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GRAHAM AUDIO PRODUCTS

E N G L I S H H I F I D E L I T Y



CHARTWELL TM
CHARTWELL ELECTRO ACOUSTICS LIMITED

BBC LICENSED
MONITOR LOUDSPEAKERS



...hear the difference[©]

HANDCRAFTED IN GREAT BRITAIN





The BBC LS3/5A & LS3/5

The LS3/5A is perhaps the best-known of all the BBC monitor loudspeaker designs, which was originally evolved from the LS3/5. With the help of Derek Hughes, Graham Audio present both versions under The Chartwell badge.

The LS3/5 loudspeaker was originally designed by the BBC for use in a small environment and specifically to reproduce the sound of musical performance as accurately as possible. Only 20 original pairs of the LS3/5 were ever produced and due to a change in available components the LS3/5 was redesigned by the BBC as the LS3/5a.

Derek Hughes has recreated both 3/5s using bespoke drivers from Volt loudspeakers and Seas. The crossover networks have been developed using extensive research from the original BBC Kingswood Warren curves and physical testing, using Southampton University's anechoic chamber.

In common with all our BBC loudspeakers, the cabinet uses the classic BBC "thinwall" construction, where the panels are mass-loaded to ensure that resonances are moved away from the critical mid-range region, and a layer of Rockwool is secured by upholstery to provide air damping. The grille on the LS3/5 is carefully designed to minimise diffraction effects and is held in place by concealed rare-earth magnets. To support the authenticity of the original LS3/5A, Velcro is used in place of the magnets.



LS3/5A
CHARTWELL
LS3/5

System
Enclosure

Finish
Dimensions (w/h/d)
Weight
Frequency response

2 Way, sealed enclosure
Thin wall construction,
9mm birch plywood,
removable rear panel
Real wood veneer
19cm by 30cm by 17cm
5.3kg
70Hz to 20kHz, \pm 3dB

Nominal impedance LS3/5A
Nominal impedance LS3/5
Sensitivity
Maximum output
Bass/midrange
Tweeter
Recommended amplifier power

11 Ohms
9 Ohms
83dB SPL (2.83V, 1m)
95dB for a pair at 2m
110mm Bextrene
19mm Dome tweeter
25 to 50 watts unclipped programme



The Chartwell Sub 3

A compact passive sub-woofer, designed to be used in conjunction with the Graham LS3/5, but also applicable to other designs of similar sensitivity and impedance.

It is designed to be used close to a rear wall, with the main speakers in their normal 'free space' position and has a front facing reflex port.

It has connections on the rear for the input from the amplifier and output to the main speakers. There is also provision for feet or spikes to be fitted into the base of the cabinet.

The crossover uses high quality components, air core inductors for zero saturation distortion and polypropylene capacitors.



TM

**CHARTWELL
SUB 3**

Alignment 4th order Bandpass
Dimensions 30cm wide, 34cm deep, 30cm high
Frequency range 35Hz - 100Hz
(crossover point to main speakers)

Note - crossing over from the LS3/5 at 100Hz increases the combined system power handling as it relieves the main speaker of signal input at lower frequencies.

Sensitivity 84dB 1w 1m
Nominal Impedance 8 Ohms
Connections Gold plated terminals
Recommended Amplifier power 30 to 80watts





The Chartwell LS6

The Chartwell LS6, designed by Derek Hughes, is comprised of a custom built 6 inch long-throw bass drive unit mated to a compact 17 litre cabinet which gives bass extension and power handling that is comparable to the LS5/9.

The bespoke 19mm dome tweeter extends to beyond 20kHz. The overall response retains the smoothness of both the LS3/5 and LS5/9.

A large rear mounted port gives effortless bass, while allowing a minimisation of the cabinet to allow it to blend easily into typical domestic environments.

A sophisticated crossover network blends the two units and equalises the overall response for optimum performance in free space. A switch on the front baffle adjusts the tweeter level to +1dB or +2dB. This can be useful for situations where the listening position is off axis.

In common with all our loudspeakers, the cabinet uses the classic BBC "thinwall" construction, where the panels are mass-loaded to ensure that resonances are moved away from the critical mid-range region, and a layer of Rockwool is held in place by fabric to provide air damping. The grille is carefully designed to minimise diffraction effects and is held in place by concealed rare-earth magnets.



CHARTWELL
LS6

System	2 Way, reflex loading
Enclosure	Thin wall damped construction
Finish	Real wood veneer
Dimensions (w/h/d)	24cm by 37cm by 26cm
Weight	9.5kg
Frequency response	45Hz to 20kHz, \pm 2dB

Nominal impedance	8 Ohms
Sensitivity	87dB SPL (2.83V, 1m)
Maximum output	Over 100dB for a pair at 2m
Bass/midrange	165mm Polypropylene
Tweeter	19mm Dome tweeter
Recommended amplifier power	50 to 150 watts unclipped programme





The BBC LS5/8

The LS5/8 is the BBC's flagship design, and was developed because of the need for higher sound pressure levels and greater transparency and consistency. This was the first BBC loudspeaker to use a polypropylene diaphragm which, being lighter than Bextrene, offered greater efficiency and lower colouration. A carefully researched cone profile enabled the unit to work successfully well into the midrange.

After many months of intensive development, the Graham Audio LS5/8 refined the concept further. Designed in conjunction with Derek Hughes and Volt Loudspeakers, and manufactured under license in the UK, it features a unique 12 inch bass/mid unit that is married to the same 34mm Audax tweeter used in the LS5/9.

The design retains the same midrange clarity and balance of the LS5/9, but offers an extended bass response and greater authority at higher level in larger rooms. The continuity of sound quality between the two designs means that engineers can move between the two different loudspeakers with complete confidence during the recording and mastering process.

The LS5/8 was originally conceived as an active design, but Derek Hughes has designed a passive crossover that greatly improves on the resolution and imaging of the original design while still conforming to the demanding BBC specification.

LS5/8

BBC LICENSED MONITOR LOUDSPEAKER

System	2 Way, reflex loading
Enclosure	Thin wall construction, birch plywood
Finish	Real wood veneer
Dimensions	76cm by 46cm by 40cm
Weight	34kg
Frequency response	40Hz to 16kHz, \pm 3dB

Nominal impedance	8 Ohms
Sensitivity	89dB SPL (2.83V, 1m)
Maximum output	Over 110dB for a pair at 2m
Bass/midrange	300mm Diaphnatone polypropylene
Tweeter	Son Audax HD13D34H
Recommended amplifier power	50 to 250 watts unclipped programme





The BBC LS5/9

Designed for use by the BBC in smaller studios and control rooms, the LS5/9 is a close sonic match for the larger LS5/8. Equally at home in a domestic setting, the open and expansive mid-range reveals previously unheard details from even the most familiar recordings.

With Derek Hughes at the drawing board, the original BBC design has been recreated. A new bass/midrange driver has been developed in conjunction with Volt Loudspeakers. It uses a substantial die-cast aluminium frame and a massive motor assembly, allied to a diaphragm formed from a selected grade of polypropylene and matched to a high quality rubber surround. Each bass driver is hand-assembled and tested by Volt.

The tweeter is a selected version of the Audax 34mm soft dome, which is protected by a strong metal grille. A sophisticated crossover network blends the units together and equalises the overall response for optimum performance in free space.

The cabinet uses classic BBC "thinwall" construction, and is manufactured in the UK from high quality 9mm birch plywood. All joints in the cabinet are reinforced with hardwood batons to ensure long life and total air sealing. The panels are mass-loaded to ensure that resonances are moved away from the critical mid-range region, and a layer of Rockwool held in place by fabric provides air damping. The grille, machined from a single piece of 9mm birch plywood is held in place by concealed rare-earth magnets.

LS5/9

BBC LICENSED MONITOR LOUDSPEAKER

System	2 Way, reflex loading	Nominal impedance	8 Ohms
Enclosure	Thin wall construction, birch plywood	Sensitivity	87dB SPL (2.83V, 1m)
Finish	Real wood veneer	Maximum output	Over 100dB for a pair at 2m
Dimensions (w/h/d)	28cm by 46cm by 27.5cm	Bass/midrange	200mm Diaphnatone polypropylene
Weight	14kg	Tweeter	Son Audax HD13D34H
Frequency response	50Hz to 16kHz, \pm 3dB	Recommended amplifier power	50 to 200 watts unclipped programme





Beautiful hand-matched, real wood veneers.
A choice of four classic finishes: Cherry, Oak, Rosewood or Ebony



H A N D C R A F T E D I N G R E A T B R I T A I N





VOTU

The VOTU brings new levels of refinement and authority to the discerning home enthusiast and professional user alike. Building on the research and development that delivered the bespoke SYSTEM 3D to the Royal Opera House in Covent Garden, London

The VOTU uses two 10" drivers which cover the bass frequencies and extend up to 800Hz, where a refined 3" soft dome driver takes over. This covers the critical midrange region until 4kHz, at which point the high power 34mm soft dome tweeter comes into play. The midrange dome is mounted above the tweeter to improve the integration between dome and tweeter.

The crossover network uses high grade capacitors and air core inductors that do not saturate at high power levels. These premium components ensure that harmonic distortion is kept at extremely low levels for maximum preservation of low-level detail.

As with all Graham Audio loudspeakers, the cabinet follows BBC "thinwall" practice, where careful damping of the relatively thin panels is designed to move all colouration away from the midrange area where the ear can be most sensitive to low-level resonances.

This flagship system maybe used with amplifiers up to 1000 watts per channel, and is capable of a breathtaking dynamic performance.

VOTU
THE VOICE OF THE UNIVERSE

System
Enclosure
Finish
Dimensions (w/h/d)
Weight
Frequency response
Nominal impedance

3 Way, reflex-loading
18mm birch plywood
High-gloss painted and lacquer finish
37cm by 116cm by 43cm
65kg
38Hz to 18kHz, ± 3 dB
8 Ohms

Sensitivity
Bass
Midrange
Tweeter
Crossover frequencies
Recommended amplifier power

88dB SPL (2.83V, 1m)
Two 250mm bass units
75mm Dome
34mm Dome
800Hz, 4kHz
250 to 1000 watts unclipped programme

