

# Jade

S E R I E S

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**WHAT HI-FI?**  
SOUND AND VISION



Jade 5 - Oct 2011

# Wharfedale

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Peter Comeau  
Director of Acoustic Design

# Jade

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Jade is the latest audiophile class speaker design from Wharfedale, the world's most famous hi fi brand. It incorporates all of the latest improvements in loudspeaker design and manufacture using IAG's vertically integrated ISO9001 factory facilities. Computer aided modeling and precision tooling enables Wharfedale to produce the highest performance results from this stunningly designed range of speakers. With every single part of every drive unit and component manufactured in our own factory, we have complete control over each and every aspect of quality in manufacturing our loudspeakers to ensure they can provide its owners a lifetime of indulgence.

Engineered to offer something beyond the ordinary and to be considered an exceptional music reproduction instrument, each Wharfedale loudspeaker must meet a number of our exacting criterion. It must present breathtaking detail and resolution which requires a tweeter with a response well into the inaudible frequency spectrum. It must possess a neutral, realistic midrange that's uncoloured by cabinet boxiness and revealing of the true recording. It must have exceptional bandwidth capable of reaching depths without overhang. It must fully coalesce with a package that is ambivalent to room surroundings and exhibits a broad, even dispersion without phase interference or colouration. Lastly, it must at all times sound relaxed and effortless as it traverses the octaves.

Apart from submitting each individual drive units under testing and certification by a team of first class engineers, each completed loudspeaker is subjected to scrupulous testing procedures, the results of which have to be confirmed by our Director of Acoustic Design, Peter Comeau.

## Designer's Message

Uncompromising in design and manufactured with care and precision by Wharfedale engineers, Jade loudspeakers are constructed using the finest materials available. Using traditional craftsmanship combined with the latest advances in acoustic technology, we are able to uphold a Wharfedale tradition of excellence in sonic performance and furniture-quality cabinet making dating back more than seventy years.

Wharfedale ensures the very highest standards of manufacture and performance are maintained for the Jade series. To this end each individual drive unit and crossover is thoroughly tested and certified by a Wharfedale acoustic technician. Each completed loudspeaker is then subjected to a rigorous testing procedure and matched accurately to Wharfedale's reference standards.

The Jade Series offers more than just hi-fi reproduction. In performance it is closer to an outstanding music reproducing instrument, allowing the listener to become involved in the musical performance by immersion in the full emotion and passion engendered by the original musicians.

We call this the Wharfedale Experience and know that, as you begin to appreciate the performance of these loudspeakers, you will enjoy a lifetime of musical pleasure.





## Advanced Drive Unit Design



Wharfedale has engineered a new cone material called **Acufiber**, an advanced material that marries the responsiveness of glass and carbon fibre materials with a self-damping woven matrix. The goal was to produce a neutral radiator which was responsive enough to transfer musical transients without dulling but naturally damp cone flexure to reduce colouration.

**Acufiber** cones also feature a moulded pattern which automatically breaks up standing waves in the cone to further reduce colouration and distortion, enabling the cone to behave closer to the theoretical acoustic 'piston' without the high 'Q' resonances experienced by formed metal cones.

The Acufiber cone is coupled to one of the most linear drive motor systems yet devised for a loudspeaker. The voice coil is immersed in a magnetic field focused to produce balanced forces for push-pull linearity. In addition the voice coil features shorting rings to reduce the usual effects of inductance, resulting in cleaner and more extended midrange response.

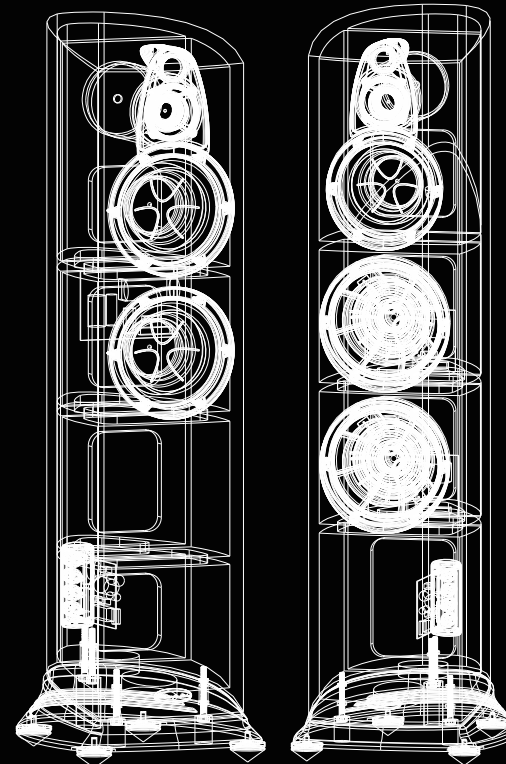
## Cabinet Design and Construction

JADE's cabinets are a work of art, both visually and in the advanced manufacturing techniques employed by Wharfedale.

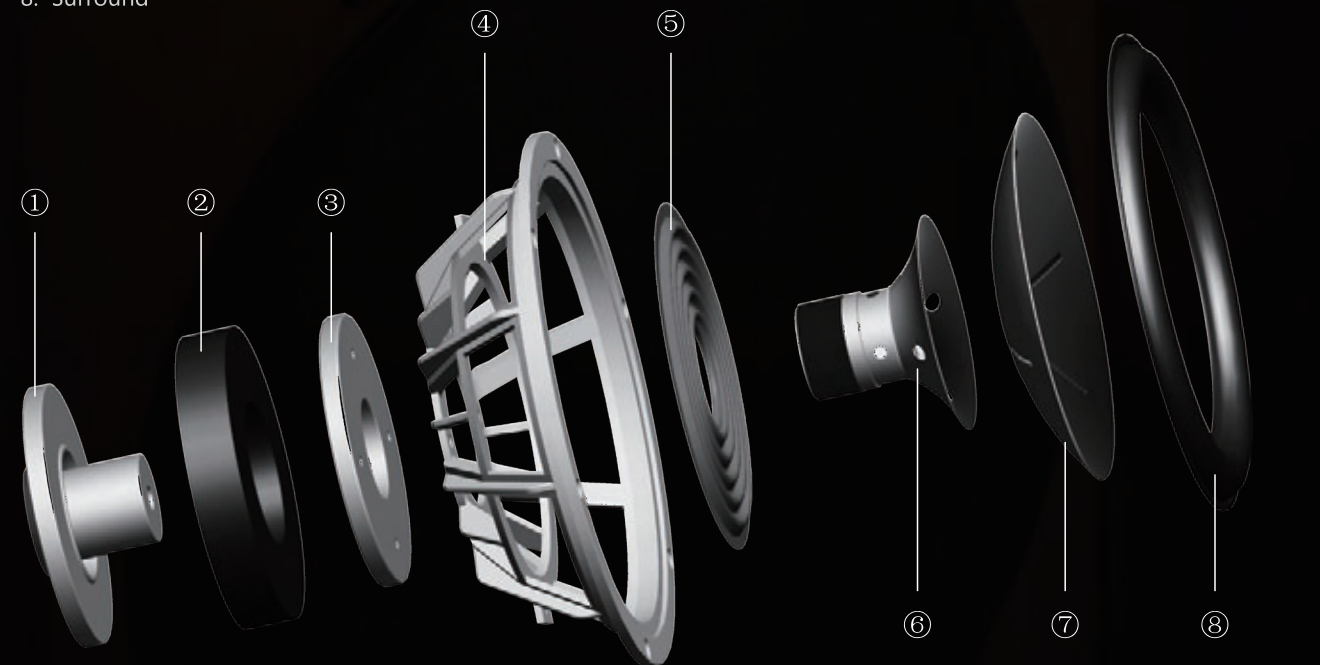
Curved cabinet construction incorporates the latest material technology developed by Wharfedale engineers, called **Crystalam**. This laminated material is formed from a series of critically specified natural wood elements and composites, formulated to reduce panel vibration and acoustic leakage to below the threshold of audibility.

Each **Crystalam** layer is bonded to allow microscopic sliding of one layer upon another, producing a natural damping effect that effectively quells the usual panel resonance experienced in loudspeaker cabinets. As well as reducing the 'Q' of the panel resonance peaks, the composite layers also spread the resonances over a wide frequency band, thereby avoiding the acoustic 'signature' readily heard from plain MDF cabinets.

In addition the multi-layer, composite construction provides an acoustic barrier to stop sound from inside the cabinet escaping through the cabinet walls. The total effect of **Crystalam** is to reduce the sonic character of the cabinet to the point where it cannot be heard below the sound coming from the drive units.



1. T-yoke
2. Magnet
3. Top Plate
4. Chassis
5. Spider
6. Voice coil
7. Cone
8. Surround





## Phase Linear Crossovers

One of the bugbears of hi-fi loudspeaker design is how to crossover effectively from one drive unit to another. Traditionally this has meant long hours spent measuring and testing each loudspeaker system still with a less than perfect result.

For the Jade Series Wharfedale has utilized the most advanced measurement techniques in conjunction with 21st Century computer crossover modeling systems to help achieve a seamless integration between the drive units.

First the speaker system is measured in Wharfedale's new anechoic chamber and the mechanical properties of the drive units are characterized by the Klippel system. These characteristics are then imported into the crossover modeling software where Wharfedale's engineers can model the desired performance.

Each prototype crossover is then evaluated in our listening rooms and optimized by ear using a wide range of musical styles. From that experience the crossover is once again simulated on the computer and any wrinkles in the performance are ironed out. This process is repeated many times until the perfect performance is reached.

In order to achieve a seamless integration between the drive units the crossover has to be phase linear. That means that the ear hears no discontinuity as each drive unit hands over sonic delivery to the next. The result is a cohesive, natural sound that acts as a window into the musical performance - the speakers audibly 'disappear' enabling you to concentrate on the music and only the music.

## Jade Stands

The Jade stands are suitable whenever you want to hear small speakers at their best. They ensure speakers locate at the correct height, provide vibration damping and isolate vibration from the floor.

The Jade stands are 645mm tall with steel floor spikes. They use one big column, which can be used for wires to go through, and two small columns. With metal columns between a wooden top plate and a heavyweight Jade-style wooden plinth, the stand minimises the vibration transmission and there are rubber pads on the top plate for isolating and steadying the speaker. The stylish and solid spikes maximise the absorption of vibrations into the ground and allow easy height adjustment.

The acoustic performance of the Jade stands is excellent: the soundstage is coherent, detail and clarity are not sacrificed in favour of integration, and the midrange is natural and clean.



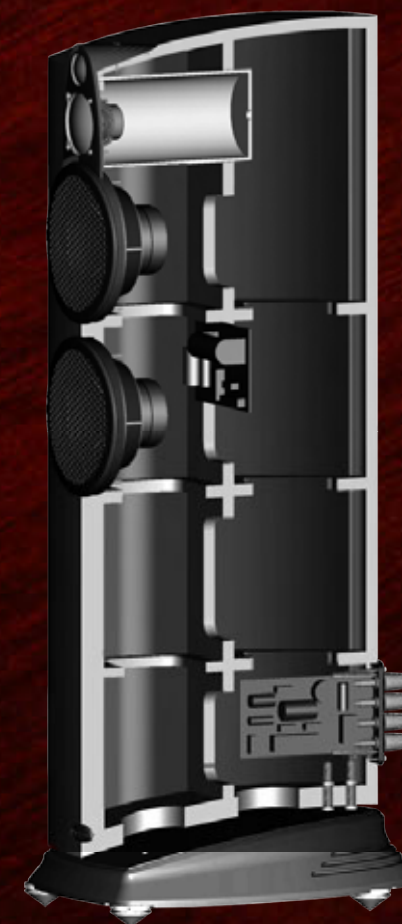
## Aperiodic Cabinet Loading

In 1958 Gilbert Briggs, the founder of Wharfedale, described in the Fifth Edition of his seminal book 'Loudspeakers' a method of cabinet loading which used a resistive 'acoustic filter' instead of the more common hole, or port, in the cabinet as a form of tuning. Unwittingly, based more on the subjective results of listening tests rather than theoretical appraisal, he had hit upon a method of Aperiodic loading of the cabinet and driver.

Aperiodic means, simply, without period or, more particularly for a loudspeaker, without resonance. Both reflex loading and closed box speakers are normally high resonance systems. This is particularly true of reflex systems where the resonance of the cabinet air volume and port is deliberately encouraged so as to produce an increase in low bass output.

Associated with this resonance is one particular problem and that is that the system continues to produce sound AFTER the initial musical transient has stopped. At its worst the bass takes on a one-note, boomy quality but, even when controlled, this resonance can still blur the clarity of the low frequency output making instruments sound unnatural and indistinct.

Aperiodic loading overcomes this problem whilst still allowing for the port to extend the low bass output of the loudspeaker. It replaces the highly resonant behaviour of the reflex loaded cabinet with a much simpler solution where no resonance is encouraged and the musical transient is reproduced without ringing therefore maintaining its accuracy and clarity.







## The Jade Aperiodic System

The graph above shows a comparison between a typical Reflex system (red) and Jade-7 Aperiodic system (white). The initial transient (tall spike) is followed by resonance which continues for 25mS in the Reflex system. For the Jade system the initial transient is followed by a small overshoot and no resonance.

Briggs original idea was to cut thin slots in a shelf inside the speaker leading to the reflex port. The slots acted as an acoustic resistance which controlled the damping of the resonance. For the Jade-5 and Jade-7 floorstanding speakers the Aperiodic system is enabled by opening a 'port' in the base of the cabinet which is then tuned by a slot formed by the space between the base of the cabinet and the top surface of the plinth. This slot is then filled with resistive porous foam that controls the airflow from the port.

Additional benefits of the Jade Aperiodic system are that wind noise or 'chuffing' from the port is completely absent and there is no midrange 'leak' from the inside of the cabinet. As a result of the Aperiodic tuning, Jade-1, Jade-5 and Jade-7 produce an extended bass range which has terrific articulation and clarity. A further benefit is that the speakers are easily integrated into the listening room and have greater freedom in their positioning.



## Art & Music Combined

Jade series loudspeakers are not only capable of reproducing the best possible sound but are also considered works of art.

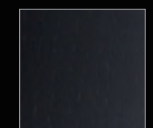
Complementing the intricate details put into perfecting its sound reproduction capabilities, each model in the Jade series is built with specially-chosen matched pairs of real wood veneers that are polished to reveal unique grain patterns and its depth of colour.

After which, each loudspeaker is then subjected to a 7-day process of gloss lacquer application to achieve its exquisite piano finish, making Jade series the ideal choice of loudspeaker to accentuate even the most sophisticated home environment.

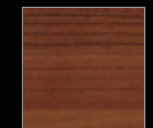


# Finishes

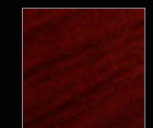
## VENEER



Black Oak

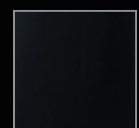


Vintage Cherry



RoseWood

## PIANO



Piano Black

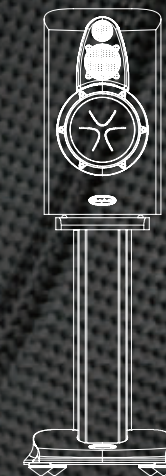
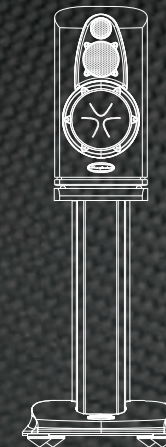
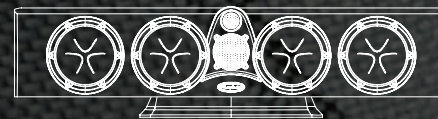
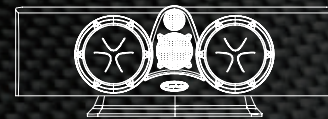


Burgundy Burr

# Jade

S E R I E S

## Specifications



	<i>Jade-SR</i>	<i>Jade-C1</i>	<i>Jade-C2</i>	<i>Jade-1</i>	<i>Jade-3</i>	<i>Jade-5</i>	<i>Jade-7</i>
<b>Description/Format</b>	Surround / wall mounting	Centre channel	Centre channel	Stand mounting	Stand mounting	Floorstanding	Floorstanding
<b>Enclosure Type</b>	3-way Closed-box system	3-way Aperiodic system	3-way Aperiodic system	3-way Aperiodic system	3-way Closed-box system	3-way Aperiodic system	4-way Aperiodic system
<b>Drive Units</b>							1" (25mm) Alu high frequency dome
<b>Tweeter</b>	1"(25mm) Alu high dome	1" (25mm) Alu high dome	1" (25mm) Alu high dome	1" (25mm) Alu high dome	1" (25mm) Alu high dome	1" (25mm) Alu high dome	3" (75mm) Alu-pulp cone
<b>Midrange</b>	3"(75mm) Alu high dome	3" (75mm) Alu-pulp cone	3" (75mm) Alu-pulp cone	3" (75mm) Alu-pulp cone	3" (75mm) Alu-pulp cone	3" (75mm) Alu-pulp cone	6.5" (165mm) Acufibre cone
<b>Bass</b>	5"(125mm) Acufibre cone	2 x 5" (125mm) Acufibre cone	4 x 5" (125mm) Acufibre cone	5" (125mm) Acufibre cone	6.5" (165mm) Acufibre cone	2 x 6.5" (165mm) Acufibre cone	2 x 8" (200mm) Acufibre cone
<b>Frequency Response</b>	80Hz - 24kHz (±3dB)	75Hz - 24kHz (±3dB)	55Hz - 24kHz (±3dB)	65Hz - 24kHz (±3dB)	45Hz - 24kHz (±3dB)	42Hz - 24kHz (±3dB)	38Hz - 24kHz (±3dB)
<b>Sensitivity(1W@1M)</b>	85dB	87dB	88dB	85dB	86dB	87dB	88dB
<b>A/V shielded</b>	no	yes	yes	no	no	no	no
<b>Crossover Frequency</b>	710Hz, 3.2kHz	710Hz, 3.2kHz	240Hz, 810Hz, 3.3kHz	570Hz, 2.5kHz	350Hz, 2.8kHz	340Hz, 2.4kHz	180Hz, 590Hz, 2.8kHz
<b>Nominal Impedance</b>	6Ω	6Ω	6Ω	6Ω	6Ω	6Ω	6Ω
<b>Recommended amplifier Power(RMS)</b>	30 - 120W	30 - 150W	50 - 200W	30 - 120W	30 - 150W	50 - 200W	50 - 250W
<b>Dimensions(Height including spikes)</b>	H: 347mm W: 300mm D: 165mm	H: 195mm W: 664mm D: 300mm	H: 195mm W: 914mm D: 300mm	H: 376mm W: 195mm D: 328mm	H: 433mm W: 246mm D: 400mm	H: 1055mm W: 246mm D: 400mm	H: 1180mm W: 273mm D: 448mm
<b>Net weight</b>	6.5kg / pc	13.2kg / pc	18.6kg / pc	8.95kg / pc	11.8kg / pc	27.5kg / pc	37kg / pc
<b>Accessories</b>	rubber feet	rubber feet; optional pedestal available	rubber feet; optional pedestal available	rubber feet; optional stand available	rubber feet; optional stand available	floor spike	floor spike

Specifications are subject to change without prior notice.