



Jamo

C803 Loudspeakers

Just when you thought that two-way speaker design innovations had slowed to a halt, along comes Jamo's amazing C803 with active impedance correction, a hard conical cone bass/midrange driver and a decoupled tweeter with a waveguide. Could Jamo have jammed any more technology into the C803? Umm, as a matter of fact, yes...

The Equipment

Jamo speakers have always looked fabulous, but then the Danes have always been renowned for their design prowess and it appears their influence continues on, despite Jamo now being owned by famous US speaker manufacturer Klipsch. So it's with some trepidation that I'll put my neck out and say that apart from the two top-of-the-line reference models (the R909 and R907) the C803 is by far and away the most stylish Jamo speaker I've yet seen, which puts it in the running for 'most stylish' speaker ever... period. The photograph doesn't do it justice.

Sure I can list the component parts of the design in support of my argument, such as the mirror-gloss black convex top surface, the equally curvy side-panels, the grille whose bottom portion slants down to interface neatly with the high-gloss black front plate into which is embossed (in *faux* silver) the Jamo logo, but the whole is greater than the sum of the parts. For example, in the flesh, the multiple curves combine to create an optical illusion that makes it look as though the front baffle and rear panel are also curved (which

they're not). However, I'm here to testify that Jamo has certainly made one mistake, which is that the veneer is so perfect, and so flawless, that I didn't for a moment believe it was real wood, which it turned out it wasn't. Next time, they should think about selecting a vinyl finish that has knots and faults, just like real trees!

The bass/midrange driver in the C803 is new and you'll find its like in all the models in Jamo's topline Concert series. This is great, because it means that once again Jamo is sensibly using economies of scale to deliver superior driver technology at unprecedentedly low prices. There are probably a few readers coughing into their cups of coffee at this juncture, given the way the four digits of the price are arrayed across the price tag, but just take a look at the C803's bass/midrange driver for a start. It's like no driver you've ever seen previously, thanks to a very hard cone made from two layers of fibreglass glued air-tight either side of a paper honeycomb mesh. It's not only super-hard but also ultra-light, being exactly the same type of technology is used to build racing yachts. It's driven by a very large magnet and the high-temp voice coil is wrapped around a pole-piece that terminates in a machined centre-plug. The 40mm dual-layer voice-coil that surrounds this pole-piece incorporates what Jamo refers to as an 'Active Impedance Correction' system, which is an extra counter-wound coil that negates the magnetic field in the vicinity of the pole piece, delivering a reduction in distortion that

can run up to 50 per cent depending on frequency and playback volume. The nominally 180mm diameter cone has an SD of 147cm².

Regular readers will know that I am not a fan of drivers that have exposed pole-pieces, despite their considerable technical advantages (such as the cone being lighter, voice-coil cooling increased, allowing higher power handling, and the elimination of pressure build-up under the cone, which dramatically frees up cone travel.) My objection is purely that such designs are more susceptible to foreign particles (grit, dust) becoming lodged in the gap between the voice coil and the pole piece—that is why the central dome in a cone speaker is called a 'dustcap' after all! Jamo obviously believes the advantages outweigh the disadvantages, but it has taken the unusual step of inserting a small felt 'gasket' that mostly covers the gap between the inner part of the cone and the pole-piece, so it's far less likely that the scenario I proposed could come to pass.

The tweeter is—with the exception of its copper-coated aluminium voice-coil—otherwise a fairly conventional 25mm silk dome unit, but it is housed in an assembly that is far from being conventional, one that completely decouples the tweeter from cabinet vibrations, with the result that these vibrations can't then modulate the tweeter's acoustic output... which is pretty easy to occur in a conventional cabinet when you consider how tiny the movements of the tweeter dome are in relation to vibrations in the cabinet caused by

the bass driver. Because the decoupling material has to be quite large to be effective, Jamo has effectively (and innovatively) killed two birds with a single stone by forming the decoupling material into a waveguide to improve the tweeter's efficiency and its dispersion. So the large black 'circle' you can see around the tweeter doubles as both the 'DTT' (decoupled tweeter technology) and the 'WaveGuide'.

All this technology doesn't end on the front panel. Around the back is a bass reflex port that has a unique convex taper to it that reduces port turbulence (which is the cause of most low-frequency port noise) but at the same time is better at preventing higher frequencies from 'leaking' though. Jamo says that compared to the volume level at which an ordinary vent starts chuffing, the convex taper means you can push the speaker 5dB louder. To all intents and purposes the port looks like any other, being plastic with flared edges. It's 140mm long and 65mm in diameter.

The rear terminal plate is a completely new design, with two sets of splayed terminals to allow bi-wiring, and the terminals are bridged with strange-looking buss-bars that occupy the banana sockets, so that if you use the buss-bars to link the bass and treble sections, you then can't use banana plugs on the end of your speaker cables. And if you use stripped wire, you'll find it quite difficult to get it into the holes in the posts because of the depth and shape of the recess. All in all it's not an overly practical design! I can only imagine that Jamo has done this deliberately in order to encourage the use of bi-wiring!

Each cabinet measures 380x225x341mm (HWD) and weighs 9.9kg. Available finishes are dark apple (pictured) and black ash.

Listening Sessions

As anyone reading this will know, you can throw all the technology you like at a speaker design and it won't necessarily make one jot of difference to their sound, because where

speakers are concerned, the saying 'the proof is in the pudding' will always hold true. Well, with the C803 you'll find that Jamo has cooked up about the most delicious pudding you've ever tasted. This is definitely a design that Jamo dealers should demonstrate behind a curtain, because when they drop the curtain to reveal the speaker, their customers will never believe that all that fabulous sound is coming from two small stand-mount speakers.

"Bass response is jaw-droppingly good, not so much for its extension as for its insane speed and its superb dynamics."

Bass response is jaw-droppingly good, not so much for its extension as for its insane speed and its superb dynamics. The bass is also totally 'solid' right across the band. I think this is the first standmount/bookshelf design I have heard where you don't only hear the sound of a kick drum, but also actually feel it hit you in the stomach... which gives you an idea of how much force the bass driver is able to generate (and how much air it's able to move!).


In yet another first for a two-way design, midrange performance is as stunning as the bass. I say 'another first' because in all two-way designs, the same driver has to produce both bass *and* midrange, yet most drivers excel at either one or the other, and the speaker designer has to compromise. There's been no compromising here: the C803's midrange performance is every bit the equal of its bass performance: that is; jaw-droppingly good. This is immediately evident when listening to vocals, where the accuracy of the delivery is easily as good—or better—than professional studio monitors, allowing you to hear every

subtle nuance with crystal clarity. More importantly, this clarity continues even when the going gets rough, and more and more instruments are added into the mix—the sound field still floats in front of you, etched and clear, and never bogging down into a cacophony of sound confusion, even when you wind the volume up.

The sonic transition to the tweeter is seamless, which I found incredible given the

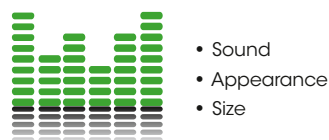
relatively low crossover frequency (2kHz) so it certainly justifies Jamo's faith in its new driver technologies. And, whereas I expected the waveguide to impair off-axis performance, I found it was actually improved over all 'normal' listening positions, though it's my opinion it did fall off somewhat at the most extreme off-axis locations. Regarding positioning, these speakers can obviously be sat on a bookshelf or at a pinch wall-mounted, so long as you leave room for the rear-firing port to 'breathe', but in my view, it would be criminal not to place them on stands, because this will guarantee you will extract the best these speakers have to offer.

Conclusion

If you've been thinking of buying a pair of speakers—not just a pair of bookshelf/stand-mount speakers, but any loudspeakers at all—I'd suggest you hold off until you've auditioned a pair of Jamo C803s. They'll either re-define your performance benchmark or spoil you for anything else, but they're certainly a 'must-listen.'  *greg borrowman*

Jamo C803 Loudspeakers

Brand: Jamo
Model: C803
Category: Standmount Loudspeakers
RRP: \$1,890
Warranty: Five Years
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LAB REPORT

Readers interested in a full technical appraisal of the performance of the Jamo C803 Loudspeakers should continue on and read the LABORATORY REPORT published on the following pages. All readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

Test Results

Loudspeaker frequency responses don't come much flatter than the one shown in *Graph 1*, where you can see that between 300Hz and 9kHz, the variation in the Jamo C803's response is almost completely negligible. The smoothed version of the trace reveals the Jamo C803's frequency response extends from 55Hz to 20kHz ± 3 dB. Between 100Hz and 10kHz, the response is ± 1.2 dB or better. Equally important, the overall response is not skewed in any particular direction: even the tiny variations there are in the response are completely balanced. There is a very slight emphasis to the bass in the 100–250Hz region and hints of emphasis between 500Hz and 1kHz and from 3–7kHz, but that's it.

Graph 2 shows a completely unsmoothed trace acquired using the gated sine technique, which simulates an anechoic response. I can't remember the last time I saw such a superb high-frequency trace. You'll note that whereas the high-frequency response was very slightly rolled off in *Graph 1*, due to the heating effect of the pink noise test signal on the tweeter's voice coil, the less-stressful gated sine measurement technique allows the tweeter to show its full potential. This graph shows the high-frequency response as extending from 500Hz to 23kHz ± 2.5 dB, but the tweeter's output is only a further 2dB down at 30kHz. Again, the smoothness of the response is outstanding.

Low frequency performance is shown in *Graph 3*, where a near-field capture technique means the room has no influence on the measurement, so it's slightly diminished to that you could expect in a room. You can see that the bass driver's response is slightly forward over the region 100–200Hz and rolls off smoothly below 100Hz to a minima at 45Hz. (Ignore the glitch at 50Hz, which is some mains hum creeping into the test test-up.) Unfortunately, the trace data above 300Hz is rather unreliable because the accuracy of the nearfield technique relies on being able to position the measuring microphone close to the dustcap, and the Jamo C803's driver doesn't have one! That glitch at 500Hz for example, is a reflection from the pole-piece. There were no such technical shortcomings measuring the port's output, which shows a textbook alignment, with the port's maximum output at 45Hz coinciding perfectly with the driver's minimum output. The port Q is quite high and there are no resonances visible at all. There is, however, some minor higher-frequency sound leakage from the rear of the bass/midrange driver cone, evidenced by the peaks at 380Hz and more so at 1kHz.

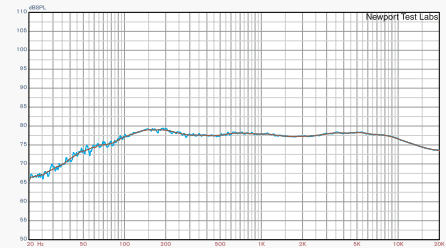
However, these signals would be a long way down and their inaudibility would be assisted by the fact that the port faces away from the listening position.

Newport Test Labs has graphed the impedance curves for both left and right speakers on *Graph 4*. The traces track almost perfectly, which is testament to the high levels of quality control at Jamo's factory. The trace itself shows the classic bass reflex alignment, with resonant peaks at 30Hz (around 13 Ω) and 75Hz (14 Ω). The crossover is fairly evidently at 2kHz. Interestingly, the impedance stays relatively high above the crossover frequency, dropping back only as far as 12.5 Ω before rising again to 15 Ω at 30kHz. The speakers' minimum impedance is 3.4 Ω at 200Hz, which means the nominal impedance according to IEC rules is actually 4 Ω , not the 6 Ω claimed by Jamo, though I can see that since the impedance is above 4.8 Ω (which is the level above which the IEC says you can claim a 6 Ω impedance) everywhere except between 130Hz and 400Hz, I can see why Jamo has used the higher figure. The phase angle shows that Jamo isn't doing anything tricky with the crossover network and the speaker will be easy to drive, though I'd suggest that whatever amplifier you use should supply at least its rated output (and preferably more) into 4 Ω loads, and that the amplifier should be rated at around 80–100 watts per channel unless you have a very small room.

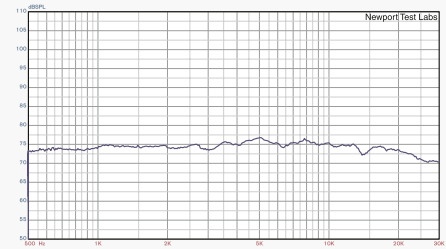
The Jamo C803s proved to be far more efficient than any other speaker of the same physical size I've reported on recently, because *Newport Test Labs* measured the C803's sensitivity at 89dB SPL, which is excellent, considering that the lab's test procedure almost always returns figures that are lower than specification. That 89dB SPL result is a full 2dB better than the average of all speakers (irrespective of size) *Newport Test Labs* has tested, 2dB better than Jamo's own specification and 3dB better than the average for small bookshelf speakers.

In the composite graph (*Graph 5*) NTL's lab techs have simply manually spliced (in post) the unsmoothed pink noise trace from *Graph 1* to the unsmoothed gated high-frequency trace from *Graph 2*, with the splice point at 1.5kHz. This graph shows that when the Jamo C803s are placed on stands, it should be very easy to achieve an in-room frequency response of 60Hz to 25kHz ± 3 dB. I was impressed by these test results: with the design of the C803 Jamo has massively lifted the bar for all two-way speaker designers!

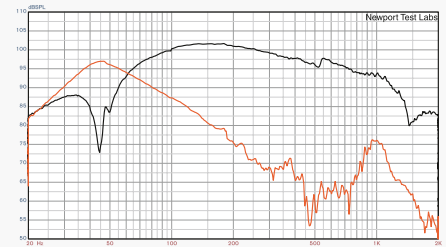
Steve Holding



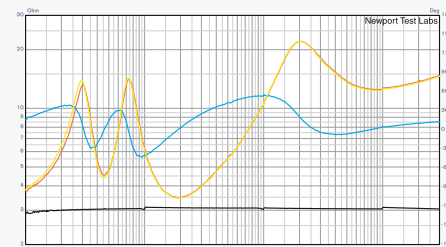
Graph 1. Pink noise frequency response. Averaged unsmoothed (blue trace) overlaid with averaged trace smoothed to one-third octave (red trace). This trace was generated by stimulating the speaker with pink noise then taking nine different measurements by placing the microphone in a grid pattern in front of the speakers at an average distance of three-metres. The nine measurements were then averaged to create these responses. [Jamo C803 Loudspeaker]



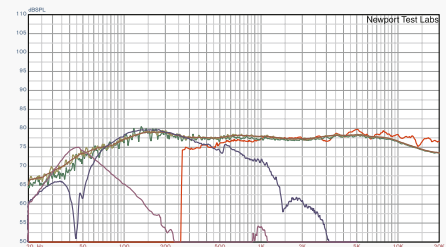
Graph 2. High-frequency response, expanded view. Test stimulus gated sine. Microphone placed at three metres on-axis with dome tweeter. [Jamo C803 Loudspeaker]



Graph 3. Low frequency responses of front-firing bass reflex port (red trace) and woofer. Nearfield acquisition. Port/woofer levels not compensated for differences in radiating areas. Ignore glitch in trace at 50Hz. [Jamo C803 Loudspeaker]



Graph 4. Impedance modulus of left (red trace) and right (yellow trace) speakers plus phase (blue trace). Black trace under is reference 4 ohm precision calibration resistor. [Jamo C803]



Graph 5. Composite frequency response plot. (See copy) [Jamo C803 Loudspeaker]

