Eton Core S3 – a high-end three-way system

A firework of sound

In the absolute high-end range, there has been nothing new from Eton for a long time. That's changing, because Eton delivers a pop with the Core speakers.

Eton, with a factory based in Neu-Ulm, is one of the most traditional and respected manufacturers in the business. For such, it is typical not to release the latest and greatest high-end system every few years, but to make a statement with the top products that will last for many years. In the car audio sector, we still remember the finest speaker systems such as the Discovery, which caused a sensation in 2002 with the innovative „Transmissionline tweeter" and the MGS 180, which in 2009 amazed the listening testers with it's sensational magnesium-ceramic dome. Now the top components are called Core, and the current power amplifier Core A2 (test in issue 4/2018) already set standards in many respects in amplifier construction. So now there are new high-end speakers with Core S2 and Core S3, initially as active systems without crossovers with two or three ways.

The tweeter's rear chamber is ventilated in two stages. The terminals of the lead wires only become apparent after the aluminium housing has been opened

And already the first glimpse signals that we are dealing with a revolutionary product here. Anyone who calls an Eton Core his own should prepare well for the first opening of the elaborate metal case. Speaker chassis emerge,

as you rarely see them. This perfection and beauty ensures damp eyes for lovers of high-quality sound transducers. The two cone drivers with 3" and 6.5" basket dimensions come into sight. Beautiful baskets made of die-cast aluminium add visual accents with subtle copper-coloured magnetic rings and logos. But the actual revolution are the cones. Eton has always trusted the proprietary and patented Hexacone as a cone material with which all top systems were equipped. This honeycomb-like composite of nomex honeycombs and Kevlar layers is stiff like a board, and this with a very good internal damping – a perfect material for speaker cones. Hexacone tends to be three millimeters thick with a 6.5" cone and this gives the only drawback of this technology: it is relatively heavy. Which is why something new – and somewhat thinner – had to come into play. After a long period of development, it was decided to use a composite of a magnesium cone and a polymer film. You can already see the cone that it is very laborious to manufacture. The magnesium cone has a strong NAWI curvature, a curved edge for stabilization and builds very deep. Nothing with a super flat installation depth. The magnesium cone is also spiral perforated, with holes increasing in diameter from the inside to the outside. The trick is then that the cone is not simply coated with plastic, but covered with a film in a special way. The coating is not smooth, but each hole in the magnesium creates a small bubble in the composite structure, starting with fine curves inside to clear elevations at the membrane edge. The whole point is that the bubbles take on a vibration-damping function and hence tame the metal cone inherently prone to resonance without taking away positive properties such as hardness and stiffness. The motor is equipped with a neodymium ring on both the 16 and the midrange driver, here again the truly pictorial manufacturing quality of the pole plates convinces. For example, the lower plates have a wreath of holes for the cavity under the voice coil and this wreath is milled into grooves that cite the spiral membrane structure – wow! Now we come to the tweeter, and here Eton remains true to their previous top technology. No surprise here, it is the same magnesium-composite membrane technology. However, it works differently with a 28 millimeter tweeter. The magnesium core is coated with magnesium oxide layers on both sides by plasma electrolytic oxidation. Here, the tough magnesium is the softer partner responsible for damping, while the very hard oxide ceramics provide hardness and stability. New is the case of this superb tweeter, which amazes with astonishing variability for a high-end system. The standard housing for flush installation can be disassembled so that only the bare tweeter can be installed. However, this can also be transplanted into a dash mount housing made of fine aluminium. Not included, but available at an additional cost are also elegant protective grids and mounting rings for all core speakers.

For the cone and the basket it was not necessary to dispense with function in favor of the built-in excitability, so the cone has become very deep

Measurements and sound

of course, the Core tweeter comes with an appropriate coupling volume, which is ventilated in two stages. As a result, the 28er dome has a deep fundamental resonance of 625 Hz. However, the internal ventilation system is also noticeable at just under 2.3 kHz, which manifests itself in a disturbance in impedance and amplitude frequency response. It is even more exciting with the woofer, which proves that the cone works with its resonance characteristics very well damped for a metal diaphragm. Here we see only a few small peaks between 4.9 and 6.6 kHz, which are spreading and harmless. The midrange driver behaves similarly, which only shows a few insignificant peaks above 7.5 kHz; by the way, the hump between 2 and 3 kHz is not the diaphragm, but rather a surrounding or coil former, not a rarity with 3" midrange drivers. Otherwise there is quite little distortion to report, as one might expect from a high-priced system, but the core speakers are not really perfect.

The hour of glory for the Core then comes in the listening test. Core S3 burns off such an impressive firework of sound that leaves the listeners absolutely astonished. The performance is definitely a feast for people who like to listen to what goes on in the music. A wealth of detail that has been heard goes hand in hand with a striking spatial imaging. The virtual space behind the speakers breathes atmosphere and the Core S3 places voices and instruments precisely on stage. Throughout the frequency range, it is honest, although the sound is not midrange-heavy. On the contrary, the sound is generously

Beautiful and excellently vented: The new Core basket is made of die-cast aluminium and scores points with low-flow shaped struts

The 28 mm magnesium dome can be installed naked in original position, with two different aluminium housings included

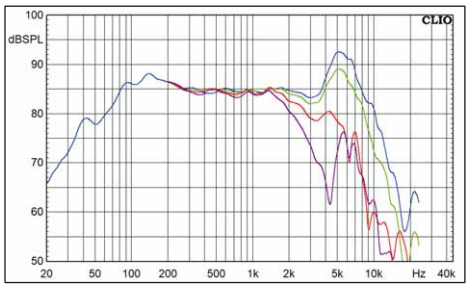
The core membrane consists of a magnesium cone, which is covered with a foil. Bubbles are formed above the holes that increase in size from the inside to the outside

warm and the 16er produces a deep, clean bass that can also hammer thanks to the large 32-millimeter voice coils. What impresses us most, however, is the almost insane dynamic leaps that the Etons implement without any effort. At higher SPL, this means that you have to squeeze your eyes involuntarily. Strokes out of nowhere are no problem, and it does not come as a surprise from Core that exactly the percussion is an experience that you don't get served in this form every day.

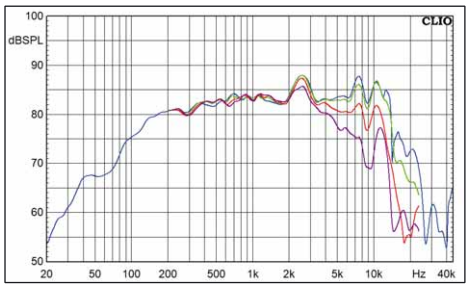
Conclusion

Core S3 is an absolutely worthy addition to the world's best car audio speakers. It convinces with unbeatable manufacturing quality and with a fireworks of sound that are unparalleled.

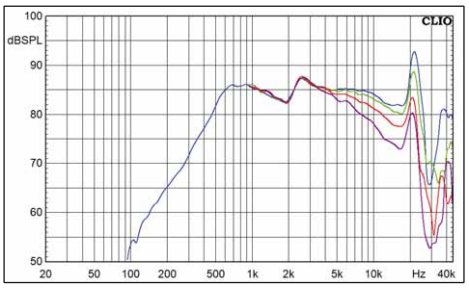
Elmar Michels



The woofer shines with a frequency response that shows an ensemble of well distributed and less pronounced frequency peaks instead of a "hard" cone resonance



The midrange driver shows a typical hump between 2 and 3 kHz, the cone resonances from 7 kHz are very well dampened and only weakly pronounced



The tweeter is the only one part to show the sharp resonance tip of hard membranes, which is sufficiently high at 22 kHz and does not interfere with the sound

Both midrange drivers and woofers naturally work with a neodymium motor. The pole plates are exquisitely crafted

SOUND AWARD
Absolute Top Class
CAR&HiFi 5/2019

Eton Core S3

Distributor		Eton, Neu-Ulm
Hotline		0731 70785-20
Internet		www.etongmbh.de
Sound	55 %	0,9
Bass foundation	11 %	1,5
Neutrality	11 %	1,0
Transparency	11 %	1,0
Soundstage	11 %	0,5
Dynamics	11 %	0,5
Lab	30 %	1,3
Frequency response	10 %	1,0
Max. SPL	10 %	1,5
Distortion	10 %	1,5
Workmanship	15 %	0,5

Specifications

Basket diameter	165 mm
Mounting diameter	147 mm
Mounting depth	79 mm
Magnet diameter	68 mm
Basket diameter midrange	94 mm
Mounting depth midrange	43 mm
Dome diameter tweeterT	28 mm
Housing diameter tweeter	51 mm
Crossover slope wf/t	3,5k/6 k Hz
Crossover slope mid HP/L	200/1,8k Hz
Tweeter protection	250/2,2k Hz
Tweeter attenuation	TT (5,4 kHz/-6 dB/Q6)
Grilles	optional
Misc.	–
Nominal impedance	4 Ohm
DC resistance Rdc	3,35 Ohm
Voice coil inductance Le	0,40 mH
Voice coil diameter	32 mm
Cone area Sd	137 cm²
Free air resonance fs	59 Hz
Mechanical Q Qms	6,08
Electrical Q Qes	0,68
Total Q Qts	0,62
Volume of suspension Vass	12,3 l
Moving mass Mms	15,4 g
Mechanical resistance Rms	0,94 kg/s
Compliance Cms	0,47 mm/N
B*l	6,09 Tm
SPL 2 V, 1 m	86 dB
Amplifier power recommendation	50 – 200 W

Rating

Price		3.000 Euro
Sound	55 %	1+
Lab	30 %	1,3
Workmanship	15 %	1+

Eton Core S3

Absolute Top Class
Top Class
Upper Class
Middle Class
Entry Level

1,0
Price-Performance: very good

CAR&HiFi Issue 5/2019

"Fantastic sounding speakers for sound gourmets. "