



Dutch & Dutch

8C

Owner's manual

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DUTCH & DUTCH

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Important safety information

Read this manual before first use and retain it for future reference

Follow all safety instructions

- **Electrical safety**

This is a Class I appliance which requires a protective earth connection. Always ensure that the device is properly grounded.

Take care to route the power cord in such a manner that it is unlikely to be pinched, walked on, or stressed in any other way. If the power cord is damaged, replace it with an equivalent type.

Unplug the power cord during a thunderstorm or when the product is left unused for a long time.

- **Moisture**

Do not use this product in moist or wet conditions. Make sure that no liquids can be spilled or splashed on the product. Do not place objects containing liquids on the product. If liquid should spill into the product, do not use it anymore. Unplug the power cord and have the product serviced by a qualified technician.

- **Heat and ventilation**

This product contains components that can get warm and require proper ventilation in order to function properly. Do not block any of the ventilation openings on the bottom panel.

Additionally, make sure not to use the product in the direct vicinity of a heat source.

- **Sound pressure**

Professional audio equipment is capable of producing sound pressure levels that can cause hearing impairment. Local laws regarding exposure to such sound pressure levels should be observed and hearing protection should be used if necessary.

- **Rigging and mounting precautions**

When mounting or installing loudspeakers, use accessories that have been approved by Dutch & Dutch. This is the only way that safe operation is guaranteed. Furthermore, make sure that all load-bearing components and structures have suitable load limits, taking legally applicable safety factors into account.

When either mounting accessories or rigging points on the loudspeaker cabinet have visible damage such as cracks, corrosion, bending or warping, damaged screw threads and so forth, the affected device should be taken out of service immediately. Safe operation can not be guaranteed when any damage is present. Perform a thorough visual inspection before use to ensure that this is not the case.

- **Cleaning**

Use only a dry or damp cloth to clean the product.

- **Maintenance and service**

This product may only be serviced by a qualified technician. Any attempt at servicing or disassembling the product beyond the measures explicitly mentioned in this manual will void the manufacturer's warranty.

IF YOU HAVE A QUESTION ABOUT THE TECHNOLOGY, DESIGN, SPECIFICATIONS, OPERATION, ACCESSORIES OR APPLICATIONS OF YOUR DUTCH & DUTCH PRODUCT, PLEASE DO NOT HESITATE TO CONTACT US AT SUPPORT@DUTCHDUTCH.COM

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General information

Introduction

Congratulations on your purchase of the Dutch & Dutch 8c.

The Dutch & Dutch 8c is a powerful studio monitor for listening distances from 0.8 meter upwards. Its advanced electronics and software provide many filtering, system integration, and equalization options.

This manual contains information on how to handle, install and use the product, how to maintain its quality and important safety instructions.

Quality assurance & control

Every Dutch & Dutch product is thoroughly inspected and tested before shipping. If, upon arrival, there is any sign of damage or if the product is malfunctioning, please do not throw away any of the packaging material and immediately contact your Dutch & Dutch sales representative.

Contents of the box

The box should contain:

- 1 Dutch & Dutch 8c loudspeaker;
- 1 IEC power cord matching your regional power outlets;
- 1 CAT5e network cable;
- 1 pair of gloves; for carefully handling your loudspeakers
- Per set of two 8c's, 1 manual and 1 AES terminator should be included.

If any of these items is missing, please contact your Dutch & Dutch representative.

Product configuration

Tweeter and waveguide

A ferrofluid-enhanced 1" aluminium-magnesium dome tweeter is coupled to an 8" constant directivity waveguide. Thanks to extensive optimization of the waveguide, baffle dimensions and baffle edge roundovers, its frequency response is virtually flat, both on and off-axis. The stiff and light membrane is resonance-free throughout the audible frequency range.

Midwoofer and acoustic cardioid cabinet

The 8" woofer has a light, stiff aluminium cone. Its high stiffness and advanced surround design suppress resonances in the woofer's operating range. The long voice coil is wound around an aluminium former, providing high power handling and low thermal compression.

The acoustic cardioid cabinet reduces rearward radiation by over 15 dB, for improved flexibility of loudspeaker placement in the room and flat power response. As an additional advantage, the semi-open cabinet reduces panel vibrations and cabinet colouration to an absolute minimum.

Subwoofers and sealed cabinet

The rear section of the cabinet houses two long-stroke, high-power 8" subwoofer drivers in a sealed cabinet. The low-Q alignment results in tight, controlled, and extended bass. The subwoofers are crossed over with a 4th order Linkwitz-Riley filter at 100 Hz.

Cabinet construction

The exterior panels of the cabinet are made of 19 mm solid oak wood, whereas the internal construction is made of 18 mm birch plywood. In combination with rabbeted joints and extensive bracing, this results in a strong, rigid construction.

The front baffle is made of spray painted ABS and damped with a special sound deadening compound to prevent resonances. It is invisibly affixed with six threaded steel rods.

Crossover and electronics

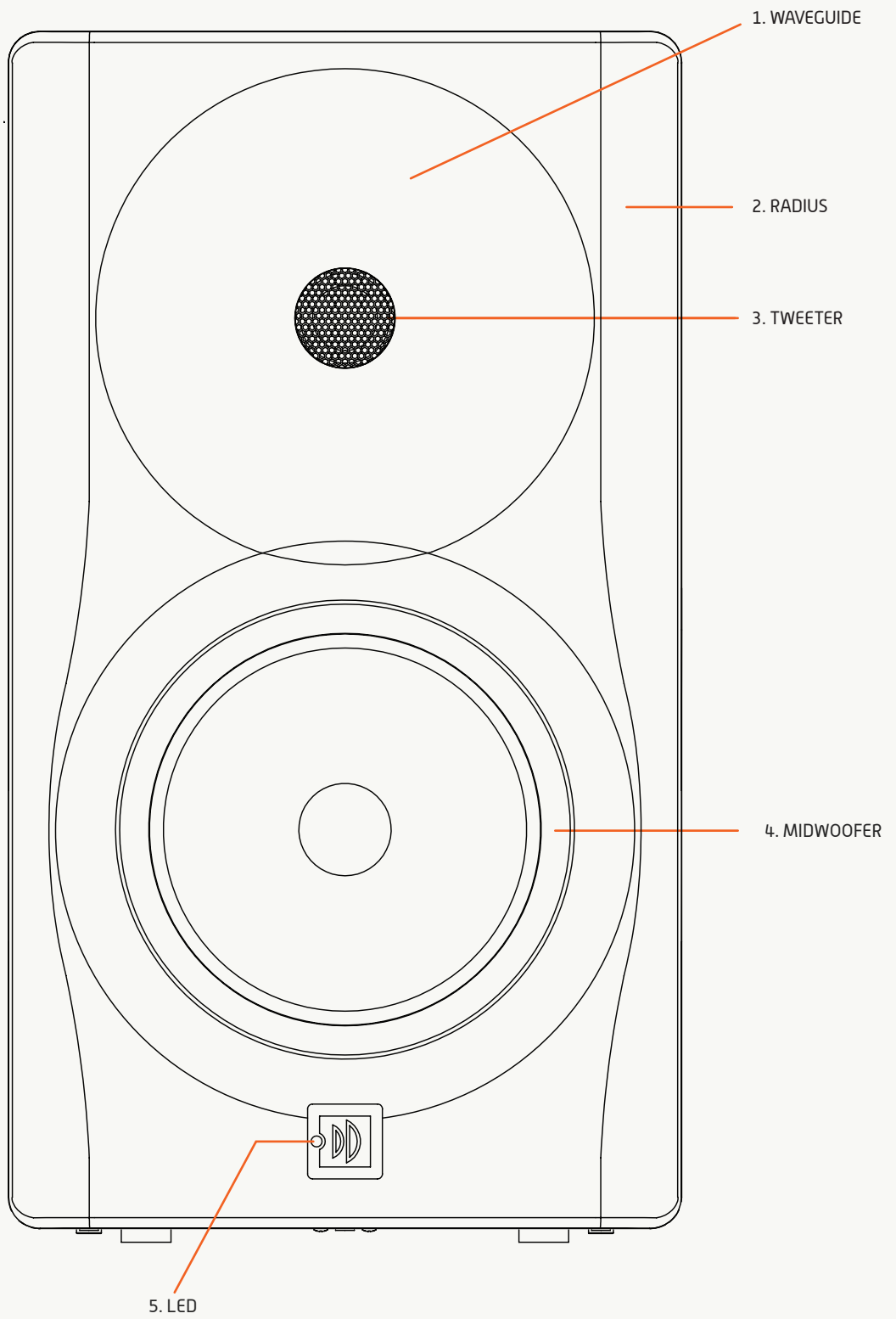
The midwoofer and tweeter are crossed over with a 4th order Linkwitz-Riley filter at 1250 Hz for optimal driver integration and minimal interference. FIR filtering ensures a linear phase perfect impulse response.

A separate compartment houses the amplifiers, which provide 500W to the subwoofers, 250W to the midwoofer and 250W to the tweeter, as well as the signal processing and communication electronics. Filtering, Active Room Matching and equalization options are accessible through a platform independent web-app, which is hosted on your 8c itself.

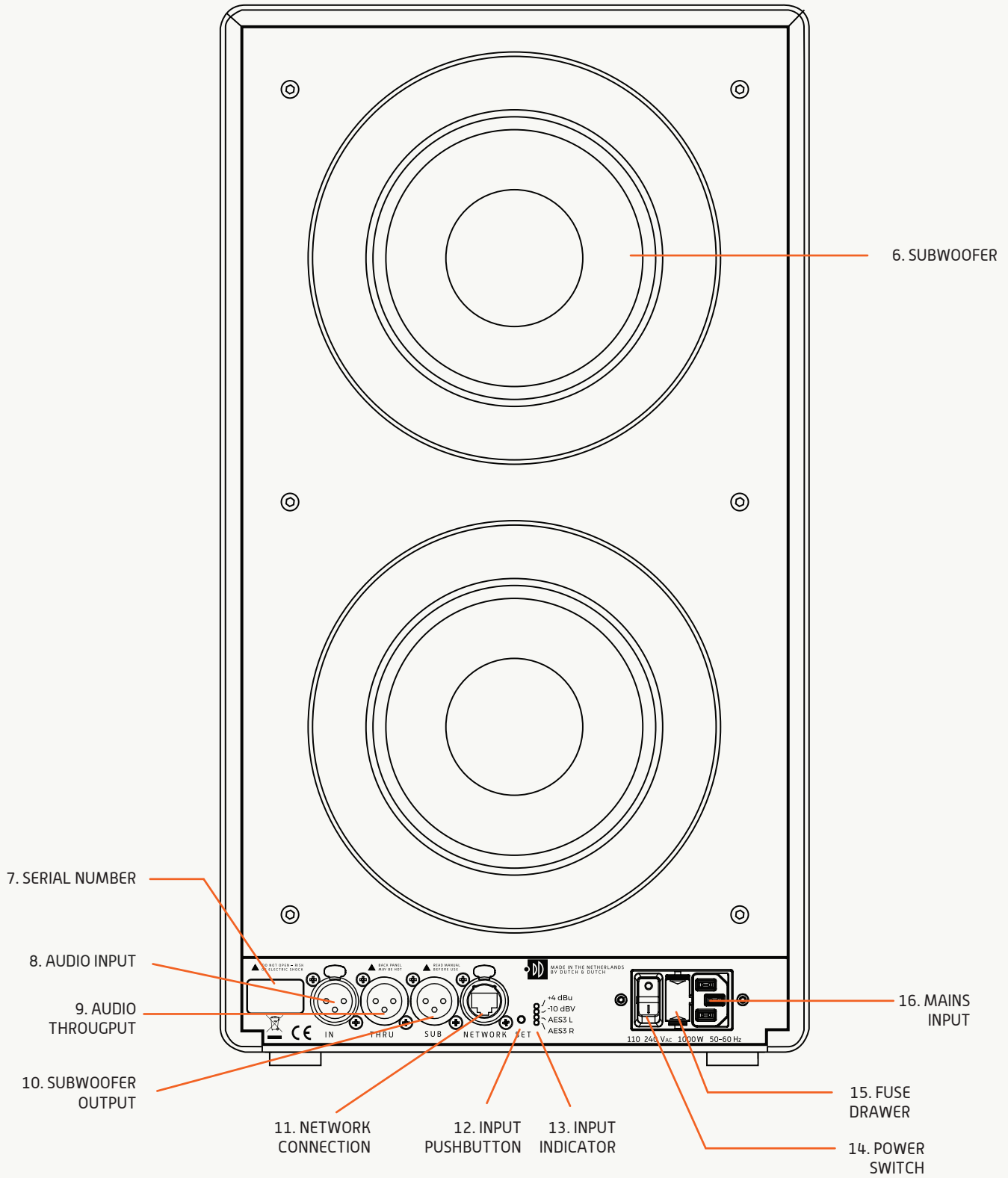
Browse to [http://8c-<serial number>](http://8c-
<serial number>) or [http://8c-<serial number>.local](http://8c-
<serial number>.local) (dependent on your browser configuration) to open the app. For serial number 123, browse to <http://8c-123> or <http://8c-123.local>.

The app can also be found online at www.lanspeaker.com.

Front panel overview



Rear panel overview



Product operation

Connecting to mains power

The 8c accepts AC mains voltages between 110V and 230V and net frequencies between 50 and 60 Hz. There is no difference in amplifier output power between 110V and 230V mains voltages. An IEC power cord, suited to your regional power outlets, is supplied with the 8c. Plug it into the IEC receptacle (16), then plug the other end into your wall socket.

Status LED

The LED on the 8c's functions as a status indicator.

- Off: the loudspeaker is switched off entirely OR the led is disabled via the app.
- On: the loudspeaker is switched on.

In case the illumination of the logo is undesirable, it can be switched off from via the app or www.lanspeaker.com. Please keep in mind that the loudspeaker's status can only be monitored through the app in this case.

Connecting to a local area network

The 8c has an RJ45 receptacle (11), which can be used to connect to your local area network (LAN), allowing the Dutch & Dutch app to find your speakers.

The 8c will work perfectly without a LAN connection: it is only required in case you wish to access settings.

Audio input

The 8c can be connected to either digital (AES3) or (preferably balanced) analog sources. A female XLR connector labelled 'in' (8) is used to present these signals to the 8c. Make sure the correct preset is selected (see "Settings").

Although it may be possible to connect unbalanced sources with adapter cables, proper functioning with regard to hum and noise is not guaranteed. Dutch & Dutch strongly recommends that balanced

sources be used in order to obtain optimal gain and sound quality.

Outputs

AES3 signals can be looped through the 8c. A male XLR loopthrough connector labelled 'thru' (9) can be used to loop the signal through the 8c. Make sure that both loudspeakers are set to the correct AES3 channel in case you are looping an AES3 signal from one 8c to the other. (See "Settings").

The second male XLR connector is labelled 'sub' (10), which is a balanced analog output intended primarily for use with an external active subwoofer.

The sub output has no standard pre-set filters; it can also be used as a fullrange filtered output for other applications than a subwoofer.

Settings

Basic settings can be adjusted with either the app or the "Set input" pushbutton (12) on the rear panel. The webapp can be reached in two ways:

1. Via www.lanspeaker.com, where you speakers automatically will show up if they are connected to the same network as the computer, tablet or smartphone you are accessing the website on
2. By connecting to your speaker directly; in your browser, enter 'http://8c-serial#'; e.g. 'http://8c-123'.

Pushing the "set input" button briefly will toggle the input setting between the analog high level (+4 dBu), analog low level (-10 dBV), AES3 left channel, AES3 right channel and AES3 mono input settings. The four LEDs indicate the selected setting.

- Analog high level (+4 dBu): this setting should be used with professional audio equipment that uses the +4 dBu alignment level. The maximum peak input level before clipping is +24 dBu.

- Analog low level (-10 dBV): this setting can be used with equipment that has a lower output level, such as consumer electronics. The maximum peak input level before clipping is +10 dBV.
- AES3 left (AES3 L): the left channel of a supplied AES3 signal will be used.
- AES3 right (AES3 R): the right channel of a supplied AES3 signal will be used.
- AES3 mono (both "AES3 L" and "AES3 R" indication LEDs are illuminated): the AES3 signal will be mixed to a mono signal.

Cooling fan

The 8c is equipped with a hybrid cooling system. During normal use, natural convection cooling will suffice to keep the amplifier and electronics at normal operating temperature range. In case of heavy use, a fan provides additional cooling as necessary. The fan speed is regulated to maintain a low noise level.

In case of extreme overheating, the 8c will shut down to prevent damage to its electronics.

Fuse

A 10A fuse is located in the fuse drawer (15) in between the mains input and power switch. If the loudspeaker should not switch on upon operation of the power switch, inspect the fuse to make sure that it is intact. Disconnect the power cable and pry open the fuse drawer with a small flat screwdriver and, if necessary, replace the fuse inside. Make sure to use the correct rating (10A).

If a fuse fails, it is most likely due to an internal electrical fault and replacing the fuse will not solve the problem. In case the new fuse also fails, the product needs to be serviced.

Sound optimization

Besides having constant directivity, the 8c has a very flat power response. These traits make it relatively insensitive to acoustic imperfections of the listening room.

Carefully positioning and configuring the 8c will result in remarkable in-room performance.

Basic triangle

When using 8c's in a two-channel stereo setup, position them in an equilateral triangle with your listening position.

Listening distance

The normal equalizer settings for the 8c yield a perfectly flat response at listening distances of 1 metre (3'3") or more.

The strength of the (accurate) direct sound from your monitors decreases by 6 dB per doubling of the listening distance. However, the strength of the (uncorrelated) reverberant sound in your room is more or less constant. As such, choosing a smaller listening distance will increase the ratio of direct to reverberant sound, which increases clarity. Listening from a larger distance makes the soundscape more spacious.

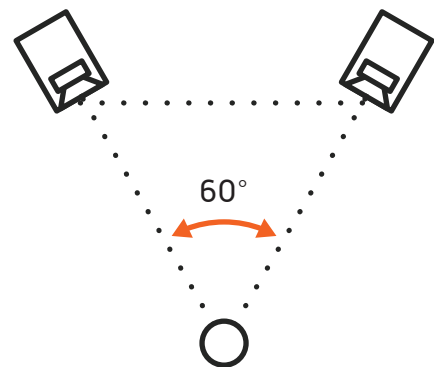
Listening height

The reference axis of the 8c is perpendicular to the baffle and equidistant to the woofer and tweeter axes, 26.5 cm from the bottom. The loudspeakers should ideally be positioned in such a manner that the axis is near ear height. However, as long as you are within around 15° of the vertical reference axis, variations in frequency response are near imperceptible.

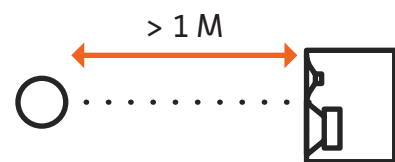
Toe-in

The horizontal on and off axis frequency responses of the 8c are very similar; the 8c sounds virtually the same whether you're straight in front of it or at an angle of up to 45°. As such, the direct sound will not be significantly affected by toeing the loudspeakers in (aiming them at or in front of your listening position) or out (aiming them so that they are parallel to each other). This, in turn, allows you to adjust stereo imaging without compromising the spectral balance of the sound.

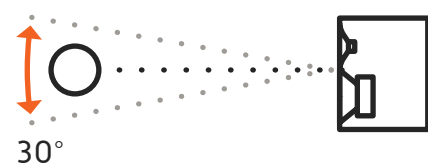
Generally speaking, more toe-in will yield a more focused, precise, and drier sound by reducing the strength of lateral



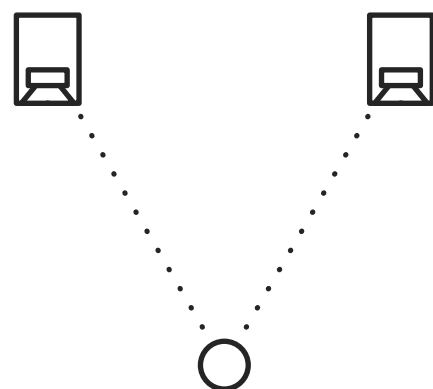
A two-channel stereo setup



Recommended listening distance

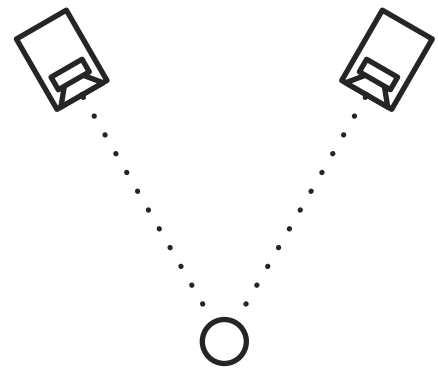


Recommended listening height

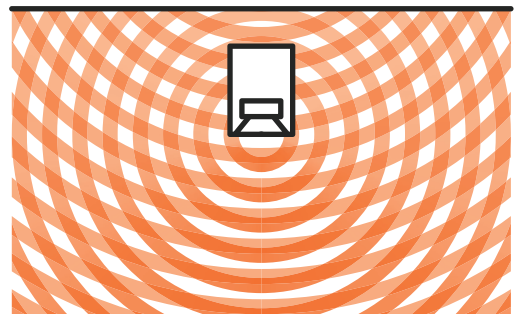


A setup without toe-in

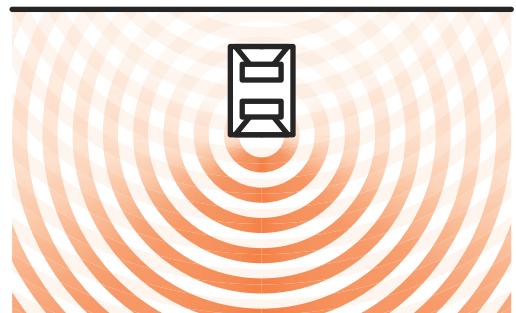
reflections from 100 Hz upwards. Using less toe-in will increase lateral reflections, usually resulting in livelier sound and a wider perceived sound stage. You can experiment with different toe-in angles to tweak the stereo image to your requirements or taste.



A setup with toe-in



Conventional speaker showing interference due to early reflections



The 8c's directional design avoids early reflections

Boundary Coupled Bass (BCB)

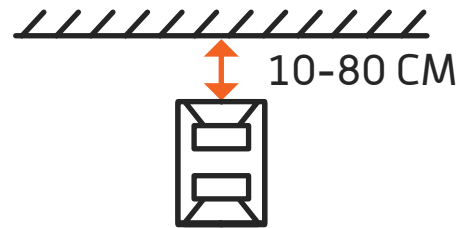
By placing the 8c's close to the front wall*, the two rear-firing subwoofers of the 8c can be used in boundary coupling mode. When the 8c and the wall are acoustically coupled, the two will effectively act as a single source. In the 8c Boundary Coupled Bass (BCB) has three advantages:

- Boundary coupling avoids the destructive interference between the speaker's direct sound and the boundary reflection.
- Low frequency headroom is increased by up to 6 dB.
- Increased directivity in the bass, for a good directivity match between the Boundary-Coupled Bass and the cardioid midrange.

With conventional loudspeakers, boundary coupling has significant drawbacks. That is because placement close to the wall negatively affects the sound quality in the midrange. In the midrange the front-wall reflection will cause coloration and smearing in the time-domain. The problems in the midrange do not outweigh the advantages of boundary coupling in the bass. However, thanks to the high directivity of its acoustic cardioid cabinet and its internal Digital Signal Processor the 8c can take advantage of boundary coupling and retain perfect clarity in the midrange.

For boundary coupling to work best, place the 8c between 10 and 50 cm from the front-wall. Placement within this range of distances will result in a maximum increase of headroom by up to 6 dB and a phase-coherent first-wave front without smearing in the time-domain.

When the 8c's are placed farther than 50 cm from the front-wall, there will be some time-smearing of the wave-front, caused the gradual falling apart of the



Distance range for boundary coupling

acoustic coupling between the 8c's subwoofers and the wall. Although front-wall distance presets will correct for part of the negative effects of reflection, as you move the 8c farther from the front-wall, you will progressively lose the benefits of BCB.

You can further flatten the in-room response with the parametric equalizer if necessary. Dutch & Dutch recommends that you use in-room measurements to properly optimize the equalizer settings.

Generally speaking, the closer to the wall, the better boundary coupling works. However, the subwoofers need some free space to operate properly. Therefore, make sure that there is at least 10 cm between the rear wall and the rear of the cabinet.

Technical specifications

DRIVERS:	LF: 8" ALUMINIUM CONE (2X) MF: 8" ALUMINIUM CONE HF: 1" ALUMINIUM / MAGNESIUM ALLOY DOME
CROSSOVERS:	100 HZ & 1250 HZ, 4TH ORDER LINKWITZ-RILEY, LINEAR PHASE
ENCLOSURE TYPE:	LF: SEALED MF: ACOUSTIC CARDIOID
MAX LINEAR SPL @ 1M:	106 DB CONTINUOUS FROM 35 HZ UPWARDS*
AMPLIFIER POWER:	LF: 500 W MF: 250 W HF: 250 W
AMPLIFIER TYPE:	CLASS D, POWER FACTOR CORRECTION, HYBRID COOLING
MAINS INPUT VOLTAGE:	110V – 230V AC, 50 – 60 HZ
DIMENSIONS (H X W X D):	485 X 270 X 380 MM (19 X 10.5 X 15 IN)
WEIGHT:	26 KG (57 LBS)
CABINET CONSTRUCTION:	SIDE AND TOP PANELS: 19 MM SOLID OAK WOOD INTERNAL CONSTRUCTION: 18MM BIRCH PLYWOOD OUTER Baffle: INJECTION MOULDED ABS, DAMPED
ANALOG INPUT:	BALANCED AUDIO OVER XLR SENSITIVITY SWITCH: +4 DBU / -10 DBV PEAK INPUT LEVEL: +24 DBU [+4 DBU SETTING]
ANALOG OUTPUT:	DSP CONTROLLED OUTPUT FOR ACTIVE SUBWOOFER
DIGITAL INPUT:	AES3 OVER XLR LEFT / RIGHT / MONO CHANNEL SWITCH
DIGITAL OUTPUT:	AES3 LOOP THROUGH OVER XLR
NETWORKING:	ETHERNET OVER RJ45
PROTECTION FUNCTIONS:	THERMAL DC / CLIPPING

*IN HALF SPACE RADIATION CONDITIONS

Limited warranty

Dutch & Dutch designs its products for longevity and uses only the best available components. However, no amount of care can fully exclude product failure. In the unfortunate event that the product malfunctions, we will repair or replace it.

Coverage

The Dutch & Dutch limited warranty on this product is valid for 2 years after the first consumer purchase and covers any defect or failure directly attributable to faulty design, materials, and workmanship. Warranty is extended to 5 years after product registration. The Dutch & Dutch limited warranty does not cover:

- Damage sustained during shipment;
- Damage resulting from improper use, abuse, accidents, neglect, or failure to comply with the safety instructions in this manual;
- Damage resulting from repairs or modifications made by anyone who is not a technician approved by Dutch & Dutch;
- Damage to any product on which the Dutch & Dutch serial number is missing, illegible or modified;
- Claims based on misinformation or misrepresentation by a reseller.

Handling

If your product is faulty, contact your Dutch & Dutch dealer or reseller. The product will be investigated, and if necessary you will receive instructions on how to ship the affected product to us.

If the fault is covered by warranty, Dutch & Dutch will pay all expenses involved in repairing or replacing the product and shipping it back to you.