High Fidelity Speaker Systems Owner's Manual

Interface:B

Series III

INTERFACE:B SERIES III OWNER'S MANUAL

The Interface:B Series III system offers significant performance advantages over most conventional high-fidelity speaker systems. Its vented, equalized woofer design and high-output Super-Dome™ tweeter provide a truly unique combination of high accuracy, wide bandwidth, high efficiency and modest size. Because of its somewhat unusual nature, the Interface:B also has a few special connecting and operating requirements. We have tried to provide clear and detailed unpacking, connecting and operating instructions. Please follow them closely to assure correct and trouble-free operation.

The most basic and widely applicable information has been printed on a grey background. This information should be sufficient for most installations.

The other information covers more advanced, detailed system and application considerations. Nevertheless, in a manual of this scope, it is difficult to cover every possible concern in great depth. We suggest consultation with your dealer and, additionally, welcome your inquiries at Electro-Voice. Address and telephone information is part of the warranty statement at the end of this manual.

Good Listening!

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UNPACKING

Unpacking the Interface:B speaker systems and equalizer is straightforward, with no special precautions necessary. However, if at all practical, *retain all packing materials for possible future use* (see "Customer Service" section).

ALWAYS USE THE EQUALIZER!

The Interface:B/C equalizer should always be used with the speaker systems. A sharp cutoff below 30 Hz protects the woofer from large subsonic signals which the speaker system is not designed to reproduce. These subsonic signals are usually non-musical in nature, most often produced by irregularities in record surfaces. The signals can produce large, damaging woofer excursions at moderately high listening levels. At best, such excursions represent wasted

amplifier power and produce increased distortion in the frequency range covered by normal program material.

Note: the octave-band and similar equalizers used by some audio enthusiasts to correct room/speaker deficiencies or custom tailor program material are typically not capable of the relatively sharp boost-and-cut contouring of the Interface:B/C equalizer below 100 Hz. Such equalizers must be used in conjunction with the Interface:B/C equalizer. For hookup instructions, see "Using the Interface:B/C Equalizer with Other Accessories."

CONNECTING THE EQUALIZER

The Interface:B/C equalizer may be easily connected to your receiver, integrated control amplifier, or separate preamplifier and power amplifier. Use the two stereo connecting cables supplied and follow the accompanying instructions and diagram.

Most Universal Connection: in the Tape Monitor Path

The tape monitor connection is most universal because virtually all consumer electronics include tape monitor facilities.

In such equipment, a Tape Monitor (also called Tape-Source) switch interrupts the normal signal path through the amplifier. The Interface:B/C equalizer, like tape recorders and other electronic accessories, should be connected to the rear-panel tape jacks, and activated by the Tape Monitor switch. One pair of Tape jacks is usually labeled "Tape Out" and the second pair, "Tape In." Other common designations and the proper interconnections are shown in the illustration on page 5.

Note that the Tape Monitor switch must be engaged at all times for the equalizer to be in the circuit. This is usually accomplished by depressing a Tape Monitor button or lever, or by turning a rotary switch to the Tape Monitor position. Common designations for the proper switch position include "Tape," "Tape In," "Tape Play," and "Playback." See the section entitled "Testing For Proper Equalizer Hookup" if, after speaker hookup, there is any doubt that the equalizer is in the circuit.

Another set ot Tape jacks and Tape Monitor switching is furnished on the equalizer, so that other equipment may still be connected into the system, even though the equalizer has "used up" the Tape jacks on the main electronics. For convenience, two pairs of Tape Out jacks are provided; either pair may be used. Both may be used if the input impedance of the auxiliary equipment is above 100K ohms.

A typical system hookup is illustrated on page 5.

Alternate Connection: between Preamp and Power Amp

The Interface:B/C equalizer may also be connected between preamplifer output and power amplifier input if

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the system includes such separate components. This alternative is attractive if it is desired to keep existing Tape Monitor facilities free or where the preamplifier has no Tape Monitor jacks.

Even some receivers and integrated control amplifiers offer the possibility of the same connection if equipped with Pre-Out and Main-In jacks which interrupt the signal path just before the power amplifier stages. First, the "U-nails" that normally connect the Pre-Out and Main-In jacks must be removed. Then the Pre-Out jacks should be connected to the equalizer input and the equalizer output connected to the Main-In jacks.

Electronics with Two Tape Monitor Circuits

Some electronics have a second Tape Monitor circuit so that two tape recorders can be conveniently accommodated. Usually, either one of the Tape Monitor circuits may be used for the Interface:B/C equalizer, as previously described and illustrated.

However, any signal source connected to the other set of Tape-in jacks on the main electronics will probably not be equalized. The actual situation depends on the internal wiring and switching of your particular electronics. A careful reading of appropriate instructions may be necessary.

Using the Interface:B/C Equalizer with Other Accessories

Other accessories, such as octave-band equalizers, noise-reduction units, or matrix four-channel decoders, may be used in conjunction with the Interface:B/C equalizer. The most widely applicable hookup is probably a variation of the most universal Tape Monitor connection for the Interface:B/C equalizer, where the accessory unit is inserted either before or after the Interface:B/C equalizer as specifically outlined below.

Noise-Reduction Units, Dynamic Range Expanders, and Matrix Four-Channel Decoders. In general, these units should be connected *before* the Interface:B/C equalizer, between the Tape-Out jacks of the main electronics and the Input jacks on the equalizer. In this way, the audio signal—which may be encoded or specially processed—is treated directly by the intended unit, without the possibly detrimental intervention of the Interface:B/C equalization.

Note that if two pairs of Interface:B speaker systems are used in a four-channel system of any type, two separate equalizers are required.

Accessory Equalizers. Octave-band equalizers and other signal-shaping devices may be connected on either side of the Interface:B/C equalizer: between the Tape-Out jacks of the main electronics and the Input jacks on the Interface:B/C equalizer or between the Output jacks of the Interface:B/C equalizer and the Tape-In jacks on the main electronics.

AC Power

Connect the AC line cord of the Interface:B/C equalizer to a

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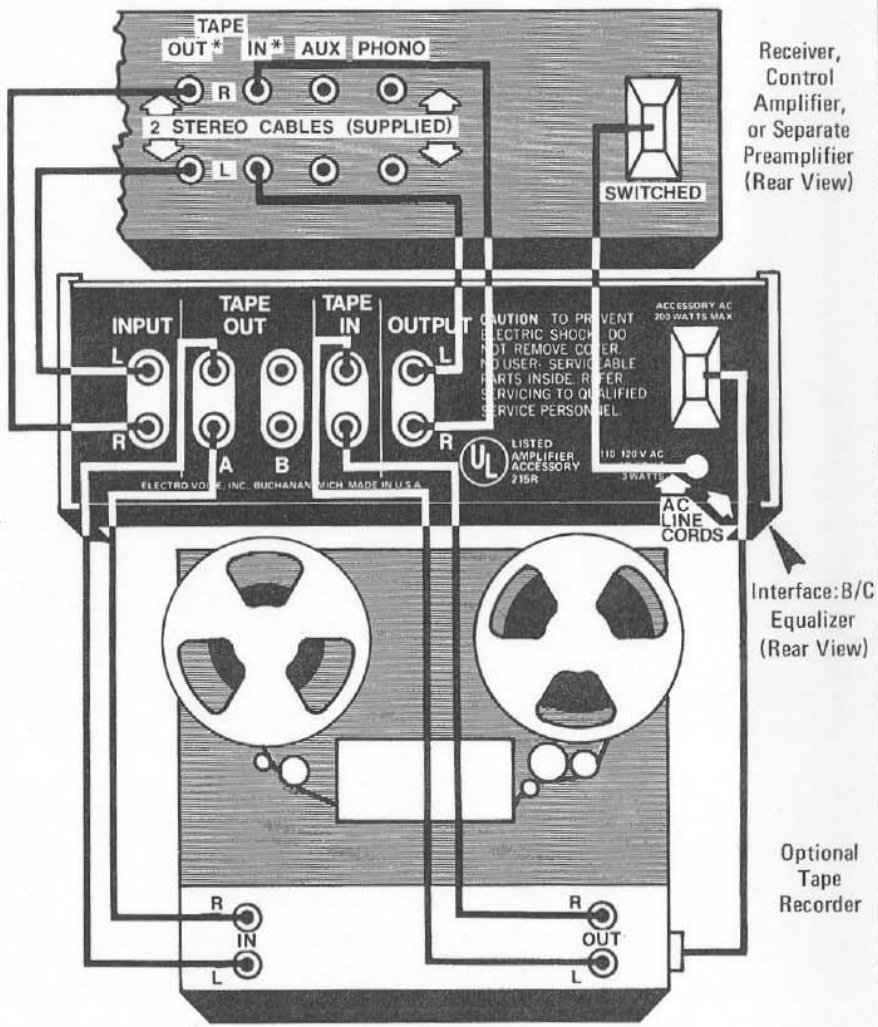
INTERFACE:B/C EQUALIZER HOOKUP



*ALTERNATE DESIGNATIONS

Tape Out: Record, Record Out

Tape In: Monitor, Play, Playback, Tape Play

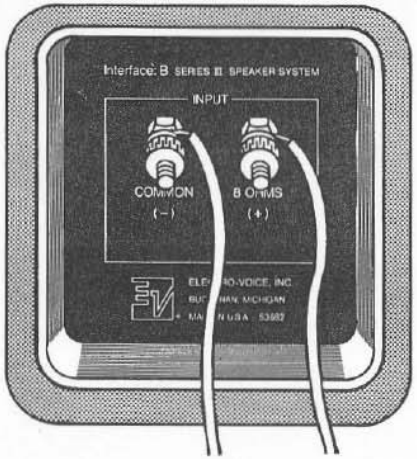
RECOMMENDED
TAPE MONITOR CONNECTION

convenient outlet. If a switched AC outlet is available on the main electronics, power will be applied to the equalizer when the main system is turned on. An unswitched AC outlet is provided on the back of the equalizer. Maximum power capacity of this outlet is 200 watts.

A typical AC line cord hookup is part of the previous illustration.

CONNECTING THE SPEAKER SYSTEMS

Input Connections



The two terminals on the terminal board at the rear of the speaker enclosure are the input connections. The left-hand terminal (common, –) should be connected to the common output terminal of the amplifier; the right-hand terminal (8 ohms, +) should be connected to the amplifier's 8-ohm output terminal. Place each bare wire end between the washer and the knurled nut and tighten the knurled nut firmly, using only finger pressure. Use of tools is not required. Make certain the bare wires do not touch each other.

In-phase Speaker Operation

Connecting the speakers as described above produces in-phase operation, an important condition for best stereo performance. This ensures that the speaker cones are moving in unison when the same signal is present at each set of amplifier output terminals. Such a signal condition occurs with monaural program material and, in stereo, with soloists or groups located midway between the two speakers.

In-phase operation results in a satisfyingly "solid" center image. Out-of-phase operation produces a spread, indefinite center image that changes location and character as the listener moves a foot or two back and forth between the speakers. Also, out-of-phase operation may reduce bass response, depending on room dimensions and speaker/listener locations.

An experienced listener can successfully test for in-phase operation by noting the quality of the center image on monaural program material. However, the least ambiguous check is to set the two speakers facing each other, an inch or two apart. Use program material with fairly prominent bass content and switch the amplifier to the monaural mode. This is usually accomplished by pressing a Mono or A+B button or lever, or moving a rotary switch to a similarly labeled position. Reverse the wires to *one* of the speakers (either at the speaker end or the amplifier end, *but not at both).* This will either increase or decrease the bass output. The correct connection is the one that produces the most bass.

Wire Selection

To avoid any significant amplifier power loss in the speaker lines, 18-gauge stranded wire (commonly called lamp cord or zip cord) is satisfactory for lengths up to 30 feet. If longer speaker lines are required, use progressively larger wire sizes: 16-gauge to 50 feet, 14-gauge to 75 feet and 12-gauge to 125 feet. Always use a separate pair of wires for each speaker, even if your amplifier permits using a common ground. Resistance in a common ground wire can degrade stereo separation.

TESTING FOR PROPER EQUALIZER HOOKUP

After the speakers have been connected, there may be some doubt that the equalizer is properly connected. Simply turn the High Frequency Slope control to the Off position while a program source is playing. After a short time, the sound will become very distorted and drop in level, indicating that the equalizer is properly connected. If the sound does not change, the equalizer is not in the circuit.

Alternatively (without turning the equalizer off), the same test may be performed by switching the Input switch from Source to Tape. If the equalizer is properly connected (and nothing is plugged into its Tape In jacks), the program will be completely interrupted.

SYSTEM PLACEMENT

Placement of stereo speakers is more often determined by floor plan and furniture arrangement than by acoustic considerations. There are some general guidelines which may be helpful, however.

Preferred Locations

Usually it is possible to select a normal listening area (a sofa, chair grouping, or whatever) in the listening room. The speakers should face the listener with no obstructions between the speakers and the listener. The Interface:B is designed for balanced performance when placed within an inch or two of one wall, several feet away from room corners.

Spacing between the speakers is important. If the speakers are too close together, stereo separation will be reduced. Conversely, if the speakers are too widely spaced, the stereo image may be disjointed with a gap in the middle. In most rooms, a speaker separation of 6 to 12 feet will provide a good stereo image. A good guideline is to have an angle of about 30° to 50° between speakers, when viewed from the listening position. Feel free to experiment.

Sound Quality and Speaker Location

There is no doubt that different listening rooms and changes of speaker location within a given room

can affect sound quality to an extent important to many enthusiasts. Some changes are subtle, while others are quite noticeable.

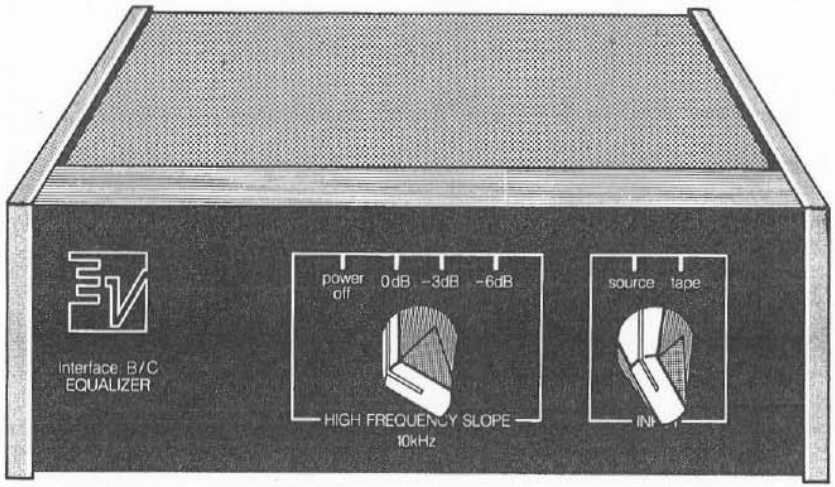
It is possible to theoretically predict and categorize many effects if room characteristics can be simply defined. However, real listening rooms are usually sufficiently irregular and complex to dilute and alter the clear-cut effects that might be predicted theoretically. The following broad statements about the major effects of speaker location change should help the experimentation.

Moving speakers into the corners of the room will increase the amount of bass and mid-bass heard. The Interface:B is designed for balanced performance in the more normal locations along one wall, somewhat away from room corners. However, the relatively wide, uniform high-frequency dispersion of the Interface:B makes it less sensitive than many other designs to less-than-ideal corner placement.

Also, placing speakers in corners tends to move the tweeter away from your ears. This can create a "heavy" sound. Again, the Interface:B's excellent high-frequency dispersion tends to alleviate the effect.

USING THE EQUALIZER CONTROLS

High Frequency Slope Control
The High Frequency Slope control combines the power on-off function with selection of three different high-frequency response contours. When the switch is to the extreme left, the equalizer is turned off. However, if the equalizer is connected to a switched AC outlet on the main electronics, the equalizer will be turned on with the rest of the system, and the high-frequency selection can be left set at all times.



The 0 dB Position. This setting produces the flattest total acoustic power output at high frequencies, approximately 6 dB down in the 10- to 12.5-kHz range.

We prefer the 0 dB position for the finest low-noise program material. With such material, the aural effect of a relatively flat acoustic power output is quite amazing, and is one of the most outstanding characteristics of the Interface:B.

The -3 dB Position. The second position provides a total acoustic power output which is down an additional 3 dB at 10,000 Hz. Many listeners would consider this the "normal" position.

The -3 dB position is useful in treating recordings of high quality except for excessive "brightness" and/or audible tape hiss. Let your ears be the judge!

The -6 dB Position. The last setting attenuates the high frequencies by 6 dB at 10,000 Hz, resulting in a sound character similar to the "duller" high-fidelity systems available. This setting produces the most listenable results from program sources having high levels of distortion and/or noise, perhaps in addition to restricted high-frequency content.

Input Switch
The Input switch chooses the desired input to the equalizer. In the Source position, whatever program material is coming from the Tape-Out jacks of the amplifier will continue through to the balance of the system. When Tape is selected, a tape machine connected to the Tape-In jacks will play.

USING SYSTEM TONE CONTROLS

Generally speaking, the more sophisticated the listener, the less he uses tone controls. The equalizer contouring is an integral part of the total system design of the Interface:B, providing the proper compensation to achieve the performance goals. While the same degree of control flexibility used with conventional speaker systems may be employed, we suggest that minimal use of Loudness, Bass, Treble, and the like, will result in better overall performance.

EXTENSION SPEAKERS

Other Interface:B Series III Systems
Once the equalizer is connected into a stereo system, additional Interface:B Series III systems can be connected to the same amplifier and will receive the proper frequency contouring. Interface:B Series III speaker systems are available without equalizer on special order from your dealer.

Conventional Speakers
If conventional speakers are connected to the same amplifier, they will also receive the contoured signal. However, the degree of contouring is minimal compared to some other available equalizers, so that other speaker systems will not be unduly endangered, especially if high listening levels are avoided. (The equalizer sends about four times normal power to the extension speakers in the region

of peak boost, around 35 Hz). The low-frequency cutoff below 30 Hz should benefit most systems.

Interface:1, 2, and 3 (Unequalized) The unequalized Interface:1, 2, and 3 may be appropriately used as extension speakers. Follow the recommendations in the "Conventional Speakers" section, above.

Other Interface Models (Equalized)

Interface:C Series II. Interface:B Series III and Interface:C Series II use the same equalizer. Therefore, in a music system set up for Interface:B Series III, Interface:C's may be added to the same amplifier and will receive the proper frequency contouring. Interface:C speaker systems are available without equalizer on special order from your dealer.

Interface:A Series III and Interface:D. Not unexpectedly, the capabilities of other equalized Interface models are best realized by using the equalizer specifically designed for each system. The deviation from ideal depends on the particular model.

The Interface:A Series III is not endangered by the Interface:B Series III equalizer as long as very low bass (around 30 Hz) at the highest listening levels is avoided. Frequency response in the 40-80 Hz range will be depressed about 3/4 dB and approximately twice normal power will be fed to the woofer below about 32 Hz.

Interface:D is not endangered by the Interface:B Series III Equalizer. However, response below about 28 Hz will be depressed about 3 dB and response in the 40-80 Hz range will be emphasized by about 3/4 dB.

If you have a question about a specific combination, do not hesitate to contact Electro-Voice.

AMPLIFIER POWER AND SOUND PRESSURE LEVEL RECOMMENDATIONS

Casual discussions of amplifier power requirements usually result in a wide range of "answers." This is so because power levels vary *immensely* with speaker efficiency, room acoustics, and desired listening levels. Nevertheless, the following commentary should help produce an answer that is right for you. Fortunately, the discussion can be simplified by fixing some of the variables. First, the efficiency of the Interface:B Series III has been assumed. Second, the recommendations are based on a listening room of average acoustics (a precise description of these "average acoustics" follows in the section entitled "Room Acoustics and Amplifier Power"). With these variables fixed, we must deal only with the question of appropriate listening levels and the amplifier power required for these levels.

Understand The Recommendations The "Detailed Specifications Summary" section of this manual specifies the rated amplifier power requirements for a broad range of

listening levels. The text of recommendations which follows illustrates these specifications and is designed to relate them to the real-world listening experience of the audio enthusiast.

Notes on Amplifier Power Ratings. All amplifier power recommendations are given in average sine wave watts (sometimes called "RMS" or "continuous" watts) per channel, all channels operating, over a minimum frequency range of 30 to 15,000 Hz. Common deviations from this rating method will not change attainable listening levels significantly. Also, to simplify the discussion, it is assumed that the amplifier is well behaved when operating at or slightly beyond its power output capability.

Notes on Listening Levels. All listening levels are expressed as sound pressure levels in decibels (dB). The dB is a term frequently used in audio but often misunderstood. For example, very few people have a real conception of what a "90 dB" sound pressure level sounds like. We hope to clarify this situation. Furthermore, the audible effect of specific increases and decreases in sound pressure level are not commonly known. A 1 dB change in overall program level is just audible to the critical ear. A 3 dB change is noticeable, but would be interpreted as only a modest change in level. Yet a 3 dB level increase requires a *doubling* of amplifier power output. A 6 dB change in level would seem fairly substantial; such an increase requires four times amplifier power.

Notes of Listening Position. The sound pressure levels noted below are those observed when the listener is in the "reverberant field" of the listening room. Sound pressure levels are highest very near the speakers. As the listener moves away from the speaker, the sound pressure level drops, as would be expected. However, in a room with average acoustics and with the Interface:B, this drop in level *stops* at about 6 feet from the speaker. Beyond this distance, the listener is in the reverberant field and the sound pressure level of wide-range program material remains virtually constant because nearly all of the audible sound energy is reflected energy.

Minimum Recommendations

Sound Pressure Level. It has been said that a sound pressure level of 85 dB is the maximum average intensity people want to experience in their homes.[1] However, it is our considered opinion that a quality music system should be able to provide a long-term average program level of approximately 90 dB in order not to be found inadequate by nearly every serious music listener at some time. It is this so-called long-term average level that the ear interprets as a given loudness over any several-second musical crescendo. Also, it is this average level that is expressed by the relatively slow-moving indicator of a sound pressure level meter.

Additionally, we feel that a music system must be able to reproduce short-duration peaks (on the order of 10 milliseconds) 10 dB higher than

the average, or 100 dB. Musical signals are full of such peaks. While they contribute very little to perceived loudness, they are essential to accurate reproduction.

A 90 dB average level will seem quite loud to many people, certainly far above a background music level (60 dB) or the level of ordinary conversation (65 dB). A 90 dB average level is very likely to represent a practical upper limit-of-pleasure for many commercial recordings where compression and background noise have compromised the integrity of the original signal.

Amplifier Power. One Interface:B Series III speaker system will produce the sound pressure levels described above with a 3.6 watt amplifier. The 90 dB average level is reached with an input of only .36 watts, with the full 3.6 watts producing the 100 dB instantaneous peaks.

This amazingly modest requirement is due to the Interface:B Series III's high efficiency, about 6 dB higher than typical acoustic suspension speaker systems. This means that the Interface:B's power requirement is *one-fourth* that often recommended for these acoustic suspension systems.

Typical Requirements

Sound Pressure Levels. Although the 90 dB minimum recommended average level capability will satisfy a broad range of listeners, this level falls far short of the levels associated with most live music. At one time or another, most enthusiasts will find live music levels enjoyable for the highest quality commercial program sources and well-executed live recordings. For example, while "loud" classical music reaches only the relatively modest level of 80 dB, "very loud" classical music goes well beyond the 90 dB "minimum" – ranging from 90 to 100 dB. The short-duration peaks required for realistic reproduction can be another 20 dB higher. Loud rock music is on the order of 115 dB average level.[1] It is therefore our opinion that many enthusiasts will find average level capabilities in the 95-100 dB range most appropriate. This means that the sound pressure levels of most live classical music can be attained. For contemporary rock and electronic music, the 95-100 dB capability represents a reasonable compromise among several variables: the actual levels of live rock, typical program sources, and neighbors.

Amplifier Power. One Interface:B Series III speaker system will produce the sound pressure levels noted with amplifiers ranging in capability from 11 (95 dB average level) to 36 watts (100 dB average level). Such levels would require amplifiers from 43 to 140 watts for typical acoustic suspension designs. The long-term average levels are produced by 1.1 to 3.6 watts with only the instantaneous peaks utilizing the full capacity of 11 to 36 watts.

Maximum Recommended Power
Amplifiers much larger than the minimum recommended may be used:

up to around 250 watts per channel. However, care and intelligence are required to see that the high power is used *only* to reproduce the harmless, short-duration program peaks that are 10 to 20 dB above the average levels. When this condition is fulfilled, the long-term average power delivered by the amplifier will be within the rating of the Interface:B Series III: 25 watts at all frequencies above 30 Hz.

This condition is virtually assured if the signal from the amplifier is distortion-free and accidental inputs are avoided. Damaging accidental inputs include insertion or unplugging of the power cord or audio connectors while the amplifier is operating and dropping the phonograph pickup arm on the record surface under similar volume conditions. Note that unusually large high-frequency power capacity of the Interface:B virtually eliminates damage from high-frequency amplifier distortion components and accidental inputs such as rewinding a tape recorder without tape lifters with the volume at normal playback levels.

Sound Pressure Level. With a 250-watt amplifier, a single Interface:B Series III will produce an average midband level of 108 dB, with peaks of 118 dB. This means that the levels of live rock music can be approached to a degree satisfactory to most rock aficionados. Many high-fidelity speaker systems are incapable of providing such high levels, even with the largest permissible amplifiers. In this context, "midband" refers to the frequency range from about 100 to 1000 Hz. This is the range where both efficiency and power handling capacity are essentially constant, and where most program material is concentrated.

Also, the maximum output ability of the Interface:B above 1000 Hz (104 dB average, minimum, in the 1000-6000 Hz range) is much greater than the usual high-fidelity speaker. The often demanding high-frequency energy content of contemporary studio recordings poses no problem.[2]

Users of high-power amplifiers should refer to the section entitled "Speaker Protection at High Listening Levels."

Room Acoustics and Amplifier Power

Description of "Average Listening Room." The professional acoustician would describe the average listening room used in the preceding discussion as a reverberant space having a room constant (R) of 200 ft.[2] This specification is a direct function of the room's surface area in square feet and the average percentage of sound energy absorbed by the room's surfaces and furnishings. For illustrative purposes, a room constant of 200 ft[2] would result from the following specifics:

1. "Average" sound absorption (average absorption coefficient = .15). This would be provided by plaster ceiling and walls, carpeted floor, some draped surfaces, and typical soft furniture.

2. "Average" surface area (about 1100 ft²) such as would result from a 19 ft x 15 ft room with an 8 ft ceiling.

How Amplifier Requirements Vary with Room Acoustics. Room acoustics affect the amplifier power required to achieve a given sound pressure level. Rooms larger than the average room have a larger surface area and thus require more amplifier power. Smaller rooms require less power. Rooms with more sound absorption than our average room (with "dead" acoustics) require more amplifier power. Rooms with less absorption ("live" acoustics) require less power.

A really complete treatment of the effects noted above cannot be given here. However, some examples will be useful in providing general guidelines:

1. A 10 ft x 20 ft x 30 ft "large" room with average absorption will require approximately twice the amplifier power as the average room.

2. A "medium-live" (average absorption coefficient = .1) room with the same dimensions as the average room will require approximately 40% less amplifier power.

3. A "medium-dead" room (average absorption coefficient = .25) with the same dimensions as the average room will require approximately twice the amplifier power.

SPEAKER PROTECTION AT HIGH LISTENING LEVELS

Protection Should Not Be Necessary with Intelligent Use

With no special speaker protection, we regularly use the Interface:B Series III with amplifiers of widely differing power capabilities including amplifiers of the maximum recommended output of 250 watts per channel. An extra margin of safety is provided by the Super-Dome tweeter which has high power capacity equal to that of the woofer (25 watts long-term average, 250 watts instantaneous peak).

We do studiously avoid the accidental, non-musical inputs described earlier. With this caution, we rarely if ever have damaged speaker components. However, carelessness or inexperience can cause excessive long-term average power input, especially when high listening levels are sought. The following commentary on excessive long-term average power inputs should be helpful.

Detection of Excessive Long-Term Average Power Inputs

Usually, the audio enthusiast will not be able to measure accurately average power inputs. However, careful listening for "peak clipping" distortion (a rough, raucous sound quality as volume is turned up) provides evidence of potentially damaging average levels.

Some background: average power levels are usually 10 to 20 dB lower than program peaks of a few

milliseconds duration. These peaks are basically harmless but are necessary for truly high quality reproduction. As the volume is turned up, program peaks will eventually be "clipped" or "flat-topped" as the amplifier runs out of power capacity, even though the average power level poses no problem for the amplifier. While moderate clipping of program peaks is inaudible on most types of program material, such clipping eventually produces the rough, raucous sound quality noted above.[3] This quality is often mistaken for "speaker distortion" when in fact the speaker system is only faithfully reproducing a distorted signal, rich in high-frequency distortion components and of high average level.

Audible peak clipping, then, is your evidence that average power levels are rising and may be only 3 to 6 dB below maximum amplifier output. For a 200-watt amplifier, this means that average levels from 50 to 100 watts are being produced, which would almost certainly damage the usual speaker system. If the listener can tolerate highly audible distortion, even amplifiers of more modest capabilities can produce high long-term average outputs.

Protection Limitations

If you choose to employ the following recommendation, keep in mind that any speaker protection system is a trade-off between two extremes: guaranteed protection and high listening levels. We feel that our recommendations do not excessively limit listening levels, yet provide a very reasonable assurance of protection. As a result, however, there are conceivably some program materials that fail to actuate the protection circuitry yet result in speaker damage. Our experience indicates that such damage should be rare.

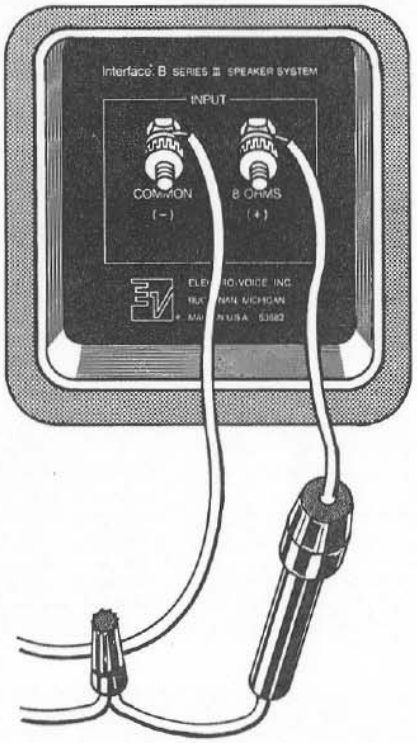
Fusing for Protection

Fusing should rarely be required. However, when the possibility of carelessness or inexperience is combined with high listening levels and large power amplifiers (say, in excess of 60 watts per channel) it is wise to fuse each speaker system. Because of the high power capacity of the Super-Dome tweeter, equal to that of the woofer, fusing will provide good protection at high as well as low frequencies.

A Littelfuse brand 3AG "Slo-Blo" fuse of 1-ampere rating is recommended for each Interface:B Series III speaker system. This particular fuse has been found to have a good current-versus-time characteristic, allowing higher (yet satisfactorily limited) current for relatively short periods of time and increased protection for more extended periods. (The same Littelfuse type with 3/4-ampere rating is not recommended, since it actually provides less protection than the 1-ampere version for time periods under four seconds. Also, other brands of slow-blow fuses and

standard-blow fuses tend to provide inadequate protection for short time periods and are therefore not recommended).

A fuse should be inserted in one of the speaker leads feeding each system. Inline fuse sockets may be used, or a fuse block may be glued to the rear of each enclosure. Both types of holders are readily available. A typical fuse installation is shown below:



DETAILED SPECIFICATIONS SUMMARY

The following specifications summary is extraordinarily complete by industry standards, complete enough to warrant some explanation. "Specs" are very popular with audio enthusiasts. They are often treated by manufacturers as a major ingredient in a successful advertising program. Other firms ignore specifications altogether, on the basis that no industry measurement standards exist and, if they did, could not begin to predict how a speaker will sound in your listening room.

At Electro-Voice, we subscribe to neither the "advertising" or "ignore-them" approach to specifications. Our design goal is to design an *accurate* transducer, one which changes the input as little as possible, which makes efficient use of amplifier power, which reproduces the dynamic range and sound pressure levels of live music when called upon to do so, and which sacrifices no single important performance characteristic for another.

The most valuable tool we have to assess our pursuit of accuracy is our ears. We listen to music, live and recorded, and we try to make our speakers *sound like music.* But our listening-based pursuit of accuracy is very much aided by a host of ojective measurements. While even a state-of-the-art complete set of measurements cannot predict how a speaker will sound, such

measurements are immensely helpful in explaining *why* a speaker sounds as it does, so we can do something about it if necessary.

With this background, we present to you the following detailed specifications summary. A truly complete set of measurements and appropriate commentary is not possible here; some measurements would have to be presented in graphical form to be most meaningful. Nonetheless, you will find these specifications as indication of our commitment to accurate reproduction as well as a useful shorthand guide to what performance you may expect in your listening room.

References:

1. For a lucid treatment of live-music sound pressure levels and perceived loudness: C. Stark, "The Dynamic Range of Music," **Hi Fi/Stereo Review**, June, 1968, and C. Stark, "The Sense of Hearing," **Stereo Review**, September, 1969.
2. For a good introduction to the frequency distribution of various program materials: L. Feldman, "Mystery of the Failing Tweeters" **Radio Electronics**, October, 1976.
3. For an excellent introduction to the audible effect of peak clipping: R. Allison, "Loudspeaker Power Needs," **Stereo Review**, September, 1973.

NOTES:

INTERFACE:B SERIES III DETAILED SPECIFICATIONS

EACH SPEAKER SYSTEM
(Equalizer High Frequency Slope Control at 0 dB)

Frequency Response, 1 Meter on Axis, Swept One-Third Octave Random Noise, Half-Space Anechoic Environment
± 2.5 dB 30-18,000 Hz

Total Acoustic Power Output vs. Frequency, Anechoic Environment
± 3 dB 30-12,500

Low-Frequency Acoustic Power Output vs. Frequency (Below 100 Hz), Small Signal
3-dB-Down:
30 Hz
10-dB-Down:
26 Hz

Dispersion Angle Included by 6-dB-Down Points, Indicated Bands of Random Noise, Horizontal and Vertical Planes, Anechoic Environment
500-8,000 Hz Octave Bands:
125° ± 30°
12,500 Hz 1/3-Octave Band:
75°

Sound Pressure Level at 1 Meter, 1 Watt into Nominal Impedance, 300-10,000 Hz Average, Anechoic Environment
92 dB

Suggested Amplifier Power Ratings, Continuous Average Power per Channel at 8 Ohms (Long-Term Average Power Capacity not to be exceeded)
Minimum:
3.6 watts
Typical:
12 to 36 watts
Practical Upper Limit:
120 watts
Maximum:
250 watts

Long-Term Average Sound Pressure Levels, with Instantaneous Peaks 10 dB above Average, at Midband Frequencies (90-1000 Hz), in Reverberant Field of Typical Living Room (R = 200 square ft), at indicated Watts per Channel Available
Medium/Loud (90 dB)
3.6 watts
Loud (95 dB)
12 watts
Loud/Very Loud (100 dB)
36 watts
Very Loud (105 dB)
120 watts
Maximum (108 dB)
250 watts

Maximum Long-Term Average Sound Pressure Levels, with Instantaneous Peaks 10 dB above Average, at Indicated Frequencies, in Reverberant Field of Typical Living Room (R = 200 square ft), with Maximum Long-Term Average Power Applied
Midband (90-1000 Hz):
108 dB
10,000 Hz:
101 dB

Long-Term Average Power Capacity above 30 Hz at 8 Ohms
25 watts

Short-Term Power Capacity (10 ms) above 30 Hz at 8 Ohms
250 watts

Half-Space Reference Efficiency
1.3%

Maximum High-Frequency acoustic Power Output (10,000 Hz)
Long-Term:
.056 watts
Short-Term (10 ms):
.56 watts

Maximum Midband Acoustic Power Output (90-100 Hz)
Long-Term:
.33 watts
Short-Term (10 ms):
3.3 watts

Crossover Frequencies
Acoustic:
42 Hz
Electrical:
1500 Hz

Impedance
Nominal:
8 ohms
Minimum:
5 ohms

Transducer Compliment
12-in low-frequency radiator
8-in dynamic midrange/woofer
1½-in Super-Dome tweeter with acoustic lens

Dimensions
16 in wide x 29-1/4 in high x 10-1/2 in deep

Cabinet
Walnut veneer

Net Weight
42 lb

EQUALIZER
(Each channel, High Frequency Slope control at 0 dB, unless noted otherwise)

Midband Gain
Unity

Maximum Equalization
6 dB at 35 Hz, fixed

Maximum Input Signal, RMS Sine Wave
Midband (80-3,000 Hz):
7 volts
35 & 20,000 Hz:
3.5 volts

Noise Output, 20-20,000 Hz Bandwidth
80 dB below 200 millivolts

Total Harmonic Distortion
1.0 V RMS Input, 20-20,000 Hz:
.01% or less
3.5 V RMS Input, 20-20,000 Hz:
.05% or less
5.0 V RMS Input, 55-8,000 Hz:
.05% or less

Intermodulation Distortion, 60 Hz and 7,000 Hz in a 4:1 Ratio, 1.5 V RMS Equivalent Sine Wave Input
.005%

Channel Separation, Source Impedance Less Than 1000 Ohms, 20-20,000 Hz
60 dB minimum

Output Impedance
1200 ohms

Minimum Load Impedance
8,000 ohms

Input Impedance
100,000 ohms

High Frequency Slope Control
0 dB, -3 dB, -6 dB at 10,000 Hz & power off

Power Requirements
110/120 volts, 50/60 Hz, 3 watts

Accessory AC Outlet
200 watts, unswitched

Dimensions
2 in high x 8 in wide x 7 in deep

Net Weight
2 lb, 10 oz

Specifications subject to change without notice.

CUSTOMER SERVICE

Shipping Damage

Electro-Voice products are packed to provide protection well in excess of the shipping requirements of the Interstate Commerce Commission. Responsibility for delivery in good condition was accepted by the carrier, and therefore any damage claims must be made by the receiver against the carrier. If shipping damage has occurred, contact the carrier immediately, requesting inspection and instructions; or contact the dealer from whom the unit was purchased.

Reshipment

We strongly encourage you to retain all packaging materials for possible furture use. Only original packaging materials are certain to provide full protection, whether used for units requiring service or simply for normal household moving. Bear in mind that a carrier can refuse a damage claim if *they judge* substitute packaging to be inadequate.

When necessary, Electro-Voice can supply replacement packaging for a nominal charge. Contact the Service Department.

WARRANTY (Limited)

Interface:B Series III is guaranteed against malfunction due to defects in workmanship and materials. If such malfunction occurs, Interface:B Series III will be repaired or replaced (at our option) as follows:

Speaker systems will be repaired or replaced without charge for parts or labor for a period of five years from date of original purchase.

Equalizer will be repaired or replaced without charge for parts for a period of three years from date of original purchase and without charge for labor for a period of one year from date of original purchase.

All units must be delivered prepaid to the proper Electro-Voice service facility and will be returned prepaid. Warranty does not cover finish or appearance items or malfunction due to abuse or operation at other than specified conditions. Repair by other than Electro-Voice or its authorized service agencies will void this guarantee.

For instructions on return of Electro-Voice products for repair to the factory or authorized service agencies, please write: Service Department, Electro-Voice, Inc., 600 Cecil Street, Buchanan, Michigan, 49107 (Phone 616/695-6831) or 7473 Avenue 304, Visalia, CA 93277 (209/625-1330,-1).

Electro-Voice also maintains complete facilities for non-warranty service.

Electro-Voice® a gulton company
600 Cecil Street, Buchanan, Michigan 49107
7473 Avenue 304, Visalia, California 93277
Electro-Voice Div., 345 Herbert Street, Gananoque, Ontario • Electro-Voice, S.A., Romerstrasse 3, 2560 Nidau, Switzerland

Part Number 53667 — 924

Litho in U.S.A.