Manger p2 – A dynamic loudspeaker with the transparent sound of an electrostat

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German loudspeaker manufacturer Manger Audio builds floor standing and stand mounted loudspeakers. The mid and high frequencies are reproduced by a single driver, called the 'Manger Sound Transducer'. The Manger Sound Transducer is a unique driver, incomparable to products from other manufacturers. What makes the Manger Audio loudspeakers so unique? Do the differences in the driver used result in a distinctively better reproduction? In the listening space, a pair of Manger p2 loudspeakers is under test, so let's find out…

Manger Audio: loudspeakers developed and built in Germany

Manger Audio is based in Mellrichstadt. The company builds loudspeakers exclusively and has been doing that for about fifty years now. Production is mostly done by hand and many tools and methods have been developed in house. Development and production is all done in Germany. According to Manger Audio, this is the best way to ensure a high quality standard constantly.

The loudspeaker market is densely populated. In all price segments, a battle is fought for the attention of the consumer. A loudspeaker manufacturer that uses techniques different from others, can attract attention from consumers with this. Of course, different techniques are not a goal in

itself, but a means to an end to reach a reproduction that can differentiate itself positively compared to competitors.

The Manger Sound Transducer developed by Josef W. Manger

The loudspeakers of Manger Audio are in essence dynamic loudspeakers. The company however has developed a driver, called the Manger Sound Transducer, that strongly differs from all other drivers available.

The founding father of the Manger Sound Transducer is Josef W. Manger. Unsatisfied with all the loudspeakers then available, he in 1968 started with the development of this unique driver. Since then, it has constantly been improved and refined until series production started in 1990. Since 1991, the Manger Sound Transducer was provided with stronger neodymium magnets, increasing the sensitivity. Since then, the design has not been altered significantly. Josef Manger died on the 27th of October 2016. The company is run by his daughter Daniela Manger, who has been working in the company for over 25 years.

The Manger Sound Transducer is still the heart of every Manger loudspeaker. The current portfolio of the brand consists of three floor standing models (one active and two passive models) and two monitors (one active, one passive). All these models are two-way systems. Also, two single driver models featuring only the Manger driver exist in the line: one on-wall and one in-wall.

So no three-way models? Nope, these are not available… Not that Manger needs any, as the Manger Sound Transducer is capable of reproducing frequencies between 80 and 40,000 Hz. Mid- and high frequencies are reproduced by the same drivers, approaching a perfect point source. Low frequencies are dealt with by a conventional woofer (which is not really that conventional). A two-way system only has one crossover frequency to deal with instead of two or more, with all technical challenges that come with them.

The subject of investigation is the floor standing Manger p2, the current passive flag ship. It's dimensions are 113 x 27 x 22 cm (44.5 x 10.5 x 8.5 inches). All the sides are parallel and all vertical corners have been rounded. The complete enclosure has been painted in a single color, except for the drives, aluminum base and back plate. The p2 has a modern and business-like appearance without frills or decorations.

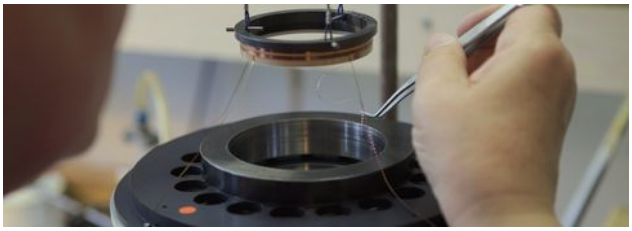
A pair of p2s costs 12,800 euros in a RAL or NCS silk finish. Silk veneer and high gloss painted finishes are available at a premium. At these prices, buyer's demands regarding sound quality, build quality and finish are high of course, so does the Manger p2 deliver?

Before we listen to the Manger p2 loudspeakers, let’s first zoom in on the engineering, especially the unique and distinctive Manger Sound Transducer.

The Manger Sound Transducer in depth

Development of the Manger Sound Transducers started in 1968 by Josef W. Manger out of disappointment about all the loudspeakers he had heard. No single loudspeaker seemed to be capable of a realistic reproduction. By investigating human perception of sound, he discovered that the first impulse/transient of sound was distorted by these loudspeakers, resulting in unnatural sound. Think of the sound of a twig snapping or the accurate reproduction of percussion. The initial transient of sound is crucial in determining if it is real or not. This is called the impulse behavior of a loudspeaker driver. For good impulse behavior, speed – you can also call it a short response time - is needed.

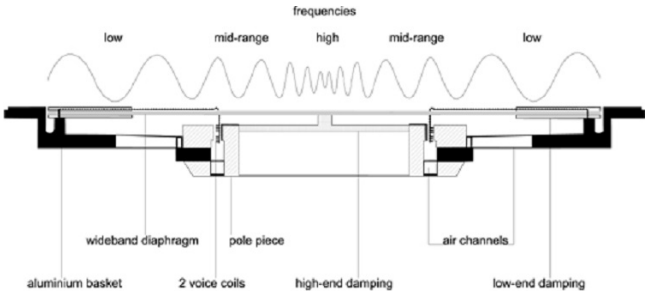
It was found that the inertia of most loudspeakers had much more impact than was thought at the time and even turned out to be the deciding factor in perceived differences. Starting a loudspeaker cone from standstill takes time and the mass of the cone and voice coil play an important part in this.



To obtain the perfect impulse behavior, Josef Manger designed the Manger Sound Transducer: a flat flexible disc that is excited from the center. The vibrations travel from the voice coil to the outer perimeter, comparable with the ripples caused by a stone thrown into water.

The disc does not move pistonic, like a normal driver, but the vibrations travel through the material as transversal waves, so called ‘bending waves’. The thickness of the disc increases towards the outer edge, just like in the human basilar membrane. High frequencies are reproduced towards the center of the disc, low frequencies more towards the edge. At the perimeter of the disc, vibrations are absorbed by the distinctive star shaped foam surround and therefore cannot bounce back. A total of 15 neodymium magnets concentrate their extremely powerful field of 1.32 Tesla in an air gap of only 0.95 mm wide, in which an extremely light weight 70 mm diameter voice coil moves to generate the ‘bending waves’.

Approaching the perfect point source



The Manger Sound Transducer is able to reproduce frequencies between 80 Hz and 40 kHz from a single driver, approaching the perfect point source. A big advantage is the absence of any crossover in the critical midrange, avoiding many technical challenges. Despite the enormous frequency range, the sensitivity of the Manger driver is very high at 91 dB/1 W/1 m and the rise time of 13 µs incredibly short.

Although the Manger Sound Transducer is able to reproduce down to 80 Hz, the crossover in the p2 has been configured to filter all frequencies below 340 Hz from the Manger driver. Most low frequencies are thus handled by the woofer. This avoids forcing the Manger driver to behave pistonic and allows for a more accurate and simpler crossover. The complete midrange and high frequencies are handled by the Manger Sound Transducer without any additional filters.

According to Manger, the loudspeakers need a run-in period of around 24 hours, after which no significant changes in the sound are to be expected. The materials used are UV stable and no toxic plasticizers are used. The user should be able to enjoy their speakers for at least 20 years or more.

Woofer and enclosure

The 8” Manger p2 woofer cone has been made from a sandwich of high-tech foam between two layers of carbon fiber. This mix of materials creates an extremely stiff cone with low mass and high self-damping. The woofer is working in a closed environment, but is augmented by two passive radiators mounted on the back of the enclosure.

The quoted frequency range is 30 Hz – 40 kHz and the p2s are able to play very loudly: maximum SPL is 112 dB.

Each p2 has a weight of 32 kg. The enclosure has a very heavy construction and has a perfect fit and finish. The highish weight is partly caused by the front baffle with its 38 mm thickness and the thick heavy aluminum base plate. Spikes and floor protectors are included, but not mandatory. The p2 has twin terminals, suitable for bi-wiring or bi-amping.

Setup and test environment

A pair of p2s was delivered and set up carefully by Dutch Manger distributor Audio Ingang in the living room of the author. According to Audio Ingang, the p2s shouldn’t be too far apart. During the review period, they were placed around 2.5 m from each other (measured from center to center) and

around 1 m from the wall behind the loudspeakers. The listening distance was approximately 4 m. The p2s were toed in towards the listener, so their axes crossed somewhat in front of the listener. According to the distributor this is critical and it took some time and dedication to get it exactly right. The sweet spot however turned out to be rather big with this setup.

The floor underneath the loudspeakers is stable and solid. During the first two weeks, listening was done without spikes. After this period, spikes were screwed in place. The use of spikes on a solid floor turned out to give slightly superior results across the complete frequency range, particularly better low frequency reproduction was noticeable.

During the review period, the p2s were driven by Pass Labs class A amplifiers. By request of the distributor, a Lindemann system consisting of the musicbook:55 (power amplifier) and musicbook:25 (pre-amp, DAC, CD-player, streamer) was used. The musicbook:55 is a class D amplifier. The purpose of swapping the amps was not to compare them, but to show how easily the p2s show up differences in sound between components in the hifi chain.

But enough about technicalities! Time to play some music and test Manger's claim. What claim? The (implicit) claim that the distinctive Manger technologies lead to a reproduction which makes a positive difference compared to rival products.

Listening with Pass Labs class A amplifiers

Lots of different types of music were used, varying from classical orchestral music to intimate chamber music, different kinds of rock music from loud to soft, studio recordings, live recordings, music played on only acoustic instruments to purely electronic music and everything in between. The p2s don't appear to have any preference for one musical genre and that is a very positive trait. They will play either heavy metal music or reproduce a chamber or full symphony orchestra without any effort.

Not only do the p2s have no preference, they also don't color the sound in any way. Right from the first listening session it was clear how neutral and linear the p2s sound. During the review period, no crossover was ever detected. The Manger Sound Transducer was able to deliver a totally linear and uncolored sound. The transition to the woofer is seamless, which tells a thing about the crossover and the quality of the woofer used.

No single frequency dominates: bass lines on a bass guitar can sometimes bring disturbing resonances to light, making certain notes too obvious, whilst not being there in the recording (which can easily be checked by listening through headphones for example). One example are the low frequency notes in the first track of the album *Voyage 34* by Porcupine Tree, where the bass guitar plays a prominent role. The p2s have very tight and controlled bass. When low frequencies are there in the recording, they will be reproduced, without a hint of wooliness. When the recording is somewhat dry, the p2 cannot solve that. The p2 does not add or subtract anything.

Although the reproduction of the low frequencies is above expectation, the true power of the p2s is in the mid and high areas. This is the domain of the Manger Sound Transducer after all. This writer is used to listen to electrostatic speakers from Quad. When starting a listening session with dynamic loudspeakers, expectations are automatically adjusted. However, it turned out these adjustments were less and less necessary with the p2s as time went on.

In essence, the sound of the p2s has a lot in common with the sound of electrostatic or magnetostatic loudspeakers. Although the Manger Sound Transducer is a dynamic driver – as it works with coils and magnets, the sound has more in common with an electrostatic loudspeaker than a dynamic loudspeaker. The claim that the Manger Sound Transducer has an excellent impulse behavior and very short rise time, appears to be confirmed by the reproduction of the music. The mid and high domain has a transparency and lack of coloration that is normally only possible with electrostatic loudspeakers or dynamic loudspeakers that cost a multiple of the p2s. The frequency range seems to be very flat. Like with the low frequencies, no single mid or high note appears to stick out. When micro details are present in the music or when something is happening in the background of the recording, the p2s will let you hear it without forcing themselves upon the listener.

The Manger p2s don’t sound warm, cold, sterile, analytical, wooly, restrained, exuberant, sharp, sparkling or dull: the p2s don’t have any ‘sound’ at all! The p2s function as the perfect vehicle for the music. The p2s show off the music and not themselves and disappear completely in the background. In no way do the p2s themselves catch the listener’s attention, so he or she is able to completely immerse him or herself into the music served by the p2s. This is a big compliment because, like noted before, only electrostatic, magnetostatic or very expensive dynamic speakers are able to deliver such a tight and uncolored sound.

The bonus with the Manger p2 in comparison with electrostatic loudspeakers is a slightly better definition of the low frequencies. Good bass reproduction is the achilles heel of most electrostatic speakers after all. The p2 is smartly capable of combining the uncolored and transparent mids and highs of an electrostatic transducer with the bass of a big dynamic system.

Listening with Lindemann Audio musicbook system

After approximately two weeks, distributor Audio Ingang delivered a complete Lindemann Audio system, consisting of the musicbook:25 preamp, DAC, streamer and CD-player and musicbook:55 class D amplifier, able to deliver 240 W per channel into 4 Ohms.

The purpose of connecting the Lindemann system was not to determine which system would sound better, but to show how the p2s would handle different types of amplifiers. It is worth noting that the Pass Labs pre- and power amps are much more expensive (and big!) than the Lindemann electronics.

The Lindemann system performs reasonably well, but in both mid and high frequencies, something is lost regarding airyness, lack of coloration and the reproduction of micro details. Human voices

sound a fraction cooler. The Manger p2s show this without any problem and again show themselves as a neutral messenger, highlighting all differences between the amps flawlessly.

Low frequencies are accentuated slightly by the Lindemann system. Checking with the electrostatic speakers, this trait remained. One listener will appreciate this slight fullness, others perhaps won't. This writer could appreciate it, but also heard the compromises in the mid and high frequencies.

It is not surprising the Lindemann system was not a match for the much more expensive Pass Labs system. Class D does have advantages though. The amplifiers are light, small, energy efficient and need next to no warm up. Energy waste, size, weight and warm up time are weak points of class A and some A/B designs.

What's important is that the p2s show up any imperfections in the hifi chain. When the recording is no good, it will show up with the p2s playing. If the driving amplifier/system sounds somewhat warmer of cooler, the p2s will reproduce this accordingly. This makes the Manger loudspeakers a perfect candidate to review amplifiers or other components. The loudspeakers don't have a 'sound' of their own and show exactly what is on the recording and what other components in the hifi chain are doing.

Manger p2 and its competitors

The (implicit) claim that the unique technology of the Manger loudspeakers leads to a reproduction that is able to differentiate itself positively from competing products can be confirmed after some weeks of listening. The Manger Sound Transducer is a very special driver and is truly one of a kind. No other manufacturer can lay claim to a similar driver.

Because of the unique design of the Manger Sound Transducer, it is hard to point to competitors for a comparison. Dynamic loudspeakers in the same price range don't really compare well: the Manger p2 simply wins from its dynamic competitors in the key areas of transparency, lack of coloration and a linear and realistic reproduction. This does not mean that competing dynamic competitors sound worse: some listeners appreciate a bit of coloration or enhanced low frequencies for example.

Competitors of the Manger p2 can more easily be found in the field of electrostatic or magnetostatic loudspeakers. In comparison with smaller models of electrostatic or magnetostatic loudspeakers, the Manger p2 however turns in a slightly better bass performance. The Manger p2 is also likely less sensitive to servicing compared to electro/ magnetostatic models, where the foil has a tendency to lose its tightness in time or simply degrade (for example, the semi-conductive coating on electrostats or the glue holding the conductive traces on a magnetostatic panel).

Which listeners should not buy the Manger p2? Those looking for a 'nice' sounding loudspeaker or one with 'balls', should ignore the p2. The p2 sounds like music and does not have a sound of its own. It also lacks 'balls'. Those looking for a loudspeaker that is able to kick you in the gut, should not buy a pair of p2. The lows of the p2 are very controlled and tight, but the p2 doesn't 'kick' like some dynamic loudspeakers seem to do. Looking for an 'exciting' sounding loudspeaker with

character? The p2 does not excite and has no discernible character either. It is the music that should possess character and excite the listener.

And which listeners should buy a pair of Manger p2s? Those looking for a transparent and uncolored messenger of music. And those looking for an authentic and realistic reproduction almost cannot go wrong with the Manger p2. Lovers of electrostatic or magnetostatic loudspeakers that are fed up with the maintenance hassle of their beloved transducers and are looking for an alternative, could well become very happy Manger owners.

Conclusion

The wide bandwidth Manger Sound Transducer is a unique driver that sets itself apart from all other dynamic drivers. Manger is able to differentiate itself with it from all competitors that build dynamic loudspeakers. The transparency, lack of coloration, speed and measure of realism in their reproduction is very good with the Manger p2s. They eliminate themselves from the musical picture and don't scream for attention. All genres of music are played without complaints and are reproduced accurately. The Manger is able to combine in a smart way the lack of coloration, transparency and realistic mid and high frequencies of an electrostatic loudspeaker with the bass performance of a big dynamic loudspeaker.

POSITIVE

- Transparent, airy, uncolored and realistic sound
- No discernible crossover
- Mid and high reproduction comparable to an electrostatic speaker
- Tight and realistic bass performance
- The loudspeaker doesn't call attention to itself and seems to 'disappear'

NEGATIVE

- Precise placement will take some effort