Electro-Voice®

ECS 15-1

Sub woofer

- **Subbass system for ECS Series Systems.**
- **Extended bass response.**
- **400 W power handling capacity.**
- **High excursion DL 15 X woofer.**

SPECIFICATIONS

Frequency Response, 10 Feet on Axis, Anechoic Environment, ± 3 dB:
54–3.200 Hz
Low-Frequency -3 dB Point:
54 Hz
Usable Low-Frequency Limit, -10 dB Point:
40 Hz
Half Space Reference Efficiency:
6.2%
Long Term Average Power Handling Capacity:
400 Watts
Maximum Woofer Acoustic Output:
25 Watts
Sound Pressure Level at 1 meter, 1 Watt Input, Anechoic Environment:
100 dB
Dispersion Angle nominal, Horizontal and Vertical:
50–200 Hz
Essentially Omnidirectional
Transducer Complement:
DL 15 X
Recommended Crossover Frequency:
125–150 Hz
Impedance:
Nominal:
8 Ohms
Minimum:
6.6 Ohms
Input Connections:
Two Parallel Speakon Connectors
Material:
Enclosure:
Black carpet covered Road Wood™
Grill:
Black metal grill, removable
Optional Accessories:
Mounting Pole ECS P
Dimensions:
70.0 cm (27.6 in) high
47.0 cm (18.5 in) wide
45.0 cm (17.7 in) deep
Net Weight:
30.0 kg
Shipping Weight:
33.0 kg

DESCRIPTION

The ECS 15-1 is a 400 Watt sub woofer speaker system designed to supplement ECS Series of speaker systems.
Designed according to the analysis of Theile-Small this system is characterized by high efficiency, low distortion, and an excellent low frequency performance in a relatively small enclosure size.
Especially designed to match the other loud-speaker systems in the ECS series both in width as well as cosmetics the ECS 15-1 is the ideal low frequency extension to the ECS 12-2, and other systems.
With the optional ECS P mounting pole fitted to the top of the cabinet, systems such as the ECS 12-2 can be mounted at an ideal height without the use of a separate speaker stand.

USE IN MULTIPLES

The ECS 15-1 may be used in multiples to increase acoustic output. A 6-dB increase in maximum acoustic output occurs when two speaker systems are located side by side. For operation at very-low-frequencies, the woofer cones mutually couple, acting as one system with twice the effective cone area and power-handling capacity of a single system. Efficiency is doubled by the increased cone area to provide 3-dB more output, while the doubled power capacity provides the potential for an additional 3-dB gain in maximum acoustic output.

Mutual coupling occurs when the center-to-center distance between woofers is less than one-half wavelength. When the woofers are spaced greater than one-half wavelength, as would occur if two ECS 15-1 were widely spaced, the level increase is limited to the 3-dB input power increase.

ENCLOSURE CONSTRUCTION

The ECS 15-1 enclosure utilizes a structural material that combines the strength of high-quality plywood with the density and acoustic damping of particle board without brittleness. Road-Wood™ uses the same principle of crossbanding veneers, as in plywood, in order to achieve its very high rigidity. A tough liquid-phenolic resin is blended with long, narrow strands of hardwood. Alternate layers are perpendicularly bonded under intense heat and pressure to form panels of superior uniformity. Unlike many grades of plywood, Road-Wood is dimensionally stable, water resistant and free from voids.

A combination of dado cut joints, tough adhesives, and proper bracing ensure a sonically dead enclosure free from panel resonances.

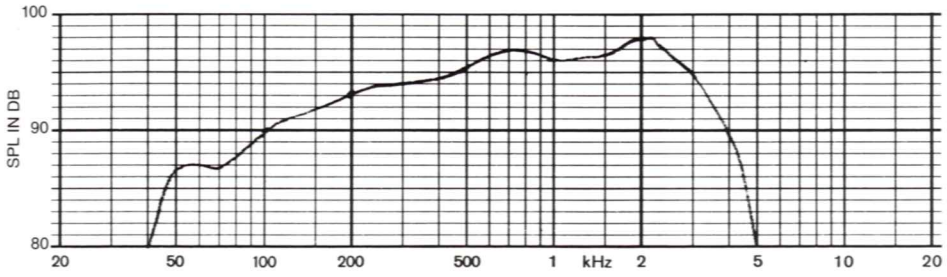

FIGURE 1 – Axial Frequency Response

The densely-woven, industrial-grade, abuse-resistant carpeting provides a finish that is both attractive and highly durable. A solidly constructed, one piece, removable metal grill protects the front of the system. Firmly secured rubber feet and recessed handles complete the picture and ensure that the ECS 15-1 speaker system is ideally suited to a long and reliable life «on the road».

FREQUENCY RESPONSE

The ECS 15-1 frequency response was measured at ten feet, using a four-volt input in an anechoic chamber, and was measured using a swept 1/3-octave pink noise signal. No external equalization was used.

Note than when the ECS 15-1 is used in a half space environment (ie on the floor) the output at the low end is raised by 3 dB as an effective mirror image of the speaker is created.

CONNECTIONS

The ECS 15-1 is equipped with Neutrik Speakon™ NL4MPR connectors. Two connectors are installed in parallel allowing additional ECS 15-1's to be installed. One mating Speakon™ connector NL4FC is supplied with each system. These connectors are locking, self-polarizing and capable of 30 amps rms continuously. Additional connectors and cables can be purchased from your dealer.

GRILLE REMOVAL

The grille assembly of the ECS 15-1 is fastened to the enclosure using four sturdy dual-lock fasteners. The grille assembly can be removed quickly and easily, allowing access to the drivers, by firmly pulling on the two black polyester ribbon loops provided.

SUBPASSBAND SPEAKER PROTECTION

Below the enclosure tuning frequency, cone excursion increases rapidly. Since acoustic output is also falling rapidly, there is no advantage in driving the system with signals much below the tuning frequency. While such signals may be in the program material, they are often extraneous – such as from record surface irregularities or a dropped microphone. High-output subwoofer systems such as the ECS 15-1 should be protected with a 40 Hz high-pass filter having 12-dB-per-octave rolloff. Subpassband filters are found in many commercially available crossovers and equalizers, such as the Electro-Voice XEQ-3.

CROSSOVERS AND AMPLIFIERS

To achieve optimum performance, the ECS 15-1 should be used with an active crossover having a crossover frequency of 100 to 250 Hz with a minimum slope of 12-dB-per-octave. The output of the crossover is then connected to a power amplifier which drives the speaker system. A power amplifier with a rated output between 400 and 800 watts RMS is recommended for optimum performance. While it is acceptable to use amplifiers with less output, maximum acoustic output will not be achieved. A passive crossover with similar characteristics can also be used.

POWER HANDLING CAPACITY

To our knowledge, Electro-Voice was the first U.S. manufacturer to develop and publish a power test related to real-life conditions. First, we use a random noise input signal because it contains many frequencies simultaneously, just like real voice or instrument program. Second, our signal contains more energy at extremely high and low frequencies than typical actual program, adding an extra measure of reliability. Third, the test signal includes not only the overall "long-term average" or "continuous" level – which our ears interpret as loudness – but also short-term peaks which are many times higher than the average, just like the actual program. The long-term average level stresses the speaker thermally (heat).

The instantaneous peaks test mechanical reliability (cone and diaphragm excursion). Note that the sine wave test signals sometimes used have a much less demanding peak value relative to their average level. In actual use, long-term average levels exist from several seconds or greater, but we apply the long-term average for several hours, adding another extra measure of reliability.

Specifically, the ECS 15-1 is designed to withstand the power test described in the EIA Standard RS-426A. The EIA test spectrum is applied for eight hours. To obtain the spectrum, the output of a white-noise generator (white noise is a particular type of random noise with equal energy per bandwidth in Hz) is fed to a shaping filter with 6-dB-per-octave slopes below 40 Hz and above 318 Hz. When measured with the usual constant-percentage bandwidth analyzer (one-third-octave), this shaping filter produces a spectrum whose 3-dB-down points are at 100 Hz and 1.200 Hz with a 3-dB-per-octave slope abouve 1.200 Hz. This shaped signal is sent to the power amplifier with the continuous power set at 400 watts into the 6.9 ohms EIA equivalent impedance, (52.5 volts true RMS). Amplifier clipping sets instantaneous peaks at 6 dB above the continuous power, or 1.600 watts peak (105 volts peak). This procedure provides a rigorous test of both thermal and mechanical failure modes.

WARRANTY (Limited)

Electro-Voice speaker and speaker systems (excluding active electronics) and accessories are guaranteed for five years from date of original purchase against malfunction due to defects in workmanship and materials. If such malfunction occurs, unit will be repaired or replaced (at our option) without charge for materials or labor if delivered prepaid to the proper Electro-Voice service facility. Unit will be returned prepaid. Warranty does not cover finish or appearance items or malfuntion due to abuse or operation at other than specified conditions. Repair by other than Electro-Voice or its authorized service agencies will void this guarantee.

For shipping address and instructions on return of Electro-Voice products for repair and locations of authorized service agencies, please write:
Service Department, Electro-Voice, Inc.
600 Cecil Street, P.O. Box 186
Buchanan, Michigan 49107
(Phone: 616/695-6831), or
Electro-Voice West, 8234 Doe Ave.,
P.O. Box 3297, Visalia, CA 93277
(209/625-1330,-1)

In Europe
Mark IV Audio AG, Keltenstrasse 5
CH-2563 Ipsach, Switzerland

In Germany
Mark IV Audio
Hirschberger Ring 45
D-94302 Straubing

Electro-Voice also maintains complete facilities for non-warranty service.

Specifications subject to change without notice.

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