RESEARCH AND DEVELOPMENT CORPORATION

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INSTRUCTIONS

KLH MODEL SIX ACOUSTIC SUSPENSION LOUDSPEAKER SYSTEM

GENERAL SPECIFICATIONS

The KLH Model Six is an 8 ohm two-way loudspeaker system designed to reproduce the full range of musical frequencies. The low-frequency section is a twelve-inch acoustic suspension mechanism mounted in a tightly sealed cabinet. The size of the cabinet is carefully chosen so that the enclosed air provides the necessary restoring force to the loudspeaker cone. The use of acoustic stiffness as the restoring force is in contradistinction to the practice in ordinary loudspeakers where most of the restoring force is supplied by the stiffness of the mechanical suspension supporting the cone. The high-frequency section in the Model Six is a newly developed small cone-type speaker with heretofore unavailable frequency response and dispersion.

THE MODEL SIX WAS ACOUSTICALLY DESIGNED TO BE USED STANDING UPRIGHT ON THE FLOOR, AND CONSEQUENTLY IT WILL BE FOUND THAT IN MOST CASES SUPERIOR PERFORMANCE WILL BE OBTAINED WITH THE MODEL SIX IN THIS VERTICAL POSITION. When the speaker is used in the vertical position, it should be placed with the backplate right side up. If it is placed with the backplate upside down, then the high-frequency speaker will be only a few inches above the floor and the high-frequency response will be impaired. In order to accomodate situations where it is desired to place the Model Six horizontally on a table or a shelf, the cabinet is finished on all four sides. Once it has been decided in which position the speaker system will be used, the four polyethylene tack-pointed "feet" may be hammered into the cabi-

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net. The KLH emblem is screwed into the front panel, so it may be rotated when the Model Six is used in a horizontal position.

IMPORTANT NOTE: PROPER ACOUSTICAL DESIGN REQUIRES THE FRONT OF THE CONE OF THE HIGH-FREQUENCY SPEAKER TO BE ALMOST FLUSH WITH THE FRONT OF THE PANEL. THEREFORE, CARE SHOULD BE EXERCISED THAT THE FRONT PANEL OF THE MODEL SIX IS NOT POKED OR OTHERWISE HIT WITH FINGERS, KNEES, BROOMS, ETC.

IMPORTANT NOTE: THE TWO SPEAKERS IN THE MODEL SIX ARE PERMANENTLY SEALED INTO THE FRONT PANEL AND THE FRONT PANEL IS PERMANENTLY GLUED INTO THE CABINET. CONSEQUENTLY, NO ATTEMPT SHOULD BE MADE TO OPEN THE CABINET IN ANY MANNER.

ASSOCIATED EQUIPMENT

To fully realize the high performance of which the KLH Model Six is capable, associated equipment only of the highest quality should be used. In the engineering design of all KLH loudspeaker systems, primary emphasis has been given to achieving very low distortion and smooth extended frequency response. This necessarily results in the KLH loudspeaker systems being less sensitive than many other loudspeaker systems. This means only that more amplifier power is required to achieve a given sound output. We therefore suggest that careful attention be given to selecting an amplifier which will not distort at the volume level desired. Such amplifier distortion is readily evident as a rasping sound during loud passages and indicates that more power is demanded from the amplifier than it can supply. In general, one of the high quality amplifiers of at least 20 watts, or the equivalent total power from a pair of stereo amplifiers, will be required for moderately high sound level.

The power handling capability of the Model Six is such that any of the amplifiers intended for home music reproduction may safely be used.

CONNECTION TO AMPLIFIER

The Model Six may be connected to the amplifier by means of ordinary two-conductor rubber covered "lamp cord" in the manner indicated on the backplate. A cord as long as 60 feet may be used with a power loss in the cord of only 10% of the amplifier power.

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AMPLIFIER DAMPING FACTOR

THE KLH MODEL SIX IS DESIGNED TO HAVE THE PROPER AMOUNT OF BASS AND PROPER TRANSIENT CHARACTERISTICS WHEN CONNECTED TO AN AMPLIFIER WITH THE USUAL HIGH DAMPING FACTOR. Consequently, the Model Six does not require an amplifier with a variable damping factor control. If your amplifier does have such a control, it should be set for highest damping.

ROOM PLACEMENT

The level of the very-low-frequency response of the Model Six has been chosen on the basis of extensive observation as to what is desired in the average listening environment. Furthermore, the engineering design of the Model Six absolutely precludes undue emphasis being given to any particular low-frequency tones. Nevertheless, the sound from any loudspeaker system is strongly influenced by the position of the loudspeaker in the room. One of the primary effects of different room positions is to give different low-frequency characteristics. Sometimes the low-frequency response can be substantially increased, or a "boomy" sound corrected, by changing placement in the room. Some time spent experimenting to find the best room placement will probably be most rewarding.

ADJUSTMENT OF HIGH-FREQUENCY RESPONSE

To account for different room characteristics and different personal tastes, the high-frequency response of the Model Six may be adjusted by means of the three-position switch on the back of the cabinet. The range of adjustment covered by this switch is about 5 db.

SEPARATE USE OF LOW- AND HIGH-FREQUENCY SECTIONS

Provision is made in the Model Six to permit separate use of the low- and high-frequency sections. When the shorting strap between terminals B and C is removed, terminals A and B lead through a choke to the low-frequency reproducer and terminals A and C lead through the crossover network to the high-frequency reproducer.

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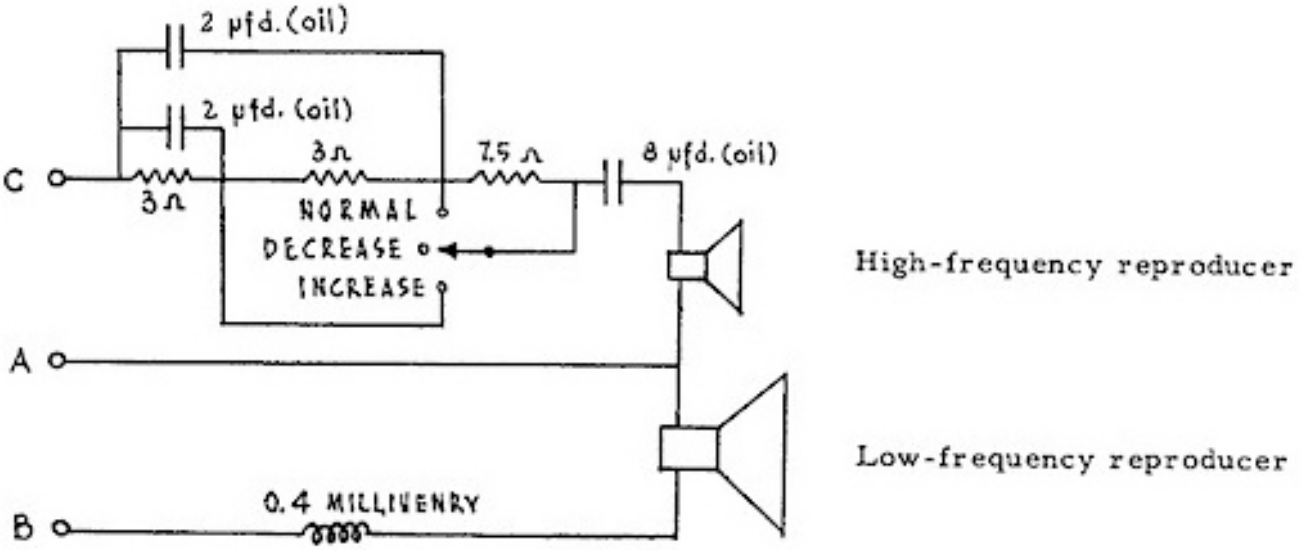
INTERNAL WIRING OF THE MODEL SIX

While it is not necessary to know the internal wiring in the Model Six to understand the above instructions, a diagram of the internal wiring is given below for those who might be interested.

Note: The sense of the internal speaker connections is such that the cones move toward the front of the cabinet when terminals B and C are connected to the center (positive) terminal of a dry cell and terminal A to the case (negative) of the dry cell.



WARRANTY AND GUARANTEE

The loudspeaker mechanisms in the Model Six were designed and manufactured entirely by KLH Research and Development Corp. KLH warrants that this speaker system is free from any defect in materials or workmanship at the time it leaves the factory. KLH guarantees the repair or replacement without charge of any component which becomes defective within two years under normal use, PROVIDING THAT THE WARRANTY CARD IS RETURNED TO KLH IMMEDIATELY AFTER THE PURCHASE. If at any time you suspect that your Model Six is not operating properly, first make certain that all other components in your system are operating properly. If you still believe the Model Six is at fault, consult your authorized KLH dealer. We will cooperate with him fully in implementing our guarantee. However, written authorization must be obtained from us before the speaker system is returned to our plant.

INSTRUCTIONS

KLH* MODEL SIX
ACOUSTIC-SUSPENSION LOUDSPEAKER SYSTEM

The KLH* Model Six is an 8-ohm two-way loudspeaker system designed to reproduce the full range of musical frequencies with exceptional smoothness and freedom from distortion. The low-frequency driver is a twelve-inch acoustic-suspension mechanism mounted in a tightly sealed cabinet. Unlike conventional speakers, the low-frequency driver does not rely on the stiffness of its cone-suspension to control the motion of the cone at low frequencies. Instead, it relies on the acoustic stiffness of the air trapped within its sealed cabinet to supply the necessary restoring force for the cone. This "air spring" is far more linear in action than the best mechanical speaker suspensions, and permits the cone to make accurate excursions over a long distance to reproduce low frequencies without harmonic distortion.

The high-frequency section of the Model Six is a 1⅝-inch direct radiator. Its cone is a shell-like material of critical shape, and is capable of excellent dispersion — a vital requirement for good high-frequency reproduction in any listening room. The elastomeric suspension of the cone permits an exceptional amount of cone-excursion, allowing the speaker to reproduce mid-range frequencies with remarkable accuracy and uniformity.

The goal in the design of the Model Six was to produce a speaker ideally suited to the widest variety of program material and associated equipment. Above all, the Model Six was designed to provide a precise octave-to-octave musical balance over the full frequency range that would not only permit excellent performance with the best program material but also provide thoroughly pleasant and unfatiguing listening over long periods with the widest variety of musical material. To our knowledge, no loudspeaker ever made has been the result of as pointed an investigation of the factors influencing the musical performance of a speaker. And no other speaker has enjoyed wider acceptance by serious listeners.

As in all KLH loudspeakers, the cones, suspensions, and other critical parts of the Model Six are designed, manufactured, and rigidly controlled by KLH in its own plant. This approach to manufacture, a highly unusual one in our industry, not only is a critical factor in achieving the musical balance of the Model Six, but guarantees that this balance will remain the same from speaker to speaker off the production line. All Model Six speaker systems, in fact, will match within 1½ db over the entire frequency range — a guarantee that can be made, to our knowledge, by

no other manufacturer. You can buy a Model Six years from now with full assurance that it will sound the same as your present Model Six.

AMPLIFIER REQUIREMENTS

To realize the full performance of which the Model Six is capable, we recommend that you use associated equipment of high quality. For stereo use of a pair of Model Sixes, we suggest that an amplifier of at least 15 watts steady-state power per channel be used; slightly higher power may be needed for equivalent monaural performance. Like all high-performance speakers, the Model Six generally will profit from increased amplifier power for undistorted reproduction of peak orchestral levels at high volume. Its power-handling ability is such that it may safely be used for home music reproduction with the highest-powered amplifiers available for home use. (*Important Note:* Like all loudspeakers designed for the home, the Model Six is *not* designed for sine-wave frequency inputs of high power and prolonged duration. Any sine-wave test input, from a generator or test record, should be at moderate listening level and for a period of less than two minutes.)

CONNECTION TO AMPLIFIER

The Model Six may be connected to an amplifier by means of ordinary two-conductor "lamp cord." A cord as long as 60 feet may be used with a power loss of only ten per cent. For a run of 30 feet or less, you may use the lighter-gauge speaker wire often provided by audio dealers.

One of the two wires in a speaker cable should be connected to Terminal "A" on the rear of the Model Six; the other wire may be connected either to Terminal "B" or "C." The metal strap provided between Terminals "B" and "C" should be left in place.

Most speaker cables are provided either with internal color-coding of wires or with seam tracers to identify the two wires. When two Model Sixes are connected to a stereo amplifier, they should be connected identically with respect to color-coding or other wire identification to insure proper speaker-phasing (that is, to insure that the cones of both Model Sixes move back and forth in unison rather than in opposition).

When used with an amplifier offering a variety of outputs for varying speaker impedances, the Model Six should be connected for 8-ohm use.

ADJUSTING HIGH-FREQUENCY LEVEL

To account for different room characteristics and different personal tastes, the high-frequency response of the Model Six may be adjusted by the 3-position switch on the rear of the cabinet. In the "Increase" position, this switch raises the relative level of frequencies above 2500 cps by approximately 2½ db. In the "Decrease" position, the same range is decreased in level by 2½ db. It is worth noting that the 3-

position switch operates by selecting one of three individually tailored response curves. Its action is far more precise (and duplicable from speaker to speaker) than that of the variable resistor used for high-frequency level adjustment in most loudspeaker systems.

ROOM PLACEMENT

The level of the very-low-frequency response of the Model Six was chosen on the basis of extensive observation as to what is desirable in the average listening environment. But the sound of any loudspeaker, and particularly the contribution of mid-bass frequencies to the total impression of sound quality, is strongly influenced by the position of the speaker in a room. In general, the proportion of mid-bass in a speaker's total output will increase as it is moved toward intersecting surfaces (wall and floor, wall and wall, wall and ceiling) in a room. In most cases, the starting point for experimenting with various placements should be a position near the floor and a wall, with the speaker preferably in an upright position and the low-frequency driver nearest the floor. From this point, it is fairly simple to determine whether more or less bass contribution is desirable for a particular room environment, and the speaker can be moved closer to or further from intersecting surfaces. The position for maximum bass is almost always at the junction of three room surfaces (i.e. in a corner near the floor or ceiling). It is generally unsatisfactory, however, to place *both* speakers of a stereo pair in this position; moving one speaker away from a corner will generally reduce bass to a desirable degree.

In some listening rooms, the amount of speaker output in the 200 cps region (which contributes markedly to the overall "weight" of a speaker's sound) will be significantly affected by the speaker's proximity to the floor. And particularly when the distance between speaker and listener is relatively short, moving the speaker away from the floor may significantly alter its impression. If you have the time and inclination, an interesting experiment that can be conducted with a pair of Model Sixes is to place one on the floor and the second on top of the first. By placing the amplifier's mono-stereo switch for mono sound and rotating the balance control to channel sound from one speaker to the other, you may make an interesting comparison of the sonic effect of the two speaker positions. To reassure yourself that any difference you hear is the result of placement rather than any difference in the quality of the speakers themselves, you can simply reverse the placement of the two Model Sixes. The difference you hear will remain the same no matter which speaker is in which position. About an hour's worth of listening to varied program material can lead to a decision of the better overall choice of speaker position for your room.

When you wish to use a Model Six up off the floor on a bookshelf, you may place the speaker in either a horizontal or vertical position.

In the horizontal position, you may place the system with the low-frequency section nearest a wall (for maximum bass) or away from it. When two Model Sixes must be placed fairly close together in a horizontal position, note that the amount of audible stereo separation depends primarily on the distance separating the two high-frequency sections (which are mainly responsible for the directional and spatial effects of stereo reproduction). When two Model Sixes are very close together horizontally (three to four feet), you may want to place them with their high-frequency sections at the furthest extremes.

It is usually rewarding to experiment with the various placements feasible in your listening room. Keep in mind that your own taste — rather than any set of arbitrary standards — should determine the most effective-sounding arrangement.

FIVE-YEAR WARRANTY

In designing, manufacturing, and setting performance standards for our products, we at KLH feel an obligation to go beyond the customary standards for home-entertainment products. As a result, all KLH products are guaranteed well beyond the point usually considered adequate for products designed for the home.

The KLH Model Six Loudspeaker is fully guaranteed against all defects in materials and workmanship for five years from the date of purchase from an Authorized KLH Dealer. During that period, through a specifically authorized service facility, KLH will replace any defective part and correct any defect in workmanship without charge either for parts or for labor.

For this warranty to apply, the Model Six must be installed and used according to its written instructions. The warranty card must be filled out in full and returned to KLH within ten days of purchase. In the event of difficulty, servicing must be accomplished by a *Factory-Authorized* service agency. If necessary, the Model Six must be delivered to the service agency at the owner's expense. Servicing information should be obtained from the dealer from whom the purchase was made or from the KLH Customer Service Department.

Accidental damage and shipping damage are not considered defects under this warranty, and KLH assumes no responsibility for defects resulting from abuse or from servicing attempted by any person or agency not specifically authorized by KLH.

IMPORTANT

Do not attempt to return the Model Six or any part thereof to the KLH factory without first requesting and receiving a Return Authorization form and sticker. Shipments arriving at the factory without the proper Return Authorization and sticker must be refused by the KLH receiving department.