dbx

Soundfield Ten
Speaker System

Instruction Manual

Thank you for your purchase of the dbx Soundfield Ten speaker system. Our goal was to make an improvement in home sound reproducton that is both genuine and dramatic -- an improvement that will give pleasure to any listener.

We hope you enjoy your Tens for a long time.

INSPECTION

Your pair of speakers with grilles and "top caps" and your controller unit were carefully packed at the factory in two protective cartons, one with a check mark and one without. Be sure to examine them and their contents for any signs of damage that might have occurred during shipping. If there is such evidence, don't destroy the carton(s) or any of the packing, and notify your dealer immediately.

In any case it's a good idea to save the cartons and packing if at all possible. Doing so will be a great help to you, to us, and to your dealer should you ever have to transport an entire unit in the future.

The carton with the box checked should contain the warranty/registration card. This is in addition to the controller (including connection cables), one speaker with grilles and cap, and this instruction manual. Please fill out the card and send it to us.

UNPACKING and INSTALLATION

The speakers proper weigh more than 50 lbs. each. Take them out of their cartons via the bottom -- don't open the carton top. To do this, first lay each carton on its side, carefully and completely remove any staples along the bottom seam, fold back the cardboard flaps, and remove the packing material. Then set the carton upright again and lift it straight up off the enclosed speaker. If any grilles have come off, pop them into the small rubber collars on the cabinet, wider end down (it's easiest to fasten the top posts first).

WARNING

TO PREVENT FIRE OR SHOCK HAZARD,
DO NOT EXPOSE THIS COMPONENT
TO RAIN OR MOISTURE.

This triangle, which appears on your component, alerts you to the presence of uninsulated dangerous voltage inside the enclosure -- voltage that may be sufficient to constitute a risk of shock.

This triangle also appears on your component, and it alerts you to important operating and maintenance instructions in this accompanying literature.

CAUTION
To Reduce Further the Risk
of Shock, Do Not Remove
the Cover or Back. There Are
No User-Serviceable Parts
Inside; Refer All Servicing
to Qualified Personnel.

CONTENTS

SPECIFICATIONS

Controller:	
Total harmonic distortion (THD)	0.05%
Intermodulation distortion (IMD) SMPTE or IHF	0.05%
Dynamic range	98 dB
Equivalent input noise	-88 dBV
Output noise	-88 dBV
Maximum input	Greater than 2.5 V
Input impedance	212 k-ohms
Output impedance	330 ohms
Soundfield Ten speakers with controller:	
Typical power response	30 Hz-20 kHz ±2.5 dB
Sensitivity (mid-band, typical room)	90 dB SPL/ 2.83 V/1 m (40-300 W/ch @ 4 ohms is recommended)
Impedance	4 ohms nominal (2.5-8 ohms), 0°+20°/-40°

Notes

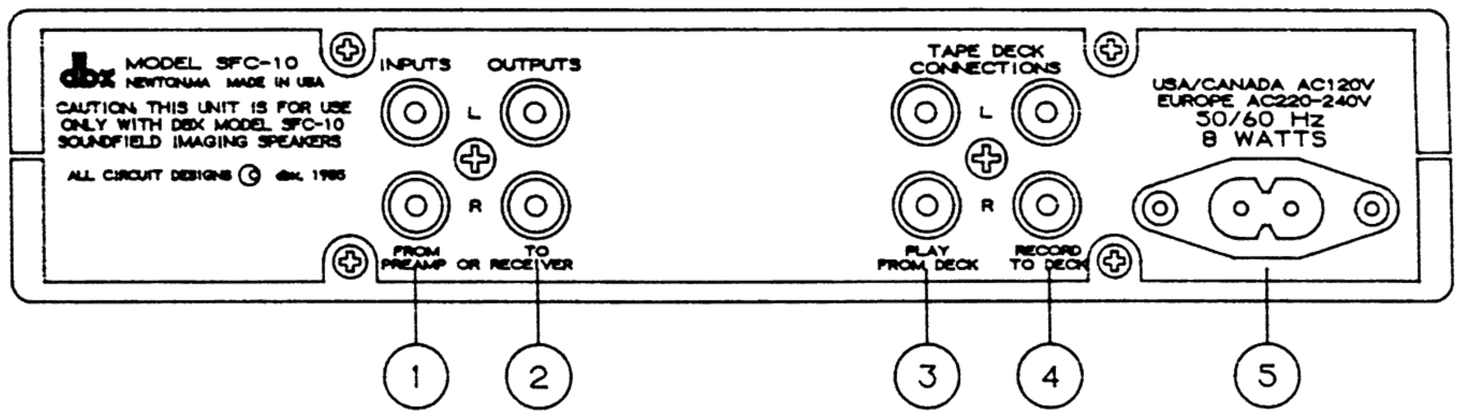
1) Specifications are subject to change.
2) All data are for 20 Hz-20 kHz unless otherwise specified; line inputs are driven by a source impedance of 1 k-ohms and outputs are loaded by 10 k-ohms in parallel with 1000 pF; all voltages are rms (root-mean-square).
3) Dynamic range is defined as the difference between the maximum rms input signal @ 1 kHz and A-weighted noise. All noise figures are A-weighted.
4) Power response for the system, from an average of numerous measurements in numerous listening rooms, is the expected third-octave response at typical listening positions in typical listening rooms with the two speakers typically placed, fed uncorrelated pink noise, and, as necessary, adjusted with the HF and LF Compensation knobs and the Wall EQ switch. Response below approximately 200 Hz will be affected by room dimensions and by listener and speaker proximity to walls.
5) SMPTE IMD is measured with 60 Hz and 7 kHz mixed 4:1; IHF (difference-tone) IMD is measured with 19 kHz and 20 kHz mixed 1:1; output 1 V.
6) Maximum input capability decreases to 1 V at 10 kHz, 500 mV at 20 kHz.
7) All dbx home products are designed to be used with components whose output impedance is less than or equal to 5 k-ohms. All units are designed to drive loads of at least 5 k-ohms in parallel with 1000 pF or less.
8) Soundfield speaker systems have a warranty of five years for the speakers, two for the controller, limited to parts and labor.

INITIAL SETUP

Let's hook up the controller first, so you can get to some music as quickly as possible. Note that it must be used with Soundfield Tens and Soundfield Tens only.

BE SURE to turn your system off and the volume control all the way down.

Rear Connections



If your preamp or receiver (mostly we'll use "preamp") has an external-processor (EP) or similarly independent In/Out loop, that's probably the best place to connect the controller. If it doesn't, then any tape-monitor (record/play) loop will do; the controller has its own tape monitor to replace the one it occupies. See right.

Another choice is using a receiver's Pre Out/Main In jacks or putting the controller between preamp and power amp. But the levels there sometimes aren't optimal, and so the potential for increased noise is greater. Note that it's possible, however, depending on the settings of any preceding signal processors in the system (a dbx 4BX above its own 0-gain point, for example), for distortion due to overdriving to occur with the controller in an EP or tape loop; if this happens, go ahead and use Pre Out/Main In.

1 Connect your preamp's EP Out or Tape Out to these inputs labeled From Preamp or Receiver.

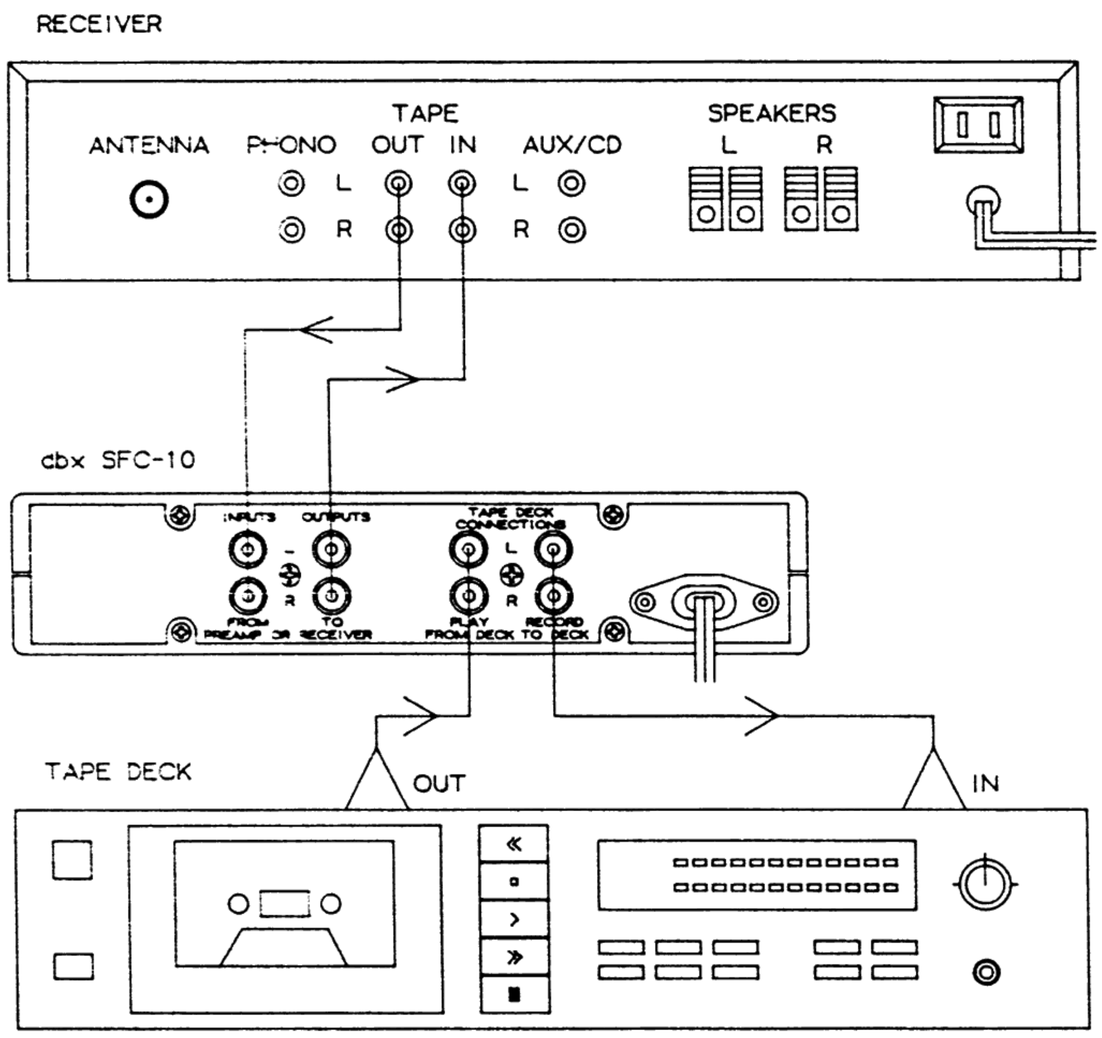
2 Connect these controller outputs, To Preamp or Receiver, to your preamp's Tape In or EP In.

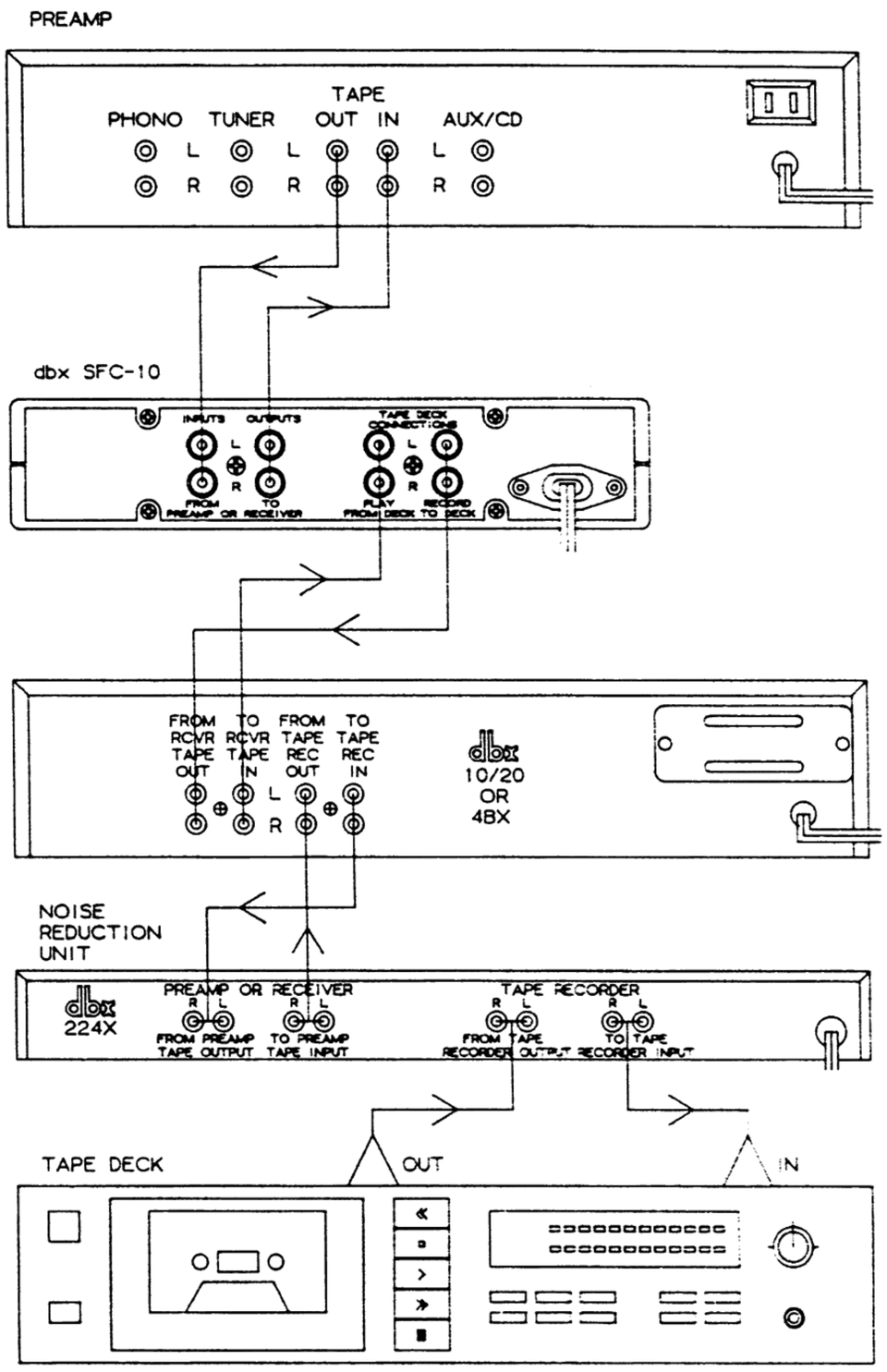
Note that on some components Tape Out is called Tape Rec just as Tape In is called Tape Play or Monitor, and there are other variations.

3, 4 If you're dislodging a tape deck (or a switch box like dbx's 200X or 400X) and need to put it in the controller's own tape loop, connect its Tape Out/Line Out to these controller inputs called Play:From Deck, and connect its Tape In/Line In to these controller outputs called Record:To Deck. Again see right.

5 We suggest plugging the SFC-10 into a switched outlet on your preamp.

Typical Tape-Loop Hookups





The principle here is to put everything in the controller's tape loop, chaining if necessary, as shown at right. Let red plugs be the right channel. Those whose systems are becoming complex might wish to investigate the dbx 200X or 400X Program-Route Selector switch boxes.

Preliminary Placement

Just for starters, put your new Soundfields where your old speakers were (unless they were on a shelf or in the corner), and use the same wiring for now. The reason for starting off in this basic fashion is so you'll have a completely familiar reference.

You've observed that each cabinet has an arrow on top. As the label instructs, point it toward the other speaker. Most of the sound radiates in that direction, and yes, it's supposed to go toward the other speaker, with an all-wood panel facing you. (These are not conventionally omnidirectional speakers -- it's their carefully calculated overall dispersion pattern that produces the unique Soundfield Imaging.) Lower the top caps back onto the cabinets afterward.

The Soundfield Tens can go either against the front wall (see the "Wall EQ" function, page 6) or out from it. As you experiment with speaker position, however, keep them at least a foot or two from the side walls. The speakers aren't terribly sensitive to room position otherwise, but putting them flush in a corner (for example) is not ideal, and neither is having large furniture or anything reflective between them. See the Usage Notes for further discussion of sound in rooms.

These speakers work well farther apart than you're probably used to with other speakers. Indeed, you may find that a satisfactory distance apart may be about the same as their distance from you, give or take a foot. If your listening area is 8-14 feet away (typically), for example, the speakers might be set 8-12 feet apart. The point is that because the dispersion of the sound is so consistent and uniform, the middle of the sonic image doesn't disappear even when speakers and listener approach an equal-sided triangle.

At the outset, then, speakers at least 8 feet apart will be reasonable, and don't hesitate to try wider separation. During your experimentation, of course, you'll be affected by your seating habits, sonic results, room width, furniture placement, and perhaps another person's wishes. Tips are given in the Usage Notes.

The input terminals are in the sides of the base. There are no switches or controls on the cabinets.

Wiring and Phasing

As with any speaker system, it's important that each unit be wired the same way to your power amp or receiver. This ensures that they're driven in phase, with each cabinet's drivers moving the same as the other's. Some listeners feel it doesn't much matter precisely how one side (right or left speaker) is done, but the other channel must be the same, from the amp/receiver connections through the two sides of the speaker cable to the speaker inputs. Other listeners are concerned about "absolute" phase, that is, whether the woofer moves outward or inward when it receives a positive-polarity signal. The woofers move outward when signal is applied to the red connection post.

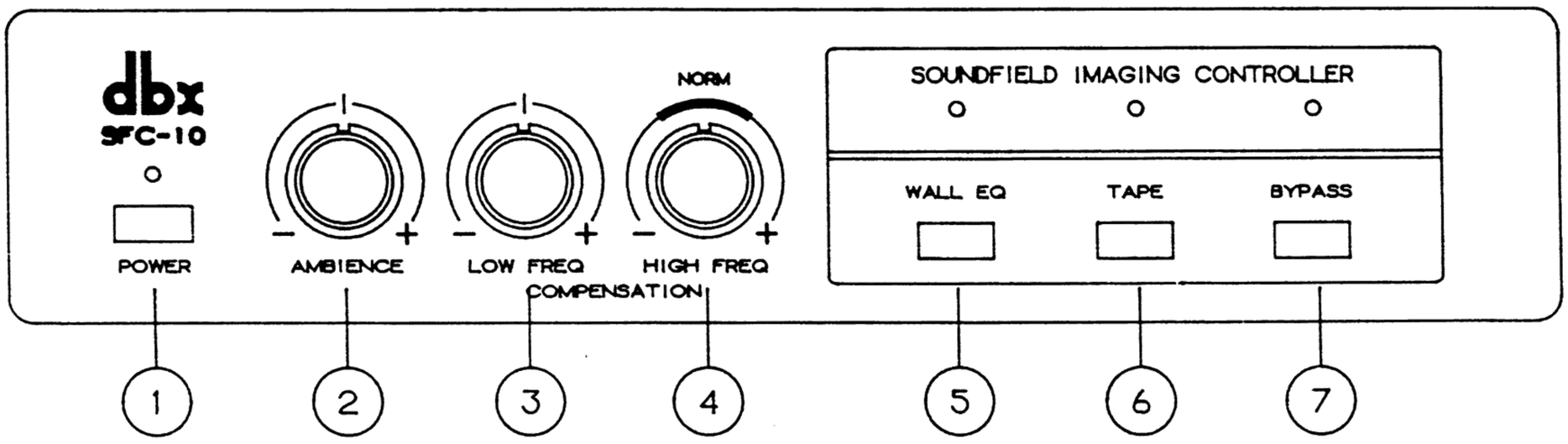
We suggest 16-gauge wire (thick lamp- or zipcord) for normal-length connections to the amplifier; the conventional two-conductor stranded-copper type will be available at most hardware stores. For speakers 25-30 feet or more from the amp, 14 gauge is preferable but harder to find. The heavy audiophile speaker cables are fine, too.

Almost all speaker wire has one conductor side coded to make properly phased hookups easier. Usually this side has a thin ridge, ribbing, or a bead running the length of the wire; sometimes the wire itself is different colors, e.g., one side silvered and the other plain copper.

The speaker connectors are five-way binding posts, which offer several means of fastening. Banana plugs are easiest and simplest, but lugs or even bare wire is acceptable (avoid frays and strands, naturally).

Now. Check that the SFC-10 power button is pushed in, that its Tape and Bypass buttons are out, and, most important, that the right EP or tape switch is engaged on your preamp. With the volume control still all the way down, turn your system back on and the volume up slowly. Put on some music you like and sit back and listen to your new speakers -- and start familiarizing yourself with the controls, discussed next.

FRONT PANEL

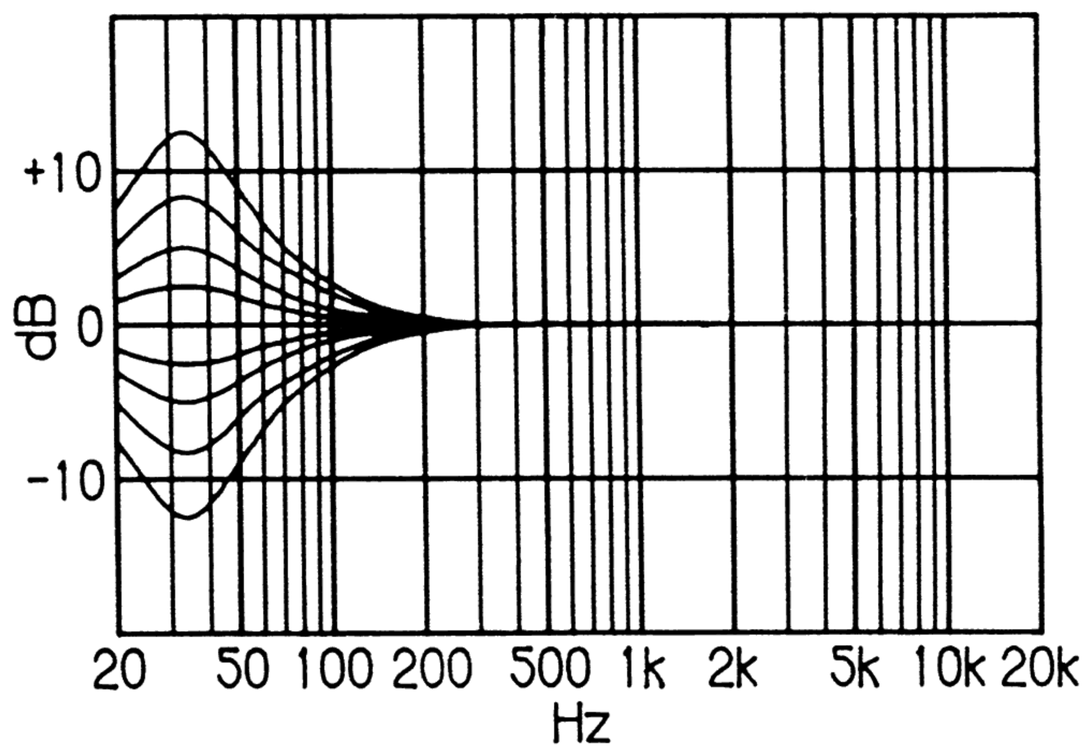


1 **POWER.** This turns the SFC-10 on (the LED will light) and off. If you've plugged the unit into a switched outlet you can leave this button pushed in.

2 AMBIENCE. This knob controls the amount of midrange "difference information" (L-R/R-L), letting you change the spaciousness of the sound.

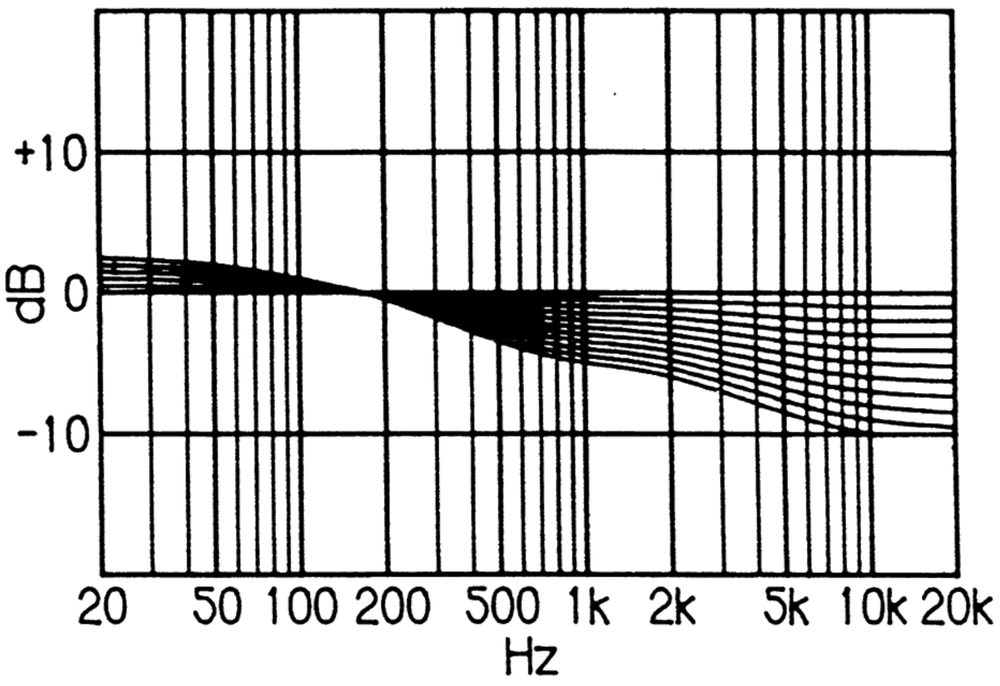
Turn this knob to the left (-) to tighten the stereo image; the channels get blended (L+R) in the midrange. This will, for example, accentuate the centeredness of an ensemble. Turning it to the right (+) opens up the stereo image by adding in channel-difference information to the midrange, which usually will increase the ambient spaciousness around the music, as for symphonic works. Either way, it sounds a little as if you're modifying the mike placement or the mix of a recording; some master tapes as revealed in the CD format sound better with added difference information (more "airiness"). But whatever your source material, it's instructive and fun to play with this knob's settings. If you use a graphic equalizer, also experiment in conjunction with judicious cuts around 500 Hz-1 kHz.

3 LOW FREQUENCY COMPENSATION. This knob varies only the deep bass. It's designed to complement the bass control in most current preamps and receivers, which usually has a broad action through both the mid-bass and the low-bass regions. A recording with muddy mid-bass (or a boomy room), for instance, will be improved by turning down the existing bass control while slightly increasing the SFC knob, to avoid losing the deep bass. A cautious increase can also help restore the bottom end to recordings in which the low frequencies have been filtered to avoid overmodulation, or in rooms that sound bass-shy (with unstiff walls and floors). BE CAREFUL about full boost; it requires much more amplifier power and aggravates any potential for overdriving the woofers. (Full boost is seldom necessary, either.) Back off immediately if you hear flapping sounds or distortion. As you can see, the range is ±12 dB at 35 Hz with frequencies above 125 Hz relatively unaffected.



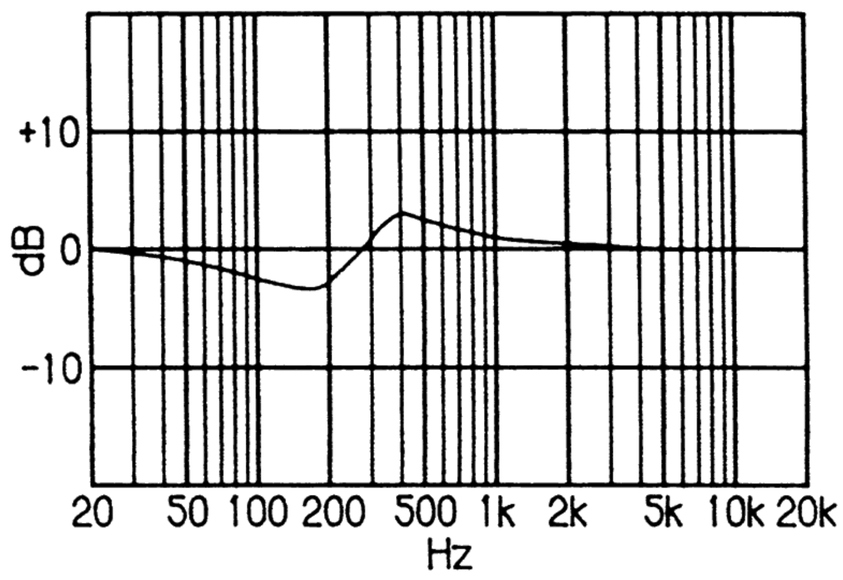
On the other hand, some material is recorded with increased low-frequency energy in anticipation of speakers with a diminishing bass response. Turning the low-bass control leftward in such a case will help avoid an overabundance of "thud."

4 HIGH FREQUENCY COMPENSATION. This is a spectral-tilt control (see right) that serves in part as a replacement for the tweeter and midrange controls found on most other speakers. Starting from full power (all the way right, to "+"), this control will tilt (hinged at around 160 Hz) the sonic balance of the system downward. The treble contours imitate the power response of conventional speakers as well as of many performing environments.



Source material recorded to sound balanced on a conventional system will often sound too bright played back in the flat position, in which case reducing the control to the indicated NORMal range allows restoration of proper balance. For example, this cut-only knob's broad characteristic is musically useful for toning down strings and brass that are peaky or were miked too closely. Note, too, that at quiet levels, far-leftward settings turn the control into a sort of "loudness compensation," altering the bass/treble ratio in a pleasing manner for background listening.

5 WALL EQ. Push this button in if you're going to have the Tens against, or less than a foot from, the front wall; this lets you have smooth response with the speakers there, too. The In position undoes the effect front-wall placement typically has on speakers (as shown, pushing the button in boosts the output 3 dB or so centered on 400 Hz and reduces it 4 dB or so centered on 160 Hz).



6 TAPE MONITOR: SOURCE, TAPE. If you used up a tape-monitor loop in your preamp for the controller, this is the replacement. Leave the button in to access -- get to and from -- any processors you've connected in the SFC-10 tape loop (as well as to listen to your deck, naturally). Refer to page 3 as necessary.

7 BYPASS. This button takes the controller completely out of the circuit. The sound will change markedly, and for the worse. Use this feature only for headphone listening and for switching to extension speakers. Be sure to use it for these purposes, too, because the controller's built-in equalization can easily damage headphones and speakers other than your Soundfield Tens.

More about placement and acoustics

These speakers permit flexible positioning, as mentioned, although we again suggest at least a foot or two distance from side walls. It should be a pleasure and an education experimenting with the location of the Tens, for the spaciousness will change somewhat according to what is nearby.

If you consistently like a sound field with depth and ambience, try the Tens 2-3 feet from the front wall. If you prefer a tighter, less ambient sound, experiment with placement close to or against the wall, although if it's glass or bare plaster the sound will remain bright and lively. (Play with the Ambience knob, too, of course.) Once you're less than a foot from the front wall, push in the controller's Wall EQ button; doing so gives you smooth response with the speakers there, too. Finally, for tighter imaging in some rooms, try turning the speakers so the inside of each cabinet -- the panel facing the other speaker -- is slightly angled toward you and the listening area. This increases the ratio of direct to reflected sound, and with recordings of certain kinds of music in certain rooms this will bring about a pleasing reduction in depth of field.

Tightness and dryness of imaging will also be increased by acoustically treating walls and other surfaces (with drapes, curtains, foam panels) or by bringing the speakers well away from front walls. (Generally, the farther from the wall, the more live or open the sound appears to be, but only up to a point.) The image also is altered by the speakers' proximity to side walls, especially reflective ones; strong reflections from close hard surfaces can smear imaging somewhat, particularly if the room is relatively narrow and the speakers aren't very far apart. Try not to have large reflective objects near the speakers, especially between them, including bare windows and oversized mirrors. Also watch to see that tunnels or cavities (which can, among other things, resonate or boom) aren't formed behind them by furniture or other objects.

Aside from your taste in sound quality, the distance between the speakers -- angle width -- will be governed in part by room length, and this in turn will influence your seating. The closer you sit, the more direct and focused the sound, and the farther away you sit, the more reflections make up the total sound you hear. Experiment with image width accordingly, while also observing the differences in focus between a seat in the front part of the room and one farther back.

Should a listening room be especially absorbent? Again, it's a matter of taste. Very reflective rooms are often too reverberant and lively for satisfactory music reproduction (or easy conversation, for that matter). Extremely absorbent rooms, on the other hand, will sound somewhat dead, although many listeners feel that plenty of absorption is not a bad thing. A room that's pleasing to talk and live in and perhaps tends a bit to deadness often has a good balance. Lately, "live end/dead end" room acoustics have been written about: the speaker end of the room is absorbent and the listener end reflective, and this too is likely to permit precise imaging characteristics. But even if you don't go this route (for whatever reason), it's acoustically wise to have an absorbent surface across from any reflective ones (e.g., carpeted floor and bare ceiling), in order to reduce ringing "slaps."

What if the sound in your room is boomy? This could result from a number of things. Many home listening rooms boost the sound at our ears somewhere between, say, 50 Hz and 200 Hz simply because of room dimensions (when those are close or simple multiples). And boominess is aggravated not just when speakers are near to and/or equidistant from two or three boundaries but also when the listener's head is. Therefore, in addition to moving the Tens, try moving your chair, and if you have a graphic octave equalizer, try bringing down the 125-Hz band. The easiest and quickest solution, though, is to cut back

your preamp's bass control 50% or so and make up for any lost deep bass with the controller's LF Compensation knob. This should reduce any room boom without making you feel you're missing anything.

Power, loudness, fusing

These are rugged speakers but they're not PA systems. In particular, the woofers and tweeters receive considerable equalization boost at the very ends of the audio band and thus are by no means indestructible. The system as a whole can take a steady input of around 250 watts through most of the audio range (and a pair will then produce over 105 dB SPL in that range in a 3000-cubic-foot space, which is a good-sized room). But you can blow up drivers if you're reckless.

Don't carelessly turn the LF knob all the way up. Boosting the low end this way is particularly dangerous on loud pink noise or bass percussion or rock 'n' roll. Be especially alert to acoustic feedback with your turntable even if there was none before, since the system's bass response is so extended; don't drop the needle, of course, or clean it with the gain up; have noisy switches on other components serviced. Don't run your open-reel deck in Fast mode with the tape on the head and the volume up. Don't crank up your compact discs or dbx records before the music starts, and never try to reproduce artillery sounds or similar explosions (as are found on some CDs) at lifelike levels.

It's wisest to fuse these speakers. Fuses are sensible insurance against costly driver damage due to transient accidents, amp failure, etc., and are an especially wise decision if you have a very powerful amp (above, say, 200 W/ch rms) or a very large room (more than 3000 cubic feet) or if you listen at deafening levels. You might start with AGC 4 values and, if your habits cause a fuse to blow frequently, move on to AGC 5. Consult your dealer or distributor for specific installation advice.

Caring for your speakers

Speakers require hardly any maintenance. The grille cloths may be lightly vacuumed if they get dusty (they come off with a firm pull, as necessary, but be gentle and pull straight out without a lot of bend, so as not to snap off a post). The logo won't tarnish. The veneer surfaces have a finish that may be cleaned and spruced up with any good furniture polish, either wax or oil (remove the side grilles, of course); such treatment is a particularly good idea in low-humidity situations. Be careful not to get any polish on the drivers or the top-cap grille cloth. The top will take rings from drink glasses if you let them stand there; treat the speakers in this respect like any piece of fine furniture.

ABOUT SOUNDFIELD IMAGING TECHNOLOGY
How we turn every seat in your living room into "the best seat in the house"

A Little History

Years ago, it was said that mono sound was like standing in the doorway of the concert hall, and the great thing about stereo was that it was like moving on into the hall.

Over the decades since commercial stereo, the serious audio enthusiast has been seeking the best way to experience, in his or her own listening room, the you-are-there illusion of live music. And in their intensely competitive efforts to satisfy this quest, audio manufacturers (most of the notable ones being in the Boston area) have tried a variety of ways to make the home listening experience "like sitting in the hall."

The evolution has been interesting:

- Wider- and wider-dispersion designs have broadened the listening area somewhat, but you've always had to sit in front of and pretty much between the speaker pair -- in the "sweet spot."
- Predominantly reflective systems became popular owing to their spacious sound and enlarged listening area, but many people feel the stereo image is implausibly big and vague and the left/right balance doesn't really hold up off-center.
- Truly omnidirectional and against-the-wall half-omni designs spread the sound stage with more accuracy, but again, if you move to the side, the stereo collapses to mono.
- Most recently, there've been experiments with conventional speaker systems which broaden the width of the image by attempting to cancel what's called interaural crosstalk, or which use separate delayed signals sent to deliberately narrow-dispersion speakers. (One process compares itself to holography; another says it's "magic.") But although they're sometimes convincing, the canceling systems (whether in-speaker or outboard) require you to sit precisely between the speaker pair for optimal results, and the new systems with the delay built-in are complex, expensive, and still yield only a slightly increased imaging area.
- Finally, there's been a return to extremely narrow-dispersion conventional forward-facing designs — but you have to sit up close, headphone-style, and the sweet spot is even smaller and more unsocial than usual.

With each of these developments, significant or not, the you-are-there-sitting-in-the-hall claim has been repeated. But when you audition these systems, it's immediately clear that their manufacturers are stretching the truth in at least one respect.

The goal of balanced, lifelike stereo everywhere in the listening area is not met.

Eureka!

In the spring of 1984, dbx, until that point famed for high-tech analog and digital signal processing in the pro and consumer audio worlds (including the new stereo TV noise-reduction system), introduced its first loudspeaker system. The Soundfield One's explicit design goal -- Soundfield Imaging -- was that seemingly impossible achievement: balanced stereo everywhere in the room. And we did it. From veteran audio reviewers to serious music lovers, everyone agreed that the Soundfield One really does accomplish this incredible feat of stereo imaging. Indeed, the critical acclaim for the One has been unsurpassed in audio history: "Great and important," "Glorious," "Breakthrough," "Significant advance," and a "Tour de force of the engineering imagination" are just a few of the published comments.

One year later, we're immensely pleased to announce the development of the Soundfield Ten. In basic sonic performance it yields virtually nothing to the One -- perhaps a smidgen of ultimate output. Even the beginning music-lover will instantly hear the Tens' smooth, widespread, and properly proportioned tonal balance (truly flat and extended power response) and their uniform, broad, stable stereo image at any listening location.

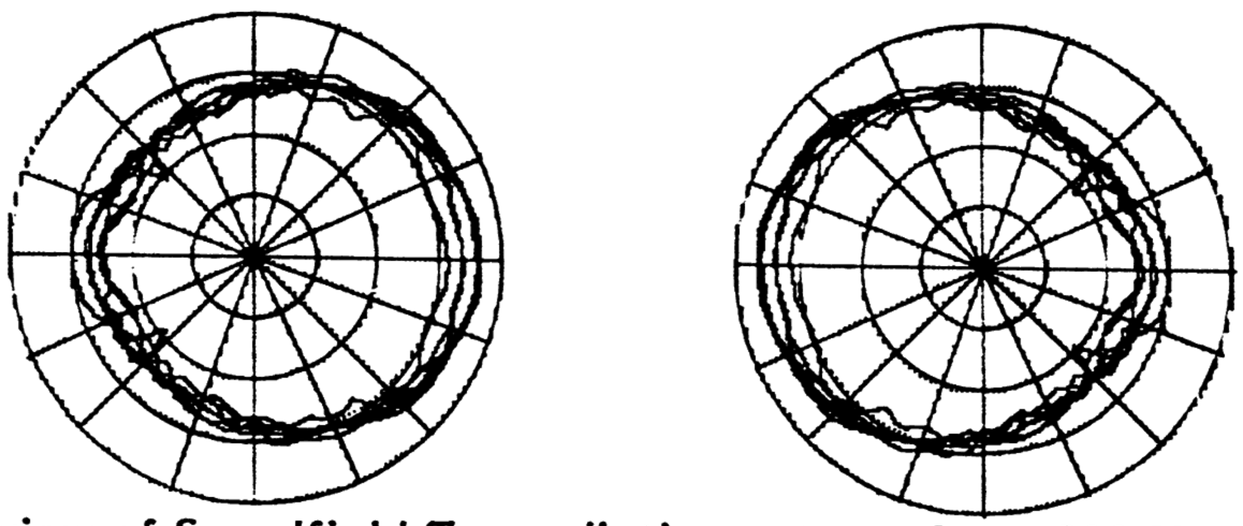
What IS Soundfield Imaging?

To find out what had to be done to keep the stereo image balanced as one moves around a listening room, we conducted experiments a few years ago employing two conventional forward-facing speakers along with a remote balance control to adjust their relative levels. The listeners used the balance control as they moved about from position to position (the speakers were turned to face them at all times), keeping the speakers' output levels subjectively equal from each speaker and the perceived sound centered between them, not collapsing into one side or the other. From the data it was clear that if we could design a pair of speakers whose output level from the inside panel was approximately twice as loud as from the outside panel (with the front level in between), our goal would be met. Wherever you were in the sound field, as you moved closer to one, it got softer and the other, the farther one, got louder. Provided that this balancing act could be done evenly for all practical locations and smoothly for almost all audio frequencies, the stereo imaging would indeed stay steady and accurate regardless of where your listening seat was.

Furthermore, if depth of field -- spaciousness in the imaging due to extra reflection from walls, in other words -- was desirable along with constant left-right balance as one moved around, then the speaker design would be an out-in-the-room one, not an against-the-wall one. The system would go out 2-3 feet, to permit reflections and create ambience in the sound. Therefore, we also decided to have the rear sound output be the same as the front output. And for maximum flexibility in placement of the Tens, with a change in spaciousness but not in smoothness, we included an optional EQ setting for against-the-wall positioning.

Eggs

The desired "loudness shape" -- the technical term is radiation pattern or dispersion -- for Soundfield Imaging with depth of field, then, looks like a pair of eggs, or ovals, pointing toward each other, with the speakers off-center to the outside. Inside is louder than outside, and the front and rear loudness level is in between and equivalent. This is



Overhead view of Soundfield Ten radiation pattern from 200 Hz to 20 kHz
(30-200 Hz output is omnidirectional, and would be fully circular)

by no means an easy thing to get a speaker system to do, especially to do it evenly at all frequencies. It's no good if it produces this distribution shape for some frequencies yet not for others -- if it does it a lot for the upper bass, a little bit for the midrange, but not for the treble. Indeed, if that kind of inconsistent, ragged radiation pattern made for accurate, satisfying imaging, a pair of forward-firing speakers simply turned to face each other would do.

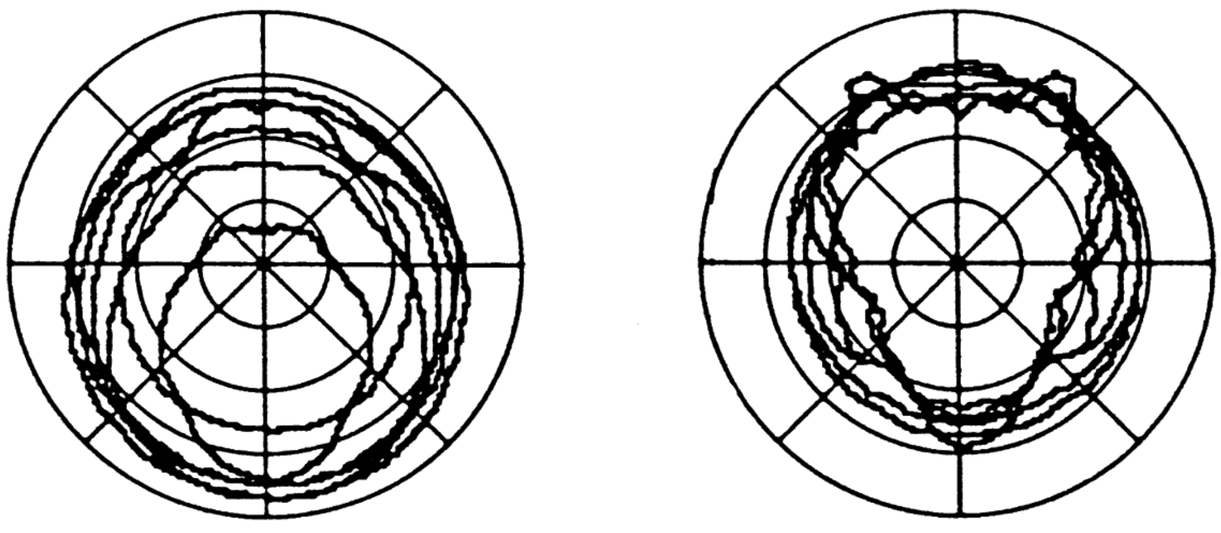
What's Wrong with Other Speakers?

Forget for a moment flat frequency response. Yes, it's important to sound reproduction but with speakers it's not that hard to achieve on-axis. Also put aside "fast transient response"; "phase coherence"/"time alignment"; TH, IM, Doppler, and other distortions; fancy plastic and metal driver materials; laser interferometry showing cone

breakup; exotic driver designs; etc. All of these alleged drawbacks and virtues can be shown to be comparatively unimportant to the ear -- because what we really hear when we listen to speakers is their radiation pattern: the dispersion of all the sound, that heard directly as well as that bounced around in the listening room.

The point is that the dbx Soundfield Ten (like the One) is a phased-array system that radiates sound consistently by frequency. Refer to the ovals again. This specific, controlled dispersion, such that the sound goes in the same directions at the same loudness for all frequencies above the bass (where directivity doesn't matter), is so difficult an achievement that no other speaker system has ever even attempted it. It's the result of what are almost certainly the most complex crossover networks -- the circuits that feed the various musical signals to the drivers -- ever designed. Some systems, forward-pointing or not, do try to be roughly omnidirectional or half-omni, radiating a lot of their frequencies in a circle or semi-circle, sort of like a globe-shaped lamp. Others, again depending on frequency, are narrow and beamy above the bass, radiating sound as a flashlight does light. Still other multi-driver systems are just uncontrolled and loby -- full of lobes -- like flashlights bunched together, sometimes on top of a bass globe or two.

In any case, virtually all other current speaker systems, including these just listed, disperse sound differently at different frequencies. So do horns. So do electrostatics. In most other systems, the bass and mid-bass are omni; the upper bass begins to get directional; the midrange and treble start to beam; and the high treble is transmitted as tubes of sound. Wider-dispersion systems do this too, albeit to a lesser extent. And the multiple-driver systems, even costly ones with side delayed systems, glom all of their beams (of various widths) together, producing ragged or inconsistent radiation patterns.



dbx-measured radiation patterns (20 Hz-20 kHz) of
forward-facing English speaker (left) and
predominantly reflective American design (right).
Note changes with frequency.

The Trouble With Inconsistency

The result is discrepancies in the total sound: discrepancies among direct and reflected, and discrepancies at different frequencies. (This is apart from the uneven contributions made by room furnishings, rugs, windows, walls, and floors.) Some frequencies do one thing, others another, going in different directions at different loudness strengths. It might seem when we listen to music that the jumble of the reflected sound doesn't matter as much as the direct sound. But actually it's more the reflected, later-arriving sound that we use to judge tonal character -- timbre -- and it's more the direct and early-arriving sound that we use to localize -- to perceive the image. The ear is exquisitely tuned to discrepancies among these direct and reflected sounds, nearly as much as it is to small aberrations in frequency response. Such dispersion inconsistency in a speaker, then, is largely responsible for our knowing right away that we're listening to one; nothing in nature has so peculiar a radiation pattern as speaker drivers. This is why speakers have always sounded like speakers, and so seldom like the real thing.

What It All Means

With your new Soundfield Tens and their unique, consistent-by-frequency radiation pattern, no matter where you listen in the room you can localize sound in the traditional left-to-right stereo sense as well as experience a gratifyingly deep sound stage. Excellent, balanced-stereo listening may be had anywhere in front of the speakers after the first few feet, including positions well off to the sides. The total sound field is essentially seamless, in other words, as the individual drivers add up properly in space; no beaming, no lobing, no funny changes with position -- no inconsistency or discrepancy. The image remains stable and accurate for almost any location.

Imagine what it would be like never again to restrict your critical listening to a preferred spot midway between the speaker pair. The same pleasing, convincing, three-dimensional field of sound exists practically everywhere, transforming your living room into a total listening environment.

The Sound of Soundfield

Apart from their imaging, how do the speakers sound? Well, because the radiation of sound is consistently the same across the entire audio band, the quality of sound is extremely open, clear, and detailed -- airy. This spaciousness cannot be easily obscured, either. For example, the highs don't disappear if someone walks in front of one of the speakers or if you start reading a newspaper. Even in adjoining rooms, the tonal balance and openness of sound hold up. With other speaker systems this is hardly ever the case.

Further, because the system is finely equalized by third-octaves, the power output has a flatness seldom associated with any speakers; because of the radiation pattern the Soundfield Ten gives this flat -- smooth as well as open -- sound wherever you're seated. There's none of the closed, boxy quality typical of the flattest front-firing designs even as heard on-axis, just as the Tens offer everywhere more precise imaging than the wide-dispersion, sometimes ultra-reflecting speaker designs. So you get the best of both worlds: accurate imaging and properly balanced, full-range frequency response -- throughout the room.

Also because of the equalization, you get extremely extended sound, as far-reaching as the ear can hear and as music requires. The bass goes thunderously low, the treble inaudibly high. It's all there, complete, nothing missing. The equalization and controller flexibility mean, too, that the sound quality is more adaptable to the room than is customary.

How It's Done

As we've said, the Soundfield Ten (like the One) is a phased-array system. The elaborate crossover individually tailors both the amplitude and the phase of the musical signal to each of the multiple drivers, so their outputs sum in space to produce the oval radiation pattern at all frequencies above the bass. The controller, for its part, tailors the amplitude of the signal going to the crossover, to produce the smoothness and extent of the power response. Together, these two circuits permit the Soundfield Ten system to have good sensitivity (sometimes mislabeled "efficiency"). The Tens can be driven to healthy levels even by less-than-mammoth amps and receivers (40 W/ch at 4 ohms is a reasonable minimum, 300 W a reasonable maximum). With the exception of reproducing arena rock at arena levels, in even large rooms the Tens will produce musical levels as loud as the serious listener needs -- and clearer and smoother than he or she has ever heard.

In balanced stereo.

Everywhere.

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 full details, consult your warranty/registration card or your dealer/distributor.

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

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

You also may call (617) 964-3210 during business hours (USA Eastern time). The Telex is 92-2522.

Should problems arise, consult your dealer or distributor. He or she will be able to do the necessary troubleshooting and driver replacement and/or will contact the factory as necessary.

FOR USERS IN THE UNITED KINGDOM

Important

The wires in the SFC-10 mains lead are coloured in accordance with the following code:

Blue: Neutral
Brown: Live.

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The blue wire must be connected to the terminal marked with the letter N or coloured black;

the brown wire must be connected to the terminal marked with the letter L or coloured red.

Ensure that all terminals are securely tightened and that there are no loose strands of wire.

Warning

This unit must be protected by a 3-amp fuse, preferably using a fused plug.

Also, do not remove the cover without first disconnecting the unit from the mains supply.