DALI 15a

Congratulations on your fine judgement. In its class the DALI 15a is one of the very finest loudspeakers on the market. To get the maximum performance from DALI 15a we recommend that you read this manual before installing your new speakers.

INDEX

POSITIONING

DISTANCE FROM WALLS

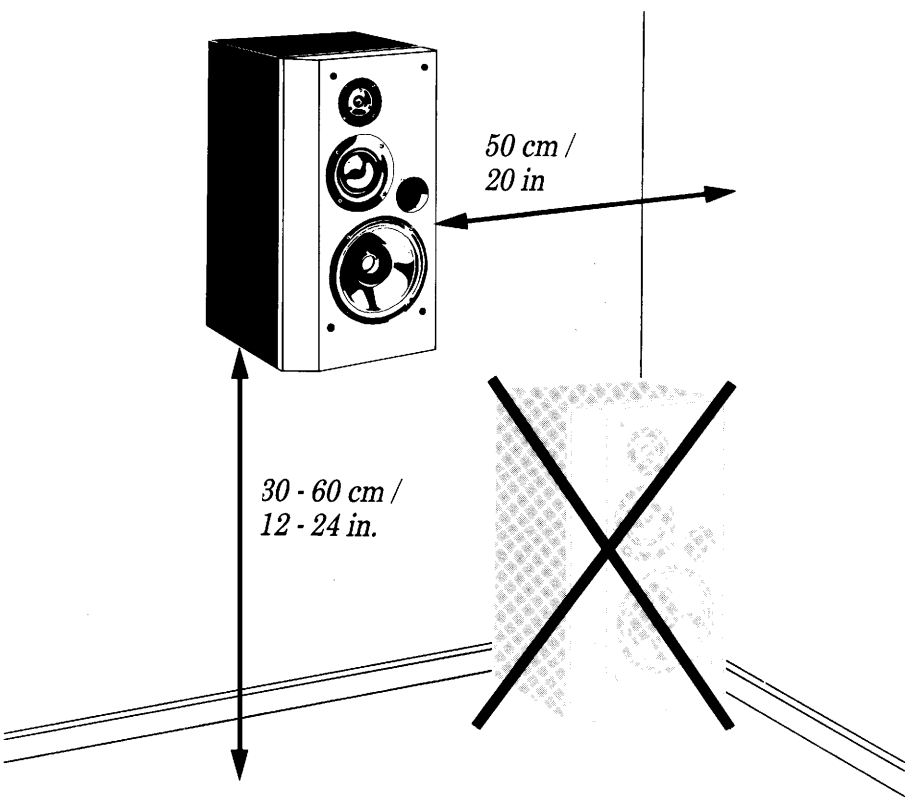
DALI 15a gives the best sound reproduction when placed on a speaker stand at a height of 30 cm (12 in). They may be close to the back wall but should not be placed at a distance of less than 50 cm (20 in) from the side walls.

Alternatively DALI 15a may be placed on the wall or on a bookcase.

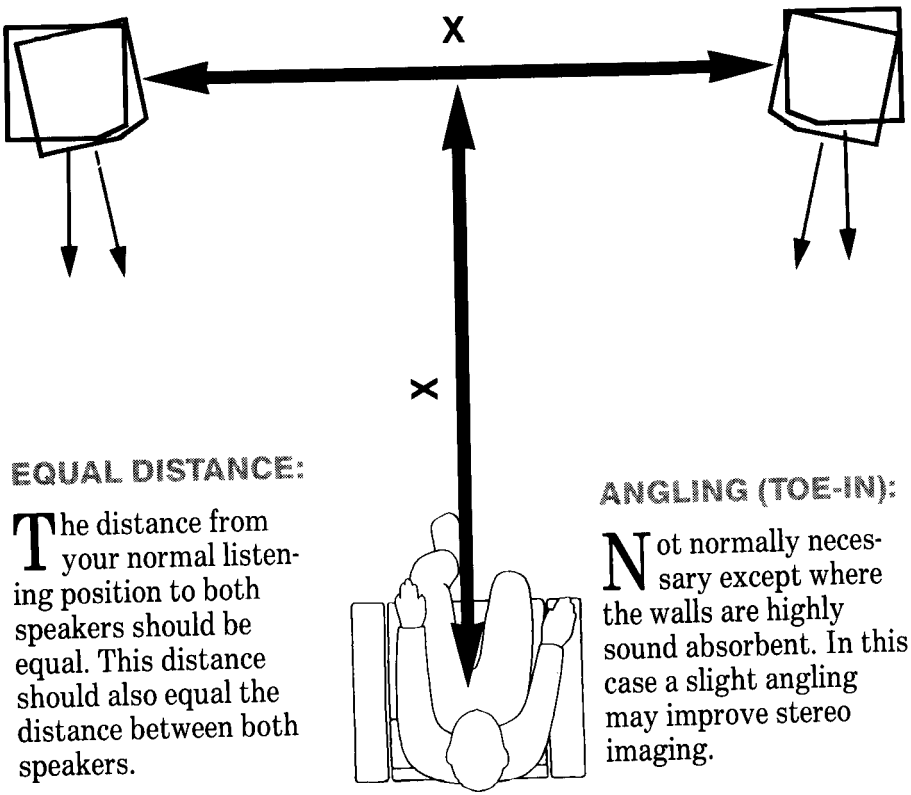
Please note that DALI 15a is provided in mirror-imaged pairs. The right speaker has oblique bevelling on the left, and the left speaker has oblique bevelling on the right.

Dali 15a should be placed vertically.

Corner location should be avoided.



POSITIONING



EQUAL DISTANCE:

The distance from your normal listening position to both speakers should be equal. This distance should also equal the distance between both speakers.

ANGLING (TOE-IN):

Not normally necessary except where the walls are highly sound absorbent. In this case a slight angling may improve stereo imaging.

SIGNAL SOURCES

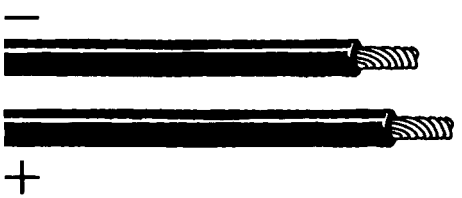
We recommend the use of the best speaker cables and, especially, a very good turntable or CD-player.

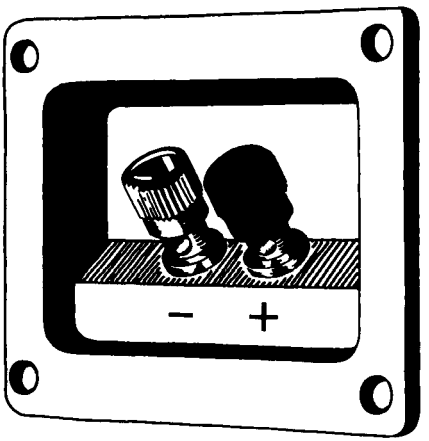
Limited sound reproduction is often caused by misadjustment and/or weak signal equipment.

CONNECTION

The gold plated terminal on DALI 15a makes it possible to use banana plugs or heavy bared wires for amplifier connection.

IMPORTANT!
Turn off the amplifier when you are working at loudspeaker connection!

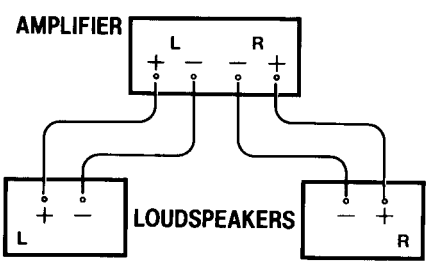




PHASING

To get true stereo-reproduction it is necessary that the loudspeakers are phased correctly. Always connect the amplifier + to the loudspeaker +, and the amplifier — to the loudspeaker —.

On most speaker cables one of the leads will have an indication making it easy to do this the right way.



DAILY USE

The main point here is: enjoy the music! The only regular maintenance required is occassional cleaning of the surfaces.

WOOD:
Dust with cloth.

TEXTILE FRONT:
Brush with a clothes-brush or vacuum clean with a brush attachment.

The Bass System

The bass performance of DALI 15a is a result of much experimentation to determine the optimum balance between enclosure volume, lower cut-off frequency and efficiency. As every speaker designer knows, these three parameters are directly related and it is the correct balance of compromises that makes for a successful design. We wanted to keep the internal volume of DALI 15a at 29 litres, thus sacrificing something in terms of either efficiency or lower limit. A reference output of 115 dB at 1 metre stipulated a cut-off frequency of 38 Hz. This reference efficiency is directly comparable to DALI 7a. However, by virtue of its greater volume, DALI 7a plays 4 Hz lower in the bass.

A short explanation of the physics concerning bass response is in order here. The bass capabilities of a speaker follow a quadratic function: That is for every octave of extra bass performance, four times as much air must be moved. To achieve good efficiency with a -3 dB point of 38 Hz requires a bass driver with special construction techniques. It must have both a very large magnet sytem and a very long linear excursion limit. It is this design that we have implemented for DALI 15 a, along with a thick (1 mm) polypropylene cone and an enormous magnet assembly - equal to that used by DALI 7a. Due to its smaller size, however, efficiency is somewhat lower and to compensate for this we have changed the impedance to 6 Ohms. This has the effect of drawing more amplifier current, hence maintaining high efficiency (for the same volume control setting).

The system is a pure 4th order Butterworth type, tuned in to provide flat response through the pass band.

The Midrange and Treble System

The midrange driver is the same 3" dome unit employed in DALI 7a. It is fabricated from a textile compound which is first impregnated then later surface-treated with a damped compound. The driver is mounted in a large double chamber sub-enclosure, and the result is exceedingly neutral response from 600 Hz to 4000 Hz.

With increasing frequency, dome drivers become progressively smaller acoustically with the result that the centre stops oscillating entirely and eventually only the voice-coil assembly moves. Hence a transition must occur from piston action to breakup mode, and it is the quality of the surface treatment that dictates how smooth this will be. With correct application this can be accomplished extremely smoothly resulting in very flat frequency response. This critical process of coating the dome is accomplished by hand, requiring great skill and precision.

Since we make such stringent demands on this process, we are assured of receiving the best of the production. Accordingly we must pay more, but the extra quality more than compensates for the additional outlay.

For frequencies 3000 Hz and upwards, a ¾" metal dome unit is used. This driver has been designed with equal care and precision. The magnetic circuit is built around a solid core and bottom plate, providing less magnetic loss and maximum flux density across the air gap. In addition it has the extra advantage of blending particulary well with the rest of the system.

Linear Directivity Crossover Design

Expressed simply, this concept involves smooth frequency response measured both on axis and off axis at very wide angles. This very critical and largely overlooked performance parameter tells us much about the final »room interface«. The basic theory is that the frequency composition of reflected sound should not be significantly different from what we can measure conventionally, that is at 1 metre on axis.

We stipulate that the response measured at angles of up to -70 degrees should not be significantly different from that measured at 0 degree. Only if this area is optimised will real smothness and precise imaging be achieved. In practice, linear directivity is achieved by matching the crossover frequency directly to the driver's diameter and employing asymmetric 40 dB/Decade (12 dB/Octave) and 60 dB/Decade (18 dB/Octave) slopes. Only the finest components are used: heavy coils, metallised polypropylene capacitors and LC-OFC cable.

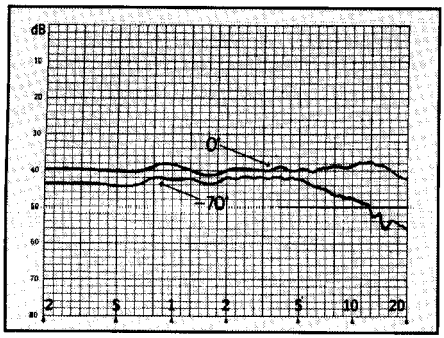
The Enclosure

No loudspeaker is better than its enclosure. This sounds simple, but cabinet design is as complex a science as any other area in loudspeaker construction. It has been proved empirically that control of enclosure resonances is crucial, especially those with a wide low Q nature. Therefore, we spare no effort to construct cabinets synthesising thickness of walls, bracing, materials and damping.

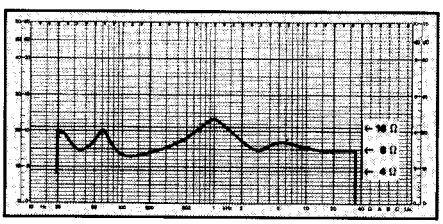
The research into cabinet behaviour includes three dimensional accelerometer measurements to closely monitor behaviour of resonances. In conjunction with many hours of listening tests, these techniques have given us the DALI 15a cabinet - one of the finest in production regardless of price. The front baffle is fabricated from 50 mm high density fibre board, the back from 20 mm closely pressed hardboard and the sides of 22 mm premium grade chipboard. Veneer is used on both sides to control resonances further. The massive front baffle and the staggered thickness provide truly »boxless« quality to the sound.

Dali 15a is a design based on research and understanding, not guesswork and chance. And each component has been chosen to »integrate« particulary well with the whole system, the result is truly outstanding, a speaker which must surely rank in the top of its class.

MEASUREMENTS



Frequency response on axis and 70° off axis.



Input impedance.

SPECIFICATIONS

Cabinet type	B4 bassreflex
Drivers	
Woofer	10", super long stroke
Midrange	3", dome
Tweeter	3/4", metal dome
Crossover	Linear Directivity. 1st. quality components
Crossover frequency	1000 Hz, 3000 Hz
Impedance	8 ohms
System resonance	36 Hz
Frequency response ± 3 dB	38-25,000 Hz
Listening window ± 2 dB hor.	140°
ver.	+9°, -7°
Sensitivity (2.8 V)	89 dB/1m
Recommended amplifier power ratings	20 to 200 W/channel
Dimensions	
Height	54 cm (21 1/3")
Width	29.5 cm (11 2/3")
Depth	31.5 cm (12 1/2")
Net Weight	15.5 kg

Specifications are subject to change without notice in the course of product improvement.