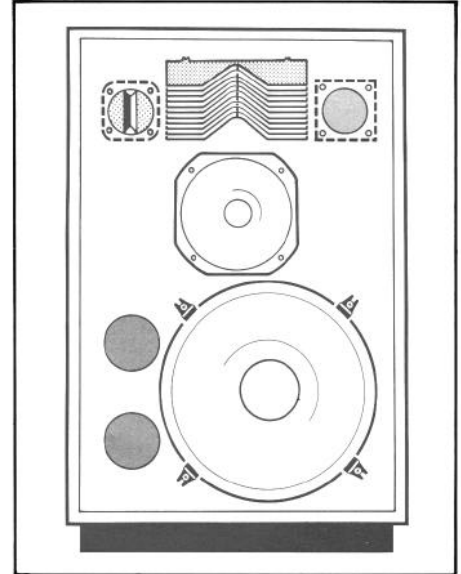


Professional Series

Four-Way Studio Monitors

4340 For Bi-Amplification

4341 With High Level Network



Accurate, smooth reproduction from 35 to 20,000 Hz, ± 3 dB

44 dB SPL at 30 feet with a 1-milliwatt input

101 dB SPL at 10 feet at one-half rated power input

Components: 15-inch low frequency loudspeaker, 10-inch midrange loudspeaker, high frequency compression driver with horn/lens assembly and ultra-high frequency transducer

Balance controls located behind the removable grille

Oiled walnut or textured gray enclosure

The 4340 and 4341 Studio Monitors

The 4340 and 4341 represent an extension of the research and development effort that produced the 4350 Studio Monitor, JBL's top system, which uses dual low frequency drivers. These new monitors accurately reproduce the full range of fundamentals and overtones in music at sound pressure levels approximating those of an original performance.

The exceptionally smooth wide-band reproduction, clarity, transient response and low distortion of the 4340 and 4341 result from total integration of the components that make up the four-way system so that each transducer reproduces only that portion of the audio spectrum for which it is specifically designed. Deliberately restricting the operating bandwidth of the individual drivers results in maximization of each unit's transient response. Another benefit of bandwidth limitation is that each driver operates only in the region of the audio spectrum through which it exhibits controlled sound distribution, thus a dispersion pattern for the complete system is achieved which is ideal for studio use. The passive frequency dividing network supplied with the 4341 controls the acoustic output of all the individual transducers. The 4340 is provided with a passive network for only the high and ultra-high frequency transitions, and is fitted with terminals for bi-amplification of the low frequency transition.

Low Frequency Loudspeaker

The 15-inch low frequency loudspeaker is mounted in a ported enclosure having an internal volume of 5.5 cubic feet. The driver features extreme, solid low frequency reproduction with smooth response well past its crossover frequency. The unit is energized by a 13-pound magnetic assembly housing an Alnico V magnet. The assembly concentrates a magnetic field having a flux density of 12,000 gauss in the voice coil gap. The 4-inch edgewound copper ribbon voice coil is hand wound on a heat resistant support. The support is affixed to a rigid cone having optimum mass, density and rigidity for exceptional transient response and maximum efficiency consistent with the bandwidth of the driver.

Midrange Loudspeaker

The smooth performance and instantaneous transient response of the 10-inch midrange loudspeaker is largely responsible for the outstanding instrumental clarity, vocal definition and dimensional accuracy of the system. Its closed magnetic assembly, weighing 6½ pounds, concentrates all the energy of an Alnico V magnet in the voice coil gap. The 3-inch edgewound copper ribbon voice coil is suspended within a powerful magnetic field having a flux density of 10,000 gauss.

The integrally stiffened cone is terminated with an exclusive JBL ring compliance that allows long excursions while maintaining linear travel.

High Frequency Compression Driver

The high frequency compression driver provides smooth, accurate response and is capable of delivering the high power output levels required in monitor applications. The closed magnetic assembly is energized by an Alnico V magnet, weighs 10 pounds and achieves a flux density of 19,000 gauss in the voice coil gap. A ring of pure silver deposited on the circumference of the pole piece maintains uniform impedance through the highest frequencies extending the bandwidth of the driver. The diaphragm, pneumatically formed of .002-inch thick aluminum foil stock, is driven by a 1.75-inch edgewound aluminum ribbon voice coil. The wavefront emerging from the diaphragm is directed through the concentric channels of a phasing plug prior to distribution by the horn/lens assembly.

Horn/Lens Assembly

Output from the high frequency compression driver is distributed through a controlled pattern by the horn/lens assembly. The horn is formed of a rigid casting to eliminate spurious resonance. The exponential taper rate of the horn controls the expansion of the wavefront providing proper acoustic loading of the driver diaphragm and determines the vertical dispersion pattern of the assembly. The acoustic lens functions in a manner analogous to a divergent optical lens. Its 11 plates, set at a precise angle to the enclosure baffle panel, provide controlled propagation of high frequency acoustic energy in the horizontal plane.

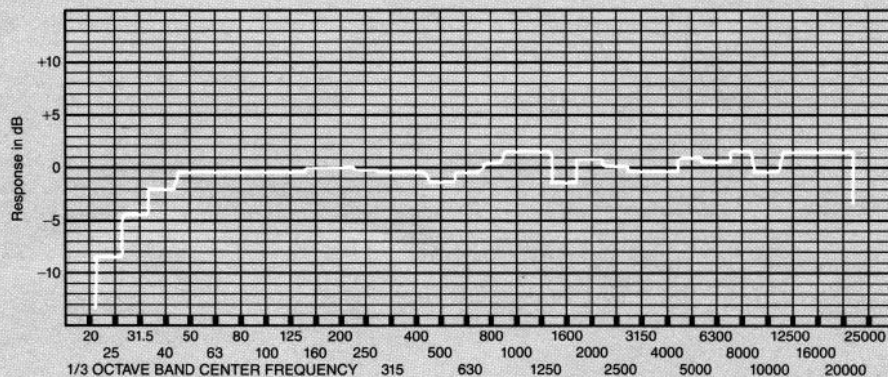
Ultra-High Frequency Transducer

Overtone above 9000 Hz are reproduced by a compression driver and diffraction horn specifically designed for reproduction and dispersion of energy at the extreme high end of the audio spectrum. The compression driver consists of a 3¼-pound magnetic assembly energized by an Alnico V magnet. The 1.75-inch edgewound aluminum ribbon voice coil, suspended within a field having a flux density of 16,500 gauss is affixed to a heat resistant support bonded to a ring diaphragm pneumatically formed of .0022-inch thick aluminum foil. Output from the diaphragm is directed through the integral diffraction horn, which produces the unit's wide high frequency dispersion pattern.

Frequency Dividing Network

The 4341 is provided with a high level, passive frequency dividing network for the three transitions of the system. The 4341 is equipped with a similar network for the high and ultra-high frequency transitions only. In each case, the circuitry has been designed with consideration for the various performance characteristics of the drivers and their location on the enclosure baffle panel. The network has been designed for continuous high power application; capacitors are non-inductive, non-polarized types with high AC current capacity, and special inductors are used to minimize power losses within the network. Each inductor is calibrated on a sensitive electronic bridge and its value set precisely.

The 4340 is provided with input terminals for the two amplifiers of a bi-amplified installation. A special circuit card providing the precise crossover characteristics for the 4340 is available for use in the JBL 5231 or 5232 Electronic Frequency Dividing Network.



Frequency response of the 4340 and 4341 taken with ½-octave band pink noise. Measured response contour of a typical system averaged through an inclusive arc of 60° in the horizontal and 30° in the vertical planes does not deviate more than 2 dB from the above curve.

Conventional electronic networks can be used, but they may not have the exact frequency and filter slope characteristics required for optimum performance of the system.

Enclosure

In keeping with current trends in studio design that encourage creativity, JBL studio monitor enclosures feature contemporary styling and are offered in two finishes, each with a complementary grille color. The enclosure, however, contributes much more than striking appearance. The low frequency loudspeaker is housed in a chamber having an internal volume of 5.5 cubic feet. The mid-range loudspeaker is enclosed in a separate,

isolated sub-chamber having an internal volume of .3 cubic feet. The internal volume of the acoustic chambers and physical configuration of the ducted ports are carefully calibrated to properly load the low frequency and midrange loudspeakers for optimum bass response and to control cone excursion, thus minimizing distortion and maximizing power handling capacity of the drivers. To eliminate resonance, the enclosure is constructed of dense 1-inch stock with a 15-ply baffle panel; all joints are carefully lock mitered and glued; the back, side, top and bottom panels are lined with acoustic damping material and are each stiffened by multiple braces glued and screwed to the panel and to the adjacent surfaces of the enclosure.

Test Parameters

The accompanying graph and specifications were compiled from measurements made under standard laboratory test conditions. The complete loudspeaker system, including the enclosure, was mounted flush in the center of a large, flat baffle in an anechoic environment. Calibrated condenser microphones were suspended at a measured distance from the sound source, sufficiently out of the near field. All associated electronic equipment was checked and calibrated before tests were run.

Specifications

Maximum Power Input¹

4340

Below 300 Hz

75 Watts steady state at 8 ohms

Above 300 Hz

75 Watts steady state at 8 ohms

4341

75 Watts steady state at 8 ohms

Nominal Impedance

8 ohms

Power Output²

101 dB SPL measured at 10 ft. (3.0 m) in a room volume of 2000 cu. ft. (56.6 m³) with ½ rated power input

Frequency Response

Sine Wave, On-Axis

35 to 20,000 Hz, ±3 dB

1/3-Octave Band

−4 dB at 31.5 Hz,

(400 Hz Reference)

+2 dB at 1 kHz,

+2 dB at 20 kHz

Polar Response

No less than −3 dB at 60° horizontal and 30° vertical to 16 kHz

Sensitivity³

83.5 dB SPL measured at 10 ft. (3.0 m) with 1-Watt input averaged from 100 to 1000 Hz

44 dB SPL measured at 30 ft. (9.1 m) with 1-milliwatt input averaged from 100 to 1000 Hz

Distortion

1/2 Power, 99 dB SPL/10 ft. (3.0 m), Single Frequency

1% or less third harmonic generation from 35 to 1500 Hz

2% or less third harmonic generation above 1500 Hz

Crossover Frequencies⁴

300, 1250 and 9500 Hz

Finish

Textured gray or oiled walnut

Grille

Black fabric with the gray finish; Dark Blue fabric with walnut

Enclosure Volume

Low Frequency Chamber

5.5 cu. ft. 156 liters

Midrange Chamber

0.3 cu. ft. 85 liters

Enclosure Dimensions

37¼"x23¼"x19¼" deep
95x60x50 cm deep

Net Weight

4340

158 lbs 72 kg

4341

160 lbs 73 kg

Shipping Weight

4340

177 lbs 80 kg

4341

179 lbs 81 kg

Accessories

5231 Electronic Frequency Dividing Network, single channel

5232 Electronic Frequency Dividing Network, dual channel

52-5140 Crossover Card, required for the low frequency transition of the 4340.

Caution

Sound pressure levels produced by the 4340 or 4341 may cause permanent hearing loss. The suggested maximum exposure is 115 dBA for no more than 15 minutes. (Department of Labor Bulletin #334)

¹ Power amplifier headroom recommendation is 3 dB minimum, i.e., for a 75-Watt rating use a 150-Watt amplifier.

² Power output measured with a B&K Impulse Precision Sound Level Meter.

³ Unlike many "theater type" loudspeaker systems that exhibit sensitivity peaks in the midrange region, the 4340 and 4341 provide substantially the same sensitivity through the full range of audible frequencies. Measured sensitivity below 500 Hz or above 2000 Hz may be considerably greater than that of other systems with higher EIA Sensitivity ratings.

⁴ The 52-5140 crossover card installed in a JBL electronic frequency dividing network will provide the appropriate crossover characteristics for the 4340. If another electronic network is used, a 12-dB/Octave filter slope will provide the closest approximation of the 52-5140.