

Cabaret Series

Technical Manual



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Introduction

Thank you for purchasing a JBL Cabaret Series system. This manual has been prepared to help you achieve maximum performance from your system. If, after reading this manual, some questions are left unanswered, consult your local JBL dealer. He has the knowledge required to provide expert advice and assistance. If he is unable to assist you, write directly to Applications Engineering, Professional Division, JBL.

Protective Cover

Each Cabaret Series system is equipped with a sturdy flush-fitting cover. It is designed to protect the system's speakers and grille from shipping damage and indirect moisture. With this in mind, each cover has been sized to provide an extremely tight fit.

To remove the cover, grasp the top handle and pull sharply towards yourself. Once the upper snap-fit fasteners have been released, peel the cover downwards to release the lower fasteners. If more than one system is used, the covers may be attached to each other for storage.

To reinstall the cover, place it over the grille and apply firm pressure in the area of each fastener. Do not use excessive force as this may damage the fasteners.

Speaker Placement

Under ideal conditions speaker placement may be calculated precisely. Unfortunately, you seldom perform under ideal conditions. Instead, you're faced with a series of tiny stages and acoustically impossible rooms. It is difficult to establish firm speaker placement rules, but we can suggest some general guidelines that will help you get the best possible sound from each system in a variety of environments.

4602 Monitor

The 4602 is designed to be an extremely flexible system that can function in a number of applications. It can be used as a stage monitor, acoustic guitar speaker system, or small vocal reinforcement system. Naturally, each application will call for a different speaker position.

When the 4602 is used as a stage monitor it should be placed on the floor and aimed upwards at either a 30 or 60 degree angle depending on your distance from the speaker. Optimum floor location will be directly in front of you with the speaker's sound energy focused towards the rear of your microphone as shown in Figure 1. This will provide an ideal balance between sound level and system feedback rejection. If this placement is not possible (as in the case of a drummer or keyboard player), the speaker should be placed to the side and kept as far forward as possible. The speaker should never be placed behind you or in any position where it would be aimed into the microphone's pickup pattern as this may cause severe feedback problems.

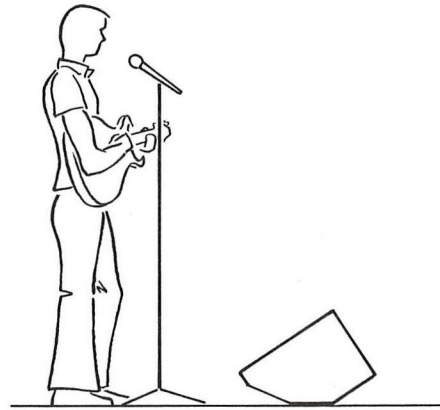


Figure 1: Optimum stage monitor location.

For use as an acoustic guitar system, the 4602 should be placed in an upright position and aimed at your audience's ear level. If you intend to use a microphone with your guitar, avoid placing the speaker behind the microphone. This will help eliminate feedback problems.

If the 4602 is to be used as the main house sound system, at least one speaker should be placed at each front corner of the stage. Speakers should be placed upright and kept as far forward as possible to minimize feedback. Elevating the speakers as high as possible with sturdy tables, scaffolding, or specially designed speaker stands will help ensure complete room coverage. If a speaker stand is to be used, the speaker should be turned on its side and the stand should be mounted at the speaker's center of gravity as shown in Figure 2. Only stands designed for speaker support should be used.

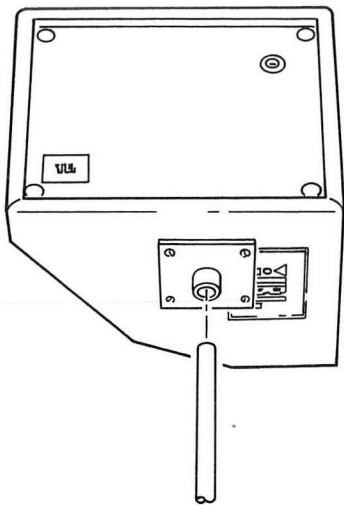


Figure 2: Proper location for mounting speaker stand.

4622 Lead Guitar

The 4622 is designed for use with electric guitars and may be used in either a horizontal or vertical position. The speaker's performance will be enhanced if it is slightly elevated. This will minimize high frequency absorption and obstruction and allow you to monitor your performance levels.

If two 4622s are to be used, they may be stacked either horizontally or vertically using the enclosure's special interlocking corners. Vertical stacking, it should be noted, will produce a column effect (a narrowing of vertical dispersion and improved horizontal dispersion) and should only be used when such a dispersion pattern is desired.

4680 Line Array

The 4680 is a line array loudspeaker system engineered for sound reinforcement. Under most conditions, the best performance levels will be obtained when the speakers are located at the front corners of the stage. Speakers should be placed as far forward as possible to minimize feedback.

If several speaker systems are used in a single-channel installation, and they are placed more than 20 feet apart, they should be arranged so their coverage patterns overlap as little as possible for best results.

As with all line arrays, the 4680 will exhibit controlled vertical sound dispersion and wide horizontal dispersion when the speaker is set up so that the longer dimension is vertical. This type of dispersion pattern (called a column effect) is caused by the linear relationship of the drivers within the system. In most cases, this kind of pattern will enable you to obtain complete coverage of the audience area while minimizing unwanted sound reflections.

Should the enclosure be rotated 90 degrees for horizontal placement, however, the dispersion pattern will also be rotated 90 degrees. The resultant pattern will be extremely wide in the vertical plane and narrow in the horizontal. This pattern is far from ideal for most applications. Horizontal placement, therefore, is not generally recommended.

Under some conditions, permanent installation of the 4680 (or other Cabaret Series Systems) may be desirable. For these applications the speakers may be suspended by cable, chain, or rope. It is advisable to use two or more suspension lines attached to separate points for stability and safety.

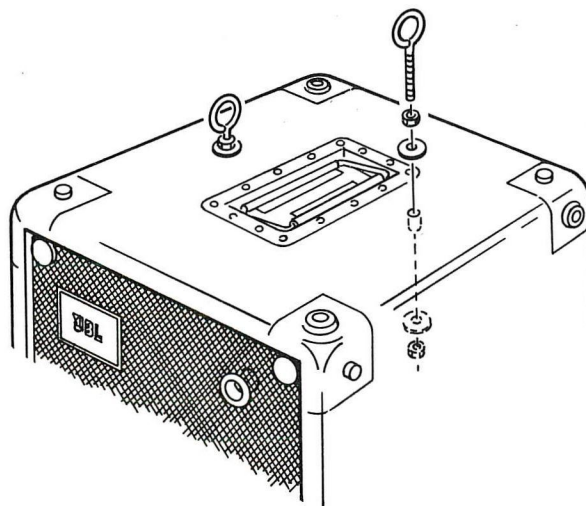


Figure 3. Mounting eye bolts to 4680 Line Array.

To begin permanent installation, remove the top 250 mm speaker from the 4680 enclosure. Next drill two or more holes in the top and/or sides of the enclosure and insert high-strength 1/4-20 (or larger) eye bolts. Washers should be used both inside and outside to prevent the bolts from pulling free. After all bolts are secure, replace the top speaker. The enclosure is now ready for suspension.

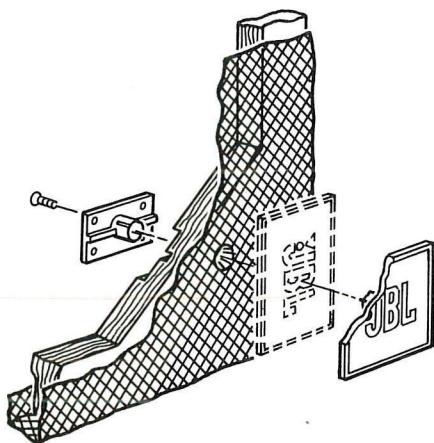


Figure 4. The JBL nameplate is keyed at 90 degree intervals.

Nameplate Reorientation

The JBL nameplate on any Cabaret Series system may be reoriented to read correctly when the enclosure is inverted or placed horizontally. First remove the speaker grille by loosening the screws found in the center of each snap-fit cover fastener. Once the screws are loose, gently lift the grille free of the enclosure. Next, take out the screw holding the nameplate and backing plate together, remove the nameplate and replace it in the proper position. Note that the backing and nameplate are keyed at 90-degree intervals, and that the backing plate has a keying ridge which matches a groove on the grille frame. See Figure 4. Reinstall the screw without overtightening, and replace the grille.

Road Handles

Each Cabaret Series enclosure is equipped with flush-mounted professional road handles. To prevent unwanted handle vibration and noise during your performance, the handles should be locked in place once initial setup is completed. This may be done by pressing the handles firmly into the enclosure recess. To release the handles, pull sharply outwards.

System Connection

Input to each Cabaret Series system is through the 6 mm (1/4 inch) phone jack labeled "Input" located on the recessed terminal plate at the rear of the enclosure. A positive voltage applied to the tip of the phone plug will cause the loudspeaker cones to move forward. Additional loudspeaker systems can be connected to any Cabaret system by using the 6 mm (1/4 inch) phone jack labeled "External Speaker Out." The systems will be wired in parallel, so care should be taken to ensure that the total impedance is compatible with the amplifier's minimum load requirements.

If the amplifier is inadvertently connected to the output jack, and additional systems are not connected to the input jack, the system will not operate and the amplifier will not be terminated. This is because, unlike other systems, the loudspeaker voice coils are shorted when no plug is inserted in the input jack. This helps prevent speaker damage during shipment by restricting cone movement.

Whenever plugs are not inserted, the snap covers on the jacks will spring closed to maintain the acoustical characteristics of the enclosure and to protect the interior of the enclosure from moisture during shipment and storage.

The rear terminal plate may be removed from the enclosure and modified for the installation of alternate connectors.

For input cable connections, 1.3 mm (16-gauge) insulated wire is the minimum size recommended for connections up to 15 m (50 ft). Heavier gauge wire is recommended for greater distances; 1.6 mm (14-gauge) from 15 m (50 ft) to 30 m (100 ft) and 2 mm (12-gauge) from 30 m (100 ft) to 60 m (200 ft).

Important: When connecting or disconnecting loudspeakers from an amplifier, the amplifier power must be turned off. Making connections while the amplifier is operating could seriously damage the loudspeaker system and void the warranty.

System Adjustment

Both the 4602 Monitor and the 4680 Line Array feature specially designed dividing networks. Crossover point for each system is 3 kHz. For ease of adjustment both systems provide a high frequency attenuation control that extends through the grille. High frequency balance adjustments can be made from the front of the system without removing the grille from the enclosure.

To adjust the system, use a coin or a large-blade screwdriver to turn the attenuation control. Maximum attenuation will be obtained when the control is turned fully counterclockwise.



Figure 5. High frequency attenuation control.

Power Capacity

Live performance conditions can place incredible demands on even the best musical sound systems. High power levels, use of controlled distortion, wide instrumental dynamic range, and explosive transients continuously challenge a system's reliability.

Because these conditions are so severe, we prefer the "Continuous Sine Wave" method of rating the power capacity of JBL sound systems. This laboratory standard test is far more demanding than actual performance situations and provides a credible measure of a system's power capacity.

Since a number of manufacturers continue to use the less stringent "Continuous Program Power" rating, we have included these figures for your reference.

When making an amplifier selection you should be aware of the fact that a severely distorted signal can place very high demands on a speaker. In fact, under some conditions a distorted 75 watt signal may damage a speaker more easily than an undistorted 150 watt signal. Because of this, amplifier distortion levels must be taken into consideration when you select an amplifier for use with a Cabaret system. In applications where high distortion is expected (such as a guitar system) it is best to use only those amplifiers whose ratings fall well within the speaker system's "Continuous Sine Wave" power capacity.

Component Removal

Each Cabaret Series system is supplied with all components installed, wired, and tested. Access to the components should not be required under normal usage. If access is needed, note that the enclosure is filled with fiberglass, which can be irritating to the skin. It is recommended that long sleeves and gloves be worn for protection when working in contact with the fiberglass.

To remove the components, the enclosure should be placed on its back. The grille should then be removed as described under the section of this manual concerning nameplate reorientation. All cone speakers are mounted from the front of the baffle board with machine screws threaded into T-nuts on the rear of the board. High frequency drivers are mounted from the rear of the baffle board with machine screws threaded into tapped holes in the mounting flanges of the drivers. When removing the screws, do not apply pressure which might dislodge the T-nuts. Note the color coding of the wiring carefully before removing the wires from the transducers so that they may be properly connected when reassembling the system.

The dividing network in the 4680 is mounted on the rear of the baffle board with machine screws going through the board into fasteners on the network. Access to the network is gained by removing the transducer closest to the high frequency assembly.

The dividing network in the 4602 is mounted in a similar manner but is mounted on two boards: one on the rear of the baffle board and one located on the side of the enclosure. Access to the network is gained by removing the cone transducer.

Replacement of the system components is done by reversing the removal procedure. Mounting screws for all devices should be tightened evenly and just enough to prevent air leaks.

Enclosure Maintenance

The Cabaret Series enclosures are finished in an unusually durable black polyurethane material. Simple cleaning can be accomplished with a damp cloth. If additional lustre is desired, treatment with a silicone-based product is recommended.

While the enclosure's nylon grille should not require any regular maintenance, it may be cleaned by gently dusting it with a vacuum cleaner.

JBL continually engages in research related to product improvement. New materials, production methods, and design refinements are introduced into existing products without notice as a routine expression of that philosophy. For this reason, any current JBL product may differ in some respect from its published description but will always equal or exceed the original design specifications unless otherwise stated

Cabaret Series

Specifications	4602	4622	4680
Frequency Range	50 Hz-15 kHz (X: 3kHz)	50 Hz-6 kHz	55 Hz-15 kHz (X: 3kHz)
Power Capacity (continuous sine wave)	100 watts	200 watts	300 watts
Power Capacity (continuous program)	200 watts	400 watts	600 watts
Sensitivity ¹	101 dB SPL, 1 W, 1 m (3.3 ft)	104 dB SPL, 1 W, 1 m (3.3 ft)	105 dB SPL, 1 W, 1 m (3.3 ft)
Nominal Impedance	8 ohms	4 ohms	8 ohms
Dimensions	508 x 406 x 374 mm 20 x 16 x 14 ¹ / ₁₆ in	767 x 512 x 478 mm 30 ³ / ₁₆ x 20 ¹ / ₈ x 18 ³ / ₁₆ in	1322 x 402 x 372 mm 52 ⁵ / ₁₆ x 16 ¹³ / ₁₆ x 14 ¹ / ₁₆ in
Net Weight	16 kg (35 lb)	25 kg (55 lb)	37 kg (81 lb)

¹ Sensitivity measured with an input averaged from 500 Hz to 2.5 kHz.



Professional Division

James B. Lansing Sound, Inc., 8500 Balboa Boulevard, Northridge, California 91329 U.S.A.



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