T+A SOLITAIRE® Loudspeakers


LUXURY HOUSES
COUNTRY


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SOLITAIRE ® High End Loudspeakers

▶ The name SOLITAIRE® has a very special significance for T+A; after all, this was the name we gave to our first, truly high-end loudspeakers back in the 1980's. T+A has now been building extraordinary loudspeakers for more than thirty years. Many models have set new standards, and a few have attained genuine legendary status, such as the large TMR 160 transmission line speaker in the eighties, and the A2D fully active digital speaker in the nineties. These loudspeakers were far ahead of their time, and incorporated design features and technologies shared by no other loudspeakers. The SOLITAIRE® speakers continue this tradition, as they also include technologies and design features which are offered by no other manufacturer. We have developed these speakers very deliberately for extremely demanding audiophile music enthusiasts. These customers certainly expect impeccable tonal balance, but they also make much more difficult demands, such as fine dynamics, high resolution, analytical ability and perfect transient response characteristics at a very wide range of levels. In our endeavour to create the perfect loudspeaker we placed absolutely no restrictions on our developers - neither in terms of price nor the size or design of the cabinet. An important aim in our development process was to create transducers which minimise the adverse influences of normal living rooms on the overall sound. We intentionally designed our SOLITAIRE® speakers to be of relatively large volume; not because we want to produce as loud a sound as possible in really large rooms, but because we wish to achieve the best possible, uncoloured reproduction of all kinds of music in the listening zone between the loudspeakers, and over the full frequency range - from really high to really low!

The new range of SOLITAIRE® speakers is based on the principle of the Cylinder Wave Transducer (CWT), designed to generate a very homogeneous sound field between the speakers, but transmitting little mid-range and treble above the cabinet and downwards. This approach produces very little reflected sound, and therefore minimises the listening room's influence on sound quality,because it is the mid-range to treble area that carries the information which is crucial to the overall sound image, such as accurate orientation, spa-tial effects and dynamics. It is very difficult to design a loudspeaker of this kind since normal drive units such as dome tweeters and mid-range drivers are point sound sources, and cannot eliminate the room's influences.

For this reason we decided to take an entirely different path, and developed a unique electrostatic device for the ultra-critical high-frequency range: the unit is relatively long and very slim, and this means that its radiation pattern in the horizontal plane is excellent, but its output is greatly reduced above and below the horizontal (line source). The membrane of the electrostatic unit is feather-light, and therefore offers extremely fast response; the signal passed to it is also zoned, with the result that it radiates a perfect cylindrical wave right up to the highest frequencies.

We have achieved the same radiation pattern in the bass / mid-range by adopting an array of up to eight mid-range drive units (line array); a side-effect of the multiple drivers is that the maximum amplitude of each individual mid-range unit is very small even at the highest levels. This endows the bass / mid-range with enormous dynamic range, which matches the electrostatic tweeter perfectly.

For the bass we use long-throw drive units with an extremely low resonant frequency, operating in a sealed enclosure. This design offers simply the best possible peak handling and transient response characteristics. The large cone area and powerful drive systems of these units endow the speaker with an effortless ability to generate high volume levels even at very low frequencies.

The sophisticated double-sided crossover unit is fitted with the finest components, carefully selected. The crossover is accurately calculated, and fine-tuned for perfect timing, optimum transient response and peak-handling characteristics. These attributes ensure that the three frequency ranges are matched perfectly to each other. Since the entire vocal range is handled by the mid-range units alone, the loudspeaker produces an extraordinarily spacious and natural sound image.

The speaker cabinet is of extremely stiff, heavy construction, as it must not be permitted to oscillate or transmit carcase sound under any circumstances. This is accomplished by making the walls, the top and the internal partitions from multi-layer laminated material no less than 30 to 40 mm thick. The bass units are installed in pairs, screwed to each other in their own chambers, and de-coupled from the cabinet itself. The mid-range drivers have individual, airtight, fully de-coupled enclosures of completely asymmetrical design. The electrostatic unit is also mounted in an asymmetrical chamber, and its rear surface is damped.

SOLITAIRE ® CWT 2000 SE

▶ The flagship of the SOLITAIRE® series is the CWT 2000 SE, a really large floor-standing loudspeaker. This unique and exemplary speaker demonstrates the technological philosophy and ultimate sound quality of the whole series, and provides impressive proof of the potential performance of our newly developed loudspeaker systems.

The electrostatic tweeter transmits the entire high-frequency range from just under 2000 Hz to over 40 kHz, and even well off-axis! The mass of the membrane is virtually zero, enabling the unit to offer fantastic dynamic characteristics; it is capable of effortlessly reaching extremely high levels, without compression effects. At the same time the total harmonic distortion always remains below 0.5%; this is a unique performance!

Viewed on its own, the 15 cm mid-range driver is certainly an ingenious design which handles the entire vocal range from 200 to 2000 Hz with ease, creating an incredibly natural sound with its dynamic ability and inherently lively nature. We use a carefully designed phase plug to ensure that it radiates high-frequency sound very homogeneously even well off-axis. The damping of the speaker cone is very effective, eliminating any hint of resonance, and features integral stiffening channels. The extremely powerful magnet and the carefully calculated suspension system ensure perfect transient response characteristics in the separate mid-range chamber. Since the loudspeaker is fitted with an array of no fewer than six of these units, the cone excursion is very small even at extreme levels, and this eradicates potential intermodulation effects in the mid-range.

A sealed bass enclosure houses four huge, perfectly matched 26 cm bass units, with gigantic magnets, extremely stiff cones, ultra-long linear excursion and very low resonant frequency; these drive units are responsible for the speaker's incredibly dry, precise bass.

SOLITAIRE ® CWT 1000-8 SE

In the truest sense of the term, the CWT 1000-8 SE is the slightly smaller brother of the CWT 2000 SE. Its overall design is identical, but the cabinet and the mid-range and bass drivers are slightly smaller. The CWT 1000-8 SE has been revised and has received two additional mid-range drivers, which improve the radiation pattern in the crossover section between mid-frequency and high-frequency range.

The electrostatic unit is of identical construction to that of the CWT 2000 SE, and its circuitry is similar. For this reason it is equally effective at transmitting the entire high-frequency range from just under 2000 Hz to more than 40 kHz - even well off-axis!

The 12 cm mid-range unit is of similar design to the 15 cm mid-range driver, and offers the same superb ability to handle the full vocal range from 200 to 2000 Hz. Once again this unit's outstanding attributes are its dynamic ability, its inherently lively nature, and its unbelievably natural sound. With this size of cone a phase plug is not sensible, and unnecessary in any case. The damping of the speaker cone is very effective, eliminating any hint of resonance, and the cone features integral stiffening channels. The large magnet and the carefully calculated suspension system ensure perfect transient response characteristics in the separate mid-range chamber. Since the loudspeaker is fitted with an array of no fewer than eight of these units, the cone excursion is very small even at extreme levels, and this eradicates potential intermodulation effects in the mid-range.

A sealed bass enclosure houses four large, perfectly matched 22 cm bass units, with big magnets, extremely stiff cones, ultra-long linear excursion and very low resonant frequency; these drive units are responsible for the speaker's surprisingly deep, powerful bass, which is incredibly dry and precise.

Both models are equipped with very complex, double-sided three-way crossover units (FSR). The crossover is accurately calculated, and fine-tuned for optimum transient response and transmission characteristics. It effortlessly handles even the highest levels, and ensures that the three frequency ranges are matched perfectly to each other. The filter stages and bandpass filters are carefully optimised for accurate phase and group delay. These networks play a crucial role in the superb imaging and radiation characteristics of the speaker system as a whole. Switches are provided for fine-tuning the bass, mid and high-frequency ranges.

More on the technology

▶ A sealed cabinet offers many advantages, but the design is extremely demanding when required to generate a very low cutoff frequency. This calls for bass units with a very low resonant frequency, capable of extensive excursion, with an exceptionally powerful magnet, and designed to cope with extreme loads. Our drive units fulfil these requirements perfectly! Since the speaker units are subject to enormous acceleration forces, the cones are impregnated with an extremely hard fibre / carbon mixture.

The demands on the dynamic ability of the mid-range drivers are very high, since the electrostatic unit and the bass units exhibit very sophisticated excursion characteristics, and are capable of generating very high sound pressures.

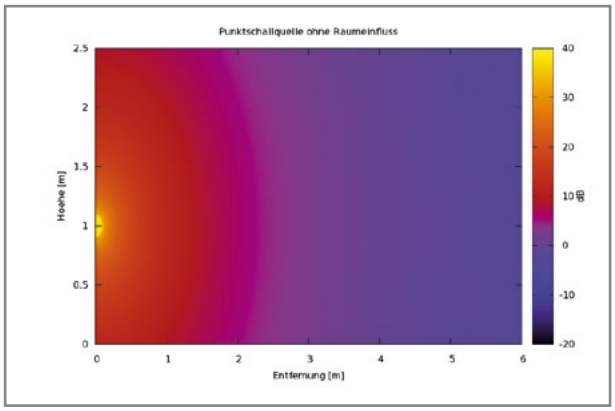
For this reason the new mid-range drivers are amongst the most advanced in existence: this superb unit features a gigantic magnet, a large coil, an effectively damped cone with integral stiffeners and a modern diecast aluminium basket. The units offer perfect radiation characteristics and transmit the entire vocal range without a hint of discoloration.

In principle it is the bass drivers which are subject to the most extreme forces, because they have the most mechanical work to do in any loud-speaker. The pressure waves emanating from the cones when excursion and acceleration are high tend to excite the cabinet walls as well as the baskets themselves to oscillate, and that is why our baskets are made of diecast aluminium to endow them with extreme strength. The forces which occur are completely eliminated, because the opposed drive units are permanently connected to each other by means of screwed aluminium rods, and the forces cancel each other out in opposite phase.

Electrostatic units are amongst the oldest of all loudspeaker designs, and as ever they remain peerless in terms of their dynamic qualities and their ability to resolve fine detail in the mid / high-frequency range. However, they are not exactly easy to make, and are very expensive to produce. Here at T+A we have been making electrostatic tweeters for more than 25 years, and have built up an enormous store of expertise. Despite this wealth of experience, we have deliberately chosen not to build full-range electrostatic speakers, because these always have a major weakness in the bass range; instead we exploit their strengths in the mid-range / high-frequency area. The membrane consists of an extremely thin film which has virtually zero mass, and is driven by a powerful electric field. The peak-handling and transient response characteristics are therefore not subject to inertial effects, and this explains the unexcelled clarity and purity of reproduction, entirely devoid of any hint of sharpness or hardness, even at very high levels. Both dynamically and tonally, this unique speaker unit harmonises perfectly with the mid-range array and bass drivers.

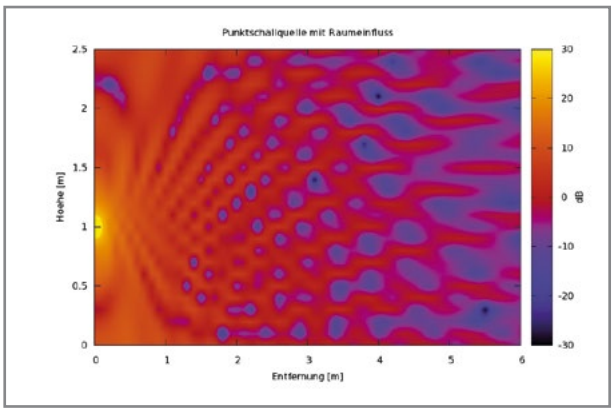
More on the technology

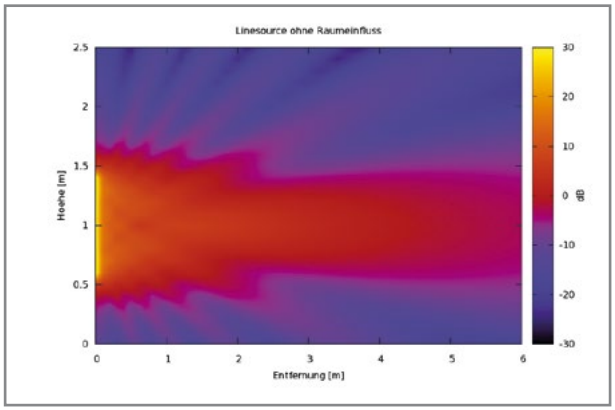
All SOLITAIRE® models are fitted with level adjusters for the mid-range and electrostatic drivers. Instead of modifying the frequency response, the adjusters alter the loudness level of the drive units. This makes it possible to fine-tune each loudspeaker individually to suit its position in the room, thereby largely eliminating problems associated with their location.
The terminals for the bass and mid / high-frequency ranges are made of solid, high-purity brass, and are wired directly to the separate cross-over units for bass and midrange / treble - which are isolated from each other - thereby allowing genuine Bi-Wiring or Bi-Amping.
The mains socket is necessary for the electrostatic unit’s power supply; it can be set to switch on automatically when a music signal is present.



The graph alongside shows the radiation pattern of a point sound source such as a cone loudspeaker, without the influence of a room. There is nothing to impede the sound's radiation, and its dispersion pattern is virtually spherical. Sound intensity diminishes relatively quickly, since the radiated energy is distributed throughout the whole available volume.

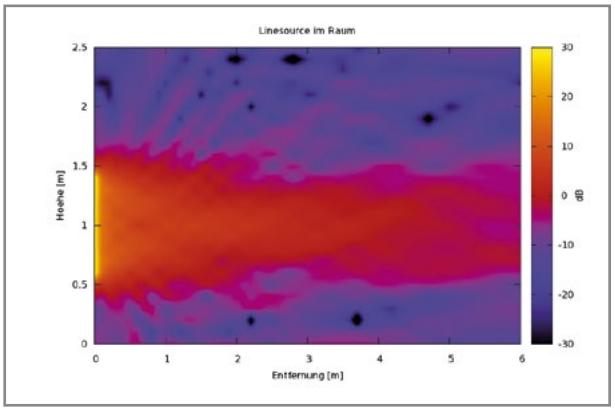
The graph alongside shows the radiation pattern of the same point sound source used in the top graph, but this time in a listening room. It is clearly evident that more and more portions of the sound are cancelled out with increasing distance (blue). This is due to interference effects between direct sound and sound reflected by the listening room's walls, ceiling and floor.





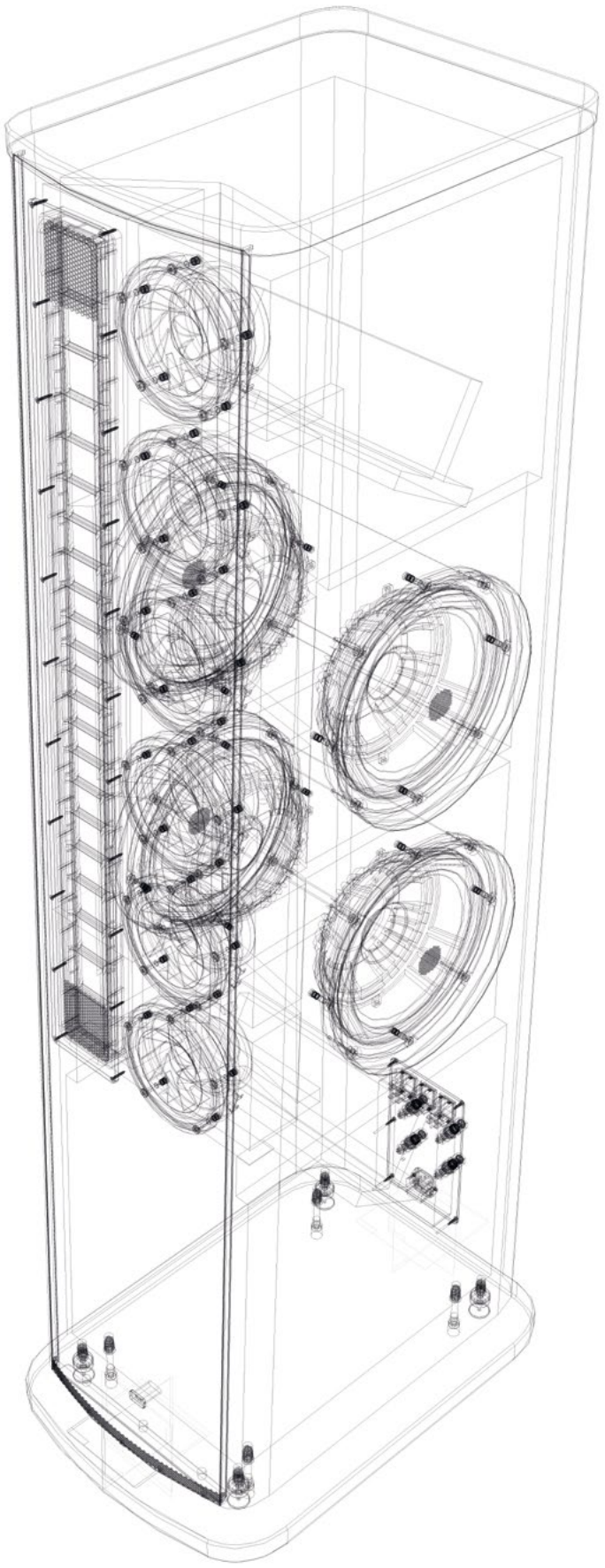
The graph alongside shows the radiation behaviour of a Line Source - such as the electrostatic driver used in the CWT 1000-8 SE - without the influence of a room. Interference effects produce a homogeneous, cylindrical, axial sound dispersion pattern in front of the loudspeaker, whose intensity does not diminish even over quite a long distance.

The graph alongside shows the sound radiation pattern of the same loudspeaker in a listening room. It is clearly evident that the sound field has hardly altered, and that the influences of reflections from walls and ceiling are minimal. Even at fairly long range the intensity of the sound has only diminished slightly. This means that the speaker's sound quality and dynamic characteristics are maintained in full, and are not coloured by the listening room.



More on the technology

▶ The cabinets are of extremely sophisticated construction: each pair of bass units has its own, airtight chamber, and each individual mid-range driver operates in its own asymmetrical chamber in the cabinet. The electrostatic unit is mounted in a separate housing with angled rear walls. All the chambers are damped using special absorbent material, and are acoustically dead.
The cabinet walls and internal partitions consist of multi-layer wood laminates and materials of different density, and are designed to suppress cabinet sound as effectively as possible.
The final surface treatment is extremely sophisticated: multiple primer coats are applied, sanded between coats, and prepared for the final lacquer which is then hand-polished. The polishing stage for the high-gloss takes several hours, and involves painstaking manual work.
This enormous effort is worthwhile since the result is a uniquely beautiful surface which is also tough and durable.



Specifications

	CWT 2000 SE 3-way closed floorstanding	CWT 1000-8 SE 3-way closed floorstanding
Nominal load, Watts	400	300
Music power Watts	600	450
Impedance Ohms	4	4
Transmission range Hz	23 - 40000	26 - 40000
Sensitivity (1 Watt/1 m)	88 dB	88 dB
Bass drive unit mm	4 x 250	4 x 210
Midrange unit mm	6 x 150	8 x 120
High-frequency drive unit mm	920 x 50	920 x 50
	electrostatic	electrostatic
Crossover frequencies, Hz	170/1200	190/1400
Adjustments	woofer, midrange, tweeter	woofer, midrange, tweeter
Dimensions H x W x D	161 x 35 x 50 cm	134 x 32 x 46 cm
	63.4 x 13.8 x 19.7 inch	52.8 x 12.6 x 18.1 inch
Dimensions base	3 x 41 x 58 cm	3 x 38 x 54 cm
	1.2 x 16.1 x 22.8 inch	1.2 x 15 x 21.3 inch
Weight	119 kg / 263 lbs	83 kg / 184 lbs
Finishes	See below, non-standard versions upon request	
	Base made of massive aluminium black.	
	Cover in high gloss black 23 for all types of wood; high-gloss white 24 for white.	

High gloss black 23

High gloss white 24

High gloss carbon 93

Metallic grey 92

Technical modifications reserved

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