

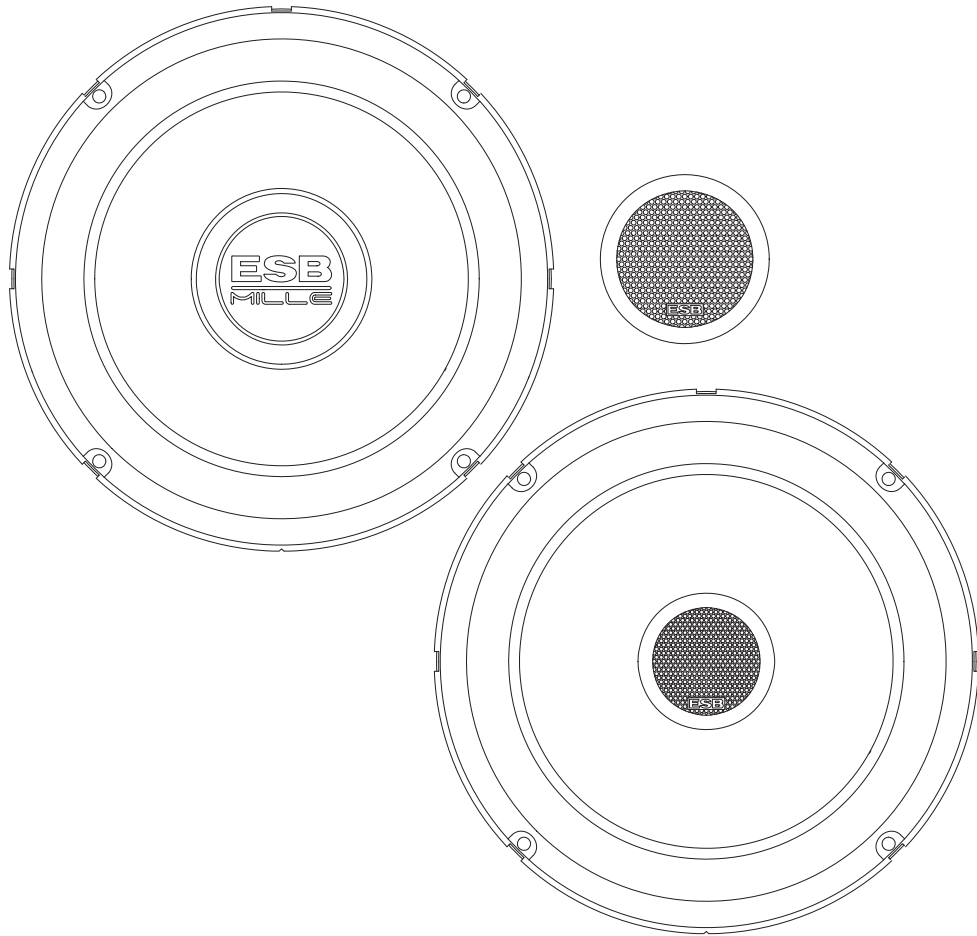


PERFORMANCE  
Speaker Series

# 1000MILLE

Installation Manual

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**1000**

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**Performance Speaker Series**



## ESB 1000 - The Performance Series

The 1000 Series was conceived and designed to offer ESB sound in low-cost speakers, without sacrificing quality. The woofer's pressed paper cone, the large voice coils for handling high power, and the silk dome tweeters with neodymium magnets, are just some of the features that make these speakers uncompromising.

As always, in the ESB philosophy, extreme attention has been given to the musical result. Although these are first-rate speakers, they maintain sonic coherence with the rest of our higher range products without overshadowing our deliberate engineering choices. Those choices guarantee optimal ventilation for safe power management, and materials carefully chosen for their undisputed acoustic qualities.

Each system is designed to be easily installed in a vehicle's original speaker housings and to be integrated with factory head unit or an aftermarket amplifier, whether a vehicle uses coaxial components or two-way speaker systems. Particular attention was given to the mounting depth, which at just 59 mm, is among the shallowest on the market today.

The ESB 1000 woofer in the 2-way systems uses the classic cone configuration with a 25 mm (1") diameter voice coil and a cone in a special cellulose fiber treated on the external side. The tweeter is a 25 mm (1") diameter soft dome which uses a coil external to the dome in order to guarantee maximum response speed (dynamic).

## Main Technical Features

### Basket

The woofer basket is designed with an open, aerodynamically efficient design to optimize ventilation and decompression, allowing sound waves to flow smoothly. Its shape eliminates interference with the moving components of the woofer allowing the use of a low-profile spider for greater support and stability at high excursions as well as a large fixing surface to the magnet. This guarantees rigidity even at high powers. A special anti-resonant paint cancels vibrations and resonances from the basket.

### Motor

ESB's experience in designing magnetic motors results in the energy produced by the motor to be used extremely effectively. The magnetic motor system (which uses a high-grade ferrite magnet) has been designed to achieve precise balance between size, weight and magnetic flux, to optimize the electro-magnetic characteristics of each speaker.

### Voice Coil

The use of aluminum for the moving coil support, although rather expensive, offers many advantages compared to classic voice coils. First of all, it provides greater thermal dissipation (20% higher), and secondly; it supports greater extension of the medium and high frequencies of the woofer which guarantees an "open" sound, making the listening experience pleasant and natural.

### Centering

ESB's research department has spent a lot of time researching the ideal shape of the spider. This fundamental component must guarantee the perfect and linear travel of the cone at both low and high power, but must limit its excursion before becoming uncontrollable. The design of this component ensures perfect ventilation of the voice coil, dissipating the heat from the lower part of the speaker, while at the same time, avoiding any counter-pressure from the cone's movement.

### Cone and Surround

Cones made of paper are the ideal marriage between lightness, stiffness and the ability of the cone to dampen any unwanted vibration. The rubber surround ensures high damping and transversal stability, eliminating movements that could cause contact with the voice coil and the magnet. The surround plays an important role in defining the linearity and stability of the cone/voice coil assembly. A great effort has been made to carefully design its geometry and flexibility, using high-quality materials to ensure precision and linearity in the cone movement, thus reducing distortion and increasing bass dynamics.

### Dust Cap

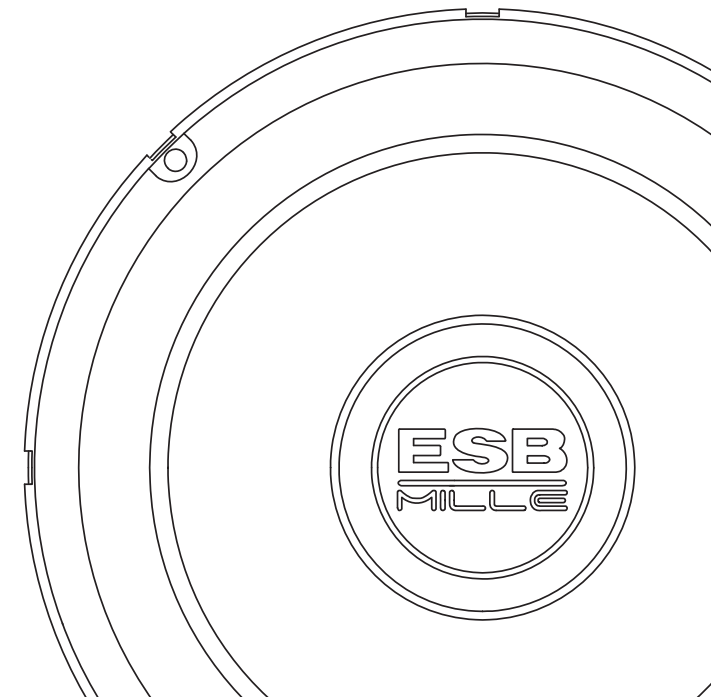
A new dust cap made of damping material helps reduce cone break-up at high volume levels, thus expanding the range of use of the woofer at high power.

### Tweeter

The tweeter design sets new standards for power handling and low distortion while delivering enjoyable music reproduction. The 1000 Series tweeters use a silk dome for a smooth and natural sound. The dome is of extremely low mass and is much less susceptible to mechanical deformation. It provides a smooth, linear and very extended response. The high-grade neodymium magnet is optimized to provide better efficiency and improved linearity, ensuring greater power management with increased bandwidth and efficiency. Different mounting options make installation simple and hassle-free. Furthermore, the tweeter can be removed from its housing to further reduce its size for installation in a vehicle's original housing.

### Crossover

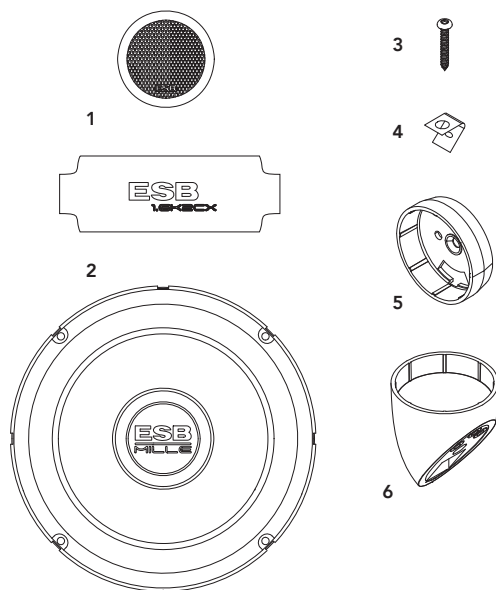
The crossover filter is built to handle higher power than the speakers by using high-quality components. This minimizes component saturation that could cause the speakers to distort, allowing the ESB 1000 System to deliver its full potential.



# Installation

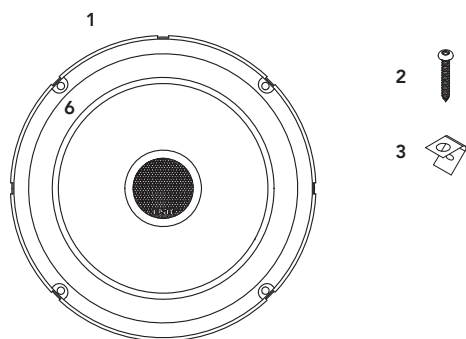
## 1.6K2X Part List

- 1 2 x Tweeter + Cap
- 2 2 x Woofer
- 3 8 x Ø4x25 Screw
- 4 8 x Clip
- 5 2 x Tweeter Cup
- 6 2 x Tilted Cup



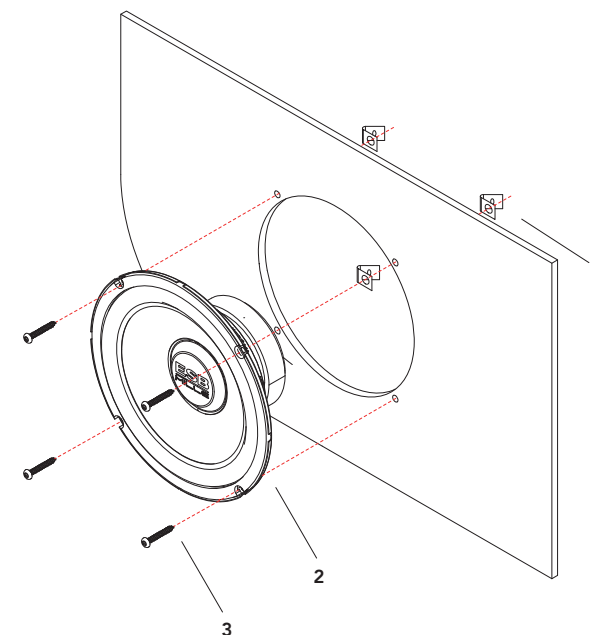
## 1.6C Part List

- 1 2 x Coaxial
- 2 8 x Ø4x25 Screw
- 3 8 x Clip

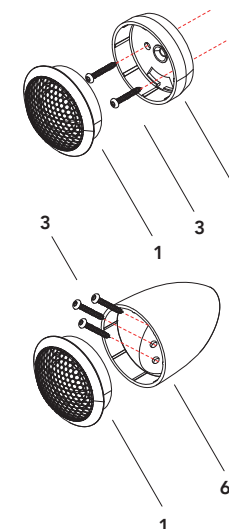


## Installation

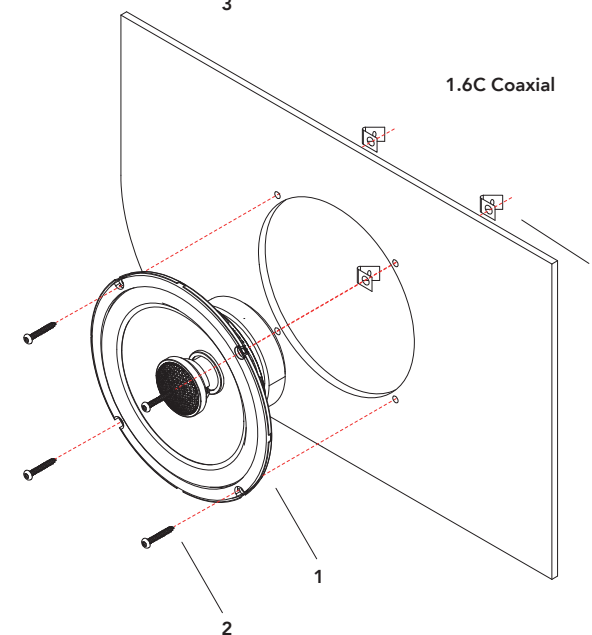
### 1.6K2X Woofer



### 1.6K2X Tweeter



### 1.6C Coaxial



# Technical Specifications

## 1.6K2X

Speaker Type: 2-Way System  
 Tweeter Nominal Diameter: 1"/25 mm  
 Woofer Nominal Diameter: 6.5"/165 mm  
 Nominal Impedance (Znom): 4 Ohms  
 Continuous Power Handling: 90 W  
 Peak Power Handling: 180 W  
 Sensitivity: 92.0 dB @ 2.83v/1m

### Main Construction Features

Woofer Magnet: Y-25 Ferrite  
 Tweeter Magnet: N-35 Neodymium  
 Woofer Cone/Suspension: Paper/Rubber  
 Tweeter Dome: Silk

### Woofer Parameters

Voice Coil Resistance (Re): 3.3 Ohms  
 Free Air Resonance (Fs): 64 Hz  
 Electrical "Q" (Qes): 1.10  
 Mechanical "Q" (Qms): 4.21  
 Total Speaker "Q" (Qts): 0.87  
 Equivalent Compliance (Vas): 11.5 lt  
 Moving Mass (Mms): 14.1 g  
 Mech. Compliance (Cms): 0.44 m/N

## 1.6C

Speaker Type: Coaxial  
 Tweeter Nominal Diameter: 0.8"/20 mm  
 Woofer Nominal Diameter: 6.5"/165 mm  
 Nominal Impedance (Znom): 4 Ohms  
 Continuous Power Handling: 90 W  
 Peak Power Handling: 180 W  
 Sensitivity: 91.0 dB @ 2.83v/1m

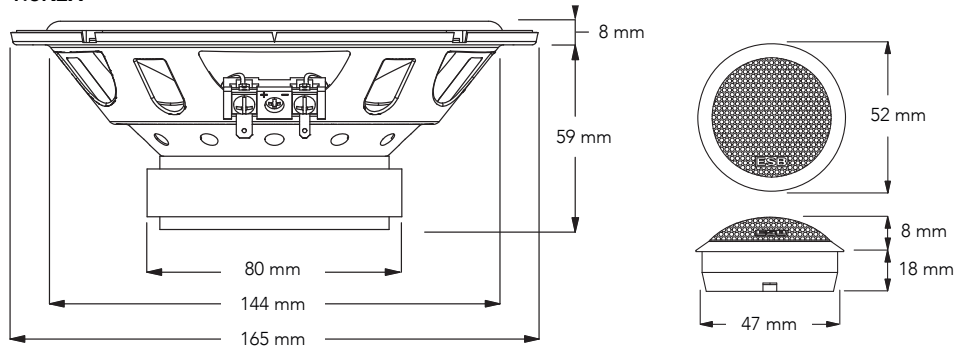
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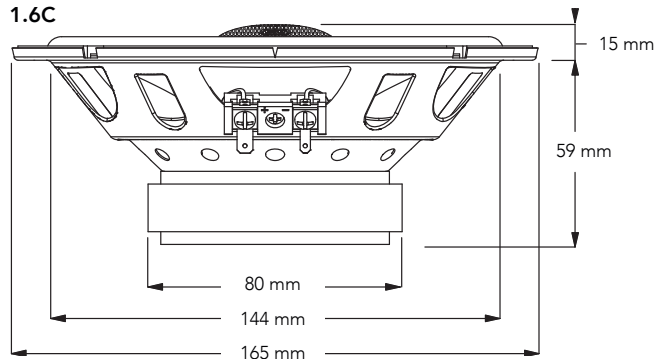
### Woofer Parameters

Voice Coil Resistance (Re): 3.3 Ohms  
 Free Air Resonance (Fs): 68.5 Hz  
 Electrical "Q" (Qes): 1.22  
 Mechanical "Q" (Qms): 5.29  
 Total Speaker "Q" (Qts): 0.99  
 Equivalent Compliance (Vas): 11.2 lt  
 Moving Mass (Mms): 12.2 g  
 Mech. Compliance (Cms): 0.44 m/N

### 1.6K2X

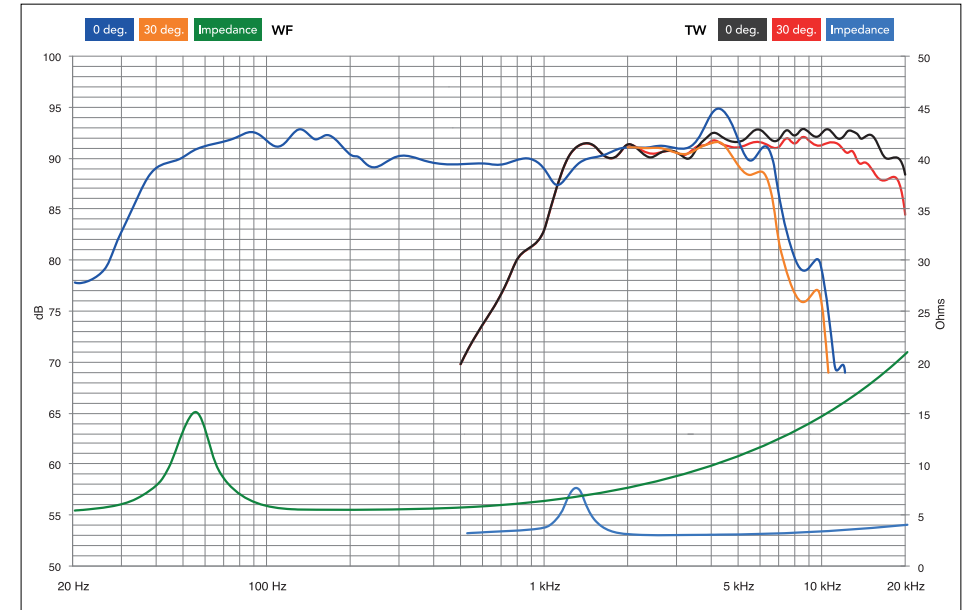


### 1.6C

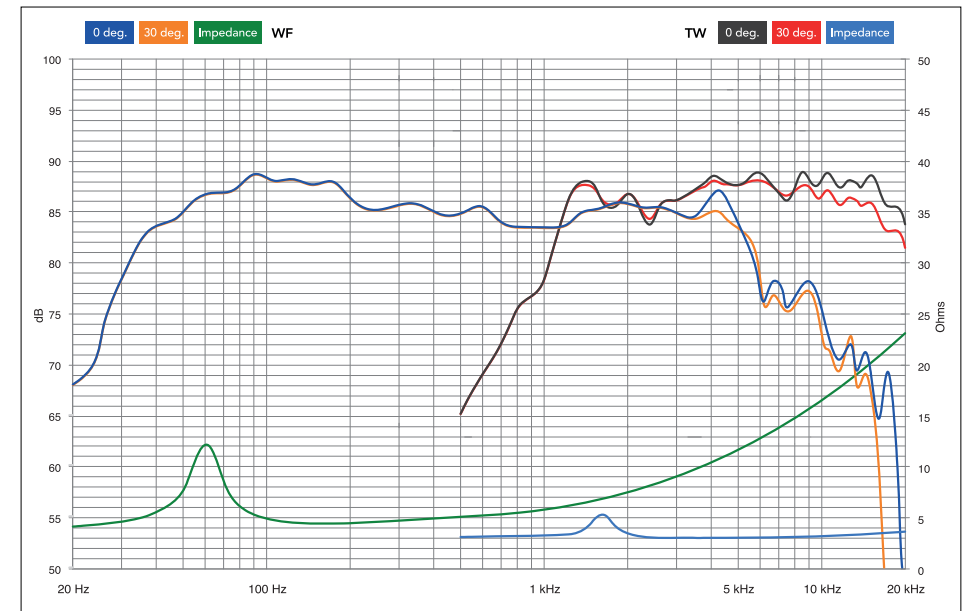


## Frequency Response vs Impedance

### 1.6K2X



### 1.6C





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AUDIO