Manger

A different way of listening

Noises, sounds and music are probably the only things
that remain with us throughout our life.

“The ear is the watch-dog among our sensory organs. Its world is the stillness, where the creaking of a branch or the wingbeat of a titmouse can be heard.”

(Rainer Klinke, Professor of Physiology)

Time to reconsider.

Noise is a phenomenon that has accompanied us at an ever increasing level throughout the past centuries. Actual noise disturbance however did not start until the media revolution, an age that has subjected us to continual noise emissions.

Our listening habits are being increasingly characterized not by acoustic events, but by indiscriminate acoustic pollution. It’s no wonder that under this bell of noise we are gradually becoming immune and deaf to the sound details of everyday life. The fact that we are also losing a part of the sensual quality of our environment is perhaps the acceptable price of progress, but that our capability for musical experience is also gradually deteriorating in line with the displacement of the listening perspective is unacceptable. Especially as it is music that provides us with a flavour of our immense emotional potential, a potential that our everyday reality prevents us from experiencing.

It is not yet clear to what extent we just “hear” the tones nowadays, instead of taking in the soul of the music. However it is absolutely clear that the fabric of perception has already begun to disintegrate. The aural effects are often enough reflected in the progress of the entertainment industry, where the motto is always “more” – more bass power, more treble clarity, more surround sound. In other words: “Amplification increases awareness of life, and euphoria is a function of sound pressure.”

It cannot be avoided that nowadays, where people are listening less and less, and only learn to perceive acoustic sensations, that the signals are in competition with each other for attention and become ever louder and more extreme in order to be heard.

“In my view a sound transducer should be capable of reproducing all types of acoustic events equally well, irrespective of whether this is a concert or a discussion. It is just as important to be able to reproduce natural sounds such as birdsong and the wind in the trees where the only human contribution is the sound of a distant church bell. The loudspeaker itself should not be perceptible in this auditory experience. Its presence should not be indicated by any natural resonance or changes in the sound field.”

(Josef W. Manger, Acoustic researcher and inventor of the Manger sound transducer)

What you should know.

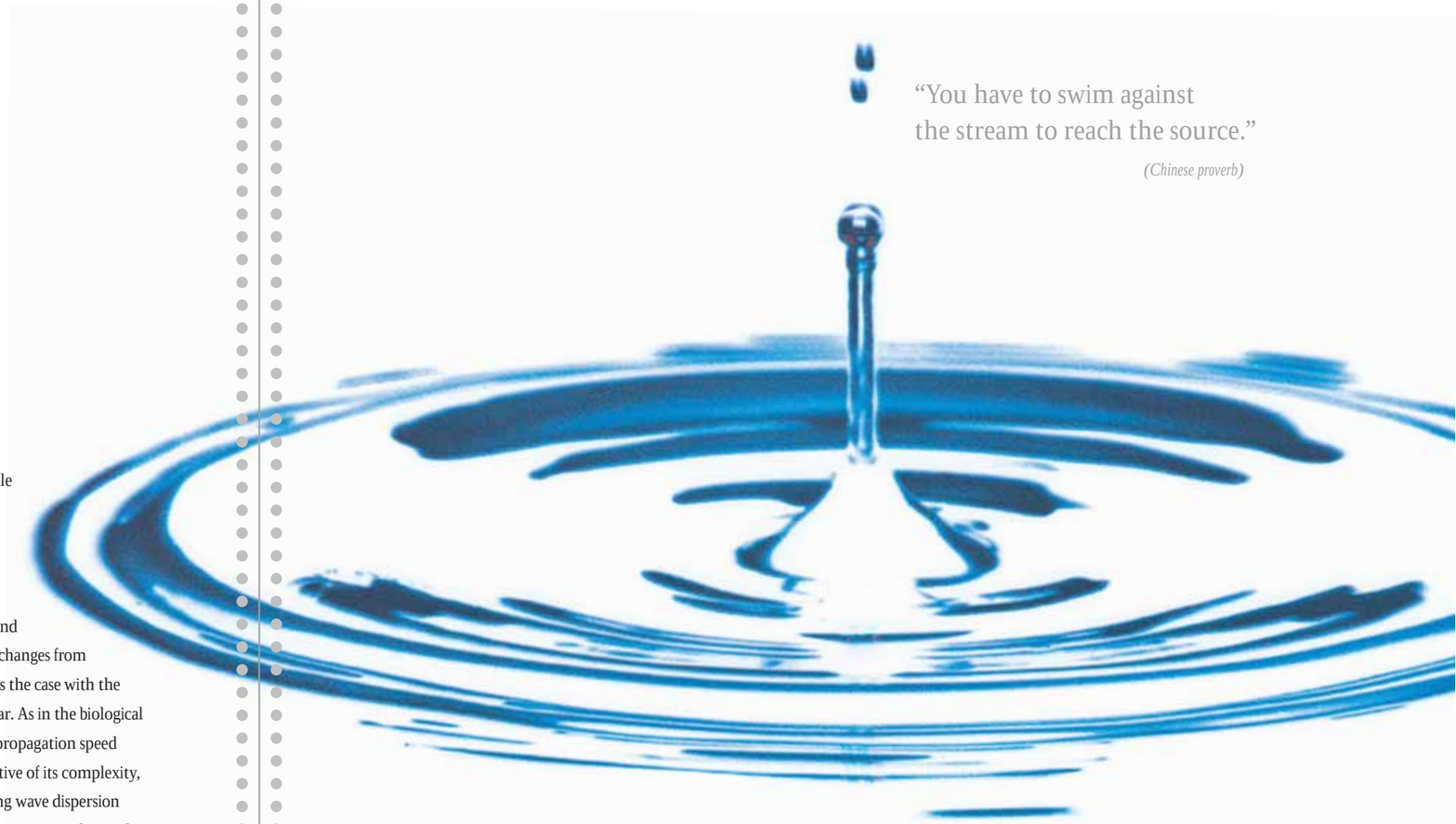
The ear is the widest ranging perception instrument provided to us in the evolutionary process. The eye reacts in the wavelength between 400 and 700 nanometers, within the spectrum of visible light. Anything below this, x-rays or gamma rays for example, cannot be registered by the naked eye. And the same is true for higher wavelengths. Expressed in frequencies this means that the eye can register a range of around one octave. The ear, on the other hand, can register ten octaves. So if our eyes were as good as our ears then we would be able to make look through everything with our x-ray vision and could turn night into day with infrared sight.

This phenomenal performance by our hearing system with its tiny hair cells that react to fluctuations in the air pressure with movements of around 100 billionth of a millimetre, make our ears not only particularly susceptible to acoustic disturbances, but also make them the most uncompromising notification instrument that registers everything without fail and that ruthlessly uncovers every single change. And this has wide-ranging consequences. Even before we perceive tones, our ears register noises that last no longer than 0.01 milliseconds (1000 times faster than the first perception of sound occurs).

But it is not only the noises from everyday life that are increasingly placing demands on our hearing, but also conventional loudspeakers that produce noises not present in the electrical input signal. To be more specific these are transient noises originating in the stored energy of the components used in the construction.

It is hard to imagine this because it doesn’t really fit into our conception of loudspeakers, but we now know that diaphragm bodies and their spring-like suspensions, as well as the capacitors and coils, act as energy storage that delay transient-free conversion of the electrical energy into fluctuations in the air pressure. This means that conventional loudspeakers, as a result of their design, suffer from dynamic irregularities which are superimposed on any input signal in the form of oscillation. You won’t be consciously aware of them, but your hearing sensitivity will still cause them to be processed. And this is the weakness of most loudspeakers. They reproduce the sound artificially and have a tendency to dynamically exaggerate the original sound. Finding a loudspeaker with no natural vibration, that reproduces only what is contained in the recording, is a difficult task indeed.

Like an ear, but with a better design.



"You have to swim against
the stream to reach the source."

(Chinese proverb)

It took more than twenty years of systematic investigation, testing, research, and rejection until finally the vision of a transient-free radiation principle became an engineering reality.

The result is not only one of the most graceful features on the loudspeaker market, but also an engineering instrument of high-end mechanical precision that has continued to gain in popularity among both music experts and aficionados under the designation Manger sound transducer. Thanks to its superior design and technology the Manger sound transducer has been the reference transducer used in recording studios, music colleges and research institutes for many years.

The decisive advantage of the Manger sound transducer is that it has no piston-like transients with their exaggerated overshooting. Instead the Manger concept is based on the revolutionary principle of bending waves moving to the outside edge like ripples of water starting from the centre of the diaphragm. Instead of conventional multiway systems with their dome and cone diaphragms the Manger sound transducer uses a single thin and flexible bending diaphragm with a diameter of 19 centimetres to reproduce all sensory impressions from 80 Hertz to 35 Kilohertz.

The actual innovation is that both the mass and the compliance of the thin diaphragm material changes from the centre to the edge at a continuous ratio, as is the case with the basilar membrane in the cochlea of our inner ear. As in the biological example bending waves at an ever decreasing propagation speed occur. This means that a sound signal, irrespective of its complexity, is split phase-exact on the diaphragm by bending wave dispersion into its individual components of differing frequencies. And as in the case of the ripples after the tiniest stone has broken the surface of the water, the highest frequencies rapidly dissipate only in the centre of the diaphragm. Lower frequencies on the other hand, as with a much larger stone thrown in the water, extend to the edge and cause the whole diaphragm to oscillate.

Manger sound transducer.
A development from auditory research.

“To my surprise it turned out that the radiation principle selected by you, at least in the idealisation I investigated, produces a sound radiation in line with the current at all times, which means that transient noises and similarly annoying effects do not occur. Therefore time curves with sudden changes are correctly reproduced in the sound pressure curves.”

(Prof. Dr. Ing. Manfred Heckl (†), Chair of Engineering Acoustics at the Technical University of Berlin)

The development of a transducer like this requires more than just know-how and personal obsession. The Manger sound transducer is the result of a plethora of scientific disciplines ranging from mathematics and physics through to audiology – the science of hearing – and is the product of close co-operation with universities and established expert institutes.

Innovative success was the result. Josef W. Manger holds 40 patents throughout the world for this exceptional sound transducer and he was presented with the Diesel inventor medal in silver, one of Germany’s highest awards for engineering excellence. Any technical development should however not be an end in itself, and the decisive factor is its usefulness.

Back to the origins of sounds.

With its sensationally time-accurate resolution the Manger sound transducer causes the air to vibrate with the same volume ratios and the same acceleration as caused by the original string of an instrument. This real-time link simultaneously couples the electrical signal with the ears and, with no mechanical discrepancies, helps the bending wave transducer to a leap in quality that is unrivalled in conjunction with the wonderful concentration allowed to the listener by the Manger sound transducer.

Even after a short period of getting accustomed to the Manger you will be transported to a world of sound where the loudspeakers become completely invisible behind the sound panorama of the imaginary source. Gerold Lingnau in the FAZ newspaper wrote: “The music is simply there – room-filling and true to life.”

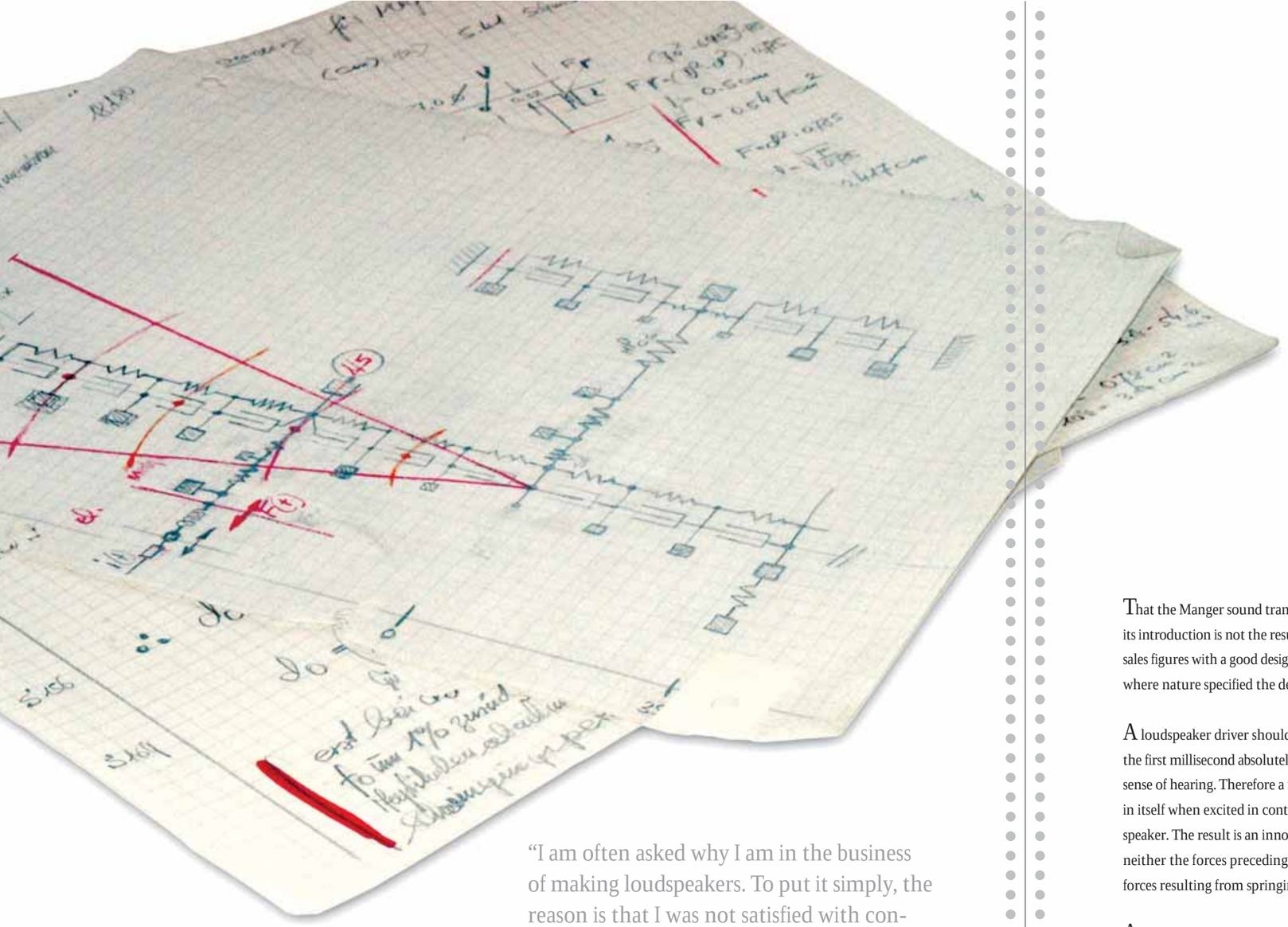
And it is not just the one flat acoustic image that exists between the loudspeakers but a complete and authentic experience of the music with a breathtaking wealth of resolution in spatial expansion. You can either concentrate on the details in the foreground or in the background, either on the left or the right.

The reproduction by the Manger sound transducer achieves the remarkable impression that you are right in front of the performer in the sound panorama and following the performance close up in its liveliness of realistically vibrating sound bodies. This wonderful sensation is so authentic that, as in a concert hall, you are no longer dependent on a specific fixed position, but can experience the music at any given point throughout the listening room, equally balanced and locationally stable.

“These localizations remain so stable even when moving from one listening position to another that you almost tend to favour listening positions that are off-centre. Even with quiet listening the reproduction is such that, in contrast to the normal tendency to increase the volume, you find yourself reaching for the volume control, but only to see if you can turn it down just a touch more”, is how Production Partner describes the sensation.

It doesn’t matter what music you listen to, the Manger sound transducer is a phenomenon in temporal precision, spatial distribution, subtlety and sensibility – an instrument that offers you not only the sounds, but also the tremendous power of the music in an unadulterated fashion, therefore turning acoustic events into musical experiences. This, of course, assumes that the recorded event is worth listening to and possesses sufficient depth to warrant the discovery of the unknown. As this is the point when hearing becomes listening and the Manger sound transducer becomes an instrument to sensitize us to appreciate the finer sounds.

“Even in the most dreadful situation music should never offend the ear, but remain a pleasure, that is to say, it should always remain music.” *(Mozart)*



"I am often asked why I am in the business of making loudspeakers. To put it simply, the reason is that I was not satisfied with conventional speakers. In my opinion they distort the original sound, and this distortion is not insignificant."

(Josef W. Manger)

How Manger sound transducers function.

That the Manger sound transducer has remained unchanged since its introduction is not the result of designers hoping for improved sales figures with a good design, but the result of a pro-tracted process where nature specified the design.

A loudspeaker driver should reproduce the sound event within the first millisecond absolutely truly in line with the efficiency of our sense of hearing. Therefore a flexible bending diaphragm vibrating in itself when excited in contrast to the monotony of a piston loudspeaker. The result is an innovative diaphragm design that stores neither the forces preceding the reference point, nor the lagging forces resulting from springiness.

A sound transducer must come as close as possible to the ideal of a punctiform sound source and cover with as much accuracy in impulse and phase the complete frequency spectrum in achieving a perfect match of the input signal. Resulting in a broadband transducer with a frequency range from 80 Hertz to 35 Kilohertz, from which all sound events cover the same path to the ears of the listeners from the one single central source.

Any true broadband transducer must also offer fast rise times coupled with high excursion amplitudes and cover the complete frequency spectrum without interference or adulterated amplitudes. This is why two extremely lightweight aluminium voice coils as an electro-dynamic unit drive the circular sandwich diaphragm. This series arrangement offers an unrivalled rise time of 13 microseconds and an astonishing stroke of ± 3.5 mm.

It is also important that waves in the diaphragm returning from the edge do not disturb the sound event. This is why a star-shaped damper absorbs the bending waves from the acoustic centre at the diaphragm edge reflectionless. It is no coincidence that its shape resembles the wedge structure of anechoic chambers.

There are good reasons why the Manger sound transducer does not look like a traditional loudspeaker driver, but is more a guiding star showing the listener the way to the music.

Manger technology.

The demands placed on the manufacture of the Manger sound transducer are so complex that the quality standards cannot be met in just one single measure. Indivisible quality is the motto, and this is why Manger sound transducers are manufactured with an exceptional degree of careful craftsmanship and with no regard to costs.

Shaped to the bending wave transducer under clean-room conditions it is typified by a degree of quality excellence that makes a Manger sound transducer an investment for life, infinitely functionally reliable, with a musical performance capacity well beyond the limitations that are imposed on a traditional loudspeaker chassis.

Manger's precision expertise and the subtle quality of the materials can be felt in every aspect of the transducer. For example, the baskets are manufactured from a piece of resonance-damping Duralumin with the highest quality of planeness and concentricity at tolerances of ± 10 µm. The surface is then turned using diamond tools and given a silk-matt finish in an anodizing process that only a handful of companies can master.

The secret behind the transducer, the efficient material of the sandwich diaphragm, was personally developed by Josef W. Manger and is manufactured in our own laboratories to a closely guarded formula. As many as 15 neodymium magnets with the highest energy density available today gives the Manger sound transducer an efficiency factor achieving an astonishingly high sound pressure level of 91 decibels.

The voice coil is yet another innovation. The rise time of 0.013 milliseconds stated in the performance specifications (which is a quantum leap compared to piston loudspeakers) meant that we had to develop a completely new coil system, the design details of which are so unique they are covered by patent protection.

The fine mechanical qualities behind the Manger sound transducer are also apparent in the four electrical coil connecting leads made of pure copper. These are connected by hand via contact points with the 0.4 gram aluminium coil and are as thin as a human hair. This extraordinary precision is only possible using a completely new process that Manger developed especially for this purpose.

During manufacture and assembly each single Manger sound transducer is stringently checked and tested for quality. We know that every detail can make a significant contribution to the overall quality of this precision transducer. Only optimum interaction of all of the individual components ensures that we maintain the high quality that has made the Manger sound transducer so famous.

The transducer design also ensures that this assertion of quality will always apply. The Manger sound transducer has neither a centering spider nor a supporting suspension. All 32 components of the sound transducer are assembled in painstaking and detailed work, carried out with the utmost care using tools specially developed for this purpose. A cost-intensive operation that is more similar to the work of an old-fashioned watchmaker than to today's standard mass production in loudspeaker manufacture.

It is no coincidence that the Manger sound transducers are made in Mellrichstadt, as this oldest site of cultural interest in Franconia is not only located exactly at the centre of Germany and Europe, but is also directly adjacent to the Rhön biosphere reserve. This model region recognised by UNESCO is intended to set an example of how human economy and trade is possible in harmony with nature. Creativity and innovation, but also an awareness of traditional values form the motor driving the people in this region to achieve this. And the Manger sound transducer is a fine example of what can be achieved.

Every single Manger sound transducer is a unique product.

Manger sound transducers can only be manufactured in very small numbers due to the immense expenditure involved in production and materials. And really we should be talking of custom-built units that are hand-made with the utmost of care. This guarantees the customer that the transducer star has been given the same attention in manufacture as the reference model at a tolerance at less than ± 0.5 dB (this being a parameter that our competitors tend not to mention).

Custom manufacturing has another advantage: the basket of every single Manger sound transducer is numbered after all checks have been successfully carried out. This means that every customer is registered in the manufacturing documentation and can not only benefit from the three-year guarantee, but also enjoy the fair service warranty of the manufacturer offered as a personal customer service.

Trust is a fine thing, but listening tests are much better. However this “cost-is-no-object” approach comes at a price. The Manger sound transducer is not expensive in view of its performance, but it isn’t cheap either.

We communicate directly with our customers and this is how we learn what you really expect from us. And you benefit from the advantages previously only offered to a small number of exclusive dealers. To demonstrate that this isn’t just an empty promise, we want to make you an offer that is pretty unusual in our business:

Test the legendary Manger sound transducer. For more information call us on ++49 (0)9776-9816 or check out our website at www.manger-msw.com

Manger range of products

New listening experience.

Describing the least expensive model in a range as an “entry model” often has the slightly negative overtones of a cheap product that doesn’t quite come up to requirements. That the Zerobox 109 is an exception to this rule is adequately demonstrated by the test report by Bernd Timmermanns in the German hi-fi magazine “Klang & Ton”:

“This miniature offered such a sovereign performance that the idea of buying an even larger Manger model is simply moot. With regard to the value-for-money factor the smallest Zerobox is top of the range. The bass also deserves a special mention as it goes remarkably low despite the closed cabinet design. Even the depiction of the lowest organ basses or the tightly stretched skins of the huge kodo drums are no problem whatsoever for the Zerobox 109, and appear deep and dry without a trace of exaggeration.”

The Zerobox 109 embodies the whole world of Manger at an affordable price. It should be noted that the difficult part of the task, reproducing music authentically and realistically, is the responsibility of the Manger sound transducer. As with the larger models, the Zerobox 103 and 107, the specially designed woofer magnificently supports the Manger sound transducer only in the regions below 150 Hz. Only the lowest octave between 80 Hz and 40 Hz is reserved for the woofer on its own. And it is this constellation that ensures the ideal of a punctiform sound source with the Zerobox 109.

The crossover must meet precise requirements to ensure transient-free and temporally exact matching of subwoofer and Manger sound transducer. A 3rd order filter with a precise time delay lets the woofer driver ideally continue the transient of the Manger sound transducer. And finally the top-of-the-range components with closest tolerances are the reason for perfect interaction in the newly designed crossover.

The cabinet is designed in trapezoidal form to suppress standing waves in the interior and this makes a significant contribution to unhindered music reproduction. A cleverly designed system of internal struts, optimised using measuring engineering experience, and the use of state-of-the-art damping materials prevents any resonance of the cabinet even when at high volume levels.

All that remains is to say that in spite of the small dimensions of the Zerobox 109 you will never miss even the finest detail of the music. In line with its name this is a sound transducer system that does not present itself, but the music. Without compromise.

Manger Zerobox 109 IIe data sheet

Driver

Manger sound transducer (MSW, W05, 8 Ohm) – patented broad-band sound transducer with bending-flexible sandwich diaphragm, 70 mm double voice coil (0.4 g in weight) and 15 extremely powerful neodymium magnets for impulsive dynamics and concentric sound propagation (point sound source).

ScanSpeak woofer (20 cm), custom-built, with optimum parameters for a dry, low and natural bass.

Crossover

Crossover frequency 140 Hz

MSW: High-pass 1st order filter, Mcap + Mcap Supreme capacitors, air coils, MOX resistors

Woofer: Low-pass 3rd order filter, MKP capacitors, vacuum-impregnated Zero Ohm transformer coils in the signal path

System data

Impedance: 4 Ohm
Rise time: 13 µs
Sensitivity: 88 dB 1W/1m

Cabinet

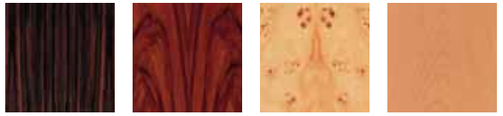
Cabinet made of medium-density wooden fibreboard. Interior lined with floating polymer resin damping panels. Trapezoidal cabinet design to suppress standing waves in the cabinet's interior.

Dimensions and weight

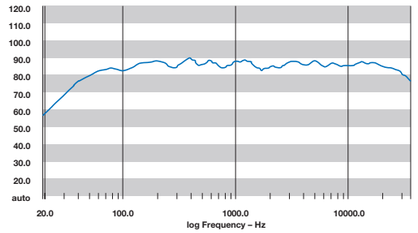
49 x 26 x 36 cm (H x W x D), 21 kg

Finishes

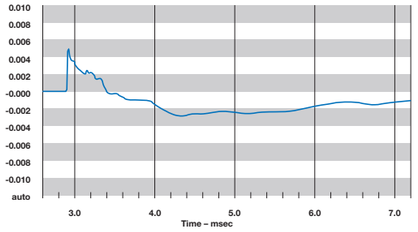
- silk matt lacquer: black, white and aluminium (silver).
- silk matt veneers: alder, beech, cherry.
- fine wood veneers: Macassar ebony, Santos rosewood, Poplar burl, Birdseye maple. Other veneers on request.
- Piano High Gloss black: a high-gloss polyester lacquer applied in several layers.



Macassar ebony | **Santos rosewood** | **Poplar burl** | **Beech**



Frequency Response: A very balanced frequency response with a remarkably low bass for a cabinet of this size. Linear from 40 Hz to 25 kHz (- 3dB).



Step response: Just about perfect and without any trace of post-oscillation. The instantaneous rise and the optimum addition of the MSW and woofer means that the finer details are never missed.

Nature of sound.

When as a loudspeaker manufacturer you have a product in your range that is repeatedly referred to with the greatest respect as a classic by experts, journalists of the specialist press, professionals in recording studios and music lovers then you can be satisfied and just a bit proud. Because here "classic" certainly doesn't mean relying on the "traditional". Because standstill is always a step backwards, we insist in the design of the new Zerobox 107 on the retention of the tried-and-tested, while improving on this using the latest knowledge.

To be exact the new Zerobox 107 is a 1.5 way system in the guise of a two-way system, as the Manger sound transducer is essentially responsible for reproducing the music as authentically as possible. Only below 160 Hz do the two woofers specially designed for the Zerobox 107 kick in to support the sound transducer in its demanding task. Only the lowest octave between 80 Hz and 40 Hz is reserved for the woofers on their own. And this constellation also ensures the ideal of a punctiform sound source.

The demands placed on the crossover are particularly strict to ensure that the woofers can continue the transient of the Manger sound transducer for a natural reproduction with absolute temporal precision. A 3rd order filter with a precise time delay preceding the woofer driver provides optimum interaction of the sound components. A closed cabinet also supports this effect and allows the woofers to decay in a controlled and ideal way. And to ensure that not a trace of the musicality is lost along the way, only top-quality state-of-the-art components are used in the Manger sound transducer. New findings in the field of physics and materials technology have meant that the Manger developer can't rest on his laurels. The Zerobox 107 has also been sensibly overhauled in other areas. The specific use of the latest high-tech damping materials from the automotive industry, in addition to the continuously optimised internal struts, means that the cabinet remains unmoved even when subjected to extreme pressure.

Tried-and-tested technology is however not completely forgotten. Three sound transducers are used in every Zerobox 107. This specially designed Manger arrangement does not serve, as is often believed, to achieve surround sound, but to simulate a quasi infinitely large sound baffle. In this way effects that would otherwise be caused by a narrow cabinet front are totally suppressed, and instead it exclusively serves the undisturbed sound propagation of the front sound transducer.

The Zerobox 107 was singled out for the highest praise and declared a "Reference Speaker" by the German magazine "Stereoplay" as early as 1999. That the new version will continue the success of our classic model and not only maintain its qualities but also improve on them is a certainty. Because neutrality will continue to find an ever growing circle of listeners. Music in its most natural form, just as the musicians played it, without any artificial technical additives, moves us and fascinates us, because we can feel the music directly.

Manger Zerobox 107 IIe data sheet

Driver

Three Manger sound transducers (MSW, W05, 8 Ohm) – patented broadband sound transducer with bending-flexible sandwich diaphragm, 70 mm double voice coil (0.4 g in weight) and 15 extremely powerful neodymium magnets for impulsive dynamics and concentric sound propagation (point sound source).

Two Vifa woofers (20 cm), custom-built carbon fibre-paper diaphragm driver for a dry and natural bass.

Crossover

Crossover frequency 170 Hz

MSW: High-pass 1st order filter, Mcap + Mcap Supreme capacitors, air coils, MOX resistors

Woofer: Low-pass 3rd order filter, MKP capacitors, vacuum-impregnated Zero-Ohm transformer coils in the signal path

System data

Impedance: 4 Ohm
Rise time: 13 µs
Sensitivity: 90 dB 1W/1m

Cabinet

Cabinet made of medium-density wooden fibreboard. The cabinet interior is fitted with complex braces and lined with polymer resin damping panels. Trapezoidal cabinet design to suppress standing waves in the cabinet's interior.

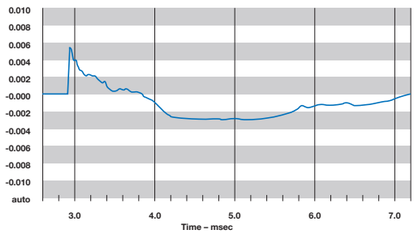
Dimensions and weight

110 x 26 x 34 cm (H x W x D), 43 kg

Finishes

- silk matt lacquer: black, white and aluminium (silver).
- silk matt veneers: alder, beech, cherry.
- fine wood veneers: Macassar ebony, Santos rosewood, Poplar burl, Birdseye maple. Other veneers on request.
- Piano High Gloss black: a high-gloss polyester lacquer applied in several layers.

Frequency Response: A very balanced frequency response is important of course, but it still isn't everything. Linear from 40 Hz to 25 kHz (- 3dB).



You can hardly get more perfect than this: The arrangement of the sound transducers, the extremely fast rise time of the MSW and the special filter technology provide the whole system with optimum transient and decay. The Zerobox 107 itself never dominates and always emphasises the actual music.

Perfect presence.

In the final analysis the complete system is only ever as good as its individual components. And the whole effort would be pointless if the cabinet or the crossover did not provide the Manger sound transducer with the necessary precision and influenced the best possible reproduction. Particular attention was paid to this aspect in the development of the latest version of the Zerobox 103.

Cabinet wall thicknesses of up to 38 mm in those areas where longitudinal waves or transverse waves can cause resonance. And a cleverly devised system of internal struts to increase the rigidity of the cabinet.

Selected and specially manufactured materials for damping and calming of the cabinet's interior walls lead to the demanded result – without any trace of cabinet post-oscillation. Here in accordance with the good old Manger philosophy, a closed cabinet without a reflex opening in the bass range is preferred to prevent any disturbing resonance here.

The Manger crossovers are just as complex in detail. Separate crossovers for the sound transducer and woofer, so-called zero-ohm and transformer core coils, highest grade capacitors, as well as high cross-talk attenuation between the individual coils resulting from their arrangement define the state of the art.

The result is a deep and dry bass and musical resolution matching the original in every respect right down to the last detail. Because, as the name says, you shouldn't hear the loudspeaker "box", but only the music. This remarkable property is however still attributable to a stroke of genius by Josef W. Manger: the arrangement of the laterally radiating Manger sound transducers. This does not serve, as is often believed, to achieve surround sound, but the unhindered sound propagation of the front transducer, without any annoying effects that would otherwise be caused by a narrow cabinet front.

And the future has also not been forgotten. With its fast rise time and pulse precision the Manger sound transducer has been ahead of its time for ages and is therefore also in a position to cater perfectly for the new standards such as SACD and DVD-Audio.

Therefore our top of the range model still remains more than faithful to the Manger philosophy that music as the provider of emotions should reach the listener exactly as the musician created it. As Gerold Lingnau in the FAZ newspaper wrote:

"In contrast to other loudspeakers, where they try to put themselves in the foreground, here it's nothing spectacular that confronts the listeners' ears, just the presence of the music – room-filling and true to life."

Manger Zerobox 103 IIe data sheet

Driver

Three Manger sound transducers (MSW, W05, 8 Ohm) - patented broadband sound transducer with bending-flexible sandwich diaphragm, 70 mm double voice coil (0.4 g in weight) and 15 extremely powerful neodymium magnets for impulsive dynamics and concentric sound propagation (point sound source).

Two Vifa woofers (25 cm), custom-built carbon fibre-paper diaphragm driver for a dry, low and natural bass.

Crossover

Crossover frequency 160 Hz

MSW: High-pass 1st order filter, Mcap + Mcap Supreme capacitors, air coils, MOX resistors

Woofer: Low-pass 3rd order filter, MKP capacitors, vacuum-impregnated Zero-Ohm transformer coils in the signal path

System data

Impedance: 4 Ohm
Rise time: 13 µs
Sensitivity: 91 dB 1W/1m

Cabinet

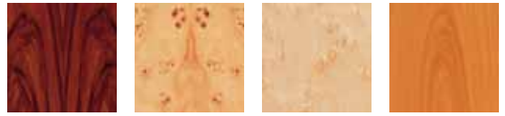
Cabinet made of medium-density wooden fibreboard, two-part acoustically decoupled cabinet, the cabinet interior is fitted with a complex system of braces and lined with floating polymer resin damping panels.

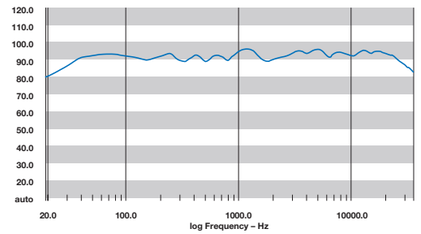
Dimensions and weight

121 x 31 x 38 cm (H x W x D), 57 kg

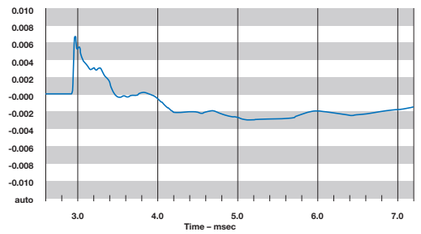
Finishes

- silk matt lacquer: black, white and aluminium (silver)
- silk matt veneers: alder, beech, cherry
- fine wood veneers: Macassar ebony, Santos rosewood, Poplar burl, Birdseye maple. Other veneers on request.
- Piano High Gloss black: a high-gloss polyester lacquer applied in several layers





Frequency Response: A very balanced and wide frequency response. Linear from 32Hz to 25kHz (- 3dB), or 32Hz to 35kHz (-10 dB). The Zerobox 103 is highly capable, particularly for the new audio standards.



Almost perfect step response: The arrangement of the sound transducers, the extremely fast rise time of the MSW and the special filter technology provide the whole system with optimum transient and decay.

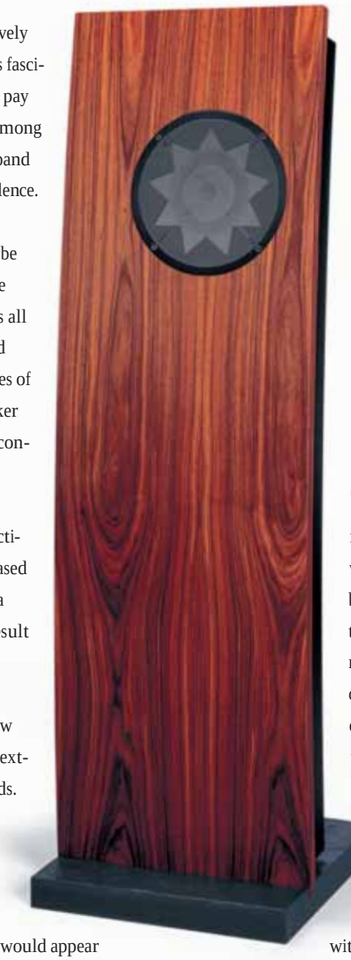
A complete work of art.

The idea of developing a loudspeaker exclusively tailored to the Manger sound transducer has fascinated us for a long time. A design that would pay tribute to this exceptional sound transducer among loudspeaker chassis and celebrate this broad-band transducer's longstanding reputation for excellence.

The presence of a second driver should not be allowed to distract the view and diminish the promise of unrestricted reproduction across all frequency ranges. The design we had in mind was intended to reflect the innovative qualities of the transducer in the design of the loudspeaker – irresistible in its simplicity and clarity, and convincing in detail.

This was not an easy task as the attempt to actively integrate and express the emotions released by the Manger sound transducer precluded a conventional loudspeaker, and could only result in a design in contrast to current trends.

Following on from the Zerobox, Manger now presents the Swing, the first in a line-up of next-generation loudspeakers unifying all demands.



The Geometry of Listening.

At first glance it doesn't resemble a loudspeaker, but a closer look reveals a circle that would appear to have been cut into segments and then reassembled – a gently curved stele with 2 centimetre wide faces shaping its design. Not a loudspeaker, but rather a slim sculpture of efficiently finished wood and stone, crowned at its exposed position by a star-shaped sound transducer.

Fine design is however not just to be found in the successful overall form, but also in the many successful detailed solutions in the areas where technology and design overlap. For example, the pedestal is made of heavy, natural slate and not only increases the aesthetic charm of the overall image, but also makes a considerable contribution to the stability of the loudspeaker sculpture. Tough elastic joints between the slate pedestal and the wooden frame ensure a resonance-free connection between the materials.

The Manger Swing renders the issue of resonance moot, as the cabinet is double-walled throughout with a dampening body as core. The outer sound baffle on the front is also in floating design and is therefore decoupled acoustically from the cabinet. But that is not the end of the story: even the cabinet outer shape aids unrestricted propagation of sound. The asymmetrical positioning of the sound transducer supports this effect and ensures that the listener only hears what is actually on the sound recording.

However, the true secret of the Manger Swing appears to be based on the fact that it is met with an enthusiastic reception from both visual design and music enjoyment standpoints. And this is also attributable to the Manger sound transducer, which was used as the basis for the design of the Swing.

Manger Swing data sheet

Driver

Manger sound transducer (MSW, W05, 8 Ohm) – patented broadband sound transducer with bending-flexible sandwich diaphragm, 70 mm double voice coil (0.4 g in weight) and 15 extremely powerful neodymium magnets for impulsive dynamics and concentric sound propagation (point sound source).

Subwoofer

Optional: The Manger subwoofer expands the lower frequency range of the Swing to 25 Hz. For further information see the Manger Subsonice data sheet.

Crossover

High-pass 2nd order filter, Mcap + Mcap Supreme capacitors, MOX resistors

Recommended subwoofer crossover frequency 150 Hz

System data

Impedance: 8 Ohm
Rise time: 13 µs
Sensitivity: 89 dB 1W/1m

Cabinet

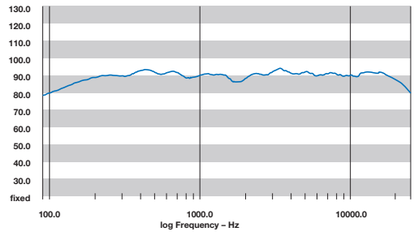
Cabinet made of medium-density wooden fibreboard, damped on the inside with floating polymer resin panels, sound baffle in multilayer sandwich design, joined elastically with the cabinet, pedestal made of split natural slate.

Dimensions and weight

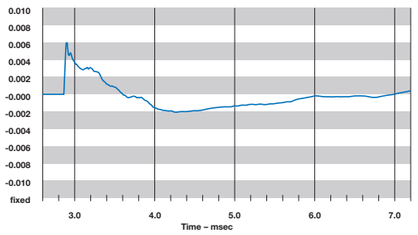
112 x 34 x 12 cm, pedestal: 4 x 34 x 34 cm (H x W x D), 33 kg

Finishes

Cabinet silk-matt black; sound baffle in wood veneer or in aluminium (silver) silk matt; slate pedestal anthracite coloured



Frequency Response: The balanced frequency response of the Manger sound transducer is supported by the special cabinet design. Linear from 100 Hz to 25 kHz (- 3dB), or 35 kHz (-10 dB) expanded to lower frequencies (e.g. with the Manger subwoofer) to 25 Hz.



Step response: The extremely fast increase of the MSW in combination with the special cabinet design results in a step response that can hardly be more perfect, without any trace of disturbing post-oscillation. Again a successful symbiosis of form and function.

Soundstage.

You can't dispense with a low bass sound, whether you are a music-lover with wide experience of live concerts, or a fan of home cinema systems. The established Manger philosophy says that it makes no difference what style or performance you prefer listening to in the comfort of your own four walls. The kettledrum from the concert-hall should retain its original magnitude and the decay should not last any longer than in real life. And similarly the rumbling of a thunderstorm should also create a true-to-life backdrop.

A low and dry-sounding bass that is balanced and realistic across a very wide frequency range is the outstanding feature of the Manger Subsonice. To achieve this we reverted to existing servo-technology, optimized to meet our requirements and implemented state of the art engineering in the cabinet design. The precisely balanced control electronics with a measuring microphone measuring the sound pressure immediately in front of the diaphragm guarantees that the bass never loses control, even with the lowest tones. The internals of the subwoofer are attenuated using a special method. Specially developed damping materials achieve the highest absorption rates by superimposing the resonance behaviour and the energy conversion as a result of air friction.

With the remarkable result that the active-control subwoofer with its wide range of possible arrangements can be smoothly integrated into a sound transducer system. The Subsonice can be combined with the Manger Sidekick to form a satellite system, integrated into existing two-channel or multi-channel systems to reproduce the lowest octave or can form a perfect unit with the Manger Swing. These wide-ranging possibilities therefore fulfil any demands placed on a high-end system.

And the aesthetics have also not been ignored, as is impressively shown by the curved cabinet front with removable baffle. This is a continuation of the unusual design of the Manger Swing and is a harmonious combination with precise technology. Resulting in a natural bass sound with a homogeneity in the music that can otherwise only be experienced live.

Manger Subsonice data sheet

Description
Active, electronically controlled subwoofer, closed cabinet.

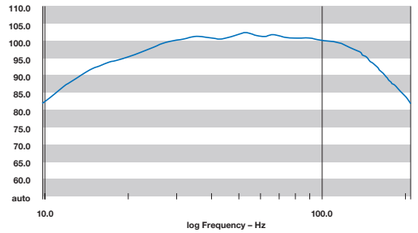
Driver
Very high loading, 25 cm subwoofer with specified data, extremely low-resonance magnesium die-cast basket, high linear excursion and continued very smooth frequency response.

Electronics
120W amplification, upper frequency controllable from 60Hz to 180Hz, 24dB/octave, lower frequency 25Hz, subsonic filter at 15Hz, -12 dB/octave, switchable, line input, high level input, phase switch

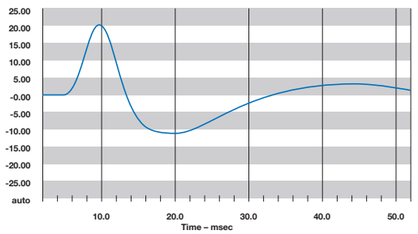
Cabinet
Cabinet made of high density wooden fibreboard, damped on the inside with floating polymer resin panels, front baffle as multi-layer sandwich design.

Dimensions and weight
52 x 34 x 47.5 cm (H x W x D), 30 kg, incl. front baffle

Finishes
Cabinet silk matt black, front baffle available in various finishes:
- silk matt lacquer: black, white and aluminium (silver)
- silk matt veneers: alder, beech, cherry
- wood veneers: Macassar ebony, Santos rosewood, Poplar burl, Birdseye maple. Other veneers on request.



Frequency response: Beyond all criticism is the extremely flat frequency response from 25 Hz to 180 Hz (- 3 dB), set here at 130 Hz.



Step response: The exemplary step response shows a perfect transient and decay of the Subsonice, the result of electronic control, use of an enclosed cabinet and fine tuning of the overall system.

Beyond silence.

If you take a closer look at the Manger sound transducer with its dimensions of 21 cm in diameter and 2 cm in depth, which are pretty remarkable for a broadband driver, it immediately becomes apparent that it is something small. The Manger Sidekick is the first on-wall loudspeaker that has nothing in common with room-filling cabinets. But being small doesn't mean sounding small, as acoustically this small-scale speaker performs its task admirably and is just as efficient as the larger models.

An aesthetic design suited to the living environment is nowadays one of the most important considerations, if not the determining factor in the selection of a new loudspeaker. This is where the Manger Sidekick is a specially attractive alternative, because it meets both the aesthetic demands for a living room and the high quality requirements for audiophile reproduction.

In combination with a subwoofer the whole world of music with its dynamics and emotionality is beautifully combined with a minimum of change to the living environment. Sidekick blends in with the wall in both optical and acoustical senses. The wall surface acts as a supporting medium for undisturbed sound propagation. This means that your favourite listening position is, as in the case of the Zerobox models, no longer restricted to the middle of the room, but can be freely selected. A three-dimensional sound is created throughout the room so that it is not only the speakers themselves that disappear but the walls as well – to be replaced by the concert hall right in your living room.

It goes without saying that the same quality requirements apply for the Sidekick as for our pedestal models. And the Manger sound transducer is made as always from cross-over components of the highest quality and surrounded by innovative damping materials. The shape of the closed polygonal cabinet also allows optimum orientation to the listening position or, if using the even more inconspicuous ceiling mounting, optimum sound propagation to the listening positions underneath. The specially developed wall mounting offers a wide range of installation possibilities.

However this model will find favour not only with friends of stereophonic sound. The Sidekick complements at the highest level two-channel systems for multi-channel enjoyment, turning your stereo system into a home theatre centre. And when it comes down to it, the wide-ranging possibilities of the Sidekick are attributable to the many advantages offered by the Manger sound transducer with its true-to-life depiction and realistic spatiality – perfectly suited for a domestic environment, that despite all of the new possibilities for music enjoyment retains its living environment qualities.

Manger Sidekick data sheet

Driver

Manger sound transducer (MSW, W05, 8 Ohm) – patented broad-band sound transducer with bending-flexible sandwich diaphragm, 70 mm double voice coil (0.4 g in weight) and 15 extremely powerful neodymium magnets for impulsive dynamics and concentric sound propagation (point sound source).

Subwoofer

Optional: The Manger Subsonice expands the lower frequency range of the Sidekick to 25 Hz. For further information see the Manger Subsonice data sheet.

Crossover

High-pass 1st order filter, Mcap + Mcap Supreme capacitors, MOX resistors

Recommended subwoofer crossover frequency 100 Hz

System data

Impedance: 8 Ohm

Rise time: 13 µs

Sensitivity: 90 dB 1W/1m

Cabinet

Cabinet made of medium-density wooden fibreboard, damped on the inside with floating polymer resin panels. Polygonal housing (7°) for optimum spatial listening throughout the room.

Dimensions and weight

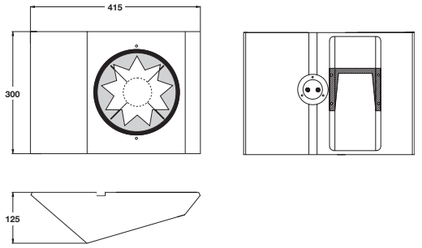
30 x 41.5 x 12.5 cm (H x W x D), 8 kg

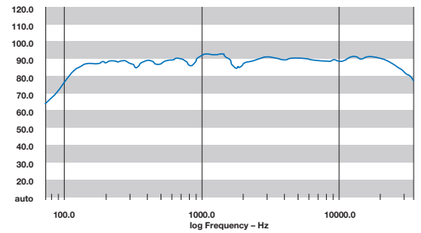
Finishes

- silk-matt lacquer: black, white and aluminium (silver)
- Piano High Gloss black: a high-gloss polyester lacquer applied in several layers

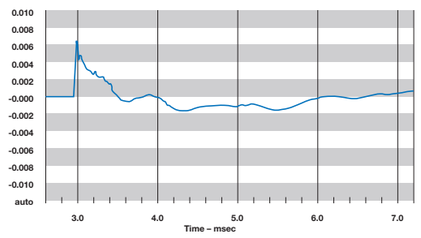
Wall Mounting

Wall mounting including drilling template for on-wall mounting. Cable feed from either top or bottom, or concealed.





Frequency Response: Extremely linear from 110Hz to 25kHz (- 3dB), or 110Hz to 40kHz (-10 dB) through the boundary layer matching.



Step response: This almost perfect step response of the Manger sound transducer is the result of the boundary layer and the delay-free rise. A holographic representation of music and noises is child's play for the Sidekick.

Josef W. Manger has been active in sound transducer research and development for over thirty years and began manufacturing the Manger sound transducer in 1985, for which he holds 40 patents. In 1982 he was presented with the Diesel medal in silver, one of Germany's highest awards for engineering excellence.

MANGER

PRECISION IN SOUND

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