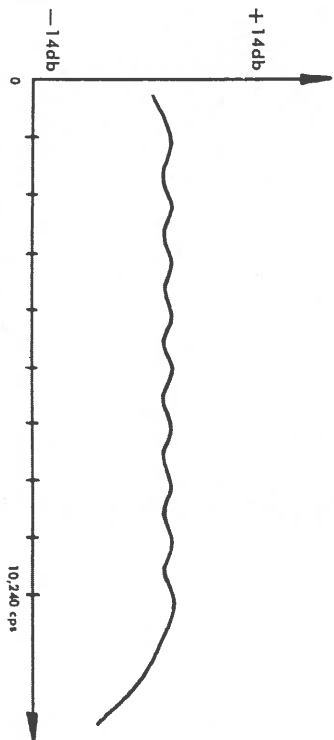


Fig. 8

Since the strength of each octave can be varied individually, we can get an infinite number of audio frequency responses. The response shown in Fig. 9 is an example of boosting the 2560 cps octave and cutting the 160 cps octave, accomplished by setting the 160 cps control to — 14 and the 2560 cps control to + 14.

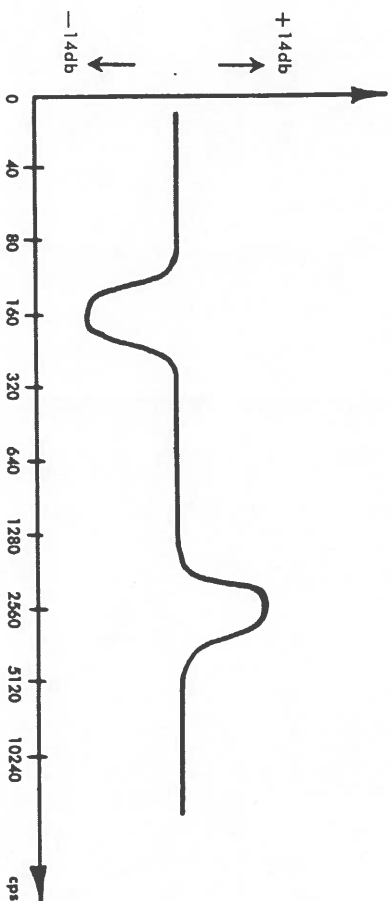


Fig. 9

NOTES ON OPERATING YOUR AUDIO BATON:

- A** Sometimes the 40 cps control will seem to have little effect. This occurs with many musical compositions for the simple reason that no frequency components in the 40 cps region are present.
- B** If the occasion arises when one desires more boost from any one control, start with all octave knobs at a reference position — 7 instead of at zero. This will permit more boost on each knob.
- C** When equalizing the response of a record having faulty tone quality, small changes perhaps as low as 3 or 4 db on a knob are usually sufficient.
Listen for at least 15 seconds after a change has been made to become accustomed to each new adjustment.
- D** If distortion is present, as indicated by a rough or kazoo-type sound, increase the attenuation of the high frequencies starting at the 10,240 cps knob and working down.

Warranty

This unit is fully guaranteed to be free from defects in workmanship and components for 90 days from date of purchase. The accompanying warranty card should be filled out completely and promptly returned to the factory. If the unit should require adjustments or parts replacements during the warranty period, return it to your dealer or if this service is not available locally, pack it carefully and ship it prepaid to: BLONDER-TONGUE, Service Department, 9 Ailing Street, Newark 2, New Jersey. A packing slip complete with name and address, serial number and nature of difficulty should be enclosed.

WARRANTY CARD VOID UNLESS COMPLETED AND RETURNED WITHIN 10 DAYS AFTER PURCHASE

FILL IN AND RETURN THIS CARD

How did you hear of Blonder-Tongue?

Dealer ☐ Friend ☐ Advertising ☐

Do you own other Blonder-Tongue products?

Yes ☐ No ☐

Do you own a Hi-Fi? Yes ☐ No ☐

If Yes: Standard ☐ Stereo ☐

Brand of Components?

Phone

Amplifier

Tuner

Speaker

Are you married? Yes ☐ No ☐

Please check your age group:

Under 20 ☐ 20-35 ☐ over 35 ☐

What is your occupation?

How do you like this unit?

Date of purchase

Model # B-9B Serial #

Warranty (gray sticker) #

Dealer Name

Address

Your Name

Address

BLONDER-TONGUE LABORATORIES, INC.
NEWARK 2, NEW JERSEY

MODEL B-9B AUDIO BATON

for the
OPERATING MANUAL

