

# TECHNICAL DESCRIPTION

## Jamo C 80

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## General description

The primary goal of the new Jamo C 80 speaker line was to create a unique showcase of Jamo competencies, as well as a loudspeaker that would ‘push the envelope’ in its category.

Over the years Jamo products have been recognized worldwide for their uniquely Danish character – with regards to sound, technologies, design, build quality and attention to detail.

But building a speaker involves compromise – if it sounds good it often isn’t elegant and vice versa. So, with the C 80 the challenge to the development team was to create a speaker line that encompassed all the traditional Jamo virtues – and with the minimum of compromise!

This, of course, was a huge challenge for the acoustics, electronics and mechanical engineers as well as the designer, Boye Lippert.

The design is very much inspired by the iconic Jamo D 5 and E 8 speakers, employing the symmetrical arc-shaped cabinets from the former and the curved top from the latter.

This combined with well-established Jamo driver technologies: DTT, WaveGuide, Hard Conical Cones and Metal Centre-Plugs result in a unique speaker line.

Of course achieving the task would also require the selection of very high quality materials and development of completely new, not to mention powerful drive units.

The sound reproduction of the C 80 is very detailed, clear and open in the entire spectra, with a large listening window making it easy to locate instruments, vocals and subtle details when listening to music or enjoying a movie.

You will also experience a very authentic standard of bass reproduction i.e. one that’s firm, precise and dynamic.

In two words the experience could best be described as unfailingly musical.

And isn’t that what it’s all about?

As for the “C” in C 80... well, that’s short for Concert, a good indication of the level of quality you can expect ...

## The Products

### C 803

C 803 is a 2-way, bass-reflex system featuring a 7in HCC woofer and a 1in DTT/WaveGuide tweeter.

This compact bookshelf speaker can be placed on a bookshelf – although you would probably be advised to place it on a high quality stand in order to experience the full potential of this little gem.

The C 80 main speakers all feature Jamo's Convex Tapered Vent. This high-flow, bass-reflex port design ensures less turbulence and allows 5 dB higher SPL before port noise occurs – which means that in practice, port noise is eliminated!

The C 803 features heavy gauge matt-chromated bi-wiring/amping terminals, giving you the opportunity of "fine-tuning" the sound by using cables that exactly suit your equipment, your room and your personal preferences.

### C 803 IW

Utilizing the same drivers as the C 803, the C 803 IW is a high-performance in-wall speaker with a 7in HCC woofer and a 1in DTT/WaveGuide tweeter.

Thanks to the potent drivers used as well as the acoustical back-box, this speaker works very well when used without a subwoofer. If you want some extra bass e.g. for a surround sound solution, just partner it with a subwoofer for extra low-frequency weight.

The front-plate features a sandwich-type construction with an ultra-rigid MDF core. This gives it enhanced rigidity and so prevents vibrations from being transmitted. This keeps colouration of the sound to an absolute minimum while increasing the level of detail conveyed.

For optimal visual integration, two front grilles are supplied with this speaker: a black cloth grille and a (paint-able) white grille.

The C 803 IW is very installer-friendly, not least because its speaker terminals are mounted directly on the speaker, rather than protruding from the back-box.

### C 805, C 807, C 809

The C 805 and C 807 floorstanders are 2½-way, dual bass-reflex systems. The 805 features a 6in HCC woofer, a 6in HCC mid-woofer and a 1in DTT/WaveGuide tweeter. The 807 features the same configuration - only using 7in woofers - while the 3-way C 809 features an additional woofer, for fuller bass response in even the largest rooms.

The 2½-way configuration has become something of a Jamo hallmark, one that

started with the debut of our highly acclaimed D 870 speaker.

The reason for choosing this configuration is that it grants you the best of two worlds: The tweeter and mid-woofer reproduce the full frequency range, so, this 2 way system delivers the coherent, harmonious and smooth sound typical of traditional 2-way systems.

Then the additional woofer(s) blends in below 150Hz to add the extra cone area and power handling needed to give full fidelity in the low bass.

The dual bass reflex configuration means that the cabinet is divided into two chambers – one housing the tweeter/mid-woofer and one the designated woofer(s).

This gives several advantages: First of all the sound pressure inside the cabinet from the woofer does not influence the mid-woofer and vice versa. This of course eliminates colouration and so results in cleaner sound reproduction.

The two chambers are identically tuned but the bass cabinet features a larger port (both in diameter and length) to effortlessly provide the considerable airflow required to reproduce deep bass.

The upper set of the heavy-gauge, matt chromated bi-wiring/amping terminals connect to the tweeter while the lower terminals connect to the mid-woofer and woofer. This split was chosen in order to separate the heavy current flow in the midrange and bass from the more delicate signal going to the tweeter. The bi-wiring/amping facility gives you lots of flexibility to tune the sound balance.

### C 80 CEN

C 80 CEN centre channel speaker is a 2-way, bass-reflex system featuring two 6in HCC woofers and a 1in DTT/WaveGuide tweeter.

The C 80 CEN can be placed on a speaker stand, book-shelf or on a TV (in the supplied rubber cradle), allowing the arc-shaped speaker to be angled towards the listening position and, just as importantly, ensuring stable placement of the speaker.

The C 80 CEN is of course magnetically shielded to enable placement in the vicinity of a normal CRT type TV.

### C 80 SUR

The C 80 SUR dipolar surround speaker is deliberately designed to deliver a diffuse sound, giving you the feeling of being enveloped in sound. Dipolar loudspeakers usually suffer, however, from a lack of efficiency in the deep bass area. To compensate for this fact the C 80 SUR is equipped with a special Jamo feature called XBR (eXtended Bass Response). XBR inverts the phase on one of the two woofers so that at frequencies below 250Hz it functions according to the bipolar principle.

Using a combination of di- and bi-polar principles not only ensures ultimate diffuse

reproduction of surround effects but also provides a remarkably deep and steady bass. In other words, Jamo XBR combines the best of these two principles.

Because XBR carries out the electrical phase shift on one of the woofers, the C 80 SUR are individually configured as a left and a right loudspeaker. In this way the perfect interaction with the front speakers is achieved i.e. there's a perfect transition between front and surround speakers when sound effects pan back and forth across the room.

## C 80 SUB

The C 80 motional feedback-controlled active subwoofer is equipped with two very powerful 10in aluminium cone woofers in a closed cabinet.

The advantage of using two 10in woofers instead of one large one are two-fold. One is higher power handling capability - as the heat is better disposed of in two voice coils/magnet systems - and the other a faster attack - as a smaller woofer has less moving mass and thus is better controlled. Finally the more compact resulting design makes it a lot easier to find a suitable area to place the subwoofer. The cone area of the two 10in woofers equals the size of one 13in woofer.

The sub's BASH® technology-based amplifier delivers no less than 1800W - more than enough to secure sufficient headroom, even for a subwoofer reaching down to 20Hz (- 6dB).

## Amplifier

The important thing with subwoofer amplifiers is the ability to deliver high power, something that's especially important for the reproduction of peak bursts (e.g. an explosion or a bass drum) with full fidelity. This has to be done with a minimum of distortion and while maintaining very tight control over the woofer.

Due to the nature of a conventional class AB amplifier it needs to have a substantial supply since only approx 60% of the power is turned into sound - the rest is turned into heat. Consequently the heat sink of a conventional amplifier also has to be enormous in order to cool it properly.

On the other hand a class AB amplifier also has some excellent advantages, such as musicality, low distortion and a high damping factor.

So, wouldn't it be nice if we could combine these qualities with the efficiency of a Class D amplifier?

That's why the development team decided to turn to a specialized technology that met those needs - one that delivered high power output with high efficiency while maintaining musicality, low distortion and tight control over the woofer. A patented technology called BASH®.

The key operating principle of BASH technology is based on a continually variable

supply voltage which tends to zero when there is no input signal and reaches its highest level when the amplification requires power. This supply voltage is continuously variable but always lower than that of an AB class amplifier and thus a much higher efficiency is achieved.

The outstanding energy efficiency (85%) achieved by this technology, allows very high output power, without heating up the amplifier and thus elimination of the need for excessively large heat sinks.

The power supply itself uses a high speed class D unit in order to constantly supply the amplifier with the appropriate level of power.

Thanks to its voltage switching capability a BASH amplifier plays louder than a conventional amplifier of comparable RMS power. Simply by virtue of the fact that it's not a voltage limited amplifier it possesses tremendous dynamic power capability.

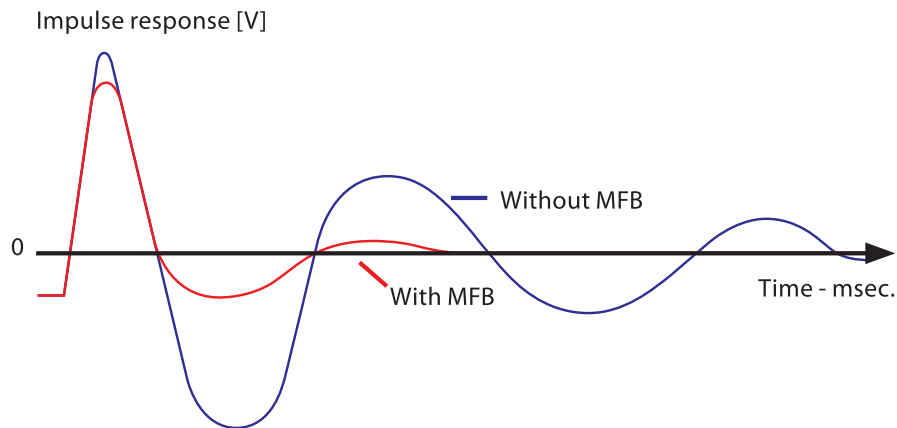
### MFB (Motional Feed Back), servo control

We have given precise timing extremely high priority in the C 80 design. To enable the relatively compact subwoofer to reach very low frequencies with perfect timing the C 80 SUB features MFB.

Even at high SPL the sound is precise and distortion very low.

Thanks to MFB the driver "overshoot" is dramatically reduced, dramatically enhancing timing. The figure shown illustrates the overshoot of a woofer with and without MFB.

MFB controls the woofer and eliminates the overshoot very quickly. Quite simply, the woofer is able to start and stop correctly.



The MFB circuit works by constantly comparing the diaphragm movements with the input signal.

The transducer at the back of the diaphragm monitors the movement of the diaphragm by measuring its acceleration. In the feedback circuitry the signal is converted to a signal proportional to the speed. The speed is highest at the resonance

frequency and so is the negative feedback. Consequently, the woofer receives less power in this area and, when combined with equalization the frequency response reaches down to an impressive 20Hz (-6dB).

It is possible to make a subwoofer this size reach 20Hz just with pre-filtering/equalizing, but that would create severe timing problems. In practice, this would be heard as the subwoofer constantly “rumbling” – i.e. not able to start and stop correctly. This might sound quite impressive initially, especially when listening to soundtracks with a lot of explosions etc. Ultimately, however, it is also the reason why many audiophiles prefer to turn off the subwoofer when listening to music - it simply sounds annoying no matter how low you adjust the subwoofer level.

Combining a powerful amplifier with MFB makes for a bass reproduction that's deep, precise and detailed.

### Variable Boundary Gain Compensation.

Reaching down to 20Hz grants reproduction of the extreme bass content of e.g. movie soundtracks with full authority.

However, in certain environments this can create a problem, which is why some A/V receivers/decoders feature a Boundary Gain Compensation filter.

This filter compensates for the room influence at low frequencies, as any room amplifies the lowest frequencies.

The magnitude of the room's amplification depends on the actual room and where you are positioned – normally it increases the closer you get to a wall, which also means that the problem gets worse the smaller the room.

This can result in too high a bass level from approx. 60Hz and increasing downwards. In the range between 20-30Hz it can easily cause peaks of up to 10dB!

On first impression this could sound really impressive but the sound will rapidly seem rather boomy, especially when listening to music, and ultimately it'll just sound very annoying.

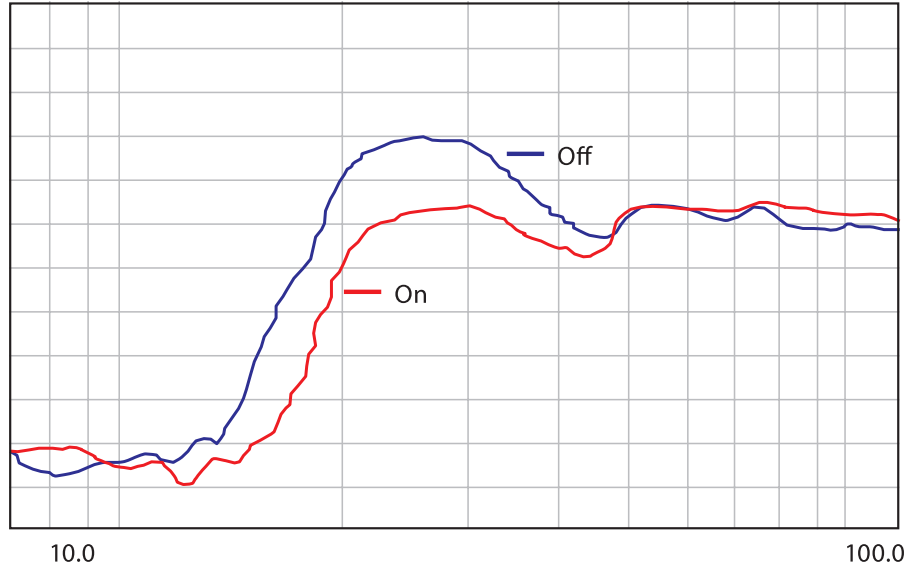
To compensate for that, the C 80 SUB has a quite unique feature:

Variable Boundary Gain Compensation is built into the C 80 SUB to compensate for a room's influence at low frequencies.

If you only employ the usual adjustment options, such as cut-off frequency and volume level, it will be impossible to obtain a linear in-room frequency response. Variable Boundary Gain Compensation, however, allows an extra degree of fine tuning which will compensate non-optimal location of the listening position and any “difficult” acoustic properties encountered in a room. All the controls (level, phase, cut off frequency, boundary gain and auto/on/off) are placed on the front of the C 80 SUB, elegantly integrated into the design so that

you have easy access when you want to change a setting e.g. when you want to fine-tune the output for a specific type of programme material or format (music, movies, DD/DTS etc, etc).

SPL/Volts [0.33 oct]



*Illustration of how the Boundary Gain Compensation technology works. Note that in the off position the peak around 20-30Hz is much higher than 40-100Hz, whereas in the on position the bass response is more linear.*

The C 80 SUB is commonly connected using the normal line-level/LFE-input terminals. If you prefer speaker-level connections - or don't have a LFE/Sub line level output on your amplifier/receiver - it can also be connected via the high/speaker-level input terminals provided.

### Auto/On/Off

Most of today's subwoofers have an auto on/standby feature whereby the subwoofer switches itself on if it senses a signal and switches in standby mode again a certain time after it has last sensed a signal. However, in movies (or typically classical music) with relatively quiet passages the subwoofer can switch to standby mode thereby "missing" the start of a new action packed sequence like for example an explosion or a kettledrum. Besides the auto on/standby mode we have therefore implemented a mode were the subwoofer is always on.

The Auto/on/off switch offers three settings:

Auto: The Subwoofer will automatically switch on when it detects a signal from the source, and switch to stand by again 20 minutes after the signal has disappeared.

The "start up" sensitivity is 3mV and it stays on as long as the signal is above 1mV.

On: The subwoofer will permanently be on

Off: The subwoofer will permanently be in stand by mode

The stand by power consumption is <1 Watt – so unless you are not using the subwoofer for a longer period of time, there is no need to disconnect it from the mains.

Just let the automatic on/off circuitry do the daily job for you.

### Phase and Cut-off controls

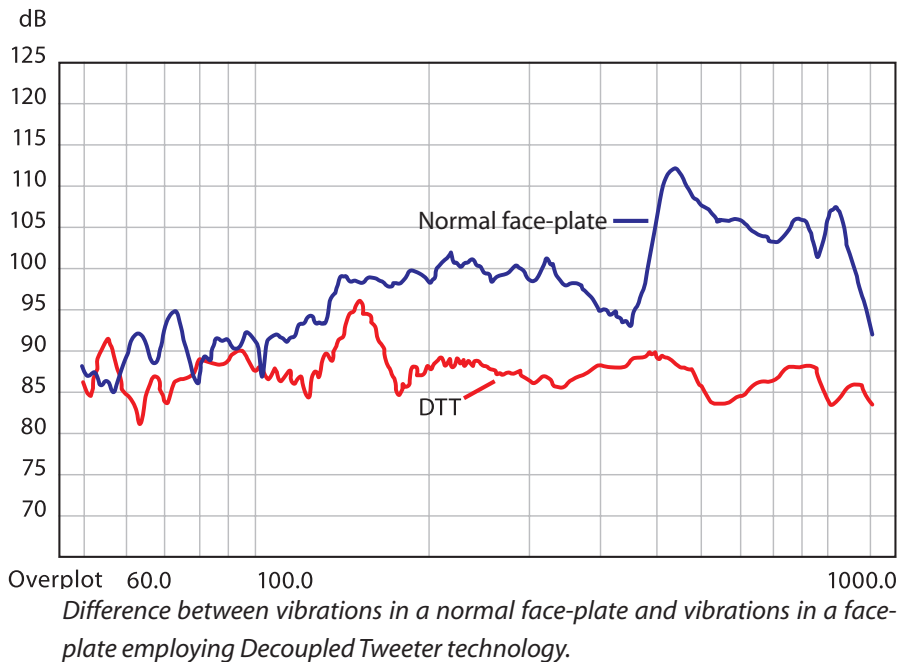
Place the subwoofer where it is most convenient - the controls ensure that the sound from the subwoofer can be adjusted to blend seamlessly with the sound from the rest of the speakers.

## Drivers

### Tweeter

The DTT/WaveGuide tweeter in the C 80 series is a completely new development.

One of the biggest challenges when designing speakers is preventing unwanted cabinet vibrations from clouding or colouring the sound. High frequencies are particularly susceptible. This problem has effectively been solved thanks to the ingenious Jamo Decoupled Tweeter Technology (DTT).

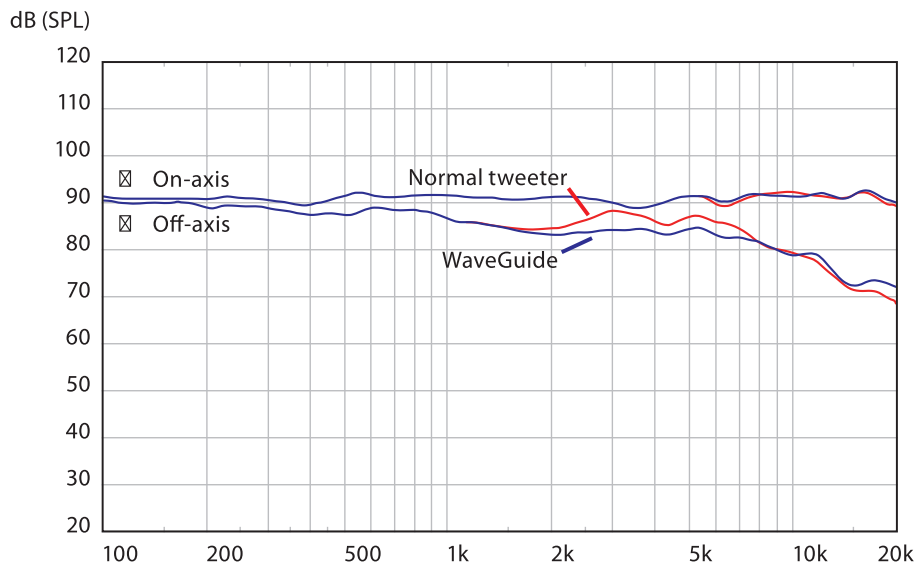


By decoupling the tweeter from the rest of the loudspeaker, vibrations transmitted from the front baffle to the tweeter are reduced by more than 20dB, resulting in an uncommonly detailed and realistic reproduction of high frequencies.

Another big challenge is to secure a uniform dispersion pattern in the treble and midrange frequencies. In general the dispersion gets narrower the higher the frequencies – and this applies to both midrange and treble. Consequently in the area where the mid/woofer and the tweeter should integrate smoothly, you'll have a mid/woofer with a narrow dispersion and a tweeter with a relatively wide dispersion.

This problem is solved with the Jamo WaveGuide, which is a carefully designed concave faceplate into which the 1in DTT tweeter is integrated. Doing so results in a uniform treble dispersion pattern from 10kHz all the way down to the critical x-over point at 2kHz and thus secures a seamless transition to the mid/woofer – both when listening on and off axis.

Furthermore the completely smooth design of the WaveGuide reduces diffractions to an absolute minimum. Finally, the WaveGuide increases treble output in the lower treble range. Thus the tweeter needs less power for the same SPL. So, power handling is improved and distortion is reduced.



*The WaveGuide result in a uniform treble dispersion pattern from 10kHz all the way down to the critical x-over point at 2kHz and thus secures a seamless transition to the mid/woofer – both when listening on and off axis.*

The 1in tweeter itself features a completely newly designed lightweight silk dome, carefully coated to achieve the optimum combination of rigidity and internal dampening.

The magnet features a hollow pole-piece so leaving a chamber behind the dome. The chamber is critically damped with two types of damping material to avoid compression behind the dome and tuned to achieve a low resonance frequency at 1kHz (the normal resonance frequency for a tweeter is around 1.5kHz).

The voice-coil former is made of aluminium for optimum heat dispersal. The voice coil is made of copper-plated aluminium wire. This is because aluminium weighs less than copper but the copper plating is needed because of its conductive qualities.

All these features when combined allow the diaphragm to move effortlessly and the result is a very clear and natural, detailed, dynamic and open sound reproduction all the way to 24kHz (- 3dB).

The absolute focus when developing this tweeter was to enhance its ability to reproduce the human voice, meaning the lower part of the treble range. Please take time to listen to the speaker's unusually good ability to convey vocals – we think you'll appreciate the excellent grip and body it exhibits.

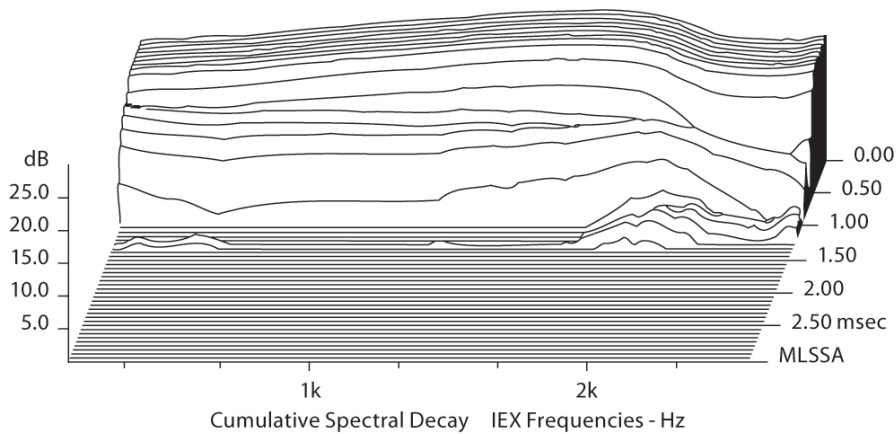
### Mid-woofer/woofer

The woofer of the C 80 speakers features a brand new HCC (Hard Conical Cone), made from an incredibly rigid conically-shaped fibre-glass honeycomb sandwich. This comprises a paper mesh between two layers of woven fibre-glass. Aside from the exclusive construction, the special weave ensures a uniform material thickness over the entire diaphragm.

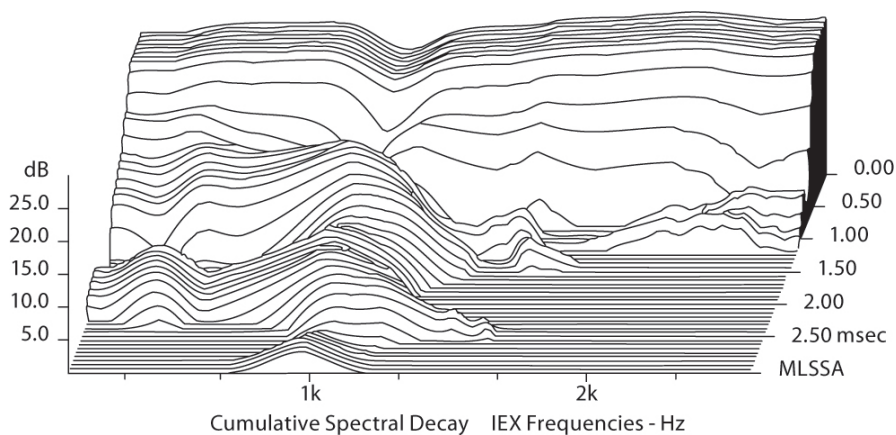
A loudspeaker diaphragm can be compared to a piston. To cope with the heavy demands on the diaphragm materials' stretching and compression properties, the composite fibre material is composed of a special mix of different types of fibres and treated with a tough hardening resin.

When its glued to each side of the paper mesh the result is a very hard and light cone with good internal damping.

Combined with the natural rubber suspension, which effectively prevents vibrations from travelling back to the diaphragm, the result is a well controlled diaphragm that operates without 'break-up' at up to 4kHz, well beyond its working range.



*Jamo HCC operates without break-ups in critical areas.*



*Other speaker break-up.*

Another advantage of our hard cones is a very good suppression of sound reflections inside the cabinet, no surprise given that it's virtually airtight (the air pressure inside the cabinet cannot penetrate the diaphragm).

The magnesium basket confers several benefits:

First of all it makes it possible to create a very 'open' basket – even behind the spider – thus ensuring high airflow at low frequencies, avoiding reflections at high frequencies and preventing under-/overpressure causing mechanical losses. Secondly, as magnesium is a non-magnetic material, the magnetic force does not spread out in the basket, but stays concentrated where it is needed; around the voice coil.

Last but not least, the very rigid material ensures that the heavy magnets and the voice coil are always perfectly aligned with the voice coil, in the exact centre of the magnet gap.

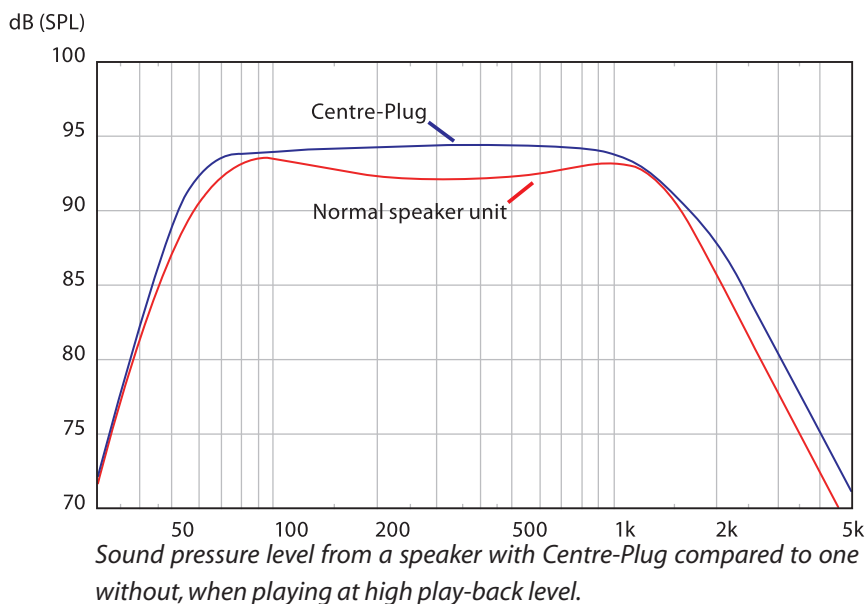
To ensure that the drive units are firmly attached – and airtight – they are mounted using 6 screws.

### Centre-Plug

However, the anodised aluminium centre plug is probably the most visible feature of the C 80 woofers.

It replaces the traditional dust cap in the centre of the loudspeaker cone at the place where the dust cap would normally be mounted, thereby making the cone lighter and thus 'faster' sounding.

This also prevents potential break-up points where the dust cap would have been glued to the cone.



In addition, it prevents over- and under pressure behind the dust cap when the cone moves back and forth. The advantage is a more dynamic and precise sound reproduction.

The aluminium Centre-Plug also has a cooling effect on the voice coil, providing greater power handling capability and very importantly, a stable sound reproduction when playing loud.

The mid-woofers all feature lightweight 2-layer voice-coils in order to achieve maximum "attack" (the ability to start and stop precisely) and minimum distortion. These acoustic properties are of utmost importance for optimum voice reproduction.

### Active Impedance Control

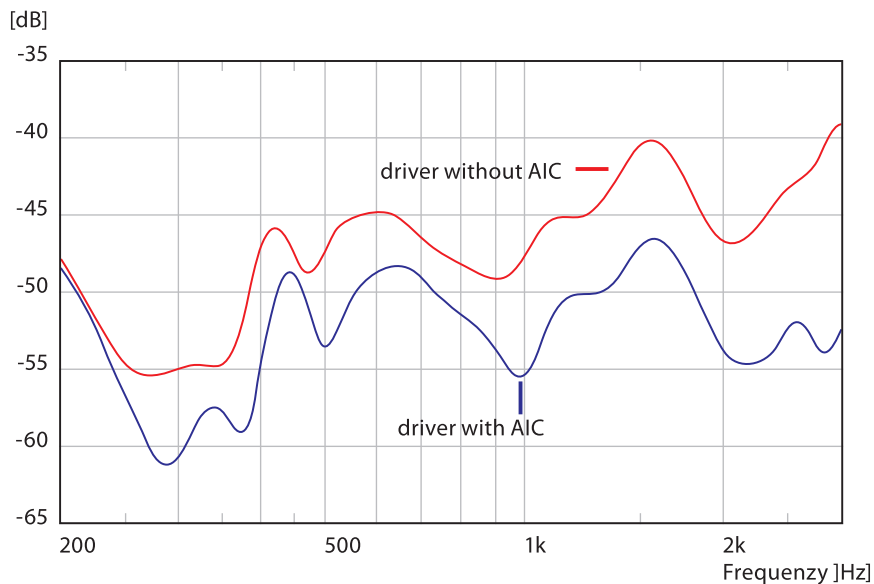
All C 80 mid/woofers feature Active Impedance Control (AIC), an innovative extension of existing techniques to reduce distortion in electrodynamic loudspeaker drivers.

When a voice coil is moving in and out of a magnet gap, it changes induction. When the coil moves inward, the induction increases and vice versa. This causes the current from the amplifier to be modulated, creating very audible distortion.

Furthermore the current flowing in the voice coil modulates the magnetization of the magnet assembly which also causes distortion of the current.

By using an extra coil, placed inside the voice coil with opposite polarity to the voice-coil winding, the inductance variation and the flux modulation can be significantly counteracted.

The effect of AIC is a clearer midrange with a markedly reduced in 'roughness', especially noticeable on vocal reproduction. In figures, this amounts to a reduction of third-order harmonic distortion of around of 6dB (ie a 50% reduction).



Compared to the conventional conductive rings in a magnet system AIC has the advantage that it is significantly better at higher frequencies i.e. in the midrange (on voices) where distortion is most audible to the human ear.

Even though they are visually identical with the mid/woofers, there is a small but significant difference in the designated woofers for the C 80 floorstanders.

Designed to work only at the lowest frequencies, these use a heavy 4-layer voice-coil, sensitivity at high and mid frequencies is reduced while efficiency at low frequencies is increased.

This works in two ways: A high B\*L product\*\* will increase port output and reduce bandwidth around port resonance. The increased weight will counteract the increased B\*L at higher frequencies. The result is a gain of about 3 dB at low frequencies - or put very simply – a more authentic and powerful bass.

The 6in drivers feature 33mm diameter voice coils while the 7in drivers feature 40mm examples. These oversized voice coils ensure optimum heat dissipation/power handling as well as full control over the cones.

*\*\*The combination of magnet size/force and length of the voice coil wire results in the so-called B\*L Product. In popular you could call this the size of the "engine" in a loudspeaker.*

### (Sub)Woofer

The 10in woofer features a vented magnet system and a 50mm/2in aluminium voice-coil former. The long 4-layer voice-coil allows linear excursions up to +/- 10mm/0.4in while still retaining more than 80% of the B\*L product available! The maximum excursion possible is more than +/- 15mm/0.6in!

The double magnet system features a vented pole-piece in order to avoid over/under pressure building up behind the dust cap (mechanical damping) when the cone is moving.

The cone is made from aluminium making it incredibly stiff and airtight. Try to imagine the air pressure generated inside a cabinet where the woofers are fed with 1800W... the importance of being airtight becomes rather obvious.

Also, the huge rubber surround allows fast and free movement at its low frequency working range.

The basket is made of magnesium giving several benefits:

First of all it makes it possible to create a very 'open' basket – even behind the spider – thus ensuring high airflow at low frequencies, and preventing under-/overpressure causing mechanical losses.

Secondly, as magnesium is a non-magnetic material, the magnetic force from the magnet does not spread out in the basket, but stays concentrated where it is needed... around the voice coil.

Finally, the very rigid material ensures that the heavy magnets and the voice coil always are perfectly aligned with the voice coil, in the exact centre of the magnet gap.

## X-over

As should be apparent from the drive unit descriptions above, we wanted to start out with drivers of immense fundamental quality, precisely so that we would only need minimal assistance from the cross-over.

Consequently, the cross-over in the Jamo C 80 is of a relatively simple – in the most positive sense of the word – low-order configuration.

The advantages of using what is basically a 2nd order filter is that both electrical and acoustical phase angles are kept at very small values, something that's of great importance both in terms of sound quality and the eventual load imposed on the amplifier.

## Cabinets

The design of the C 80 allows the use of large cabinets without the loudspeaker seeming unduly imposing. Also the arc shape damps standing waves. The cabinet sides are made of multiple layers of MDF board, high-frequency glued together for optimum surface contact between them.

The arc-shaped design itself results in a much more rigid panel (compared to a flat panel) and to further improve rigidity the cabinet features internal bracings making it very inert-sounding, thus preventing undesirable vibrations from colouring the speaker's output.

The planar design of the cabinet fronts gives optimum working conditions, i.e. a minimum of diffraction (colouration/distortion particularly in the upper midrange and treble, due to reflections from irregularities on the loudspeaker front),

All C 80 cabinets are made of heavy MDF board, a solid and inert base for the drivers to work in.

All the C 80 floorstanders are equipped with die-cast aluminium feet to obtain best possible placement. Using the included spikes – with or without the rubber feet – secures the speaker firmly, something which is essential to obtain maximum performance.

Using the adjustable spikes ensures a good mechanical contact to the floor, irrespective of the floor material underneath. If you prefer to decouple it from the floor, this can be done by using the enclosed rubber absorbers.

# Specifications

<b>Name</b> .....	<b>C 809</b>
System.....	3 way bassreflex
Woofers (mm / in).....	2 x 180 / 7
Midrange (mm / in).....	180 / 7
Tweeter (mm / in).....	25 / 1
Long term power (W).....	200
Short term power (W).....	400
Sensitivity (dB/2,8V/1 m).....	89
Frequency range (Hz).....	30-24,000
Impedance (Ohm).....	6
Crossover frequency (Hz).....	150 / 2000
Dimensions HxWxD	
Mm.....	1157 x 252 x 428
In.....	45.6 x 9.9 x 16.9

<b>Name</b> .....	<b>C 807</b>
System.....	2½ way bassreflex
Woofers (mm / in).....	180 / 7
Midrange (mm / in).....	180 / 7
Tweeter (mm / in).....	25 / 1
Long term power (W).....	180
Short term power (W).....	360
Sensitivity (dB/2,8V/1 m).....	89
Frequency range (Hz).....	35-24,000
Impedance (Ohm).....	6
Crossover frequency (Hz).....	150 / 2000
Dimensions HxWxD	
Mm.....	1007 x 242 x 406
In.....	39.6 x 9.6 x 16.0

<b>Name</b> .....	<b>C 805</b>
System.....	2½ way bassreflex
Woofers (mm / in).....	155 / 6
Midrange (mm / in).....	155 / 6
Tweeter (mm / in).....	25 / 1
Long term power (W).....	160
Short term power (W).....	320
Sensitivity (dB/2,8V/1 m).....	88
Frequency range (Hz).....	40-24,000
Impedance (Ohm).....	6
Crossover frequency (Hz).....	150 / 2000
Dimensions HxWxD	
Mm.....	877 x 201 x 347
In.....	34.5 x 7.9 x 13.7

<b>Name</b> .....	<b>C 803</b>
System.....	2 way bassreflex
Woofers (mm / in).....	180 / 7
Midrange (mm / in).....	-
Tweeter (mm / in).....	25 / 1
Long term power (W).....	125
Short term power (W).....	250
Sensitivity (dB/2,8V/1 m).....	87
Frequency range (Hz).....	45-24,000
Impedance (Ohm).....	6
Crossover frequency (Hz).....	2000
Dimensions HxWxD	
Mm.....	380 x 225 x 341
In.....	15.0 x 8.9 x 13.4

<b>Name</b> .....	<b>C 80 CEN</b>
System.....	2 way bassreflex
Woofers (mm / in).....	2 x 155 / 6
Midrange (mm / in).....	-
Tweeter (mm / in).....	25 / 1
Long term power (W).....	160
Short term power (W).....	320
Sensitivity (dB/2,8V/1 m).....	88
Frequency range (Hz).....	70-24,000
Impedance (Ohm).....	6
Crossover frequency (Hz).....	2000
Dimensions HxWxD	
Mm.....	212 x 501 x 281
In.....	8.3 x 8.9 x 13.4

<b>Name</b> .....	<b>C 80 SUR</b>
System.....	2 way dipole
Woofers (mm / in).....	2 x 155 / 6
Midrange (mm / in).....	-
Tweeter (mm / in).....	2 x 25 / 1
Long term power (W).....	160
Short term power (W).....	320
Sensitivity (dB/2,8V/1 m).....	87
Frequency range (Hz).....	65-24,000
Impedance (Ohm).....	6
Crossover frequency (Hz).....	2500
Dimensions HxWxD	
Mm.....	293 x 286 x 181
In.....	11.5 x 11.3 x 7.1

<b>Name</b> .....	<b>C 80 SUB</b>
System.....	Closed box
Woofers (mm / in).....	2 x 254 / 10
Amplifier rated output (W).....	1800
Frequency range (Hz).....	20 – 200
Cut off frequency (Hz).....	Variable
Impedance (Ohm).....	22k
Phase.....	Variable
Boundary Gain Comp.....	Variable
Limiter.....	Yes
Auto/on/off switch.....	Yes
12V trigger.....	Yes
Motional Feedback.....	Yes
Dimensions HxWxD	
Mm.....	447 x 390 x 432
In.....	17.6 x 15.4 x 17.0

<b>Name</b> .....	<b>C 803 IW</b>
System.....	2 way bassreflex
Woofers (mm / in).....	180 / 7
Midrange (mm / in).....	-
Tweeter (mm / in).....	25 / 1
Long term power (W).....	125
Short term power (W).....	250
Sensitivity (dB/2,8V/1 m).....	87
Frequency range (Hz).....	45-24,000
Impedance (Ohm).....	6
Dimensions HxWxD	
Mm.....	400 x 270 x 85
In.....	15.7 x 10.6 x 3.3

