



credo

Audio System - Speakers



Handmade in Switzerland

Credo Loudspeakers

The best part of your audio system? From our 35 years of experience we know that, "your electronics are always as good as the loudspeaker allows it to be." An this is how we develop and design our speakers, they need to reproduce music the most accurate way possible for a variety of rooms and budgets.

On a Credo speaker you'll find several very unique features and designs, developed and implemented over many years. We always focused on the highest goal in speaker design - to reproduce all kinds of music and genres, without compromise!

Now some of you music enthusiasts might be skeptical about that, because over the years you experienced so many speakers choosing the music for you. But we ensure you it is possible to play all your favorite recordings from heavy Drum'n Base over finest performances of Classical music or the smooth voice of some famous Jazz standard to a beefy Guitar Riff. ...

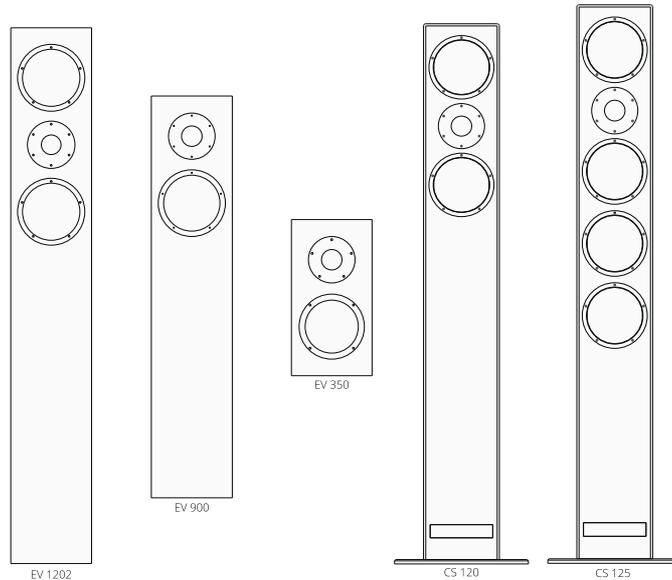


The EV and CS Series

We manufacture two different series, the EV and CS models.

"EV" - stands for "Evolution" - because the design is based on our previous SPC Series

"CS" - means compound steel, a combination of stainless steel with other materials for the cabinet



The models **EV 350 and EV 900** are our most affordable models. For us these speakers are nevertheless very challenging - to fill the gap between mass-produced Hi-Fi speaker and the expensive High-End world is our goal. We implemented many of our unique designs, a crossover equipped with best components and everything is built in our manufactory in Switzerland.

The **EV 900 Reference and EV 1202 Reference** are our floor standing models, the cabinets made from HDF (high density fiberboard). For our „Reference“ version we use some of the best tweeters and mid woofers available today, which match perfectly with our philosophy of speaker design.

Our **CS 120 and 125** are truly unique and will be the choice if you are looking for highest performance. We achieved a superb cabinet by using stainless steel, combined with our very effective P.S.D damping. The appearance is modern and elegant without compromising the sound quality. **A Reference version** is also available, where even the smallest detail is optimized to the maximum. These models feature large external crossovers, protecting all the premium-components from the enormous sound pressures inside the speakers.

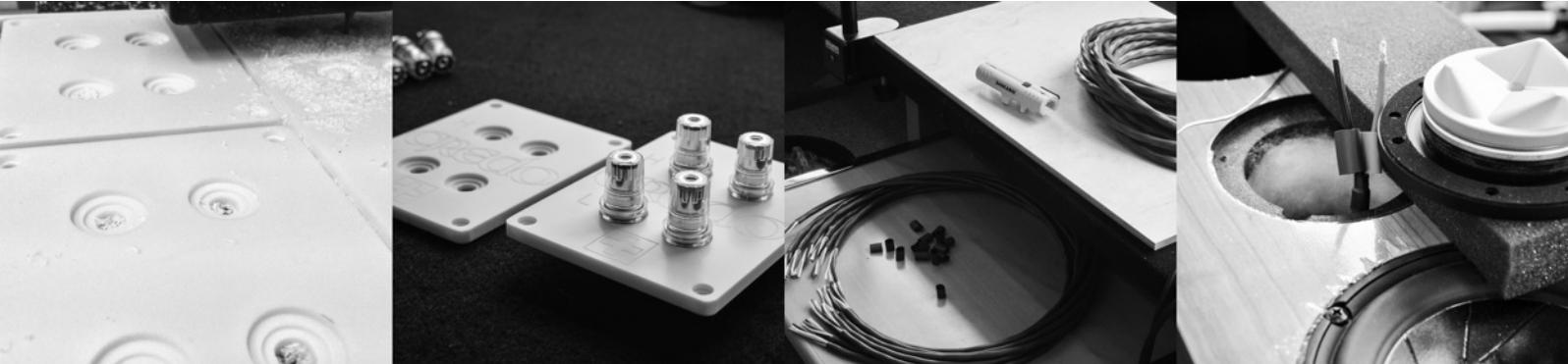
The components, used in all the reference-crossover are all of premium quality and belong to the best on the market. There is a controversial discussion about the advantages of such components (coils, resistors and capacitors). We found that we achieve better results with the components we picked.

Tighter tolerances, better mechanical and electrical specifications of course make a difference.

With intense listening-tests we also found that some parts provide better clarity and fine dynamics. *FYI: Bad engineering can't be resolved with "beeswax and copper foil"...*

The internal wiring and the connection-terminal are also different to the standard version. The terminal is milled from 6mm mineral composite and has major mechanical advantages. The connection terminals are made of high-purity copper and provide superior contact to your cable with BFA- or Spades.

The cables we use internal have very low inductance. In the way they are made, the magnetic fields within the cables are reduced dramatically and it has outstanding mechanical characteristics. The vibrations inside the loudspeaker also have an influence to the cable, microphone-effects occur. We use cables with 5N OF and 6N copper quality, which practically is the best you can get.



About our designs and unique features

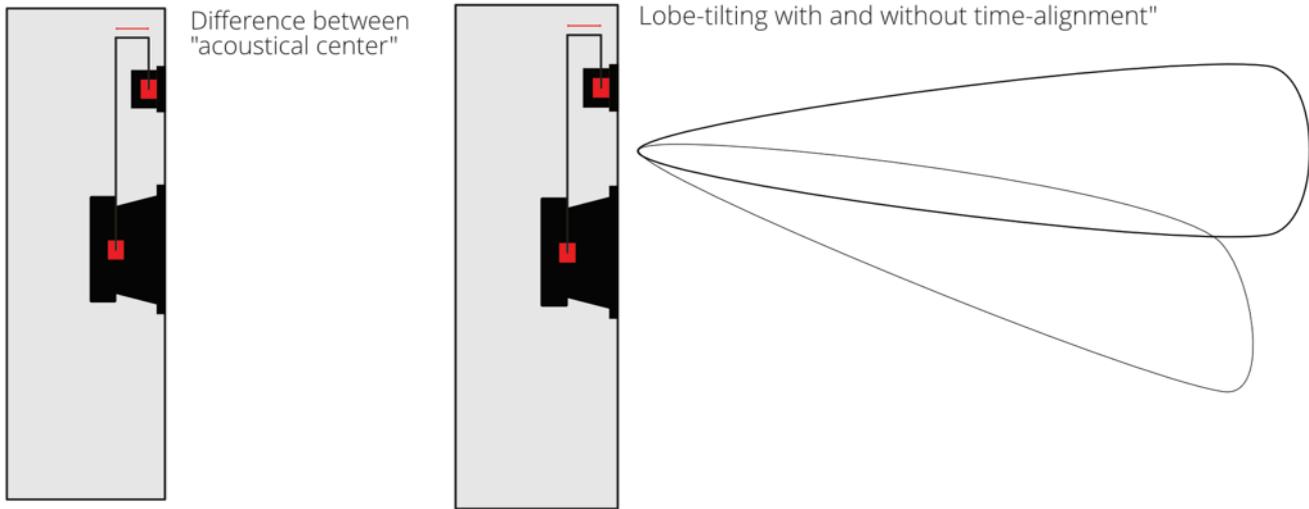
High-pass filter and bass reflex tuning

An central element of all the Credo speakers is their bass-reflex tuning. We use a high-pass filter to extend the lower frequency response of the chassis, resulting in a lower cutoff frequency. So the maximum SPL (sound pressure level) is increased and the intermodulations, caused by large movements of the driver are minimized. It also helps to reduce the temperature-peaks at the voice-coil - a hot voice-coil leads to dramatic changes in sound and reduces the life-time of your speaker. Because of the HPF we can tune the reflex-pot very low and achieve a flat frequency response down to 35Hz, or lower depending on the model.

The Credo speakers have a punchy and powerful low-end. The roll off starts at much lower frequency, but is steeper.

Time Alignment

Why „time-alignment“?



It would be ideal to reproduce all frequencies of the music-signal at the exact same time and from the exact same location. But we have to use different drivers (tweeter, mid woofer and woofer) to reproduce the full frequency range. Because of the physical differences between drivers and due of phase shifts caused by the

crossover, time-alignment is an important technique to correct the transient response, improve accuracy and improve the directivity or lobe tilting at the crossover frequencies.

Lobe-Tilting

Indeed many (also High-End) speaker-systems do not use time alignment. However, we are sure it is absolutely necessary to reproduce music accurate. Our proprietary crossover-design has the property that at the crossover frequency the electrical summing is flat and the signals are always in phase (180° out of phase, which is corrected by simply inverting the tweeter's signal). Now our loudspeaker's main lobe points exactly forward so that it will illuminate the listening position evenly, resulting in better overall system performance - such as imaging or clarity.

Time-alignment

A very precise Time Alignment is also achieved by selecting appropriate chassis matching our proprietary filter topology. We carefully optimized our filters and have achieved outstanding phase response and group-delays for our speakers. This means you get a clear image since all frequencies of a Credo loudspeaker arrive with correct timing at your ear.

Smooth impedance - amplifier optimized

Why do we optimize the impedance of our Credo speakers? To provide optimum working conditions for the amplifier. This is achieved by making the load “amplifier friendly”. In High-End we often speak about matching the components, the most critical is the relationship between amplifier and loudspeaker. The speaker is a significant load for the power amplifier’s output stage. When we look at numbers we often read four or eight Ohms specified impedance, which is meant from 20 Hz - 20 kHz - but that is radically simplified, since no speaker has a stable impedance of exactly 4Ω . So we never have a stable load for our amplifier. In order to make amplifiers as stable and accurate as possible many manufacturers make use of significant negative feedback in their designs. When looking at the typical design, it is obvious that a stable impedance helps the amplifier to perform, also at higher frequencies.

Design guidelines:

- The impedance of a loudspeaker must be as linear and smooth as possible
- No excessive “impedance correction circuits” in the crossover
- No dips exceeding 20% of specified impedance according to the IEC 60268-5 standard

Why even a superb amplifier will sound better with Credo speakers:

- An uneven impedance causes reactive behavior, making the amplifier stressed and unstable
- Performance will improve with a well-defined, stable impedance compared to a heavily fluctuating one
- It will improve performance for all types of amplifiers

Now this is not an easy task, to design a speaker with smooth frequency response and our specified impedance characteristics. Only best drivers and components let us fulfill that goal.

Distortion:

Many components and parts of a loudspeaker cause- or are affected by distortion. First you may think of the cabinet and its resonances. Of course this is correct, but also the drivers themselves distort - at certain points of the diaphragm and their suspension. Unnecessary compression or uncontrolled decay will increase distortion. The parts of the crossover are exposed to the sound pressure and vibrations inside the speaker. We take great care about these effects, because the distortion need to be as low as possible.

Damping and bracing , it's all about the balance. If you do not design your cabinet right, you have to stuff it with foam to get rid of ringing and resonances - the result is increased distortion of the driver and loss of dynamic. Of course we use the correct damping in our speakers. Bracing of the cabinet reduces the vibrations caused by the drivers and it makes it also a lot more rigid, so that the high sound pressure inside the speaker does not disseminate in the enclosure.



Micro-dynamics, impulses, control and optimized efficiency:

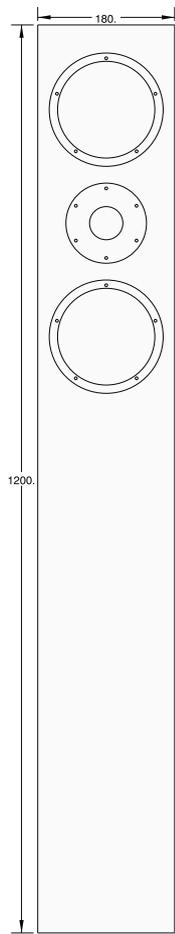
The individual drivers in the speaker react in relation to their environment - meant is the housing and its damping. We developed different methods to calculate the cabinet for our drivers. So we avoid a large loss of efficiency and dynamic and increased the signal fidelity.

The selective use of braces in the housing, the right insulation and cushioning allow the full potential of the chassis. We work with 3D models, simulations of different materials and test different methods of measurement. And finally we make our decisions based on the performance of our prototypes!

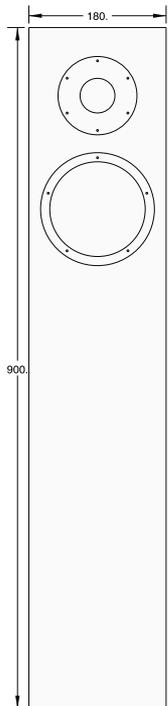
The CS Series - Hybrid materials and P.S.D damping

The mechanical requirements to a speaker-cabinet of this size, which can easily generate large sound pressure level, are enormous. But in order to maintain the elegant body shape, we had to look for other materials than just wood (MDF) or aluminum for the cabinet. We achieved to built comparatively thin walls, way more rigid than any other super-heavy constructions.

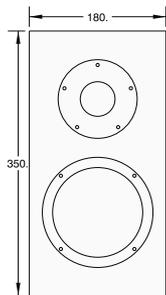
This development process already began in the 1980s - at that time we have built the first cabinets with a frame and outer shell of steel. Different bracing and materials for resonance reduction were used. Over many generations of models and prototypes, we developed the current hybrid-cabinet. We use a clever combination of materials. The outer shell is completely made of stainless steel - up to 6mm wall thickness,



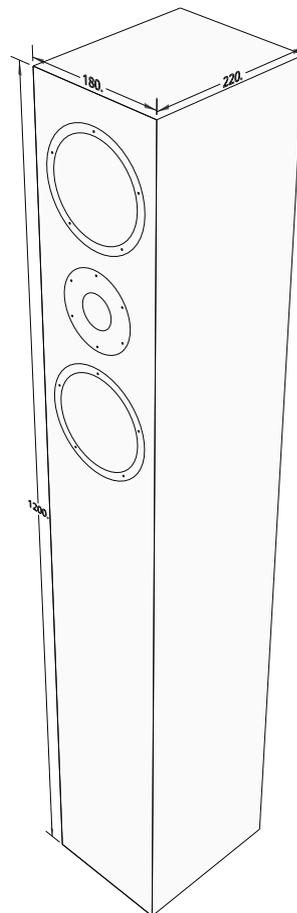
EV 1202



EV 900



EV 350



EV 1202 3D

inside we work with several layers of materials. With that combination of these layers, we achieve a unique balance between rigid walls, damping, inner volume and resonance behavior.

Our ear decides!

You probably got an impression how much development and passion we put in our speakers. Of course several measurements and the simulations are important tools for us. But without extensive listening it is not possible to create a product that provides the listening experience that we are looking for!

In fact, we listen and measure often. We also study the behavior of the loudspeakers in different rooms (we have four listening-rooms) and setups - we care a lot about what happens outside the 0 ° listening-axis. And that is how you get a well balanced sound, not only in our - but also in your listening room.



Swiss made

These high-end speakers are made in small quantities and by hand! Almost everything is made in-house. Of course we also work with specialist suppliers - some parts of the enclosures are made and painted in our region. The additional production steps, such as CNC milling, cabinet coating in P.S.D, assembling of the crossover and cables, that is all done in our facility.

Quality control

All our drivers and crossover components are measured and matched in pairs before we produce the speakers. We have very tight tolerances to ensure constant quality and highest performance. Each pair of speakers is burned-in several hours before the final measurement and Q.C.



Specifications

EV 1202 Ref

Chassis	1" textile (coated) dome-tweeter; 2 x 5.25" mid woofer sliced-paper
Tuning	Bass reflex (back)
Sensitivity	87.5 dB SPL@2.83V/@1 m (semi-reverberant room)
Frequency response	37 Hz - 20 kHz +/- 3dB
Nominal impedance	4 ohms, minimal 2.7 ohms @ 45 Hz
Terminal	Gold plated OFC, bi-wiring BFA or SPADE
Dimensions	120 x 18 x 22 cm (h x w x d)
Weight	21 kg
Finish	White / Black, Cherry or Birch veneer (real wood) or rough-cut
Options	External crossover, different feet, isolation podium



EV 1202

EV 900 Ref

Chassis	1" textile (coated) dome-tweeter; 1 x 5.25" mid/woofer sliced-paper
Tuning	Bass reflex (back)
Sensitivity	87.8 dB SPL@2.83V/@1 m (semi-reverberant room)
Frequency response	41 Hz - 20 kHz +/- 3dB
Nominal impedance	4 ohms, minimal 2.8 ohms @ 40 Hz
Terminal	Gold plated OFC, bi-wiring BFA or SPADE
Dimensions	90 x 18 x 22 cm (h x w x d)
Weight	14.5 kg
Finish	White / Black, Cherry or Birch veneer (real wood) or rough-cut
Options	External crossover, different feet, isolation podium



EV 900

EV 900

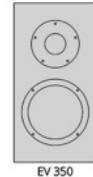
Chassis	1" textile dome-tweeter; 1 x 5.75" mid woofer (coated paper)
Tuning	Bass reflex (back)
Sensitivity	88.1 dB SPL@2.83V/@1 m (semi-reverberant room)
Frequency response	39 Hz - 20 kHz +/- 3dB
Nominal impedance	4 ohms, minimal 2.9 ohms @ 45 Hz
Terminal	Gold plated, bi-wiring BFA or SPADE
Dimensions	90 x 18 x 22 cm (h x w x d)
Weight	14 kg
Finish	White / Black, Cherry or Birch veneer (real wood)
Options	



EV 900

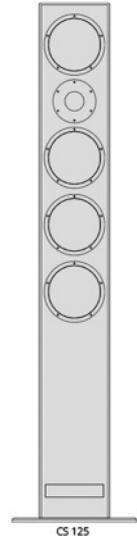
EV 350

Chassis	1" textile dome-tweeter; 1 x 5.75" mid/woofer paper (coated)
Tuning	Bass reflex (back)
Sensitivity	88.9 dB SPL@2.83V/@1 m (semi-reverberant room)
Frequency response	52 Hz - 20 kHz +/- 3dB
Nominal impedance	4 ohms, minimal 3.3 ohms @ 45 Hz
Terminal	Gold plated, bi-wiring BFA or SPADE
Dimensions	35 x 18 x 22 cm (h x w x d)
Weight	6.5 kg
Finish	White / Black, Cherry or Birch veneer (real wood)
Options	



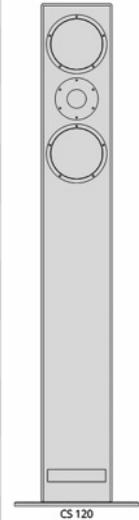
CS 125 Ref

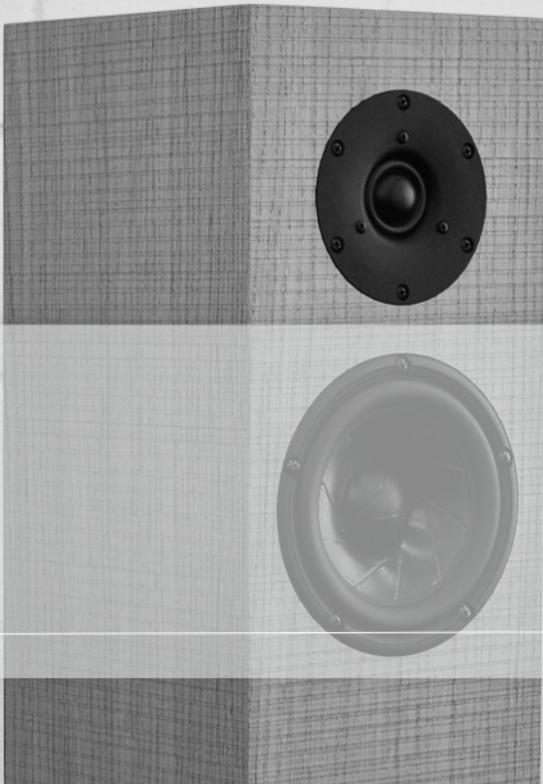
Chassis	1" textile (coated) dome-tweeter; 4 x 5.25" mid/woofer sliced-paper
Tuning	Bass reflex (front)
Sensitivity	89.7 SPL@2.83V/@1 m (semi-reverberant room)
Frequency response	28 Hz- 20 kHz +/- 3dB or + 2dB 2 - 20 kHz selectable
Nominal impedance	3 ohms, minimal 2.1 ohms @ 45 Hz
Terminal	Gold plated OFC, bi-wiring BFA or SPADE
Dimensions	124 x 17 x 20 cm (h x w x d)
Weight	64 kg
Finish	Stainless steel (brushed), all RAL colors
Options	Different feet, isolation podium, front-grill



CS 120 Ref

Chassis	1" textile (coated) dome-tweeter; 2 x 5.25" mid/woofer sliced-paper
Tuning	Bass reflex (front)
Sensitivity	88 dB SPL@2.83V/@1 m (semi-reverberant room)
Frequency response	37 Hz - 20 kHz +/- 3dB or + 2dB 2 - 20 kHz selectable
Nominal impedance	4 ohms, minimal 2.7 ohms @ 45 Hz
Terminal	Gold plated OFC, bi-wiring BFA or SPADE
Dimensions	120 x 17 x 20 cm (h x w x d)
Weight	33 kg
Finish	Stainless steel (brushed), all RAL colors
Options	Different feet, isolation podium, front-grill





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