

OVERDRIVE™



**ODX352 (3.5"), ODX402 (4.0"), ODX462 (4X6"),
ODX542 (5.25"), ODX573 (5X7"), ODX653 (6.5"),
ODX663 (6.5" OS), ODX694 (6X9")**

Professional Quality Coaxial Speaker Systems

Systèmes de haut-parleurs coaxiaux de qualité professionnelle

Sistemas de Altavoces Coaxiales de Calidad Profesional

Sistemas de Alto-falantes Coaxiais de Qualidade Profissional

● BLAUPUNKT®

Bosch Group

BLAUPUNKT TECHNICAL SPECIFICATIONS FOR ODx COAXIAL SPEAKERS

PERFORMANCE DATA **	PARAMETER	ODx352	ODx402	ODx462	ODx542	ODx653	ODx663	ODx573	ODx694
POWER HANDLING <small>(Undistorted peak power, limited by woofer)</small>	Watts rms	30	40	40	50	50+50	50+50	50+50	50+50
	Watts peak	90	120	120	150	200	200	200	300
SENSITIVITY	dB (1W/1m)	89	89	89	90	90	90	90	91
	dB (2.83V/1m)	92	92	92	93	93	93	93	94
FREQUENCY RESPONSE	Hz (-10dB)	80-20k	70-20k	70-20k	60-20k	50-20k	50-20k	45-22k	40-22k
NOMINAL IMPEDANCE	ohm	4	4	4	4	4+4	4+4	4+4	4+4
CROSSOVER	Freq. (kHz)	4.0	4.0	4.0	4.0	4.0/8.0	4.0/8.0	4.0/8.0	4/8/10
	Slope (dB/oct)	12	12	12	12	12/6	12/6	12/6	12/6/6
MAGNET WEIGHT	ounces	5.3	8.0	5.3	10	10	10	10	20
MOUNTING CUTOUT DIMENSIONS	dia/(h x w)-(in.)	3.1	3.7	3.8x6.0	4.9	4.9	5.7	5.0x7.2	6.0x8.6
MOUNTING DEPTH FROM FLUSH	(in.)	1.42	1.93	1.77	2.20	2.20	2.40	2.50	3.1
AIR VOLUME DISPLACEMENT	Vol. Displaced (cu.ft.)	0.002	0.003	0.004	0.012	0.014	0.014	0.040	0.060
WOOFER SECTION THIELE-SMALL DATA									
Resonance frequency	fs (Hz)	145	100	110	95	90	85	85	60
Total Q factor	Qts	1.53	1.03	1.46	1.00	1.10	1.25	1.39	0.72
Electrical Q factor	Qes	2.38	1.21	1.85	1.24	1.29	1.47	1.73	0.81
Mechanical Q factor	Qms	4.34	7.03	6.94	5.23	7.53	8.35	7.16	6.48
Volumetric equivalent compliance	Vas (cu. ft.)	0.05	0.05	0.10	0.13	0.17	0.23	0.287	0.64
Linear excursion (one direction)	Xmax (in.)	0.02	0.06	0.06	0.08	0.12	0.12	0.10	0.15
DC resistance	Re (ohms)	3.92	3.82	3.78	3.70	3.6+3.6	3.6+3.6	3.6+3.6	3.7+3.7

** Blaupunkt occasionally makes product improvements in order to maintain the highest consumer performance and quality standards possible. Because of these efforts, specifications and appearance may change over the life of the product from those depicted in this manual.

THANK YOU FOR CHOOSING BLAUPUNKT!

Congratulations! You are now the owner of exceptional loudspeakers from the audio enthusiasts at Blaupunkt. Our engineering staff has spent considerable time refining our coaxial speaker line in order to introduce great sound to the consumer at an affordable price. We have evolved the speaker design with new AIP cones (Aluminum Injected Plastic) for more accurate sound and more aggressive cosmetics.

We are always very concerned about the end consumer using proper installation techniques for the highest performance possible from their new loudspeakers. But, MOST important to us are concerns with your safety and the installation process. Since our Blaupunkt retail dealers have the tools and experience for an optimized and safe installation, we always recommend they do the final vehicle integration. But, should you choose to install these products yourself, please take the time to read this manual completely and abide by all precautions.

KEY FEATURES

It has been repeatedly proven that surprisingly high audio system performance can be achieved by a moderately priced set of coaxial speakers. The OVERDRIVE ODx coaxials are designed for HIGH POWER HANDLING LEVELS, HIGH SOUND PRESSURE LEVELS, and FLEXIBLE INSTALLATION CHOICES. Combined with a basic subwoofer installation, the resulting performance is often outstanding.

The highlight of our new coaxials is the Aluminum Injected Plastic cone material offering lighter mass compared to conventional polypropylene cones but with additional rigidity thus preventing flexing properties common to poly and paper cones. This gives a much "tighter" bass response and smoother high frequency response without distortions often found at high listening levels. Below is a good summary of the new features and materials.



New "AIP" Aluminum injected Plastic Cones

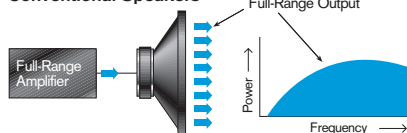
- Lightweight, and mechanically rigid, plastic cones play louder with less power
- Acoustically inert, injected plastic cones do not "color" the sound of the music
- Environmentally resilient plastic maintains shape & thickness, ensuring premium tonal quality for years

Conventional Inexpensive Paper/Plastic Cones

- Non-uniform cone thicknesses (are heavy & often generate internal "bending" motions)
- Self-resonant materials & construction (standing waves occur yielding strong tonal shifts)
- Paper & cheap plastic cones warp & change mass over time due to swings in temperature & humidity (degrading performance)

In addition to the AIP cones is our unique DVC (Dual Voice Coil) coaxial system. The DVC speakers (6.5", 5x7", and 6x9" only) offer improved bass response to a vehicle that cannot accommodate a subwoofer enclosure of any kind. A dedicated secondary subwoofer amplifier driving the subwoofer coil on the coaxial provides a remarkable increase in bass response from a speaker that drops into the factory mounting holes of most cars.

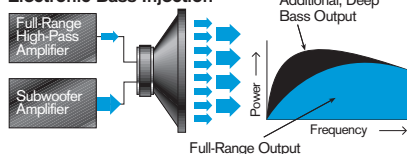
Conventional Speakers



Conventional Coaxial Speaker

- Listener is always yearning for more low frequency response
- Bass response limited to full-range, standard receiver power
- Increasing bass response on the receiver drives the mid and high frequencies into distortion

Electronic Bass Injection



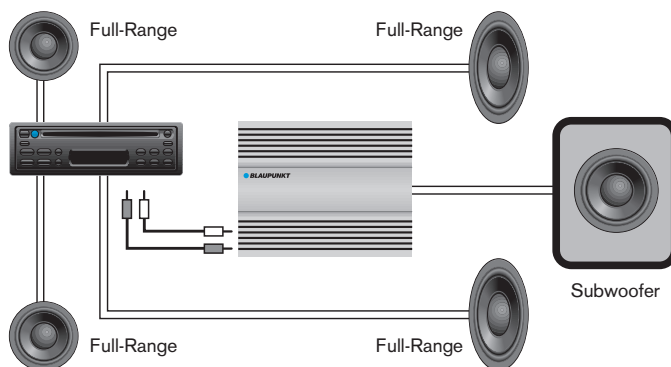
Blaupunkt Dual Voice Coil Coaxial Speaker

- Low frequency response bridges the gap between bass-shy coaxials and a high performance subwoofer enclosure
- Bass response is dependent upon power limit of outboard subwoofer amplifier - NOT an under-powered receiver
- Less distorted mid and high frequency SPL since the receiver power is not wasted in attempting to drive conventional coaxials harder, PLUS frequency contouring of dedicated subwoofer crossover

SYSTEM DESIGN GUIDELINES

SYSTEM PLAN (STEP-UP COAX/SUBWOOFER)

The largest possible impact on any audio system (home or car) is the tonal quality of the loudspeakers, their respective placement, and their overall efficiency (loudness). Many newer cars have acceptable speaker locations but a factory 4x10 watt radio with dual cone speakers is not going to impress anyone. To move up in performance, add an outboard subwoofer and amp to give an emotional sensation of "strength" to the audio system.



AMPLIFIER POWER

Amplifier choice and power is important but less so compared to speaker choice and placement. Matching the rms (continuous) power capability to that of the speaker is important. If the speakers are rated to 50 watts rms, you can often run 60-80 watt rms amplifiers without concern IF the amps are not driven into clipping (deep distortion).

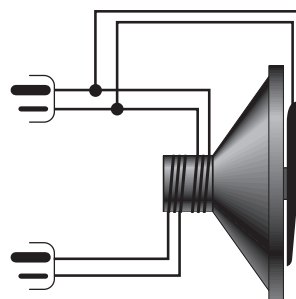
SOUND QUALITY VS. LOUDNESS

All well designed sound system can provide good sound quality and still play loud. Above about 120 decibels the sound isn't perceived as getting much louder due to the non-linearities of the human ear. A four loudspeaker system with the per-speaker efficiency rating of 90 dB (1 watt/1 meter) will often achieve about 110-115 dB if driven by 100 watts per speaker channel. *(Although debated, this is more than enough sound pressure level for most humans to enjoy and can easily cause hearing loss if listened to at such levels for hours at a time.)*

DUAL VOICE COIL COAXIAL SYSTEMS

HOW THE DVC COAXIAL WORKS

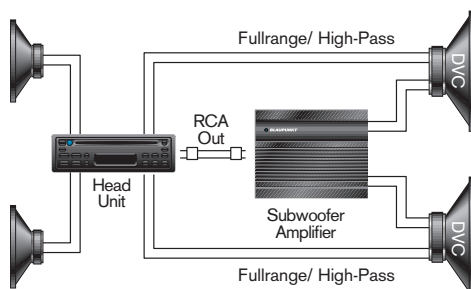
The performance requirement is simple - to get more bass into the car you must push a woofer cone harder. This can be done by either [1] additional full ranged audio power (20-20kHz) or by [2] adding more electrical bass signal to a second coil winding on the woofer cone.



The Blaupunkt DVC coaxials starts with a conventional coax speaker (we use sizes above 6.5" only). A second voice coil is added to the woofer cone with a second set of terminals exiting the basket for this coil. This configuration creates a speaker with two sets of terminals with one set driving the woofer/midrange/tweeter and the second set driving the woofer cone only. This second set is recommended to be driven by a dedicated subwoofer amplifier of higher power than the coax signal.

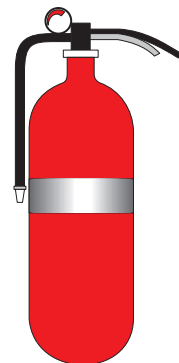
DVC COAXIAL INSTALLATION

In real music, mid and high frequencies typically require far less power to play as loud as the bass, usually only 1-10 watts. With most factory installed radios offering about 10-20 watts per channel capability, a natural installation would have the radio drive the full-range terminals and a supplementary subwoofer amplifier driving the subwoofer terminals. A dedicated 2x50 watt (rms) subwoofer amp with crossover set at about 80 Hz (low-pass) nicely complements such a system and provides remarkably good overall performance. A DVC coax system will NEVER replace the performance of a dedicated 12 inch woofer in a box but it will offer bass response that a conventional coax will never be able to provide on its own.



INSTALLATION WARNINGS & SAFETY CONCERNS!

Before disassembling your beautiful new car you need some basic installation knowledge and skill with common hand and power tools. Following such basic installation tips and warnings will prevent possible damage to the vehicle and also prevent possible fires.



- **AGAIN...READ THE MANUAL!** There is a lot of helpful information in this manual that will save time and prevent problems later.
- **WEAR SAFETY GLASSES** - flying debris is dangerous and possible at any time.
- **COVER THE VEHICLE WORK AREAS** - Use fender covers or blankets to protect the work areas from scratches or dings.
- **DISCONNECT THE (-) LEAD ON THE BATTERY** - No sparks or fires please!
- **“REVIEW” THE INSTALLATION** - Before using any tools or moving vehicle components, take five minutes to review the installation intentions (e.g., verify that an enclosure will fit in an area of a car before tearing out all the interior).
- **“REVIEW” THE VEHICLE** - Before drilling any holes or cutting into any surfaces, make sure there are no fuel or hydraulic lines behind the surfaces. Also make sure there are no wires routed directly behind or near the desired mounting area (remember...screws can often extend 1-2 inches behind the mounting surface).
- **ENSURE PROPER FIT** - Before cutting or drilling, make sure the speaker will physically fit in its desired location. Check for clearance around rear deck torsion bars or other structural elements.
- **EVERY CAR IS ASSEMBLED DIFFERENT** - Every auto manufacturer uses different assembly techniques. Take care in removing/modifying all trim panels and mounting surfaces since they often use unique screws or snap fasteners that are difficult to replace if they are lost or broken.
- **BE CAREFUL WITH CABLE ROUTING** - When routing audio cables, make sure RCA and speaker wires are routed away from high current power lines for audio amplifiers and vehicle systems lines when possible. This will help prevent noises from creeping into the audio system, plus prevent potential damage to the vehicle wiring itself.
- **BE CAREFUL WITH ALL CONNECTIONS** - When making connections, make sure each connection is clean and properly secured. Observe all polarity markings carefully to ensure proper end performance.
- **CAUTION - FUEL TANKS AND FUEL LINES ARE NOW LOCATED DIRECTLY BENEATH THE REAR DECK IN MANY CARS - CHECK FOR ADEQUATE CLEARANCE BEFORE EVEN CONSIDERING SUCH A MOUNTING LOCATION!**

INSTALLATION GUIDELINES

We strongly recommend that you have your Blaupunkt speakers professionally installed. If you choose to do your own installation please note the following important information:

- Before cutting any trim or metal make sure your final installation will clear all moving parts, factory cables, wires, and hoses.
- Be sure to leave enough slack in the wiring to prevent the need to pull or stretch wires if service is needed later.
- Tie down all loose wires with nylon wire ties to prevent them from getting caught in moving parts or shorted out due to abrasions from moving over time.
- Never mount speakers in a vehicle's wheel wells or areas where they may be subjected to moisture or road spray.
- Proper speaker polarity must be observed. The polarity positive side is marked by a (+) symbol or a red colored dot. At low frequencies woofers out of phase will acoustically cancel one another thus resulting in little bass output.
- Although components used in Blaupunkt speakers exceed most production quality standards, speaker frames can still be twisted by improper installation on uneven surfaces. This can occur when surfaces are heavily padded or carpeted and the screws are unevenly tightened or over tightened. The results will be a damaged voice coil assembly due to knocking it off center.
- When installing more than one speaker per amplifier channel be sure that the combined impedance values do not fall below the recommended minimum speaker load values of the amplifier (most amplifiers will overheat over time and possibly shut down with loads below 2 ohms).
- Speaker wire size should be sufficient to carry the full power of the amplifier (16 gauge or larger is sufficient in about 90% of all audio systems assuming <100 watt amplifiers and wire runs under 20 feet)
- Speaker wires should be electrically and physically isolated from the vehicle and routed away from any factory wiring that carries high currents or noises (e.g., ABS brake systems and engine computer signals)

FINAL SYSTEM TEST & TROUBLESHOOTING

Once the system is installed, turn on the total audio system main power switch and SLOWLY turn the volume up using a music selection with a full range of frequencies. If you experience any problems take corrective action immediately to prevent damage to the speaker, amplifier, and vehicle.

LIMITED WARRANTY INFORMATION (United States Only)

Robert Bosch Corporation warrants new Blaupunkt car audio products it distributes in the United States through authorized Blaupunkt dealers, or which are imported as original vehicle equipment by the automobile manufacturer, to be free from defects in material and workmanship, in accordance with the following:

For twelve (12) months after delivery to you, the original consumer purchaser, we will repair or at our option replace at no charge to you any car audio product which, under normal conditions of use and service, proves to be defective in materials or workmanship. However, this warranty does not cover expenses incurred in the removal or reinstallation of any car audio product, whether or not proven defective, and does not cover products not purchased from an authorized Blaupunkt dealer. This warranty is limited to the original consumer purchaser and is not transferable. Repaired and replacement car audio products shall assume the identity of the original for purpose of this warranty and this warranty shall not be extended with respect to such products.

To obtain performance of this warranty, contact the nearest Blaupunkt authorized repair facility or our nearest office. A dated purchase receipt or other proof that the product is within the warranty period will be required in order to honor your claim. Carefully pack the unit and ship prepaid to the servicing location. For further information, write to the Robert Bosch Corporation, 2800 South 25th Avenue, Broadview, Illinois, 60153, attention Blaupunkt Customer Service Department or call 1-800-266-2528.

Specifically excluded from this warranty are failures caused by misuse, neglect, abuse, improper operation or installation, dropping or damaging, unauthorized service or parts, or failure to follow maintenance instructions or perform normal maintenance activities. Normal maintenance activities for car audio products include but are not limited to cleaning and other minor maintenance activities and adjustments that are outlined in the owner's manual or that are normally required for continued proper operation. Also excluded from this warranty is the correction of improper installation and the elimination of any external electromagnetic interference. This warranty sets forth your exclusive remedies with respect to the products covered by it. We shall not be liable for any incidental, consequential, special or punitive damages arising from the sale or use of any Blaupunkt car audio products, whether such claim is in contract or tort. No attempt to alter, modify, or amend this warranty shall be effective unless authorized in writing by an officer of Robert Bosch Corporation.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES OR REPRESENTATIONS, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY IMPLIED BY LAW, WHETHER FOR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE AND SHALL BE EFFECTIVE ONLY FOR THE PERIOD THAT THIS EXPRESS WARRANTY IS EFFECTIVE.

In the event any provision, or any part or portion of this warranty shall be held invalid, void or otherwise unenforceable, such holding shall not affect the remaining part or portions of that provision or any other provision hereof.

NOTICE TO CALIFORNIA OWNERS: If your Blaupunkt car audio product needs warranty repair service and there is no authorized service center reasonably close to you, you can return the defective unit to the dealer from whom you purchased it, or you can return it to any dealer who sells Blaupunkt car audio products. The dealer may, at the dealer's option, replace, repair or refund the purchase price for any Blaupunkt car audio products which prove defective under conditions of normal use. If the dealer fails to repair, replace, or partially refund your money, you may take your Blaupunkt car audio product to any repair shop and they can repair your unit at our expense unless the repair cost exceeds the depreciated value of the unit, but you must contact Blaupunkt to receive authorization to do this before your car audio product is repaired.

ROBERT BOSCH CORPORATION
BLAUPUNKT CUSTOMER SERVICE
2800 SOUTH 25TH AVENUE
BROADVIEW, IL 60153
TEL: 1-800-266-2528

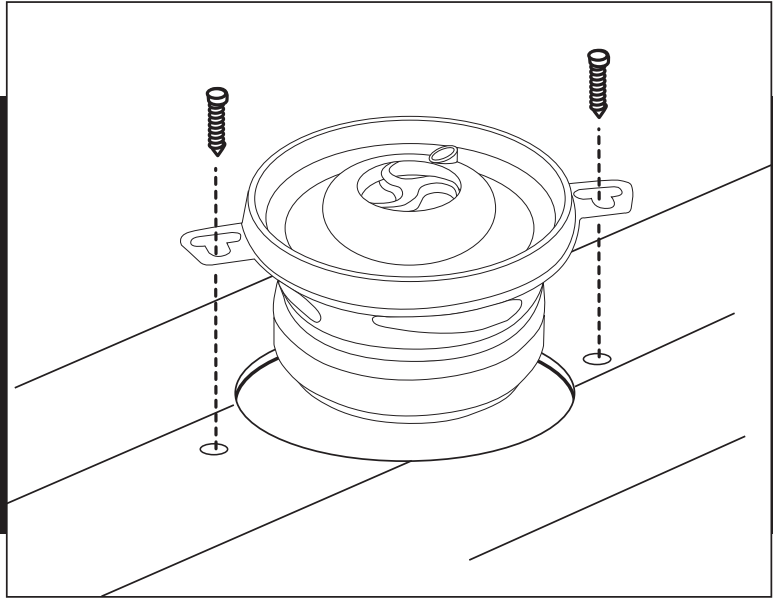
ADDITIONAL REFERENCE INFORMATION

The following is a list of materials and sources of recommended reading for the person interested in loudspeakers, acoustics, and audio in general. Subjective comments are noted for each.

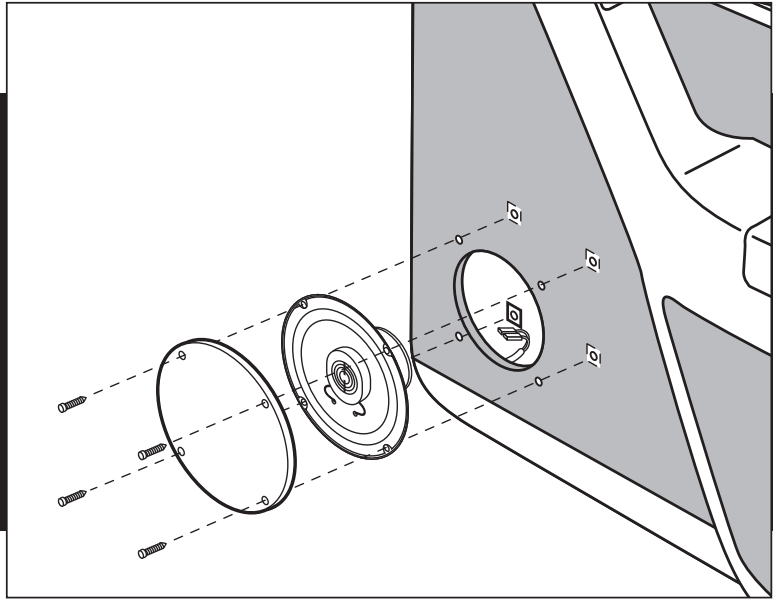
- **DESIGNING, BUILDING, AND TESTING YOUR OWN SPEAKER SYSTEM**, David Weems, Copyright 1984, TAB Books #1964, Blue Ridge Summit, PA 17294. *(This is an excellent introductory book on designing speakers for the home but is quite applicable to the car since many concepts are carried over.)*
- **LOUDSPEAKER DESIGN COOKBOOK**, Vance Dickason, copyright 1991-1996, distributed by Old Colony Sound Lab, Peterborough, NH, 03458. *(A technical step up from Weems addressing complex woofer box and crossover designs. Clearly a reference book useful for all.)*
- **BLAUBOX WOOFER BOX DESIGN COMPUTER PROGRAM**, Thomas Breithaupt, Blaupunkt div. Robert Bosch Corporation, 2800 S. 25th Avenue, Broadview, IL 60153. *(This is a simple to use IBM PC computer program used to predict the frequency response of a subwoofer in 10 different enclosures including sealed, vented, and bandpass configurations. Basic passive crossover designs are covered as well. It is provided free of charge as a download from the Blaupunkt Internet site at: <http://www.blaupunkt.com>.)*

INSTALLATION DRAWINGS

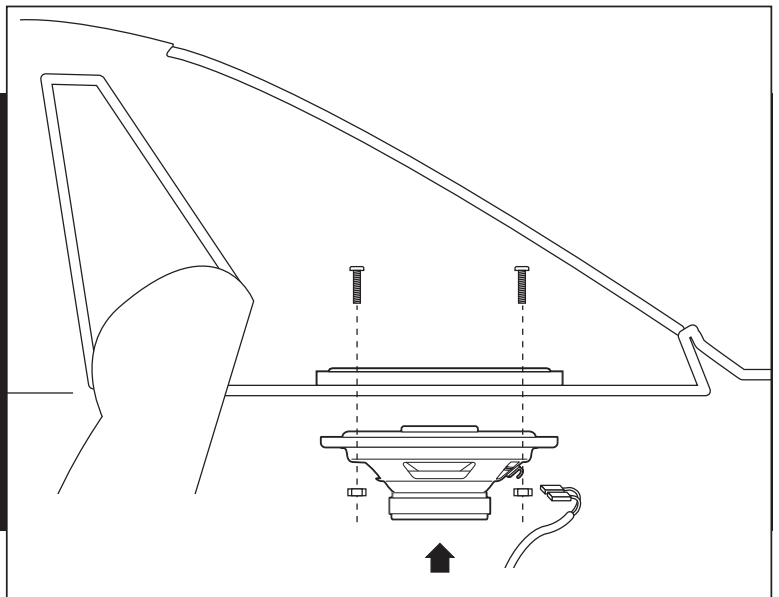
Dash Installation



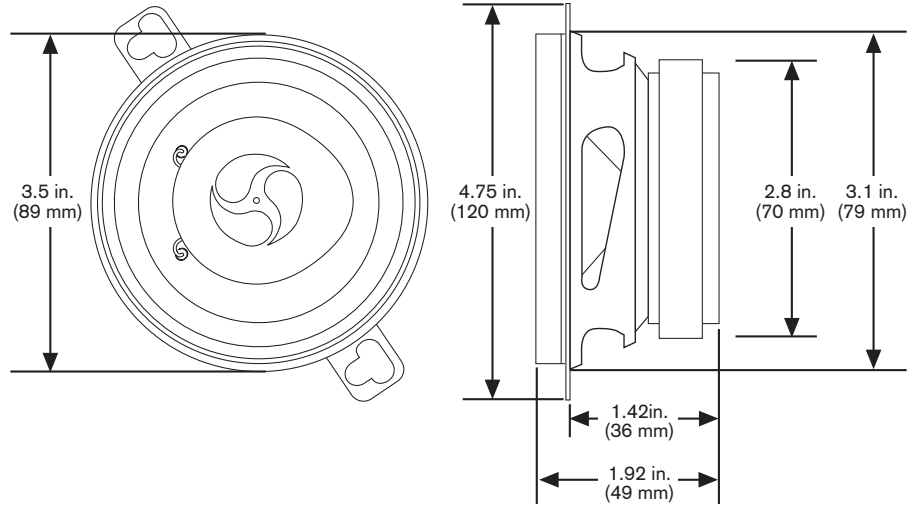
Door Installation



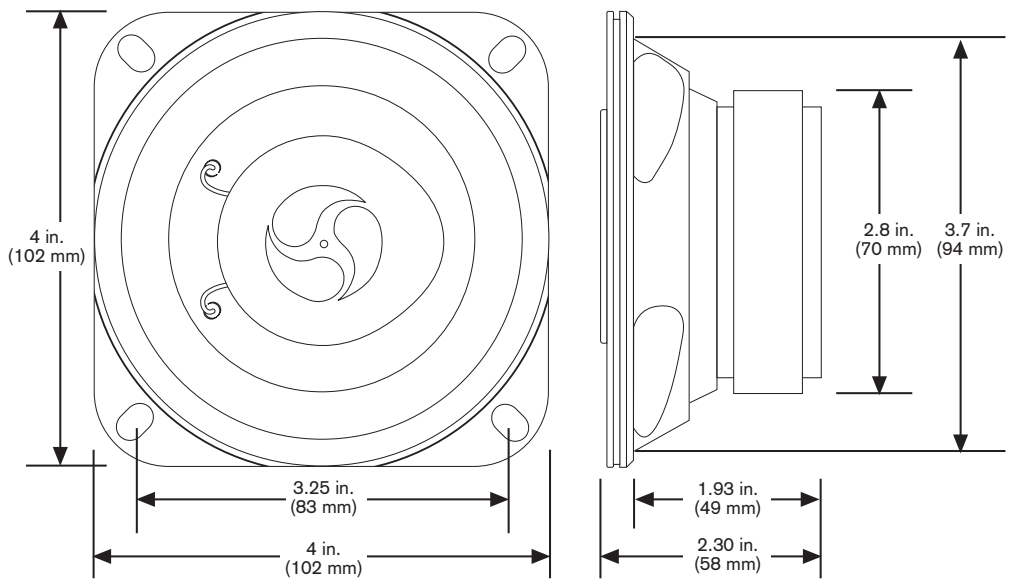
Rear Deck Installation



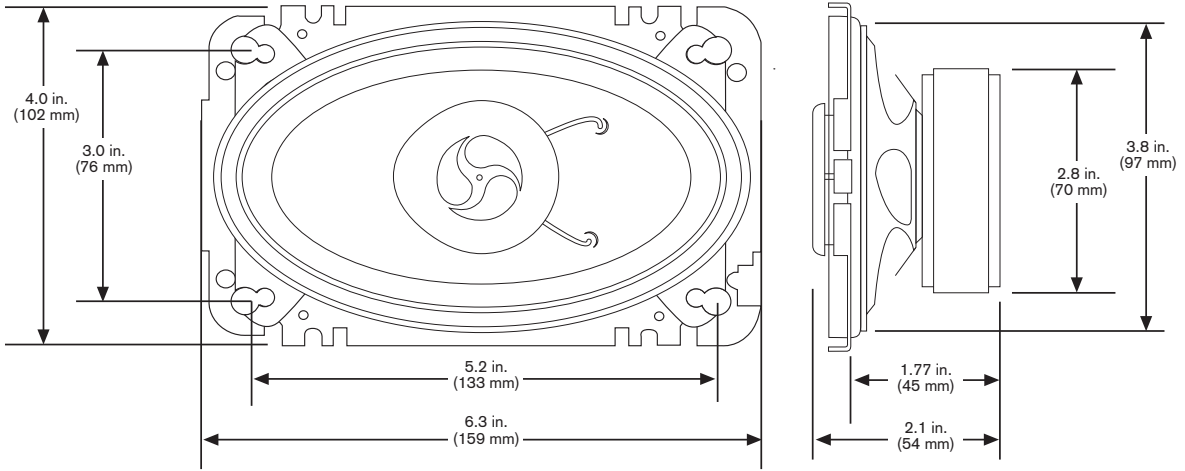
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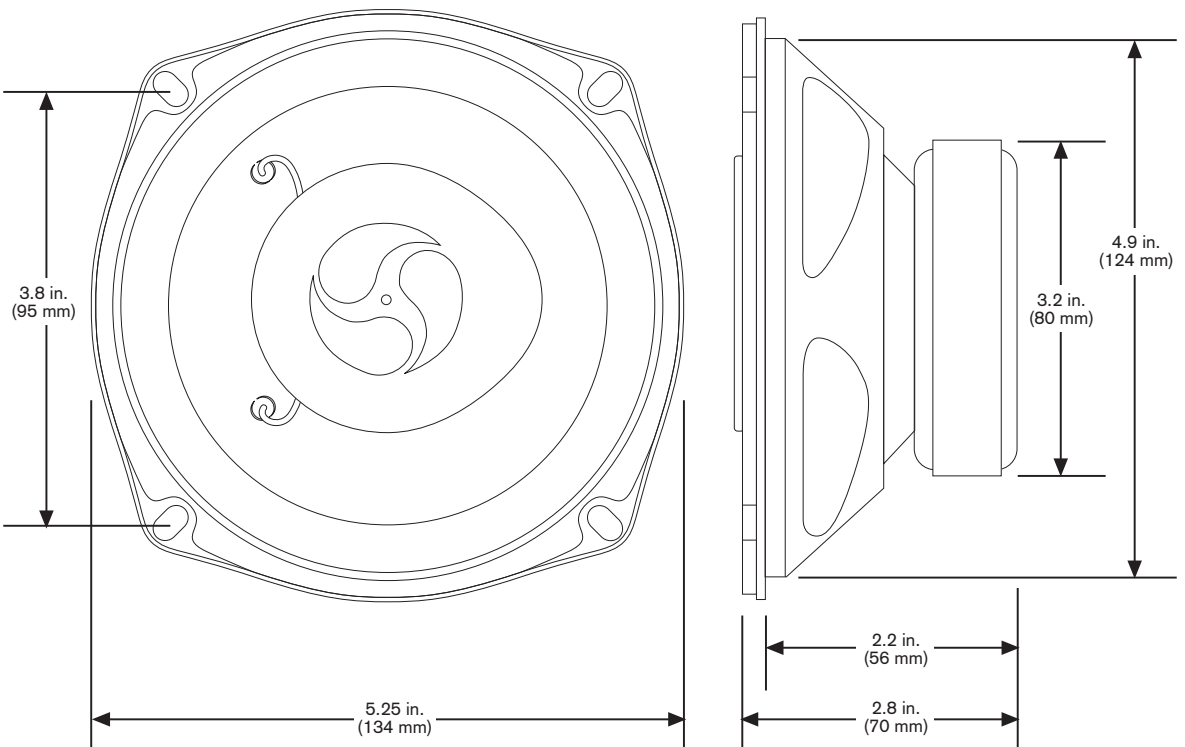
ODx402



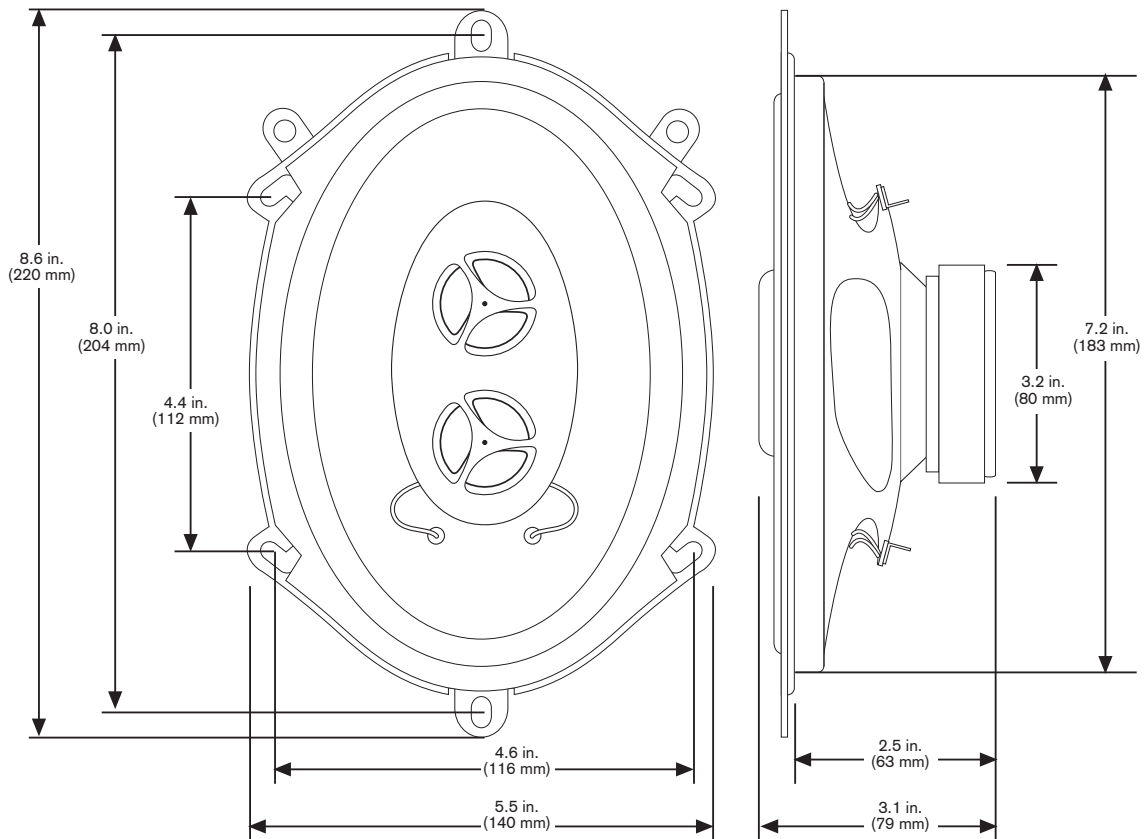
ODx462



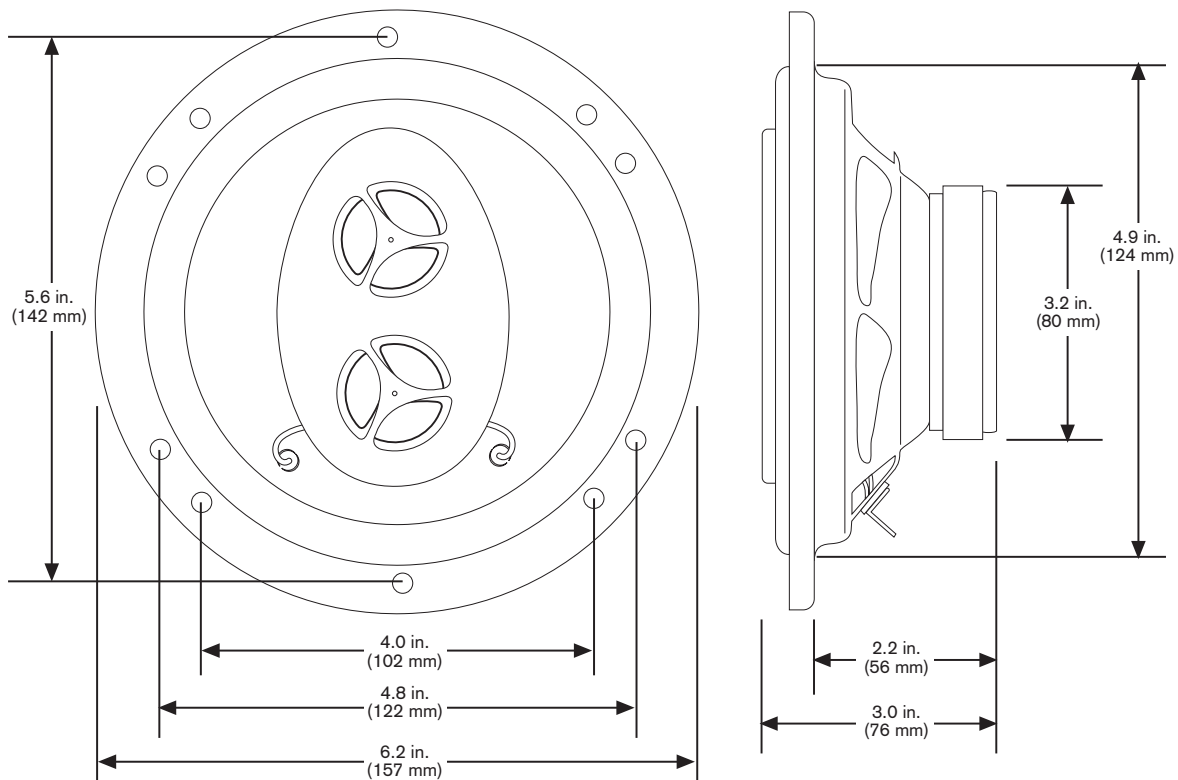
ODx542



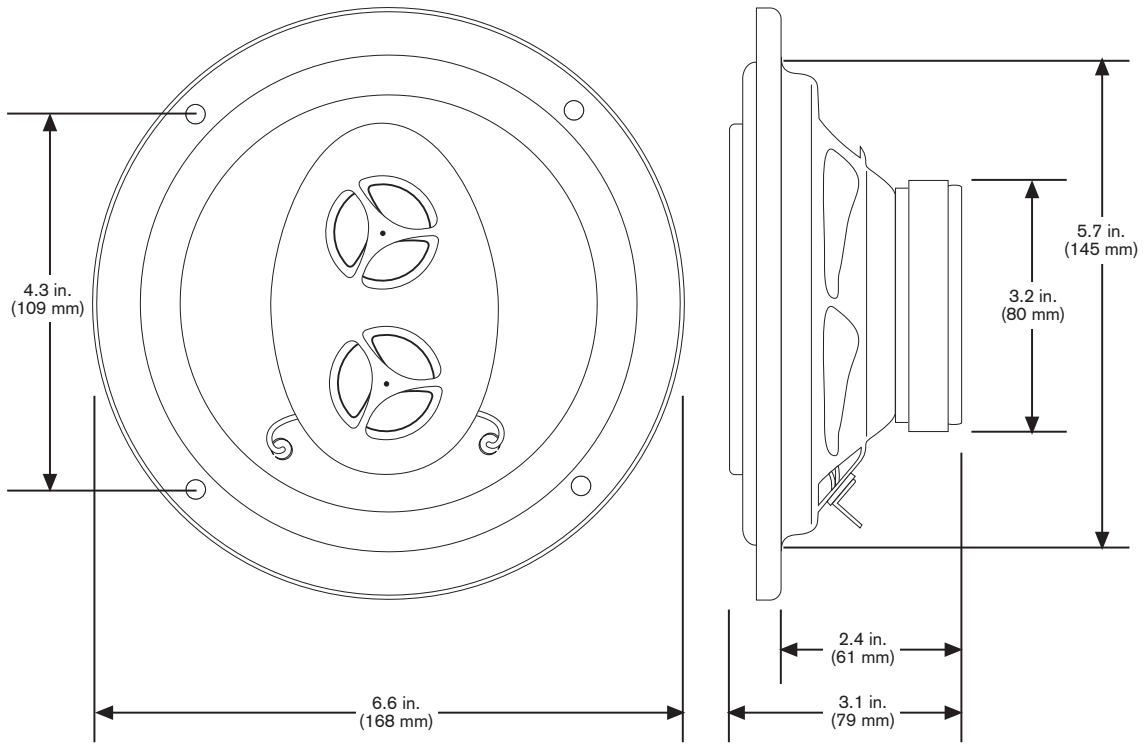
ODx573



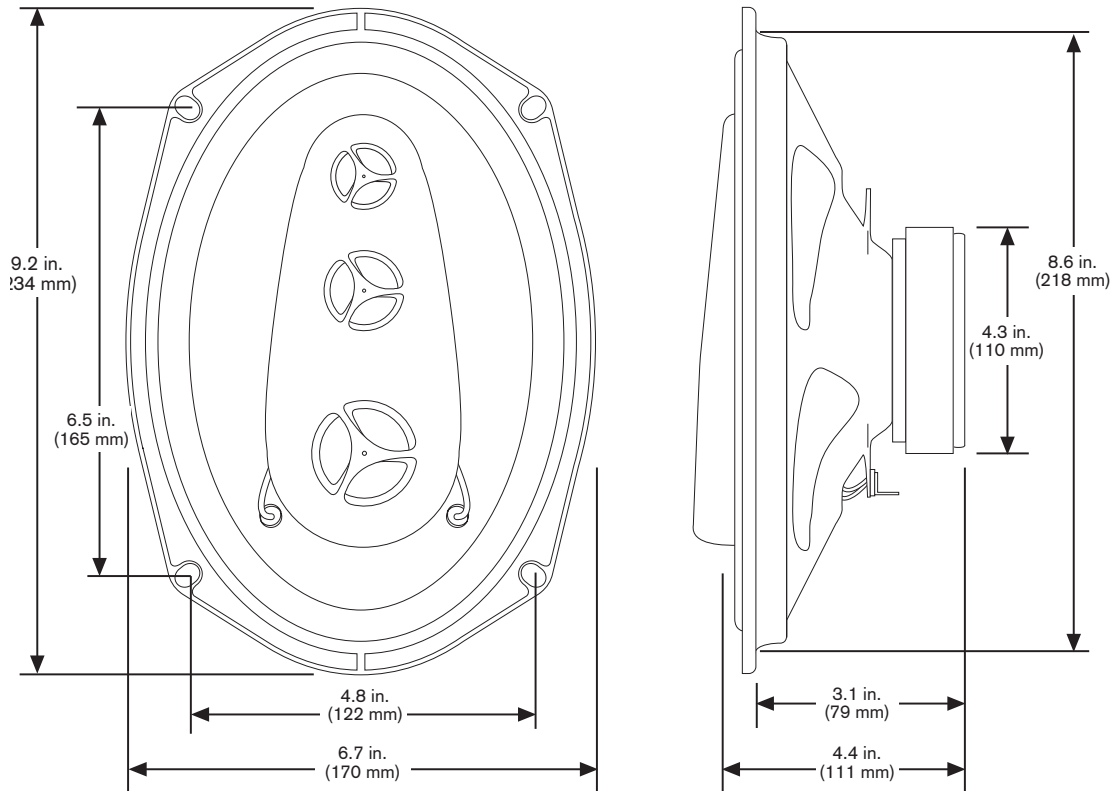
ODx653



ODx663



ODx694





Robert Bosch Corporation
Sales Group - Blaupunkt Division
2800 S. 25th Avenue, Broadview, Illinois 60153 U.S.A.
<http://www.blaupunkt.com>