

JURASSIC BASS

ONE CLASSIC MOVIE SCENE, THREE ENORMOUS SUBWOOFERS... AND WATER



Subwoofer Shootout



As the Jurassic Park T-Rex prepares to make its dramatic entrance, and the thwump of its footfalls fills the room, puddles of water ripple from the shockwaves. It's the most iconic scene in home cinema, and for millions introduced the concept of room shaking bass. But just how likely is it that a dinosaur would cause your beverage to buckle? In the name of home cinema science, we asked Adam Rayner to conduct an experiment...

So starts one of the most incredible home cinema demo sequences of all time. It welcomed enthusiasts the world over to both the joys and perils of excessive LFE bass, as well as the DTS 5.1 sound system. *Jurassic Park* was a home cinema demo dream. The sequence when Dr. Alan Grant (Jeff Goldblum) and the owner's grandkids Tim and Alex are stuck in an open meadow and the Gallimimus (that lots of Gallimimus) all come 'flocking this way' – only to be ambushed by a Tyrannosaurus – remains a thrilling example of immersive surround sound design.

But it was its use of bass and, in particular, the LFE (low frequency effects) channel, that the movie really innovated. When the self-guided jeeps are waiting by the T-Rex enclosure the soundtrack adds to the suspense and sudden mayhem. Little Alex asks, 'Where's the goat?' only to have a rear haunch of said luckless beast land on the see-through roof of the jeep. Then a seriously hungry and stropky T-Rex then tries to eat them.


It all sounds frighteningly real. Cue Jeff Goldblum saying, 'I'm fairly alarmed, here...'

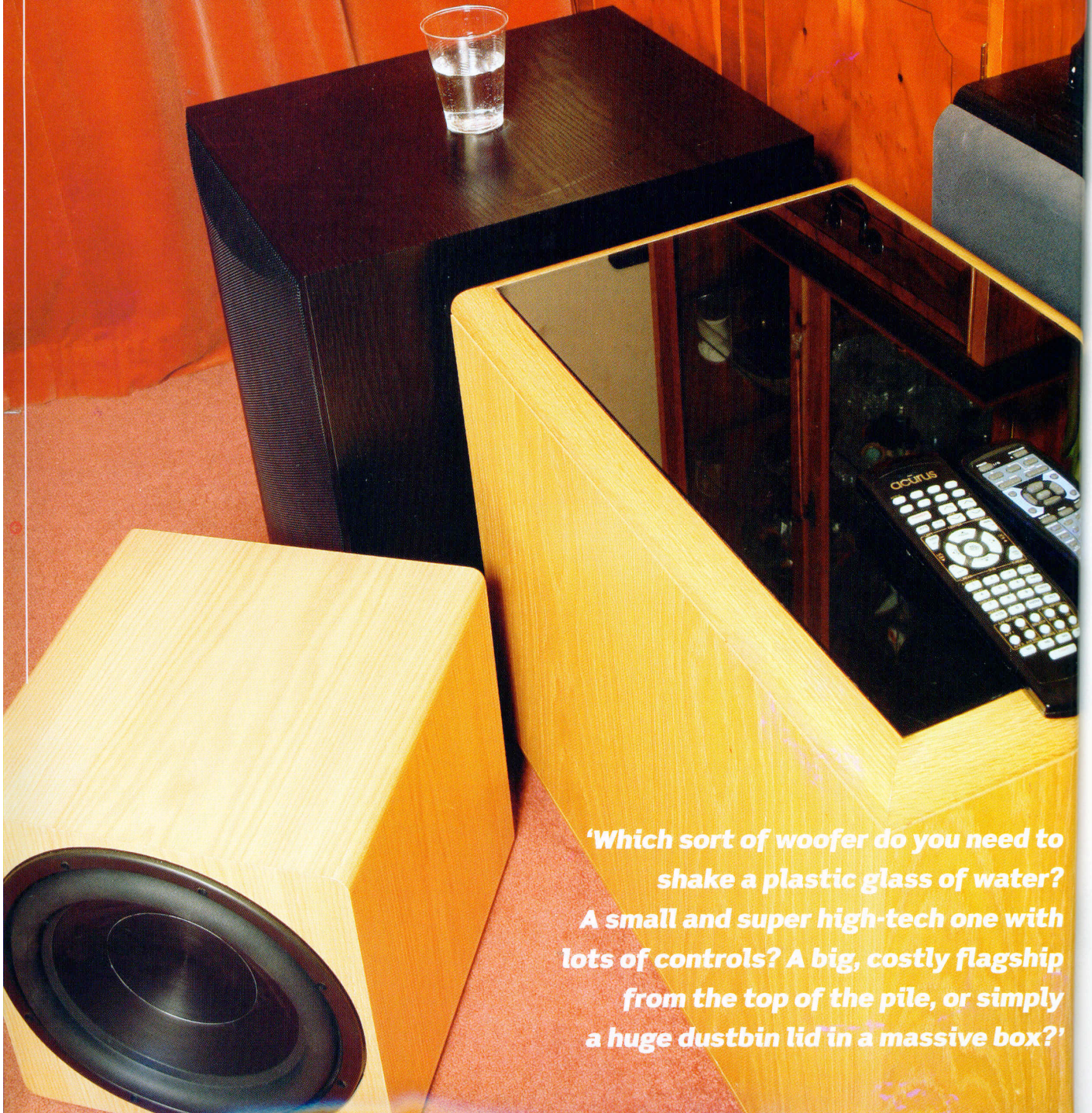
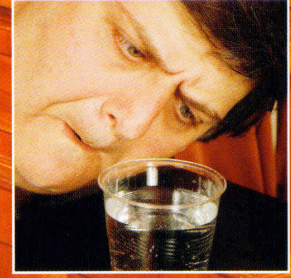
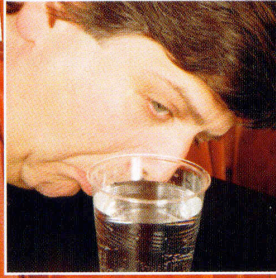
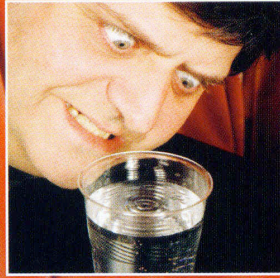
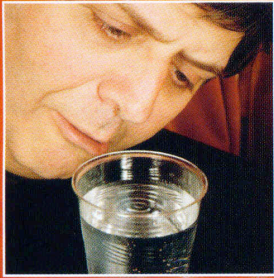
During the classic first footfall, as felt from within the 4x4 @ 59:16, a plastic tumbler of water trembles and ripples as the ground shakes beneath the feet of a terrible lizard somewhere off. Timmy asks, 'Can you feel that?'. The T-Rex seems to be taking very slow, heavy steps – obviously chuckling to itself, thinking, 'This'll freak 'em out...'

But just which sort of woofer do you need to shake a plastic glass of water? A small and super high-tech one with lots of controls? A big, costly flagship from the very top of the quality/ability pile, or simply a huge dustbin lid in a massive box with ports big enough for deaf cats to crawl up?

In selfless devotion to duty (and giggling a bit) I gathered up three powerful sub bass systems. A high-tech SVS SB-12 Plus, with parametric EQ, sweepable phase control and room size compensator circuitry; a REL Stentor III with a mere 10in driver but three-way acoustic resistive matrix-loading and a huge weighty cabinet able to drop to below 10Hz; and finally a prehistoric hooligan, in the shape of a Cerwin-Vega! CLS-15S with a pile of watts and a massive 15in cone.

A JP-approved plastic tumbler was used and I spun Disc One of the four-disc set, using Chapter 11 at 59 mins, 16 seconds in. There are three impact tremors, with the biggest at 59m 50s. You can try this at home; just wait for the neighbours to be out, even if you are fully detached...

As well as a brief technical pull through, I have given all three subs a T-Rex rating for their overall power and control, breaking down into individual scores for slam and precision, and water wobble – their suitability for apology-free low register SFX. This isn't music, it's dinosaurs! Warning, users of this test may get wet... 



'Which sort of woofer do you need to shake a plastic glass of water? A small and super high-tech one with lots of controls? A big, costly flagship from the top of the pile, or simply a huge dustbin lid in a massive box?'

Subwoofer Shootout

"Think they'll have that on the tour?"

The first subwoofer, and cheapest, that I attempted to recreate movie-realism with was the Cerwin-Vega! CLS.

There does seem to be some disagreement between the specs in the brochure and those printed on the box. Is it 200W or 250W? No matter, it stonks. However, the gain knob on the back isn't really able to wick up the level, and the power doesn't seem that big.

As I discovered when I reviewed the whole C-V CLS system in HCC #143, get yourself a fat peak of soundtrack bass and the 15in woofer just loves it. It's able to get a lot louder from already loud - this woofer is pure hooligan joy. The CLS-15S is meant for lovers of easy-drive Position One gain controls - that's 1) all the way on; 2) all the way off; 3) somewhere in between.

Setting this woofer is simple. Pick a crossover point, choose 0° or one 180° out of phase and then turn it up. The speaker lives under an industrial-looking grille and it moves industrial amounts of air. How was it at the dino footfall, though?

The Cerwin-Vega! CLS-15S houses a massive 15in woofer - it might look like a dustbin, but it gets the job done



Well, using this boom-box to recreate dinosaur footfalls is so much fun, it should be illegal. I needed a place to put my JP-style tumbler of water, so opted for a glass shelf inside a glass-fronted cabinet, full of never-used crystal. This thing shook the house to the foundations! An easy 4.5 out of 5 for room shake, then, with it wobbling the water far harder than the T-Rex did in the movie. When I put the tumbler on the top of the woofer, it was a four-pointer, again shaking the fluid harder than it did on the dash of the jeep. Good work C-V!

"That's an impact tremor, that's what it is..."

Next up to recreate the dinosaur peril is the awesome REL Stentor III. Just one look at the 11Hz frequency rating will tell you that the model (still very much a part of REL's flagship range and second only to the Stadium III) is able to hit low - and with authority. This is the sub I have tested the neighbours' patience with for ages now, it being my resident reference. As such it seemed fitting that it be given a chance to shake some juice.

Be warned: infrasound can be dangerous!

The home cinema experience just wouldn't be the same without the presence of low-end bass. But you'd better be careful that you don't take it too far and venture into the world of infrasonics - audio with a frequency below the audible range of a human ear - because this can lead to some very nasty side-effects...

A prolonged 100Hz note can cause feelings of irritation, mild nausea and giddiness in a listener, you might also experience sensations of vertigo, anxiety, extreme fatigue, throat pressure and respiratory dysfunction. Nice.

Between 60-73Hz reports have demonstrated that people suffer from coughing, severe sternal pressure, choking, excessive salivation, extreme swallowing pains, an inability to breathe, headaches and abdominal pain. It has also been shown that these effects can last up to four hours after exposure ends.

It gets worse. A NASA report gave the resonant frequency of the human eye as 18Hz, which means that any audio close to this frequency will cause your eyeballs to resonate. Not only would this make for a lousy home cinema experience, but some scientists claim that optical illusions caused by this are responsible for many ghost sightings.

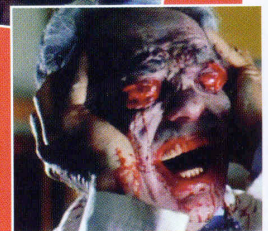
At 12Hz sound can cause extreme nausea in people subjected to it. This is exactly what happened to Walt Disney and his team of animators when they slowed down a cartoon sound effect and amplified it through a cinema system.

In *Acoustic Trauma: Bioeffects of Sound*, researcher Alex Davies claims that 7Hz corresponds with the median alpha-rhythm frequencies of the brain. This is also believed to be the resonant frequency of the rest of the body's organs, leading some to conclude that this sound could therefore cause organ rupture and death.

Perhaps the only good news is that the 'Brown Note', reportedly an infrasound frequency that causes a person to lose control of their bowels due to resonance, has yet to be proven despite numerous experiments designed to find it. So you can safely file this one away as an urban legend... for now.



Watch out for those 18Hz notes, or you might end up looking like this guy



CERWIN-VEGA! CLS SERIES

£470 (approx) ♦ 0870 350 2 460 ♦ www.axisdistribution.co.uk
Power: 200W RMS ♦ Frequency Response: 25Hz-150Hz ♦ Drive Unit: 15in

Slam ★★★★★½ Water Wobble ★★★★★ Precision ★★★★★

T-Rex rating:

Subwoofer Shootout

This REL is the father of sub-bass. Through it, the T-Rex was simply more scary and deeper of throat than ever, although interestingly its 10in driver didn't shake the glassware as hard as the Cerwin-Vega. I rank it as a 4-pointer for the crystal cabinet and a low 3 points for the on-the-sub test. It's a very inert box – all the bass comes out and is not used to wobble the enclosure's panels, which is a good thing. It remains an easy favourite in this company.

“Must go faster...”

Our final test subject is the SVS SB12-Plus. If you want the same technology and control for a smaller price, then order one in black Grittex for £100 less than the venerated or piano black versions. This model offers a serious slice of control, maybe even too much for some users, who may

feel the need for an acoustician to set the sweepable phase control, room-size selector and even the three-knob parametric booster.

However, after some experimentation I finally let the beast loose on the T-Rex footfall sequence. One last time, Timmy asked, ‘Can you feel that?’...

Starting with the tumbler in the cabinet, it didn't manage quite the slam-your-furniture effect the other, far bigger products had achieved, despite having an easy 100W more power than either. However, when placed on the box of the sub itself... well, even a very inert and solid item has to vibrate under that much pressure – not only did the water wobble furiously, the whole plastic cup grooved left and right a bit. Left alone, it'd fall off and spill all over the carpet. Brilliant!



The REL Stentor III: A king amongst subwoofers

Velodyne SMS-1: finetuning you bass...

The Velodyne SMS-1 is quite unlike any other piece of home theatre hardware around. It comprises a small box of electronics that actually listens to your room through a proper microphone (a major part of the price), and a remote control to boss it with. Velodyne says that any subwoofer can be fine-tuned to sound better, as long as it has sufficient basic capability. (Or should that be basic?..)

Coming from the Digital Drive servo-controlled subwoofers that Velodyne are renowned for, the SMS-1 can be set to do its thing by full automation or else by way of letting you get at all the parameters yourself. It offers a similar capability to a much more expensive analysis and adjustment hardware setup used by professionals in studio/pro applications, but in a smaller frequency band way.

Operating between 15Hz and 199Hz, (from 5Hz with the newer software up the RS232 port) the unit has an 8-band parametric equalizer you can see via the TV-connected GUI and a low-pass crossover and subsonic filter. There's an adjustable phase control from 0° to 180° in 15° increments and a 12v trigger for use in custom installs.

The front panel LCD display shows you the status of all the functions. Manual adjustments include level, frequency, and Q. There's a fixed 80Hz high-pass crossover, too.

This can be easy or challenging to setup and it depends on how bad a 'tweak' you are, as with fully-automated setting, you'll get a result that's nearly as good as several hours of experiments. The bypass and presets can help you tell what's being achieved. Simply put, this device will allow a good woofer to sound better and gives a brilliant woofer just about all the advantages the potent DD Velodyne subwoofer comes with. It can run up to three subs – but all will get identical control.

The SMS-1 is a powerful tool for those that really care about sound quality as well as quantity. It can tighten your whole soundstage by making the bass feel faster, more accurate and definitely more musical. Overall, a sound investment for high-end systems.

Velodyne SMS-1 ♦ £575 (approx)
0131 555 3922 ♦ www.red-line.co.uk

WIN!
A VELODYNE
SMS-1
SEE P.88

Want to make your subwoofer sound even better? Then get one of these babies!



REL STENTOR III

£2,500 (approx) ♦ 01656 768 777 ♦ www.rel.net

Power: 300W RMS ♦ Frequency Response: 11Hz-100Hz ♦ Drive Unit: 10in

Slam ★★★★★ Water Wobble ★★★ Precision ★★★★★

T-Rex rating:

Subwoofer Shootout

SVS SB12-PLUS

£600 (approx) ♦ 0870 774 0730 ♦ www.kenthomecinema.co.uk
Power: 425W RMS ♦ **Frequency Response:** 22Hz-150Hz ♦ **Drive Unit:** 12in

Slam ★★★ Water Wobble ★★★★★ Precision ★★★★★

T-Rex rating: 

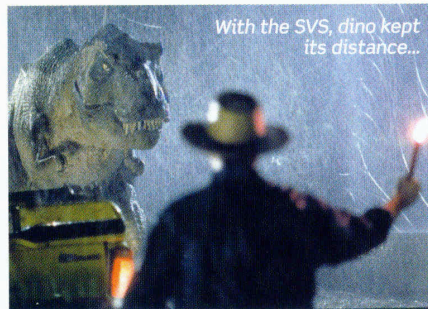
The SVS SB12-Plus is complex to setup, but its 425W power-plant remains a marvel



And so our valiant investigation concludes with celebratory champagne and general back-slapping. We have proved without doubt that it is possible to produce a level of deep bass that effectively recreates in the viewing room the physical effects of perhaps the most iconic moment in movie bass. But what have we learnt in the process?

Perhaps most significantly, it's important to realise that a realistic Dinosaur roar is not just about volume; depth matters too – and the deeper the bass goes, the scarier the monster seems. Our experiment to re-create the physical FX of Jurassic Bass confirmed the REL Stentor III as the most convincing T-Rex impersonator. It certainly shook our viewing room quite a lot and created authentic water ripples in our stunt beaker.

The Cerwin-Vega! CLS-15S thundered into second place. Of all the boxes, it's an unashamed lout that flouts its ASBO. It doesn't actually go all that deep (so the T-Rex never actually seemed three-dimensional) but it is trouser-flappingly daft in output. Consequently it was able to disturb our water through brute force alone. By way of comparison, the much-smaller SVS had to work much harder to convince us that a dinosaur was sniffing at the door, but there's no doubt that it's a marvel when it comes to compact power. But in the wobbling water stakes it has to take third place. You also have to balance a stick on your nose to set it up is all – it is prehistorically complex ■



Check out the video!

To see Adam Rayner putting one of the subwoofers through our JP test, head on over to YouTube and search for 'Jurassic Bass'. Unfortunately, mammoth low-frequency rumblings don't come across very well through our camcorder mic, but it's all in the visuals...



♦ <http://www.youtube.com/watch?v=exYUCAFQ8w8>