

Low Rider

REL R-505 (£995)

Reinvigorated by its recent takeover by Sumiko Audio, REL is responding to changing market tastes in subwoofer design. Enter the R-505, a compact, eye-catching model with a truly convincing sound



ABOVE: Controls are accessible from the front of the REL, a removable frosted glass cover giving a neat attractive look

When I think classic REL sub I picture a large, wood-finish box with downward-firing driver and port. REL still makes models of this description but the market increasingly demands alternatives that are less of an eyesore: smaller, and with an appearance that will match modern decors. REL's new R-series, of which the R-505 is the largest, meets this demand.

Because there is no room for an appropriately proportioned reflex tube, compact subs are typically sealed enclosures and operate below the fundamental resonance of the driver in the box. So they require equalisation (EQ) to flatten the response, and oodles of amplifier power (normally from a class D module) to achieve the required output capability.

The R-505 follows this basic recipe, but that's not to say it is predictably me-too. It has a novel approach to applying the necessary EQ, and its chic, high-quality appearance design sets it apart. Although R-series subs are now becoming available in a range of wood finishes, beginning with cherry, early production was in high-gloss black lacquer. Further visual interest is added by the strakes on the sides and top of the cabinet, and by the 'stand off' front grille, which is chamfered along its back edges to create a cutaway between it and the front baffle. Removing the grille exposes a 12in (305mm) long-throw driver with carbon-fibre reinforced paper cone and 2in voice coil, the supplier of which REL declines to identify.



BELOW: Knurled turned aluminium knobs add to the air of class, though it is difficult to see their settings

UNDERSLUNG BOX

Another visually attractive feature is the underslung control box, which brings the two level controls (one for the high- and low-level inputs, the other for the LFE input), crossover control and phase switch (positive or negative polarity) to the front of the box. The rotary controls all have knurled turned-aluminium knobs – much classier than the plastic knobs of old, although it is more difficult to see their settings. A small glass cover, frosted on the inner face, fits over these via a pair of thumb screws, both to tidy up the appearance and to deter inquisitive little fingers.

The principal technical advantage of a physically small sub like the R-505 is that the cabinet is less likely to resonate within the operating range. As explained in the Lab Report, the R-505's first cabinet resonance occurs at around 200Hz, so there should be no bass muddling from this cause – something that hasn't always been the case with REL's bigger subs. Downsides are the need for EQ – because the small cabinet causes the driver's response to roll-off from a relatively high frequency – and for sufficient amplifier power to achieve the required output levels at low bass frequencies. REL has traditionally used linear amplifiers but for the first time in the R-series employs class D switching amplifiers,

ABOVE: Beneath the grille the REL sports a long-throw 12in driver of carbon-fibre reinforced paper with a 2in voice coil

'The REL R-505 added hangover-free lower-octave oomph without crapping out at any replay level I would call comfortable'

supplied by B&O's ICEpower division. The R-505's is rated at 500W continuous and has the twin advantages of being both efficient and compact, which frees up valuable volume within the cabinet.

REL's unusual EQ approach uses a low-pass filter with its variable corner frequency set below the high-pass corner frequency of the driver in the box. The end result is a bandpass response, the upper and lower corner frequencies of which change as the crossover control is adjusted. For details, see the Lab Report overleaf. One side-effect of this is that the sub's gain is affected somewhat by the crossover control, something that needs to be borne in mind when setting it up.

ROCK 'N' ROLL-OFF

Ever since Richard Lord founded REL Acoustics in the early '90s, its design philosophy has been that ☺

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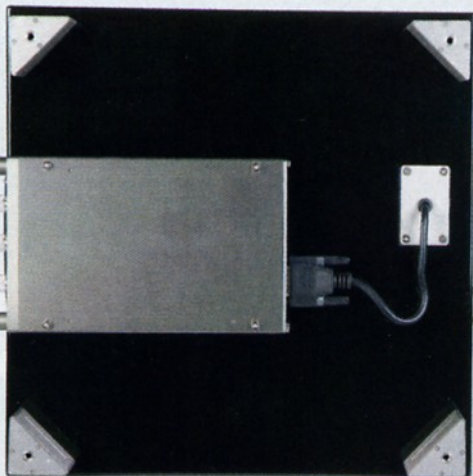
subwoofers – REL prefers to call them sub-bass systems – should fill in below the natural roll-off of the main speakers, and the R-series is true to this creed. The irony of using a subwoofer this way is that, when you've set it up properly, you should be largely unaware of its presence – until you switch it off.

Although you can, of course, set the level and crossover controls such that your investment declaims its presence very obviously, the trick with these systems is to get them to add weight and scale to the sound without advertising their presence.

One of the best ways to ensure this, curiously, is to use music without obvious bass content during the setup process, like naturally recorded chamber music. If the sub enhances the sense of acoustic space without any clouding of the sound, its setup is close to optimum.

FINDING A MATCH

I used the R-505 with a pair of B&W 805S speakers, which aren't the easiest of stand-mounts to integrate with a sub because of the underdamped bass alignments that



ABOVE: The underslung control box and front-facing controls shown from below the REL

B&W uses, which initially decline in output quite gradually. The 805S has a specified –6dB frequency of 42Hz, which suggested that the R-505 would have to be used close to its minimum crossover setting, and this proved to be the case.

Set up in a corner of the listening room, in line with REL's instructions, and connected via the recommended high-level input from the power amplifier output terminals, the R-505 then gave a fine account of itself.

I have a suspended wooden floor, which inclines me to opposed-driver subs like the B&W PV1, which don't excite floor resonances. But mounted on spikes near to the room's periphery, the R-505 rarely gave itself away as a result of floor vibration.

FOR: Looks, size and sheer subtlety of performance

AGAINST: Some may find control knob settings difficult to see

What it did do was add hangover-free lower-octave oomph to all my favourite bass-intensive recordings, without crapping out at any replay level I would call comfortable.

What's more, it also proved itself subtle enough to enhance the scale of orchestral and chamber works without any sense of muddying, and without calling attention to itself. That's everything a good sub should do, and the R-505, sensitively set up, delivers. ☺

BELOW: Connections are made to phono or speaker inputs on aluminium rear panel



Hi-fi news
Verdict

REL R-505
£995

SPEC/FEATURES



SOUND QUALITY



BUILD QUALITY



VALUE FOR MONEY



All told, the R-505 is a fine subwoofer in the modern mould: compact, good looking and a convincing performer. Few users will require a sub capable of greater output capability, but those who want to achieve the very best results will buy two – one for each stereo channel. Meanwhile, remote control would make setup easier, but that's also true of many of its competitors. On this evidence, the R-series represents something of a watershed for REL.

Hi-fi news
OVERALL RATING **17/20**

Lab report

REL's novel EQ approach results in unusual behaviour as the R-505's crossover frequency control is adjusted. At the minimum setting, near-field measurement showed lower and upper –6dB frequencies at 13 and 57Hz, with maximum output at 29Hz. At the maximum filter setting the equivalent figures were 26, 80 and 53Hz, so the bandwidth actually narrowed a little, in octave terms, as the crossover frequency was raised. There was also an increase in output level of about 3dB, which may affect the setup process. LF roll-off was second-order (12dB/octave), HF roll-off approximately fourth-order (24dB/octave).

(Subsequent to making these measurements I was informed by REL that the review sample was a pre-production unit. Design changes have been made for production which extend the upper –6dB frequency to around 100Hz on the maximum crossover setting, in line with REL's specification.)

At an output level equivalent to 72dB SPL free-field at 3m (which equates to 90dB SPL at 3m in-room assuming 18dB boundary reinforcement from two adjacent walls and a floor), total harmonic distortion at 30Hz was 0.98%. At 80Hz, the THD (again for 72dB SPL free-field at 3m) fell to 0.24%.

A light piezoelectric accelerometer attached to the middle of one side panel indicated that the R-505's lowest cabinet resonance occurs at around 200Hz – comfortably above its working range.

Manufacturer's specifications

FREQUENCY RANGE:	25-100Hz
DRIVER:	12in (305mm) long-throw
AMPLIFIER:	500W class D
PROTECTION:	Over-current, over-voltage
DIMENSIONS:	428×382×420mm (hwd) including grille
WEIGHT:	26.3kg

Contact numbers

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Review system breakdown

SOURCE Townshend TA565 CD universal player
AMP Exposure XVIII Mono
SPEAKERS B&W 805S
CABLES Townshend Isolda

We listened to

SHEFFIELD LAB
DRUM & TRACK
DISC

First Impression Music
LIM XR 005

WOOD

Brian Bromberg
A440 Music Group 4001

MOZART CLARINET
QUINTET IN A

Antony Michaelson
1999, Musical Fidelity

