

ESB
AUDIO
9.4M High End
Midrange



ESB AUDIO 9.4M High End Midrange Instructions

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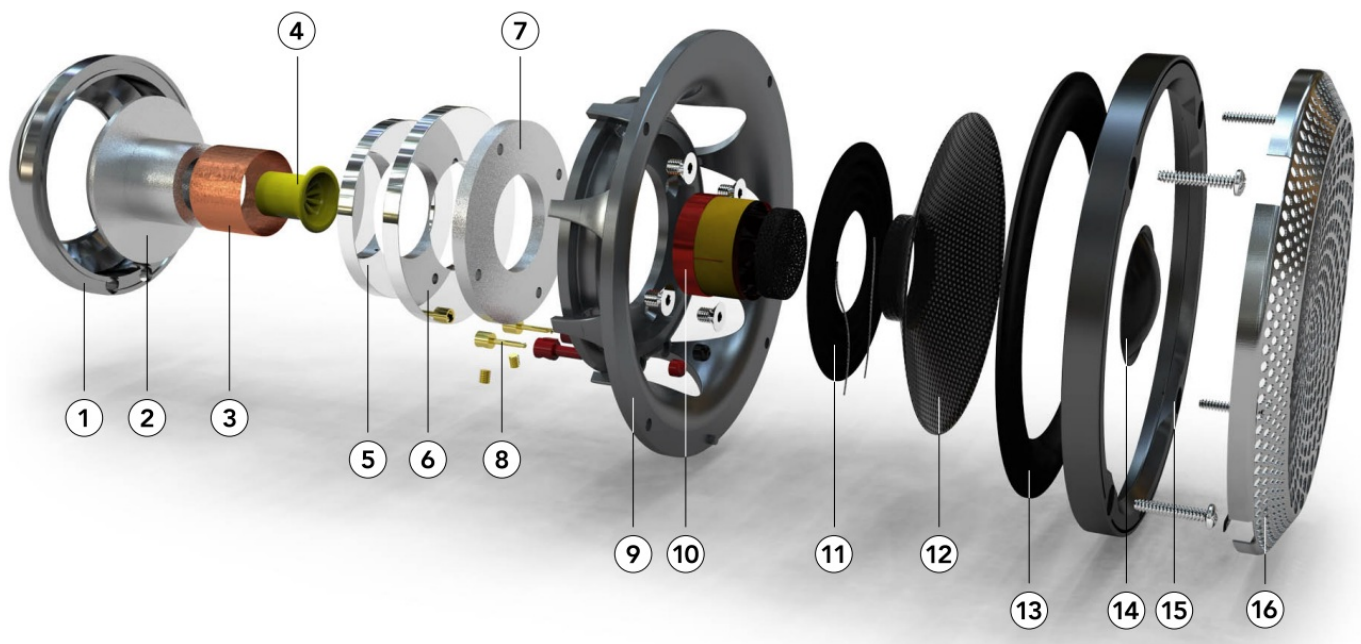
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ESB AUDIO 9.4M High End Midrange



OVERVIEW

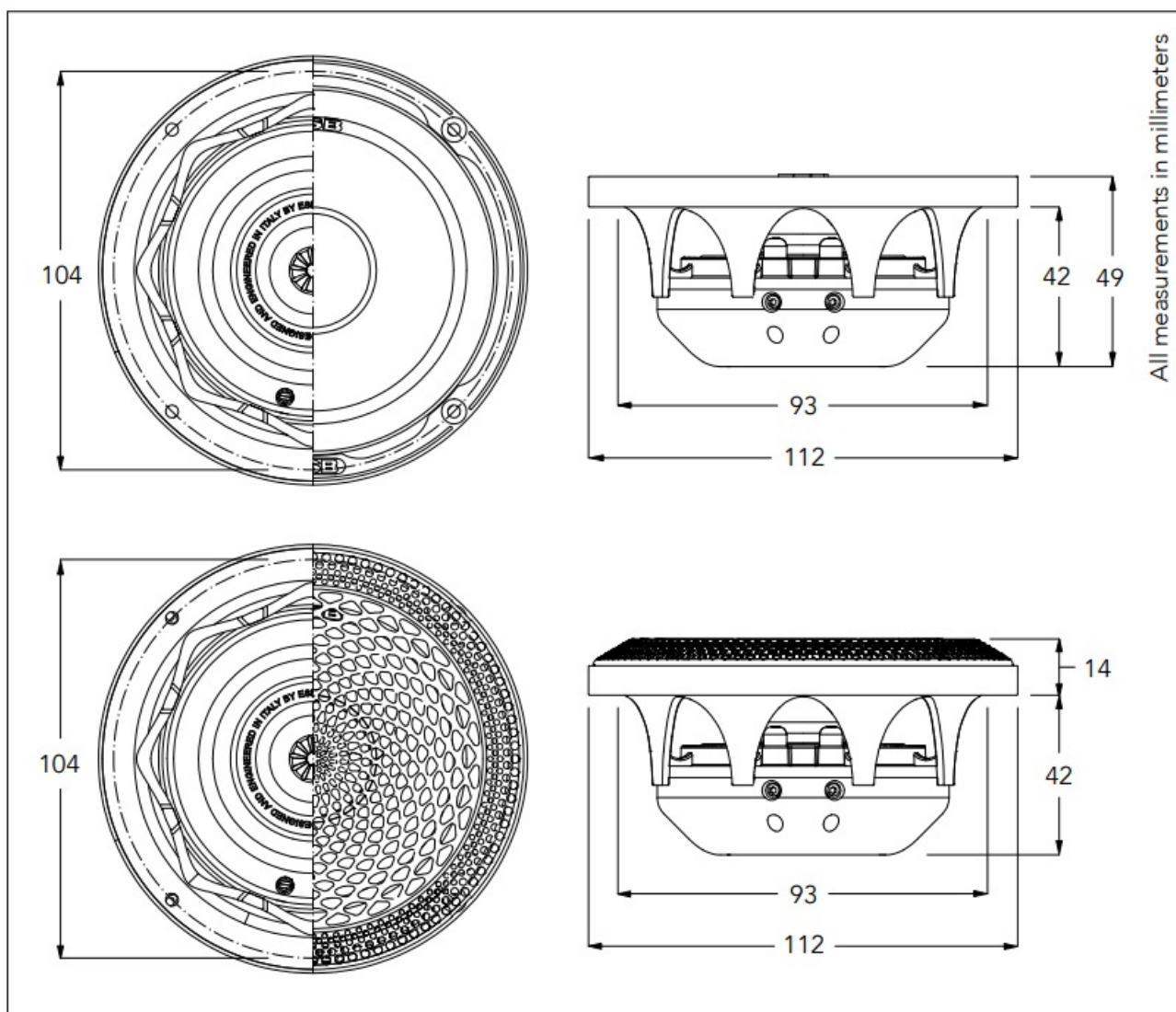


1. Aluminum finishing cup
Pole yoke designed with the help of magnetic flux analysis software. It helped to achieve perfect and homogeneous saturation of the magnetic gap for the benefit of the voice coil stroke, this reduces distortion and increases dynamics.
2. Pure copper ring placed in the air gap helps reducing the inductance of the voice coil so that it offers minimal resistance in high-frequency reproduction. This means better high-frequency response, enabling the speaker to reproduce high-frequency sounds more accurately. Reducing inductance contributes to better handling of rapid transitions of audio signals. This can improve the speaker's ability to more accurately reproduce transient sound pulses.
3. TCA to control the flow of air moved by the cone creates aperiodic damping resistance and implies that the release of energy accumulated in the movement of the speaker occurs in a controlled and fast manner, without

creating persistent oscillations. This contributes to a more precise and faithful response to the audio source and to the accuracy and overall quality of experience.

4. Secondary of twin coupled neodymium magnet.
5. Main of twin coupled neodymium magnet. This pair of neodymium high-temperature resistant magnets are one of the powerful motor magnet structure for this size of car audio midrange. They are made from a high-grade neodymium and allows the size and bulk of the magnetic motor to be greatly reduced.
6. Pole plate CNC machined from a solid piece of ultra-low-carbon steel.
7. The built-in terminals accept large gauge cables and are thick gold-plated to prevent any loss of the power generated by the amp.
8. Die cast-aluminum and powder-coated basket offers very low resistance to the passage of air, and its shape (verified by FEM analysis) reduces vibration and resonance.
9. Wide, lightweight Nomex voice coil with aluminum winding contributes significantly to the wide bandwidth extension.
10. Large balanced Conex™ spider damper device ensures linear excursion in both directions, reducing distortion.
11. The cone is made of high modulus carbon molded under vacuum and autoclave, a technology rarely used in speakers because of its cost, but brings enormous benefits in terms of naturalness of reproduction and high transient dynamics.
12. The NBL rubber edge has a shape designed to ensure very smooth movement at very low excursion, becoming increasingly controlled as the excursion increases and approaches the limit. This, too, helps to make this speaker extremely dynamic and capable of handling large powers.
13. The laminated aluminum dust cup helps extend this midrange's frequency response upward, and its shape and size help equalize and linearize the frequency response.
14. CNC-machined aluminum ring secures the rubber suspension on the edge, ensuring perfect fastening and centering, avoiding glue alone.
15. CNC-machined aluminum grille.

DIMENSION



- **Speaker Type:** Component Midrange
- **Nominal Diameter:** 4"/100 mm
- **Nominal Impedance (Z_{nom}):** 4 Ohms
- **Continuous Power Handling:** 120 W
- **Peak Power Handling:** 240 W
- **Rec. Amplifier Power:** 50 – 200W (RMS)
- **Driver Rear Displacement:** 0.14 l_t
- **Min. Rec. Sealed Enclosure:** 1 l_t

PARAMETERS

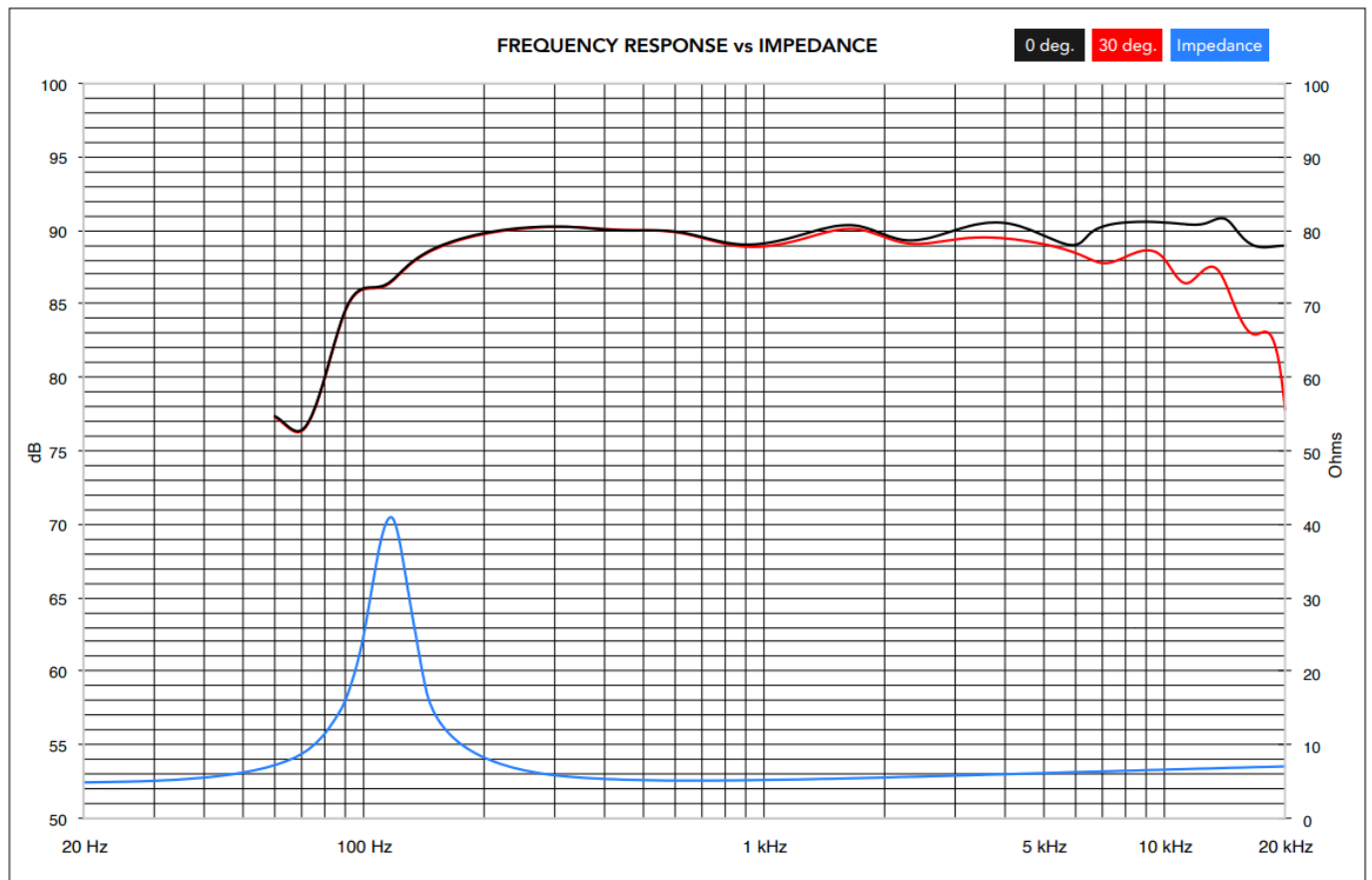
- **Voice Coil Resistance (R_e):** 4.1 Ohms
- **Voice Coil Diameter:** 25.5 mm
- **Free Air Resonance (F_s):** 135 Hz
- **Reference Efficiency (η):** 0.359 %
- **Sensitivity:** 87.6 dB @ 1W/1m 90.6 dB @ 2.83V/1m
- **Electrical "Q" (Q_{es}):** 0.931
- **Mechanical "Q" (Q_{ms}):** 3.645
- **Total Speaker "Q" (Q_{ts}):** 0.741

- **Equivalent Compliance (Vas):** 1.4 liters.
- **Moving Mass (Mms):** 4.5 g
- **Mech. Compliance (Cms):** 0.306 mm/N
- **Magnetic Strength (BL):** 4.117 N/A
- **Effective Piston Area (Sd):** 56.7 sq. cm
- **One-Way Linear Excursion (Xmax):** 2.8 mm

DESIGN BANDWIDTH

- With 48 dB/oct. HP filters: 100 Hz – 20 KHz
- With 24 dB/oct. HP filters: 120 Hz – 20 KHz
- With 12 dB/oct. HP filters: 140 Hz – 20 KHz

FREQUENCY RESPONSE vs IMPEDANCE



Product Usage Instructions

Installation

1. Choose a suitable location for the midrange speaker installation in your vehicle or audio system setup.
2. Ensure the mounting surface is secure and can support the speaker's weight.
3. Connect the speaker wires to the appropriate terminals following the polarity markings.
4. Secure the speaker in place using screws or mounting brackets provided.

Amplifier Connection

Connect the midrange speaker to a compatible amplifier within the recommended power range for optimal performance.

Sound Adjustment

Adjust the amplifier settings and equalizer to fine-tune the midrange frequencies according to your preferences.

Maintenance

Regularly check the connections and speaker condition to ensure proper functionality and longevity.

Frequently Asked Questions (FAQ)

Q: What is the recommended amplifier power for this midrange speaker?

A: The recommended amplifier power is between 50 – 200W (RMS) for this midrange speaker.

Q: What is the sensitivity of the speaker?

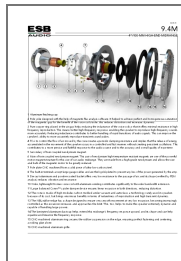
A: The sensitivity of the speaker is measured at 87.6 dB @ 1W/1m and 90.6 dB @ 2.83V/1m.

Q: What is the design bandwidth of the speaker with different high pass filter settings?

A: The design bandwidth varies with high pass filter settings as follows:

- With 48 dB/oct. HP filters: 100 Hz – 20 KHz
- With 24 dB/oct. HP filters: 120 Hz – 20 KHz
- With 12 dB/oct. HP filters: 140 Hz – 20 KHz

Documents / Resources



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9.4M High End Midrange, 9.4M, High End Midrange, End Midrange, Midrange

References

- [User Manual](#)

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