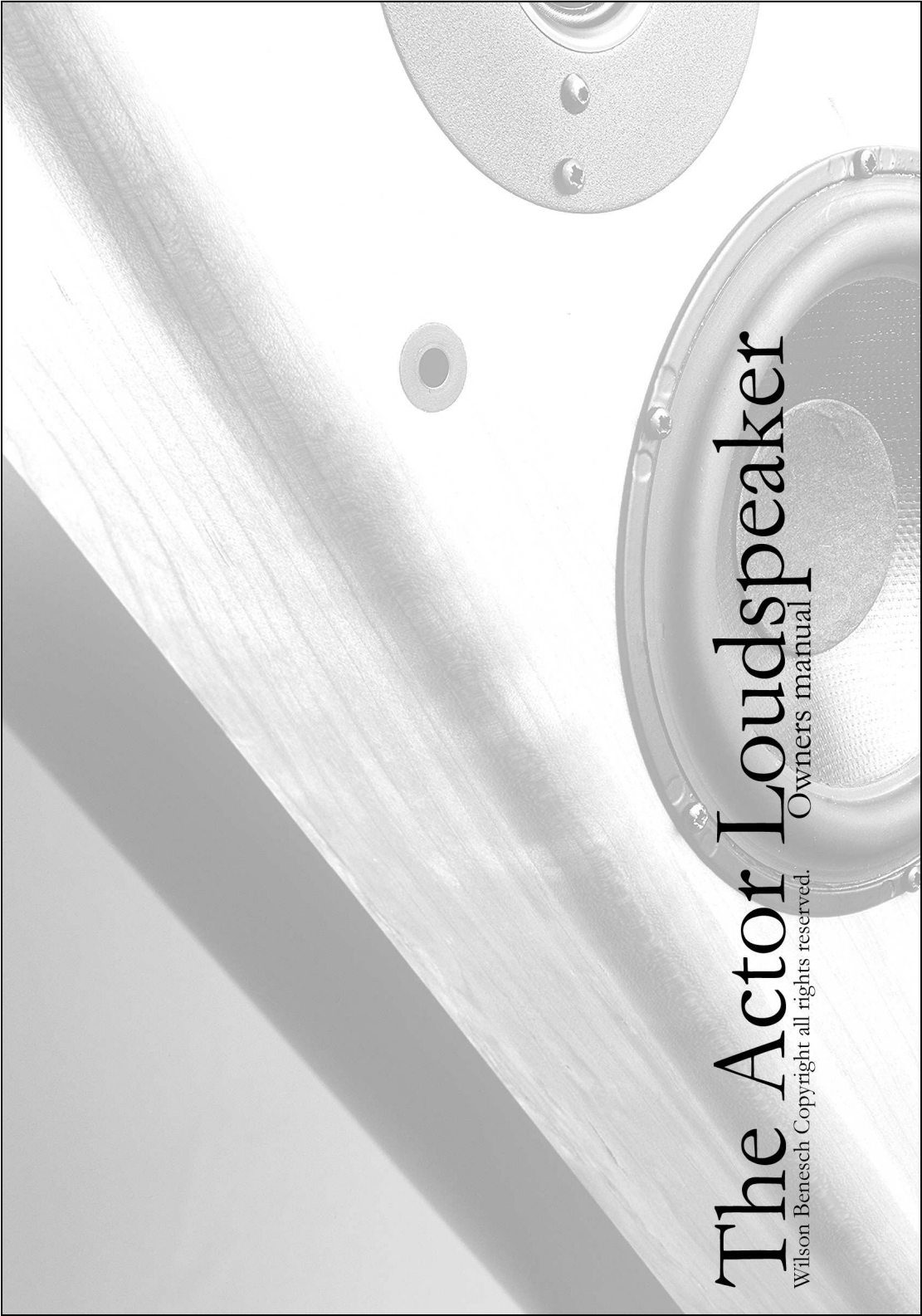




The Actor Loudspeaker

Owners manual

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WILSON BENESCH

Loudspeakers

The Actor

Post Cubism!

The Actor Loudspeaker is a direct descendent of the radical A.C.T. One Loudspeaker the World's first floor standing loudspeaker to incorporate fully curved panels.

The distinctive form is functional and attractive and incorporates many of the basic high quality components used in the A.C.T. One. The Actor concept is quite different in many ways from the hundreds of speakers with which it might be compared. It is hand built from materials that are unique to Wilson Benesch loudspeakers. The curved panels are a particle composite developed by Wilson Benesch from the benchmark standards of the Advanced Carbon composite Technology panels that are used in the flagship designs.

An outline of some of the more important aspects of the design will assist in understanding the alternative approach to loudspeaker design and manufacture.

The Background

High performance loudspeakers cannot ignore the importance of low frequency information. High performance sources and amplifiers demand good quality transducers and the range between 30 to 60 Hz represents a whole octave of eight tones sixteen semitones etc. This range is extremely important to the speed and neutrality of the upper bass range and it underpins all the frequencies above. Some have argued that in fact this range is more important than the frequencies above 8 KHz, since these are all harmonics. Integrating an accurate and musical low frequency response with an equally impressive mid range is a very complex balancing act that can only be achieved with the very best drive units.

THE TWO POINT FIVE CROSSOVER DESIGN PHILOSOPHY.

Music is in phase, the two point five crossover design is a common philosophical link between all Wilson Benesch Loudspeakers. We have repeatedly demonstrated that the phase coherence of reproduced sound is a critical factor in high performance audio systems. Integrity of phase from loudspeakers is a pre requisite of sincerity. This approach requires the very best components that are capable of coping with much wider bandwidth than lesser systems could tolerate.

Hand built drive units provide for the highest levels of precision. This level of precision allows us to realise superior levels of performance that in turn allows us to design the simplest of crossover networks that deliver in phase energy to the drivers. These are also manufactured by hand to obtain the shortest possible signal path. Low grade PCB mounting systems are avoided. The combined effect of this purist philosophy translates into the most natural sound possible with this design approach.

It is when the cable from the amplifier reaches the loudspeaker that the Wilson Benesch standard of engineering begins. Simplicity and quality is again the order by which the signal quality is maintained. Because we manufacture our own high quality terminals we eliminate the superfluous. For this reason finger tight connections are not even possible with Wilson Benesch terminals. This air free method of clamping is superior to all the alternatives accepted by the conventional design. Soldered joints are used throughout to maintain signal integrity and only selected audio performance components are used. This attention to detail is evident in all Wilson Benesch components, It is this which makes the ultimate and perceptible difference between Wilson Benesch products and conventional audio products.

If its not in phase its not natural.

Wilson Benesch has never been associated with the simple conventional box solution. We were the first company in the world to set the new agenda of fully curved floor standing loudspeaker systems. Wilson Benesch loudspeakers have never been constrained by conventional production techniques. The critical point is not that we have assembled the cabinet to form a structure that is almost devoid of flat resonant sections. Nor is it that we have invented a panel to imitate the characteristics of the carbon composite structure. It isn't the attention to detail which sees every line and curve assembled to create a visual harmony that will blend seamlessly into the most demanding environments. It isn't the low diffraction characteristics which cause the structure to disappear without trace. It is the fact that we have shown how loudspeakers can be assembled differently. It is this that makes

the Actor such a significant product. The ubiquitous and inadequate mass produced box is simply not acceptable.

So why do boxes fail to meet the need? Some, but by no means all of the reasons are listed below:

- Boxes cause internal standing waves. Standing waves cause increase in output at that and multiples of that frequency, result inaccuracy.
- Boxes are made of flat panels that are easily excited into giving off their own sound, result distortion, smearing, booming, inaccuracy.
- Boxes cause severe diffraction at the edges informing the listener exactly where the sound is coming from.
- Large side panels are flat reflectors. The human ear can easily detect such simple shapes. Result, the illusion of real music is destroyed and in its place, that average Hi Fi sound.

Wilson Benesch speakers never sound like Hi Fi. Curved, complex structures, unique materials technology, profiled edge and corner facets, angled complex top plate, careful attention to porting, solidly terminated electrical and mechanical systems all combine to provide the unique sound that is beyond the reach of convention. Wilson Benesch loudspeakers rejoice in their lack of convention. Their distinctive appearance evokes the idea of fitness for purpose. In a world of banality it is a product that will maintain its value and be capable of improvement. The Isotactic polymer another World's first from Wilson Benesch, is the first upgrade that has become available and is now fitted as standard to all our loudspeaker systems. The advent of driver production by Wilson Benesch will see other innovations that will provide further improvements in pursuit of excellence.

We know that you have a choice and we would like to thank you for investing in a Wilson Benesch product.

The subject of room acoustics

Acoustics is a complex subject and this text should be treated for what it is, a simple but for some informative guide. For a more in-depth understanding you would need to refer to a whole range of texts on the subject. The most important outcome of this should be the greater appreciation of the role played by the room on the overall sound of the audio system.

The air contained within the room is the link between the output of the loudspeaker and your ear. How air behaves is dependent upon the attributes or character of the room. It follows that a better understanding of basic acoustics and what facets cause the most influence in the room will assist in making decisions about the way in which the room and subsequently the system can be improved.

Room types fall between two extremes. A room can be “**dead**” on the one hand (full of highly energy absorbent materials and complex diffusing structures) or very “**lively**” on the other (few reflective surfaces and a high proportion of very reflective hard non absorbent surfaces). As so often is the case, a balance of materials is commonly preferable to one extreme or the other. The correct balance for the end user is the goal.

Room attributes which can be changed easily

The contents of the room impact upon the overall acoustic character of the room. As you would expect, hard surfaces like glass and concrete tend to reflect a broad band of acoustic energy. Complimentary materials that are soft and thick in section such as heavy natural fibre curtains will tend to absorb a broad band of frequencies.

Room attributes that require more consideration

The other important factor is room dimensions shape and substantial internal structures within the room.

What are Standing waves?

Soundwaves reflecting between two parallel walls set up resonance modes when :-

One-half, or a whole multiple of one-half, the wavelength of the sound wave is equal to the distance between the walls.

These resonance modes are referred to as “**standing waves**”. In loudspeakers with parallel walls these waves will cause distortions. The standing waves in your room will distort the reproduction of your system sympathetically boosting certain frequencies. If a certain standing wave frequency is acoustically isolated from its modal neighbors, its effect is more likely to be audible and problematic. This can compromise the accuracy of any loudspeaker.

To analyse your room for standing waves we would recommend that you work upto about 300 Hz. Beyond this point they become less relevant and difficult to perceive. Any standing wave below 300 Hz is detectable and should they combine sympathetically the result will be a lumping together and this is very undesirable. Evenly distributed modes are the goal.

Characterising the room

Characterising the behaviour of the room is the first step towards your understanding of your listening room's contribution to the audio system. Follow the simple procedure below to obtain a better understanding where changes could be made in order realise improvements.

1. Record data of the room dimensions onto a simple floor plan. The graph paper can assist you with this.
2. Apply the data (dimensions) to the formula
3. Make a record of the predicted standing wave frequency characteristic for each parallel wall dimension of the room.
4. Verify your predictions using the Wilson Benesch test CD which has a number of fixed frequency tests and swept frequencies. Use these to verify and back up your predictions.

Note 1 big differences in perceived and calculated values will indicate an error

Note 2 If the predicted frequency matches with the perceptible increase in output in the room this has verified your prediction.

Note 3 The listening tests should be taken whilst seated in the main listening position.

Evaluate the data and look for errors.

5. Assess whether changes should be made and what can be changed in order to overcome any dramatic and clearly in-accurate increase in sound pressure levels.

Middle and High Frequency Room Characteristics

The middle and high frequencies are effected more by room contents rather than room shape. The "sound" of a room is described by the surfaces and how they **reflect, absorb** or **diffuse** the acoustic energy. Like all energy, acoustic energy cannot be destroyed, it can only be converted into something else or reflected. The shape of the surface will determine how it is reflected and the material will determine whether it is absorbed. All rooms have a particular sound, and to appreciate what influences are present in your room you should be aware of how the objects in your room will respond to sound. Sound waves behave in the same way as light waves or "rays" and so imagine the driver to be a flood light.

Reflection: acoustic energy is not converted but reflected in an orderly, predictable fashion.

Diffusion: acoustic energy is dispersed in a random and or disordered fashion.

Absorption: acoustic energy is converted into kinetic energy or heat. All or a majority of the sound energy is "soaked up" or disposed of by the object surface or room boundary.

Loudspeaker positioning

There is no objective criteria that can be used to state precisely where loudspeakers should be positioned. Should any individual or company suggest that there is, they should be regarded as special people and treated with a great deal of caution. In the global scenario our loudspeakers are driven by unique systems that are selected by the owner because of particular virtues. Every listening room is as individual and unique in character as the owner. Compound this complex picture with the combination of different equipment. Consider the changeability of rooms, if the room is dressed with heavy curtains simply changing the curtains position can alter the whole balance of the system. The only rule is that there are no rules. Like producing good wine it is the goal that is the only guide. The owner is the pivot in this subtle balancing act.

The goal of high performance audio systems is accurate reproduction. The information be it in groove or pit form should be transcribed, amplified and converted back into sound energy without the additional views of the audio equipment designer being combined with that translation process.

When one considers this and finally that what one actually hears is a unique experience and subject to the realms of subjective evaluation It is for these reasons that when making recommendations about positioning loudspeakers it is only possible for very general advice to be given.

In order to make the task of positioning the loudspeakers less complex we would like to make the following suggestions. That most valuable commodity, time, is the most important ingredient in this process. Be prepared to make small changes over longer periods of time.

Chose four musical passages that you are familiar with that can fulfill the following tests. They should all be stereo recordings.

Select one with a distinctive and easily heard human voice. Spoken voice is ideal.

Select one passage with a full orchestra like The Pines of Rome.

Select one that is very emotional for you.

Select one that has a strong rhythm as in the case of dance music.

You should appraise the performance of the loudspeakers according to **your needs** based upon the tests above.

WILSON BENESCH
ACTOR LOUDSPEAKER.
SPECIFICATION.

DESCRIPTION:

FIBRE COMPOSITE TECHNOLOGY, LOUDSPEAKER.

TYPE:

FREE SPACE FLOOR STANDING.

RANGE:

FULL FREQUENCY;

30 Hz TO 20 KHz. +/- 2.5 dB 40 Hz TO 20kHz.

IMP LOADING:

6 OHMS NOMINAL, 4.5 OHM MINIMUM. WITHIN 1-3 OHMS TOLERANCE 50 Hz TO 20KHz.

SENSITIVITY:

88dB / WATT, 2.83 v INPUT.

LOW FREQ LOADING:

BESSEL ALIGNMENT OF FOURTH ORDER REFLEX, DOUBLE CHAMBER
DIFFERENTIAL TUNING

CROSSOVER:

MINIMUM PHASE, PRIMARILY LOW ORDER 6dB / OCTAVE , SHORT SIGNAL PATH.
AIR CORE INDUCTORS, SELECTED POLYPROPYLENE CAPACITORS.

BASS DRIVER:

ISOTACTIC POLYPROPYLENE FERRITE DRIVE UNIT.

BASS-MID DRIVER:

ISOTACTIC POLYPROPYLENE FERRITE DRIVE UNIT.

TREBLE DRIVER:

SCAN 9300.

INTERNAL WIRING:

MULTI STRAND SILVER PLATED STRANDED COPPER, TEFLON JACKET.

INPUT:

BI WIREABLE.

POWER HANDLING:

200 w PEAK UNCLIPPED PROGRAMME.

MAXIMUM LEVEL:

112 dB AT 1 METRE.

INTERNAL VOLUME:

APPROX 44 LITRES.

SIZE:

HEIGHT: 1115 mm.

WIDTH: 230 mm.

DEPTH: 370 mm

WEIGHT: APPROX 26 Kg.