

THIS IS YOUR G-610B TRIAXIAL . . .

The G-610B TRIAXIAL® is truly the finest reproducing instrument that modern science can provide. Experts graciously acknowledge it supreme in its field. It and the lower cost G-600 TRIAXIAL® are the only unitary 3-way speaker systems with three independent electrical and acoustic elements . . . the only ones with compression horn-loaded sections for both the mid and high frequency channels. The name TRIAXIAL and the contraction TRIAX are Jensen properties so registered in the U.S. Patent Office. Remember that no one else has such a speaker system unless he too has a Jensen TRIAXIAL.

The design objectives set for the G-610B TRIAXIAL were quite demanding. A loudspeaker system was required having performance noticeably superior to anything heretofore available. Reproduction in suitable enclosures was to be flawless with smooth, extended output at both ends of the spectrum, and with uniformly wide angular coverage. Power handling capacity adequate for the largest room and efficiency quite high so as to accommodate the amplifiers of lower rating were mandatory. Not only must distortion of all kinds be reduced to the vanishing point, but every possible step taken to achieve an extremely smooth and well-balanced loudspeaker system. Reproduction must be free of "coloration" or "formant" which tends to give the loudspeaker individual "character." This loudspeaker system was to reproduce music exactly as supplied to the speaker system, injecting none of its own character. Extensive tests both of an objective and subjective type to evaluate the results of the extended, tedious and painstaking efforts confirm that the G-610B TRIAXIAL has fully met our objectives.

The G-610B TRIAXIAL, shown in Figure 1, is a complete loudspeaker system comprised of three separate loudspeaker units each specially designed to reproduce a specific limited portion of the music spectrum—that is, each is a "specialist" in its own range and can therefore do a better, more thorough job unencumbered by design compromise. Fig-



Figure 1
The G-610B TRIAXIAL 3-way Loudspeaker System

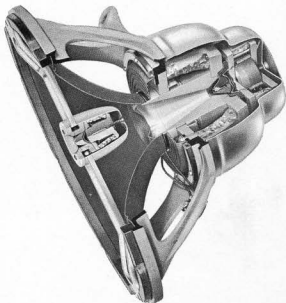


Figure 2
Cutaway View of the G-610B Speaker Assembly

ures 2 and 3 clearly show the three loudspeaker units. Elaborate, precision electrical networks divide the full music range into three segments and "route" each to that speaker unit designed particularly for that portion of the music spectrum. Balance controls provide the precise final adjustment necessary for realistic life-like reproduction.

Figure 4 shows a block diagram of the G-610B TRIAXIAL. The incoming signal is first divided at 600 cycles (just above the middle of the piano keyboard); all of the music components below this frequency are fed directly to the special l-f unit and converted to sound with the aid of the enclosure discussed below. The music components above 600 cycles are then again divided at 4000 cycles (about the highest note of the piano). The music content between 600 and 4000 cycles then passes through a continuously variable level control (M-F BALANCE CONTROL) to the reproducing unit. This yields high efficiency, exceptionally smooth, low distortion reproduction in the important middle frequency (m-f) range where the ear is most critical. The balance of the music components, above 4000 cycles, is fed through another level control (H-F BALANCE CONTROL) to the "super tweeter" renowned for its smooth, high efficiency reproduction to the upper limits of audibility.

The m-f and h-f units are of the horn type or compression type; the driver units use plastic diaphragms with the desired internal damping so difficult to obtain in any other way. The driver units are attached to carefully matched horns using a flare formula of the hyperbolic-exponential family (a JENSEN patented development). Such a design yields best possible performance with the desired wide angle of coverage.

INSTALLING AND USING YOUR TRIAXIAL . . .

Your G-610B TRIAXIAL is a complete loudspeaker system ready for installation in your loudspeaker enclosure. Refer to Figure 5 for dimensions. Fasten securely to baffle with bolts or wood screws. Wood often shrinks in time and retightening several weeks after installing is a recommended procedure. Attach the network with wood screws to any cabinet panel near the basic speaker in such a way that the G-pin plug can easily be inserted into the mating socket on the speaker. Two $1\frac{1}{8}$ " diameter holes should be provided on an outside panel of the cabinet for the balance controls. Assemble the controls to their mounting plates with the correct designation to the front and hold with lockwasher and locking nut. Attach the control assemblies to the inside of the wood panel using the small wood screws provided. See Figure 6.

Your loudspeaker enclosure is important because it will control to a great extent the performance of your loudspeaker system at the low end of the music frequency range—it is a part of the loudspeaker system. We recommend for very best results the Jensen Imperial back-loading folded-horn enclosure. If space must be limited then the Jensen Bass Ultralex*-15 design is recommended. You will find a complete discussion of these designs with detailed plans for their construction in Jensen Manual 1060 (price 50c).

Connect input terminals "1" and "2" of the A-640 cross-over network to the 16 ohm output terminals of the amplifier. Ideally the amplifier should be near the speaker system, but cable lengths (ordinary lamp cord) up to about 100 feet are permissible without undue loss and without reduction in the quality of reproduction. Use JENSEN Autotransformer Z-3422 if necessary to effect a perfect impedance match; connect your 16-ohm TRIAXIAL to the "C" and "8," if 8 ohm terminals are provided, or "C" and "4" if only 3.2 or 4 ohm terminals are available.

The nominal power rating of the G-610B TRIAXIAL is 40 watts maximum speech and music signal. This means that reproduction of speech and music will be free of distortion and the elements of the speaker system will not be endangered when a standard level indicating meter shows maximum readings of 40 watts. The peak power will, of course, exceed this figure. For steady-state single-frequency signals (such as from an oscillator or frequency test record) the power should be limited according to the following table:

TABLE 1

Frequency	Max. Power
Above 2000 Cycles	30 Watts
Above 3000 Cycles	15 Watts
Above 4000 Cycles	5 Watts

The above technical description merely means that the power capability depends on the type of signal being reproduced. Note that you do not need a 40 watt amplifier just because that is the rating of your TRIAXIAL. Amplifiers of lower power rating will work perfectly well and conversely, your TRIAXIAL can be used with amplifiers of more than 40 watt rating. At normal listening levels the listener will adjust the volume control so that only a few watts at most are being delivered to the speaker system for even loud reproduction in the usual living room.

The "M-F BALANCE CONTROL" and the "H-F BALANCE CONTROL" must be carefully adjusted to gain the finest performance. Increase the H-F BALANCE CONTROL setting from minimum (while listening to wide range music) until the output from the h-f unit just becomes identified or noticeable. Similarly adjust the M-F BALANCE CONTROL setting for proper middle register reproduction—too low a setting destroys naturalness and

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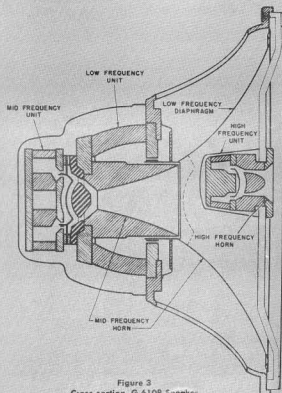


Figure 3
Cross-section, G-610B Speaker

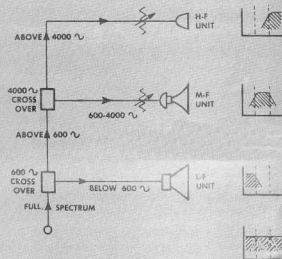


Figure 4
TRIAxIAL Block Diagram

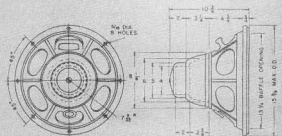


Figure 5
G-610B Speaker Dimensions

presence—too high a setting gives strident or raucous reproduction. A readjustment of the H-F BALANCE CONTROL can then be made—too high a setting here will tend to give "glassy" or "brittle" reproduction. The proper settings yield smooth natural reproduction with good "presence" and "definition" of the individual orchestra instruments.

Note that these balance controls adjust the output loudness in their respective channels; they are independent controls and do not affect the input level nor the frequency range of the system.

The balance controls of this loudspeaker system are not intended to correct abnormalities of the source material (such as phonograph record characteristics). Any high quality amplifier suitable for use with this speaker system should have h-f and l-f "boost" controls and these should be used to best advantage (the controls may often be located on the associated preamplifier). Remember that you are listening to a complete system or chain of equipment and each "link" should be adjusted to give the best overall performance characteristics attainable. Only then will you approach the goal of true, faithful, life-like reproduction technically possible.

Remember that the room acoustics will also play a part in the reproduction obtained. These effects are exactly the same as they would be for a vocalist or small orchestra in the same room. However, the usual living room used for listening will generally prove quite satisfactory—experiment with the controls available for best results. Preferably choose a position for the reproducer at one end of the listening room or an adjacent corner.

The Certificate of Performance assures you that your particular TRIAXIAL fully meets our exacting standards. It has been manufactured under expert supervision using the finest materials and techniques. Its final tests, under the personal supervision of a member of our Engineering Staff, included a listening test under normal operating conditions. Every effort has been made to give you the finest reproduction possible; every component of your reproducer is of rugged and durable construction and for these reasons you can expect trouble-free performance for many years to come. Figures 7, 8 and 9 are wiring diagrams for the G-610B TRIAXIAL showing color coding for each connection.

Accidental damage can result from the faulty operation of amplifiers having very high power capability or such errors as connection to the household a-c power outlet. In case of damage or faulty operation of any kind, it is best to return the entire TRIAXIAL to our Service Department for test and repair.

The individual voice coil circuits can be tested at the speaker socket; a d-c resistance value between 12 and 14 ohms applies in each case. Resistance values greatly different would indicate a faulty unit or connecting lead. Resistance measurements are valid only with the A-640 crossover network disconnected.

The m-f driver unit can easily be removed for individual return if necessary. Simply remove first the metal nameplate and then the metal cover from the back of the TRIAXIAL. Next remove the four screws visible on the back of the m-f unit and lift off completely after disconnecting the two connecting leads.

The h-f unit hanger bracket assembly can be removed by disconnecting the two leads at the speaker socket, loosening the cable clamp and unthreading the two leads through the eyelets at the front flange. Then lift off the entire assembly after removing the four screws fastening it to the speaker flange. Do not further disassemble either of these units, but have them returned complete if repair is necessary. In reconnecting be sure to observe correct color coding shown.

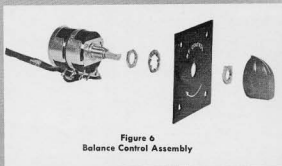


Figure 6
Balance Control Assembly

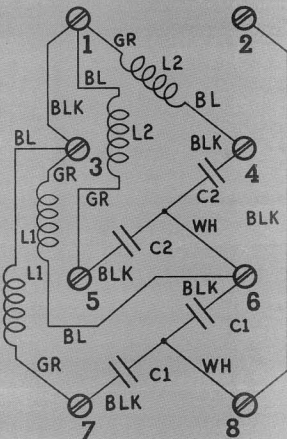


Figure 7
A-640 Crossover Network Wiring
C1—11.75 MF; C2—1.75 MF; L1—6 mh; L2—0.9 mh

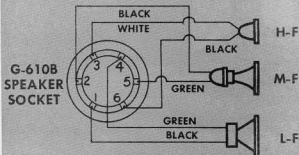


Figure 8
G-610B Speaker Wiring

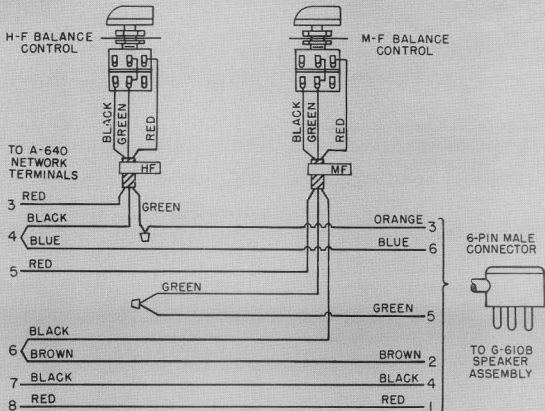


Figure 9
G-610B Cable Harness Circuit

ABOUT HIGH FIDELITY . . .

It is not difficult to achieve truly high fidelity performance. A quality record player or changer equipped with one of the modern magnetic cartridges and an amplifier providing record equalization control (internal or in companion preamplifier) and "bass" and "treble" controls are all that are needed with your TRIAXIAL to obtain excellent reproduction of the great wealth of recorded music.

However, there are no simple standards to differentiate equipment that is "high fidelity" from that which is not. Obviously it is a matter of degree and all of the important factors are highly inter-related. Although no completely satisfactory standards can be formulated there is one simple test at your disposal—the only realistic test—an actual listening test of the system. All other tests and measurements are only tools useful to some degree in evaluation.

There is a current trend to stereophonic reproduction (often called binaural). Ideally two identical loudspeaker systems are used spaced about 10 feet apart. It is also true that two such speaker systems give a great deal more realism even when only a single channel signal is being reproduced. This effect is known as "spread source."

Remember that the final results one hears is the composite of a long chain of interconnected components starting at the broadcast or recording studio and only ending with the loudspeaker system. If one or more links in this chain are faulty the whole chain is weak and the full potential performance of the loudspeaker system is not then realized. On faulty signals it is often desirable to reduce the h-f range by decreasing the treble control setting on your amplifier. The h-f range can be restored to normal for those outstanding records and broadcasts that make the expense and effort expended to assemble such a system worthwhile.

A NOTE ABOUT JENSEN . . .

The Jensen Manufacturing Company was founded in 1927 for the original purpose of manufacturing what was then a totally new concept, a "dynamic" loudspeaker with high-efficiency and high power rating. Since then the Jensen name has been continuously associated with important advances in every phase of loudspeaker research and development.

A large staff of engineers with specialized skills, training and experience devote their full time to our only business—loudspeaker equipment. This specialization has resulted in many Jensen "firsts"—the first high-efficiency direct radiator speaker; the first permanent magnet loudspeaker in the United States; the first bass reflex enclosure design; the first commercial coaxial 2-way loudspeaker; the first "tweeter"; the first unitary 3-way loudspeaker system (TRIAXIAL®)—to name but a few.

Jensen manufactures a complete line of loudspeaker equipment for high fidelity, including complete reproducer systems in cabinets; coaxial and TRIAXIAL two-way and three-way unitary speaker assemblies; single-unit direct radiator types; low frequency, mid frequency and high frequency units; crossover networks, level controls, impedance adjusting transformers, and cabinets. Literature is available without cost describing these items.

A Technical Service Department has been established here at Jensen to provide consulting service on your individual problems in connection with the use of Jensen loudspeakers. There is no charge or obligation of any kind for this service.

Various publications are available discussing special phases of sound reproduction. A series of Technical Monographs treat in a comprehensive and fundamental way the general problems; a group of Technical Bulletins cover the "how to do it" phases. Ask your dealer or write directly to us for a list of these publications.