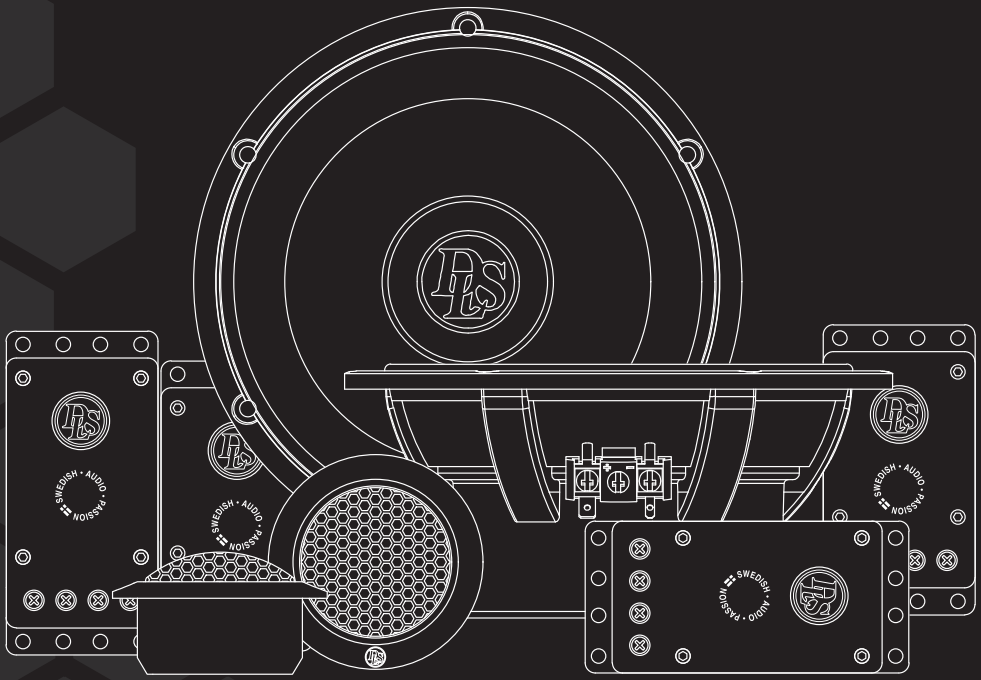
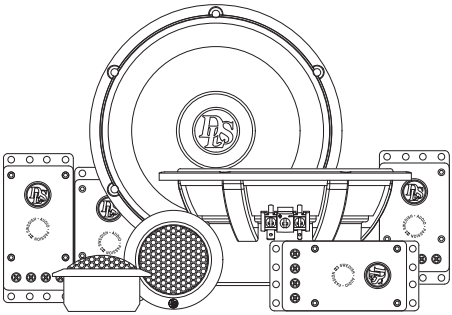


RC6.28

User Manual

Classic 6.5" Component Kit

REFERENCE



DLS REFERENCE

RC6.28

Welcome to DLS!

Thank you for purchasing DLS Reference RC6.28 2-way component kit. For us, it's all about the sound experience. We care deeply about sound and construction quality. In order for your experience to be as optimal as possible, it is important that you fully read this manual, preferably before you start your installation. Keep the manual in a safe and accessible place for future reference.

Your speakers must be installed correctly in order to work as intended. Make sure you have all necessary tools nearby before starting and that you are completely confident in how to proceed. If you feel the slightest uncertainty; feel free to take the help of an experienced installer or a car audio dealer.

Warranty

This component kit is covered by warranty, depending on the conditions in the country where it is sold. If the speakers are returned for service, please include the original dated receipt with the product.

DECLARATION OF CONFORMITY

DLS plug and play speakers for vehicles are manufactured in accordance with the EU directive EEC 95/54 (72/245/ EEC) and are marked with the approval number. They are also marked in accordance with the WEEE-directive 2012/19/EC. The products are also produced in accordance with the EU RoHS directive 2015/863/EU.

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DLS speakers are engineered by DLS Sweden, a part of:

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Designed & Sound tuned in Sweden.

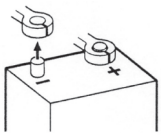
Included parts

Included products:
2pcs Woofers
2pcs Tweeters
4pcs Crossovers

Included in box:
18pcs Screws (12pcs M4, 6pcs M3)
12pcs U-clips
2pcs Tweeter ring with mounting holes
2pcs Tweeter ring
4pcs Crossover connection cables
2pcs Speaker grills
1 pc Manual

Pre-installation

Disconnect Battery



Before you start the process of replacing speakers, disconnect and secure the negative terminal from your battery/power source. This will prevent the risk of damaging yourself or the products. Place the disconnected terminal in a secure and isolated location away from any possible connection belonging to the battery/power source system.

General Info

Sound systems may vary in size and impedance of the door speaker and the installed tweeters. Before you start the assembly, make sure that your vehicle has the same size and impedance as this 2-way component kit. The installation process may vary depending on the car model, factory options and other factors.

Take care when removing door panels, A-pillars or side mirror panels. Use a plastic PRY tool to avoid marks on panels and damaging the plastic clips.

In many vehicles there are factory locations for tweeters that you can use for installation. If this is impossible, try to install the tweeter close to the bas/midrange driver. The tweeter can also be installed on the dashboard, or recessed in the door with the accessories coming with the tweeters.

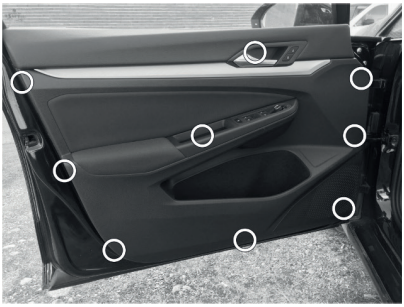
Installation

Disclaimer

Below is the assembly process for a typical application of the DLS RC6.28 component kit in place of factory door speaker and tweeter. RC6.28 is a fully universal component kit, your way of installing the speakers will vary depending on your vehicle and chosen application.

Remove Door Panel

Disassemble the car door by removing the door panel cover.



Typically the clips/screws are located around the perimeter of the door panel; however this varies depending on the vehicle. Sometimes they are hidden under a plastic cover or behind another panel which can be removed using a pry tool.

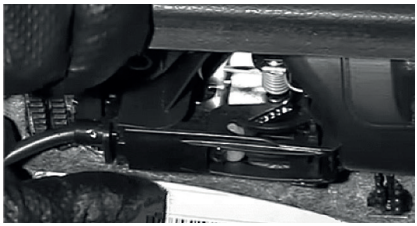


Unscrew any screws and store them in a safe place for later use when reinstalling the door panel.

Loosen the door panel by inserting the pry tool between the panel and the door. Pry the door panel gently, but firm, outward to release the clips.

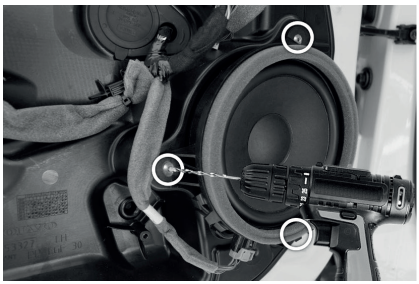


When the door panel is loose, start by softly lifting the panel straight up to remove it.



There are often several electrical and mechanical connectors installed in the door panel. Disconnect any connections and remove the door panel.

The speaker itself is usually fixed with screws, clips or rivets. Rivets need to be removed using a 4mm drill bit. Loosen any clips/screws/rivets and the speaker will come loose.





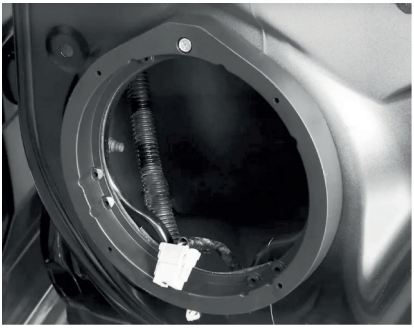
Remove Woofer

Start by disconnecting the factory speaker connector. In some cases, the speaker connector is located at the rear of the speaker, in which case the speaker needs to be removed from the door first.



Mount DLS Woofer

In most cases, the factory speaker will have a built-in spacer ring and a different bolt pattern than the DLS speaker. To safely mount the DLS speaker, speaker adapter rings are available separately for most vehicles. Install the speaker adapter ring in place of the factory speaker, either using the same size rivets or using the factory screws/clips.



The next step is to connect the speaker. This is often done by cutting the factory harness and installing the provided crimp terminals onto the factory wire, which are in turn installed on the speaker terminals. If you want to avoid modifying the factory harness, speaker adapter harnesses are available separately for most vehicles, in which case the positive and negative wire is clearly marked. Make sure the DLS speaker is connected with the correct polarity to avoid phasing issues.





Finally, install the DLS speaker in the speaker adapter ring using the provided screws.

Door Insulation (optional)

To achieve an optimal performance from the installed sound system in your vehicle, DLS recommends to complement your installation with separately purchased insulation/sound deadening material.

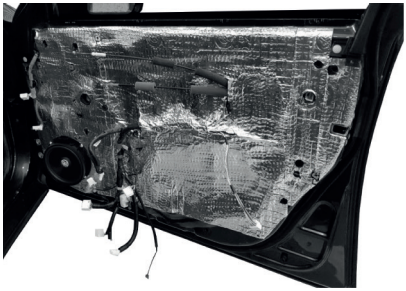
A good place to start is on the outer skin of the door, the inner sheet metal inside the door and the door panel itself. Using insulation/sound deadening prevents vibrations and rattling and other disturbing noises from plastic details in the doors. The result is less road noise, a quieter car environment along with an increased midbass output and cleaner midrange response. This allows your sound system to deliver the natural DLS sound of high quality for you to enjoy.

Please note that any included or separately purchased insulation material should not be installed in a way that risks interfering with the speaker's ventilation or moving parts. If you need help deciding what type of door insulation material you should use or how to install it properly, ask your DLS retailer for info and guidance.

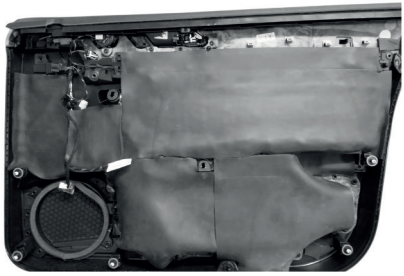
Insulation is usually installed in two parts: sound deadening with butyl mat and sound insulation with a thicker, sound absorbing mat.

Below you can view examples of two types of soundproofing that is commonly used. **NOTE!** The sound proofing material shown in the examples are not included with the component kit, they are purchased separately.

Door with outer skin and inner sheet metal covered with sound deadening mat:



Door panel with sound isolating foam:



Remount Door Panel

Start the reassembly of the door panels. Follow this manual in reverse order. Reconnect all cables. Connect all plugs to the door panel, reconnect the door handle cable, place the door cover from the top by the window seal and push it down gently. Make sure the clips align with their holes and can engage. Give the door panel a push by the hand to attach to the clips. Mount and fasten all screws/bolts at the correct places.

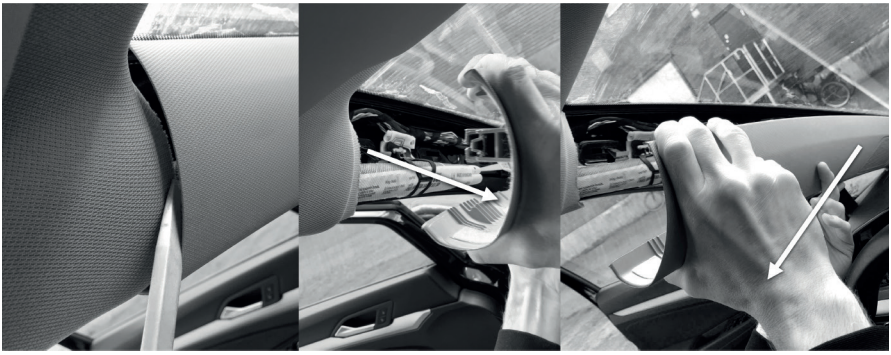
Hint!
Take care when installing the door panel, to make sure no wires get squeezed and/or pressed against the woofer when it's installed in the door frame.

OEM tweeter replacement

Locate the tweeter - either in the A-pillar, by the side mirror or in the door by the handle.



Start by removing the tweeter covers. Use plastic pry tools and be careful, there can be air-bags behind the A-pillar. The first clip can be hard to remove. Take it easy and use minimal force. The instructions below shows how to remove the A-pillar tweeter.



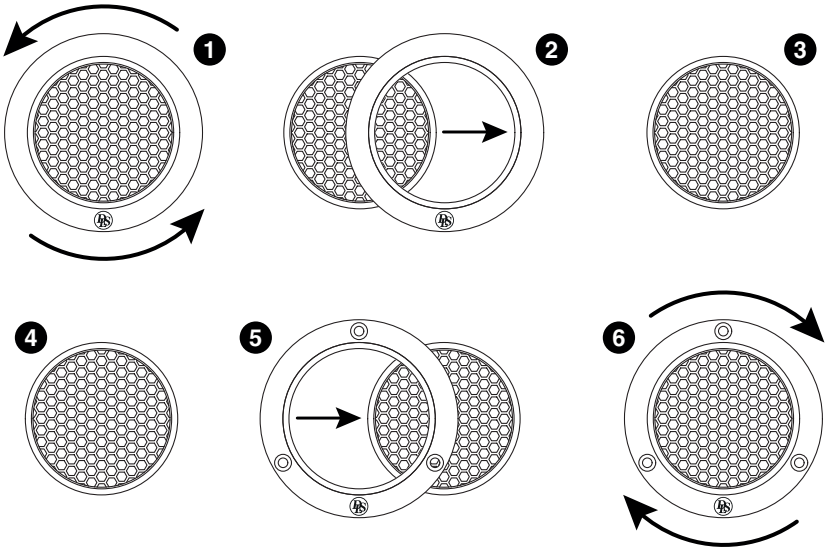
Un-plug the cable harness and unscrew or unsnap the old tweeter from the bracket or panel. Remove the OEM tweeter and replace it with the DLS tweeter. The flush cup adapter can also be used for the assembly.

Install DLS tweeter

The RC28C tweeter can be installed in the dashboard with its standard cup or recessed in a door side with screws by switching the tweeter ring. **NOTE!** Two crossovers are included with the tweeters and they must be used unless you are replacing the tweeters in a existing kit system that already have crossovers. If the speakers use a correct active crossover setup you do not need to include the passive crossovers in the system.

Recessed tweeter mounting

To make a recessed installation of the tweeter, drill a whole that is 51mm in diameter. If you wish to use screws to mount the tweeter, similar to how you mount the speakers of the RC6.28 component kit, simply unscrew the top of the tweeter and replace it with the tweeter ring that has mounting holes.



Crossover installation and settings

NOTE! If there is no active crossover or DSP being used for setting crossover frequencies and slopes for the tweeter, the included passive crossover must be used!

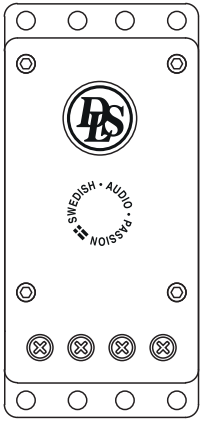
There are 4 crossovers included with the DLS RC6.28 component kit. 2 for Tweeters (High pass) and 2 for Woofers (Low pass). These crossovers are very versatile and can be used in different types of setups:

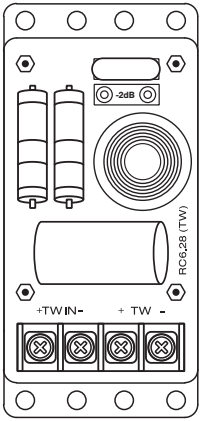
Passive = Use all 4 crossovers with a 2-channel output amplifier or source unit (see page 10).

Bi-Amp = Use all 4 crossovers with a 4-channel output amplifier or source unit (see page 11).

Active = Use active crossover for some or all speakers.

DLS recommend using active crossover settings for the DLS RC6.28 component kit to get increased power handling and durability.
- High pass filter: 50 - 100 Hz
- Low pass filter: 2500 - 5000 Hz



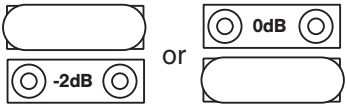


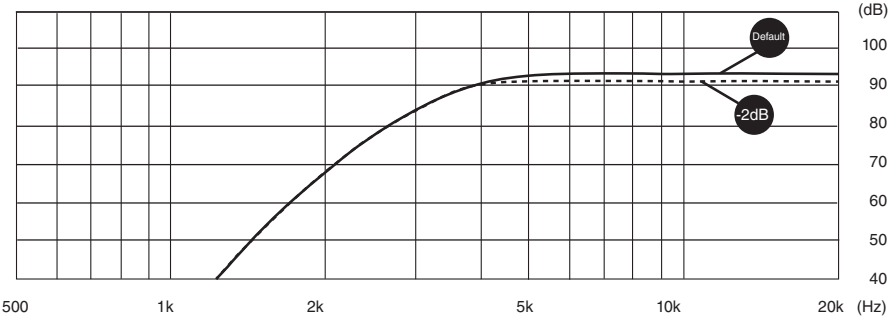
Tweeter Level

The jumper inside the tweeter crossover allows adjustment of the tweeter output level for fine tuning of the high-frequency response.

Two level settings are available:
- 0dB setting = No level attenuation (default setting). See illustration below.
- -2dB setting = Reduces the tweeter output level by 2dB. See illustration below.

By changing the jumper position as illustrated, the tweeter output in the higher frequency range is reduced. This makes the sound less intense and slightly smoother. DLS recommend using the -2dB setting in installations where the factory tweeter location is angled directly toward the listening position.





Run-in Period

To ensure optimal performance from your speakers, it's essential to allow for a proper run-in period. Fresh out of production, the moving parts like spider and suspension in a speaker can be stiff. A bit of exercise is necessary. Once they've had a chance to settle, you'll notice an improvement in sound quality.



Plan to let them play for a minimum of 15-20 hours. This can be achieved using a tone sweep or simply by playing music until they reach their intended performance.

Once the run-in period is completed the speakers now provide a more natural and enhanced music experience.

DLS Support

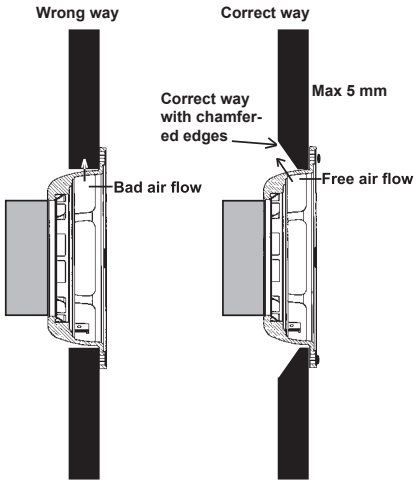
For technical assistance, ask your car audio dealer where the product was sold or the distributor in your country. You can always contact the DLS Support in Sweden via e-mail: info@dls.se. For more information regarding DLS and our products, visit our website: www.dls.se. We follow a policy of continuous advancement in development. For this reason, all or part of specifications and designs may be changed without prior notice.

Installation Tips

Custom Baffle Installation

If you want to improve the sound reinforcement in your installation, you can use a baffle of MDF-board or similar. For door placements, there are normally speaker rings that have to be used to make the speaker fit.

It is very important that the custom baffles are stable and fastened properly, but it is just as important that its shaped in a way that the driver is allowed to “breathe” correctly. Bass reproduction will be enhanced when the air flow is free.



Speaker Polarity

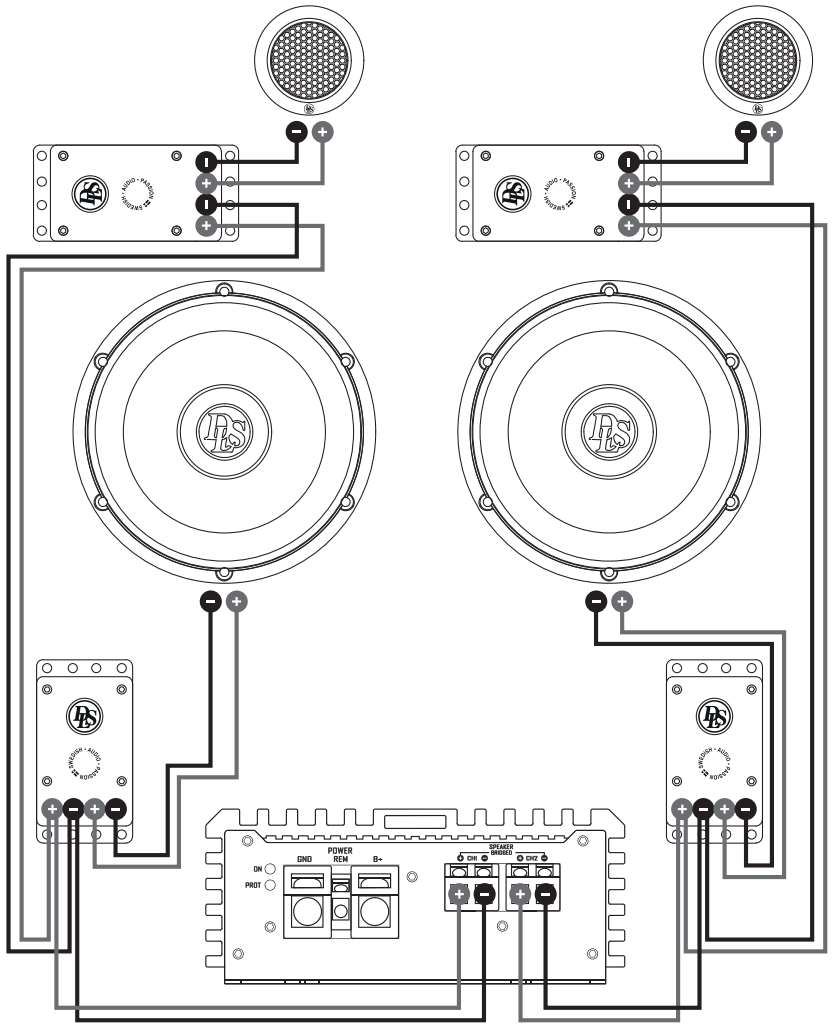
Make sure you connect the cables with correct polarity on the speaker terminals. Observe the markings and size differences on the connectors.

Speaker phasing
To ensure that the DLS RC6.28 woofers are connected with the correct polarity (phase), you can easily check the phase using a 1.5 V battery.

Connect the battery’s positive and negative pole to the speaker cable. If the speaker is correctly connected the cone should move outwards. This needs to be tested on all left/right pairs to make sure all drivers are in phase with each other.

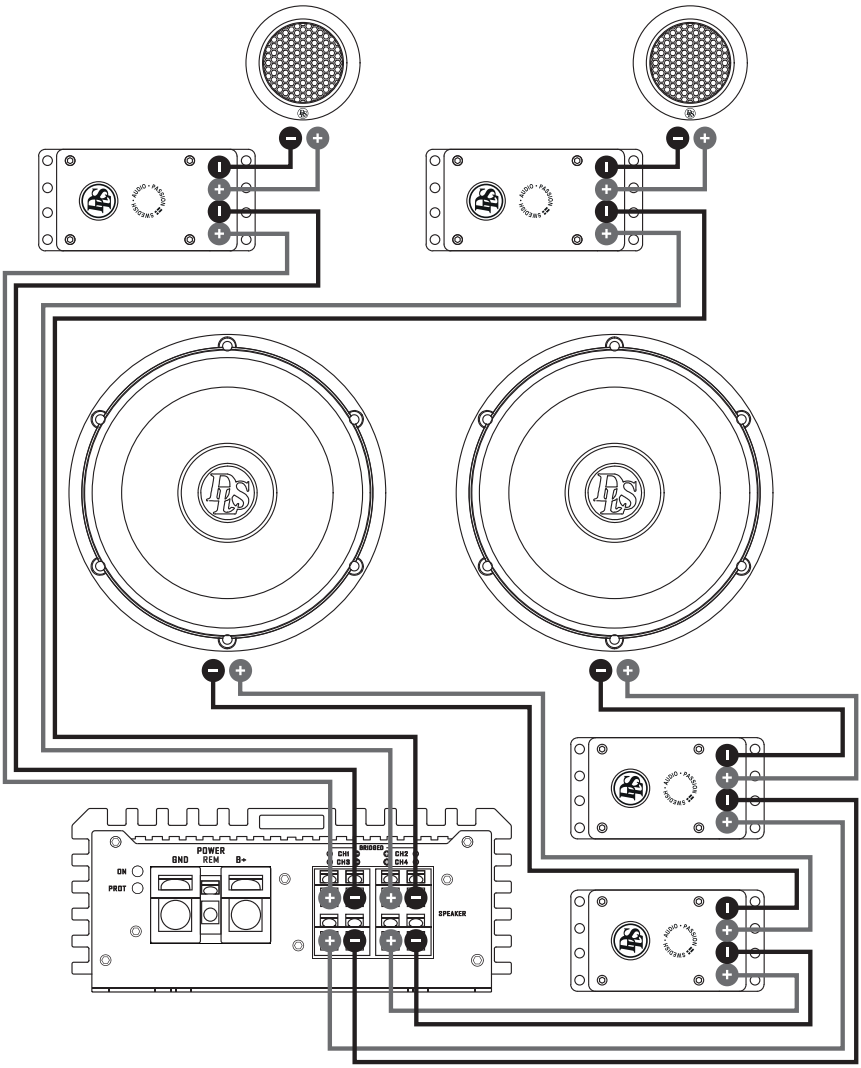
Note!
Do not use this testing method on tweeters or other low excursion drivers without a correctly connected high pass crossover.

Wiring Diagram (Passive)



- Connect the **woofer and crossover** together with the connectors/cable. Secure the crossovers with plastic ties / screws (not included), in a suitable location.
- Connect the **tweeter and crossover** together with the connectors/cable. Secure the crossovers with plastic ties / screws (not included), in a suitable location.

Wiring Diagram (Bi-Amp)



- Connect the **woofer and crossover** together with the connectors/cable. Secure the crossovers with plastic ties / screws (not included), in a suitable location.

- Connect the **tweeter and crossover** together with the connectors/cable. Secure the cross- overs with plastic ties / screws (not included), in a suitable location.

Specifications

DLS Reference RC6.28 Component Kit
Technical Specifications

Size	6.5” /165 mm woofer and 1.1” / 28 mm tweeter
RMS Power	125 W
MAX Power	250 W
Impedance	4 Ohm
Sensitivity	88 dB 1W/1m
Freq. range	49 Hz - 27 kHz
Crossover	Tweeter HP: 3100 Hz 12 dB / Oct Woofer LP: 2600 Hz 6dB / Oct

DLS Reference RC64 Woofer
Technical Specifications

Size	6.5” /165 mm
RMS Power	125 W
MAX Power	250 W
Impedance	4 Ohm
Sensitivity	88dB 1W/1m
Freq. range	49 Hz - 5 kHz
Voice Coil Size	1.12” / 28.5 mm
Voice Coil Material	Non-Magnetic TIL® former
Basket	Ventilated Die Cast Alu FBS
Magnet	Hybrid Ferrite & Neo Magnet
Shorting ring	Yes / Copper Cap
Cone	Coated Wood Fiber
Dust cap	Santoprene® rubber dust cap
Spider	Nomex® with woven tinsel leads
Terminal	Twin terminal

Electro-Acoustic Parameters

Re	3.2 Ohm
Fs	54 Hz
Mms	11.6 g
Cms	6.8
Vas	17.3 L
Qts	0.49
Qes	0.53
Qms	6.8
Bl	4.9 Tm
Spl	88 dB 1W/1m
Sd	129 cm^2

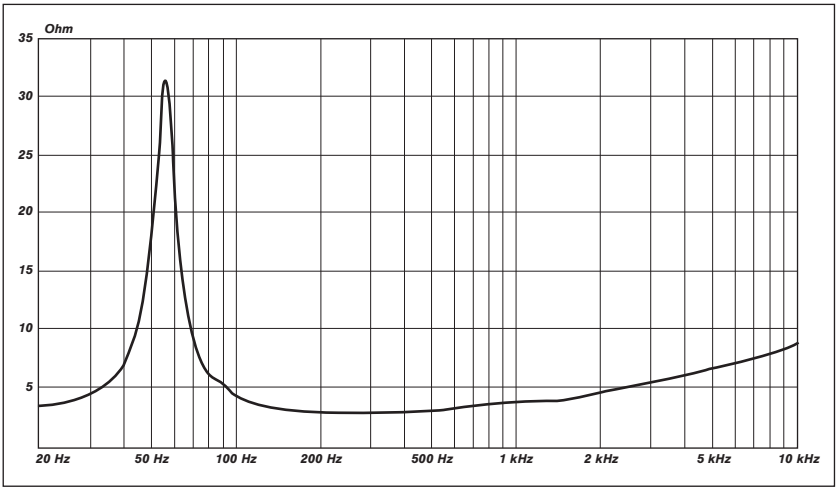
DLS Reference RC28C Tweeter
Technical Specifications

Size	1.11” / 28 mm
RMS Power	60 W
MAX Power	120 W
Impedance	4 Ohm
Sensitivity	88dB 1W/1m
Freq. range	700 Hz - 27 kHz
Voice Coil Material	CCAW voice coil with aluminum former
Frame	CNC machined aluminum housing / mounting rings
Magnet	Neodymium with copper shorting ring and tuned ventilated backchamber
Cone	Natural Dual coated soft silk dome with internal customized damping pad
Crossover	MXP caps, Max resistors, Air coil
Attenuation L-pad	-2 dB / 0 dB level

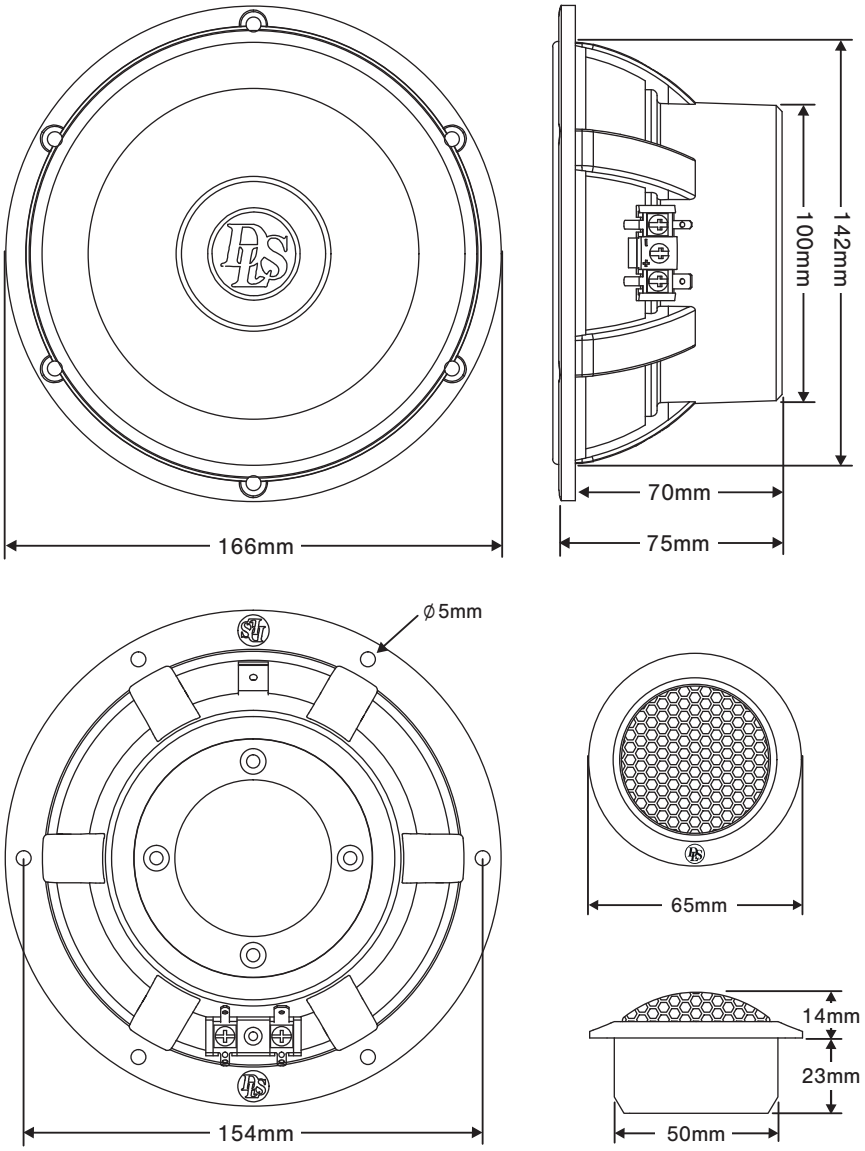
Electro-Acoustic Parameters

Re	3.4 Ohm
Fs	650 Hz
SPL	88 dB 1W/1m

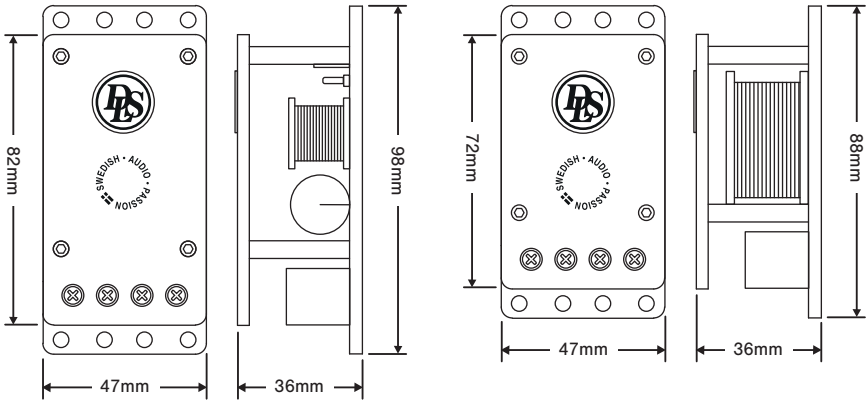
Impedance vs. Frequency

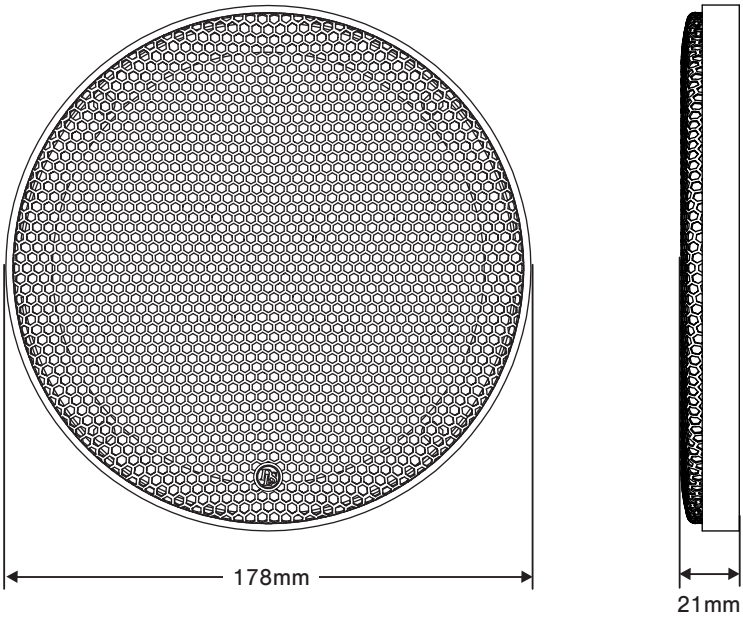


Dimensions



Dimensions





Product Markings



The crossed-out wheelie bin symbol means that the product, literature and pac kaging included must be taken to separate collection at the end of their working life. Do not dispose of these products as unsorted municipal waste: take them for recycling. For info on your nearest recycling point, check with your local waste authority.



This product has been granted with the CE certification mark to show that the product follows the health, safety, and environmental protection standards for products sold within the European Economic Area (EEA).



DLS products comply with the relevant provisions of the RoHS Directive for the European Union. In common with all Electrical and Electronic Equipment (EEE) the product should not be disposed of as household waste. Alternative arrangements may apply in other jurisdictions.



DLS is a global partner of the European Mobile Media Association, an organisation that focus on promoting the custom made mobile media installations to consumers.

We follow a policy of continuous advancement in development. For this reason all or part of specifications & designs may be changed without prior notice. We reserve for possible typos, factual or numeric errors that may have been printed on any products, package designs, user manuals and/or other included accessories.



REFERENCE