

## ANOTHER JENSEN ACHIEVEMENT . . .

Pride of people in their accomplishments is traditional in American industry and invariably an essential ingredient of the high quality and value in all of America's finer products. The people here at Jensen have just created and are now building a fine new instrument known as **The Jensen G-610 Triaxial Speaker** and they would like to tell its owners and prospective owners something of the historical background behind this latest achievement of which they are so justly proud.

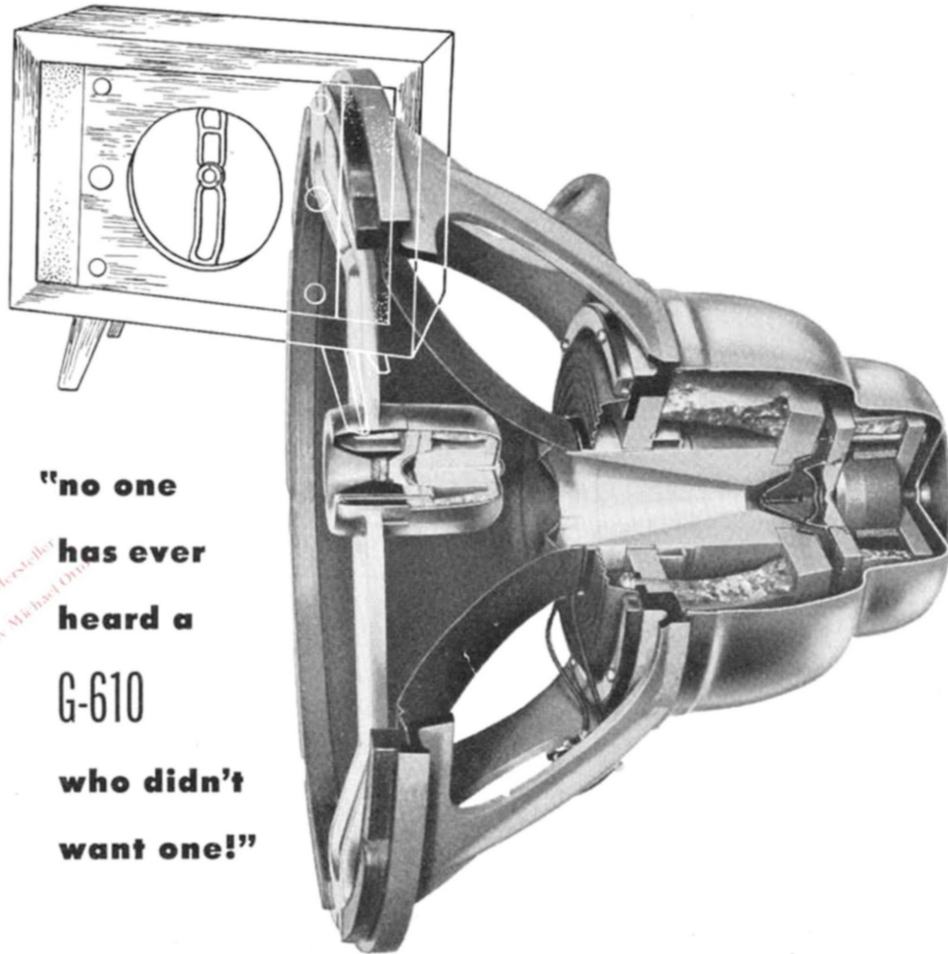
Some of us here at Jensen were associated with the creation of the first moving coil (electro-dynamic) loudspeakers ever made away back in the early 1920's. Remember the early types with the unsightly goose neck metal horns? Then in the mid 20's Jensen Manufacturing Company was formed and the first Jensen cone type moving coil loudspeaker was conceived and built. Nearly everyone will recall that the introduction of this new type of loudspeaker changed the whole course of the electronic industry. Radio receivers and phonographs were now to reproduce sound with amazingly improved quality and faithfulness compared to their predecessors and immediately manufacturers of this revolutionary new kind of loudspeaker flashed into existence like comets. Within 3 years at least 40 were in business, but it is interesting that of this group of approximately 40 in 1930 one may today count the survivors on the fingers of one hand and have one or more fingers left over to point to the brushiness of some who said they had already achieved the "ultimate" in loudspeaker performance.

Of course these early "dynamic" loudspeakers, phenomenal as they were compared to their predecessors were naturally short of the ultimate. Their efficiency was relatively low, distortion products were rather high particularly at anything more than relatively low output, they had limited frequency range, they were costly, and all required a "field coil" with a suitable source of power for excitation. From this beginning, nearly a quarter of a century ago, Jensen set out to overcome or minimize these shortcomings and every product of the Jensen laboratory and factory since serial number 1 was applied to a Jensen Loudspeaker has demonstrated the value of this concept and effort. Further demonstration is in the record of Jensen "firsts" which have become mileposts tracing the path of history through nearly 25 years of progress.

Jensen set out to increase loudspeaker efficiency and power handling capacity and the result was the **Jensen Auditorium Speaker**, the first to meet such requirements while extending the frequency range at the same time. Today, 20 years later, many Jensen Auditorium Speakers are still in operation and are regarded as one of the finest examples of high quality loudspeaker performance.

Today nearly all loudspeakers use permanent magnets instead of field coils — Jensen pioneered this design and built the first "PM" Speaker in America. Thus the cost, size and convenience improvement enormously expanded the field of loudspeaker use and opened up new design possibilities.

For many years Jensen engineers had recognized the limitations imposed by the single radiator (i.e. cone or flat diaphragm) in the problem of extending the useful frequency range of loudspeakers and improving their fidelity. Solution



**"no one  
has ever  
heard a  
G-610  
who didn't  
want one!"**

*We believe this statement is literally true . . .*

The Jensen G-610 Loudspeaker System brings you clear, clean, life-like reproduction with thrilling transport-to-the-original such as you have never heard before. . . NO ONE has ever heard one who didn't want one!



**Jensen**

MANUFACTURING COMPANY

DIVISION OF THE MUTER COMPANY

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of this problem led to the combination of two loudspeakers to form a system, the early examples of which were quite large and heavy — too much so for the average home or user. Exceptionally good performance characteristics were achieved in these loudspeaker systems and Jensen systems were widely used in such critical applications as laboratory reference equipment, monitoring and more commercially, of course, for heavy duty sound reinforcement systems such as in theatres, stadia, etc. An important result of this concept, experience and practice was the unitary loudspeaker system of high performance ability of such size and cost as to make it practicable for the average home or listener. Thus the first Jensen Coaxial Speaker came into existence — another first and another milestone along the path of progress.

The Jensen Bass Reflex Principle was another Jensen first. The use of this new principle brought about substantial improvement in the low frequency response of loudspeakers when they were installed in cabinets and the merit of this Jensen originated feature is now so generally recognized that its use is almost standard practice in the industry. Recognizing this wide usage we have recently declared the term "Bass Reflex" as being in the public domain and have thus made the descriptive term available to everyone.

Pioneering in the use of molded and one piece cones, improved voice coil centering devices and many similar but equally important contributions have been steadily made over the years. And along with this steady advancement came parallel progress in other links of systems for the reproduction of sound. Builders of amplifiers, pickups and other related equipment recognizing the great improvement in loudspeaker performance were quick to add improvements in their products. Radio broadcast sound, record, tape and wire recording technique was greatly improved so that today without question it is possible to reproduce sound more accurately from a greater variety of sources than at any time in our history. That is one reason why the new G-610 Triaxial Speaker has such timely significance. Never in prior history have all of the links in the sound transmission, recording, and reproduction art reached such a high degree of simultaneous perfection.

Of course the Triaxial is another Jensen "First". As the name implies this instrument employs three separate and complete loudspeakers in a unitary design comprising together with its frequency dividing network a compact 3-way loudspeaker system; the first unitary 3-way loudspeaker ever to be built. Three speakers (1 direct radiator and 2 compression type with horns) are used because each may then be designed and built for performance through a relatively narrow frequency band of the audio spectrum with a consequent reduction of design compromise compared to the more conventional types of loudspeakers.

And so the G-610 Triaxial now takes its place at the head of the Jensen family of "Genuine Wide Range" Loudspeakers. We call it Ultra High Fidelity but note that it's in the Wide Range Family and that Jensen always maintains a relationship between High Fidelity and Wide Range descriptive phrases. That's because we think the two terms are complimentary but not synonymous, and it's because we think the Industry and public have fallen into the habit of using the descriptive term High Fidelity too loosely perhaps because of its effect as a sales stimulant. There is no common or precise definition of "High Fidelity". By our standard perhaps the most inaccurate definition is that which

implies that High Fidelity performance is accomplished simply because response is claimed or even achieved through a frequency range of say 40 to 20,000 cycles or for that matter any other range. Our term for defining loudspeaker performance through a range of frequencies wider than that commonly associated with loudspeaker performance is "Wide Range". We specify High Fidelity Performance when a degree of balance, smoothness and distortion tolerance has been achieved through the specified useful frequency range such as will produce a quality of faithfulness very near in approach to the original. Thus by our definition it would be possible to produce a loudspeaker which might reproduce both the very high and/or very low frequencies but still not qualify as a High Fidelity product simply because other equally important performance requirements had not been met.

Perhaps the most brief and understandable definition of High Fidelity performance according to our concept is to say that it is that performance which would make a listener relatively unaware that the sound was coming from sources other than the original. And finally from the standpoint of the average listener the most valid judgment of loudspeaker performance may very well come from an appraisal of the integrity, experience and ability of the manufacturer who built the product.

Jensen have published an interesting little booklet entitled, "Let Music Come to Life". A copy is shipped with each G-610 Triaxial and we will be glad to send additional copies upon request. You will find its discussion of loudspeaker performance of absorbing interest.

For those who are interested in a somewhat more technical discussion of the whole subject of loudspeaker performance we recommend Jensen Technical Monograph No. 3 titled, "Frequency Range and Power Considerations in Music Reproduction", and for those interested particularly in the significance of frequency response measurements we suggest Monograph No. 1 titled, "Loudspeaker Frequency Response Measurements". Both books are available from your dealer or direct from the factory. Their cost is 25c each.

We call the G-610 an Ultra High Fidelity instrument because we believe that by the most exacting standards that's precisely what it is. We do not claim it is the ultimate in loudspeaker performance. We do claim it to be the "World's Finest Loudspeaker" today and we think it will be for some time to come.

If you now own or acquire one of these instruments you are certain to experience the greatest satisfaction you have ever known with sound reproducing equipment. No matter what your favorite source of entertainment may be: radio, tape, wire or records you will find that you enjoy and appreciate them more than ever before. Even if you have some old shellac "collectors item" records you can enjoy them with this instrument which to the best of our knowledge is unique with the G-610. It is the only truly High Fidelity loudspeaker we know of which will give completely satisfactory performance on comparatively poor source material such as old or worn records. That's because of its inherent performance characteristics, which for want of a better word and brevity, we describe as "balanced" and because of the control facilities associated with the instrument.

We here at Jensen who conceived, designed and built the G-610 are all

fully aware that the reputation of this company rests upon a firm foundation of experience, demonstrated ability and conservative performance claims. As a matter of fact many of us have been with the Company so many years that we have helped to construct and built the foundation itself. We are proud therefore of our latest achievement and we hope sincerely that all who own the G-610 may experience an equal pride of ownership. We are confident you will if and when you possess one.

## PRODUCT DESCRIPTION . . .

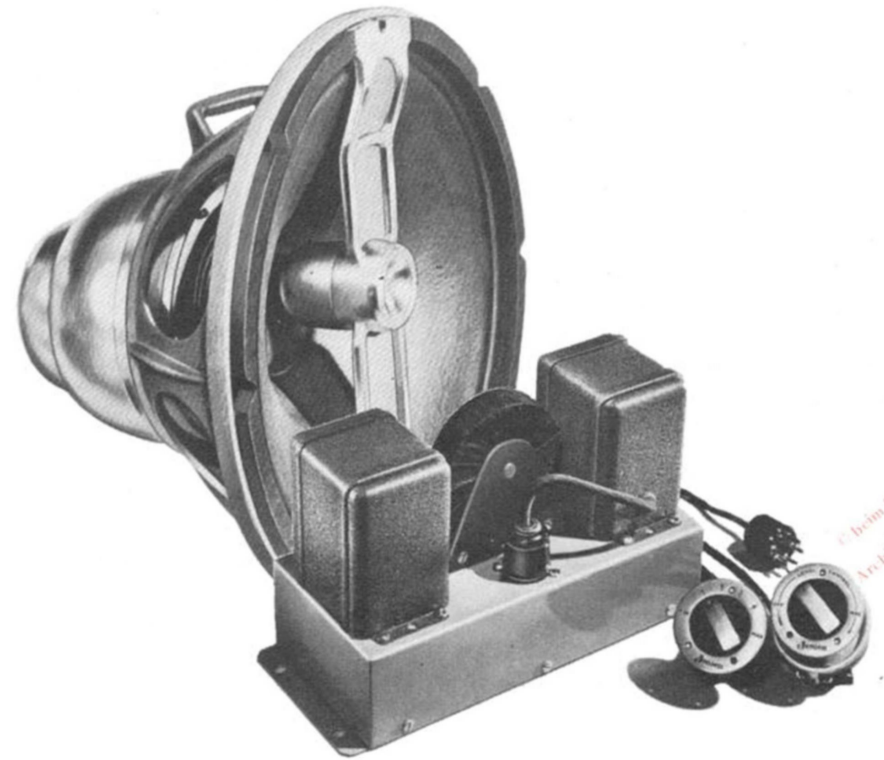


Fig. 1

The Jensen G-610 Triaxial consists of the 3-way unitary loudspeaker system and a separate frequency dividing network assembly with its associated controls. The loudspeaker should not be operated without this network or a properly designed equivalent. Figure 1 shows the complete product and Figure 2 a sectional view of the loudspeaker showing the 3 separate units with respective diaphragm radiating surfaces and in the case of the mid-channel and high-channel units, their horn structures. Figure 3 shows a functional block diagram of the G-610 Triaxial indicating how each of the 3 separate sound generators perform their individually assigned function and then how all three are combined to give overall response throughout the whole useful frequency range. Note that a level control is associated with the system to adjust overall output of the system and that a high frequency "step" control is provided for adjustment of high frequency output in the range above 4,000 cycles per second. Use of these controls will be discussed in detail later.

Model A-221 frequency dividing and control network is shown physically as a part of the complete system in Figure 1, Figure 5 is a pictorial diagram of this network and Figure 4 is a schematic wiring diagram of the complete system.

In operation audio signals are fed from the amplifier output to Model A-221 Network whereupon the energy is electrically divided causing power for frequencies below 600 cps to be delivered to the low frequency 15 inch cone type loudspeaker, power for the mid frequency range (600 to 4,000 cps) is delivered to the mid frequency compression type speaker and power for the upper range of frequencies (above 4,000 cps) is delivered to the high frequency compression type speaker (commonly called "tweeter").

All of the circuit facilities necessary for operation of the G-610 System are incorporated within Model A-221 Network with its attached controls, terminal strip and connector plugs. The Network also has facilities for adjustment to various amplifier output impedance values through the addition of a proper impedance matching transformer (Jensen T-200 Series) as explained in following paragraphs. **Without** one of these transformers the network is designed as a 16 ohm load.

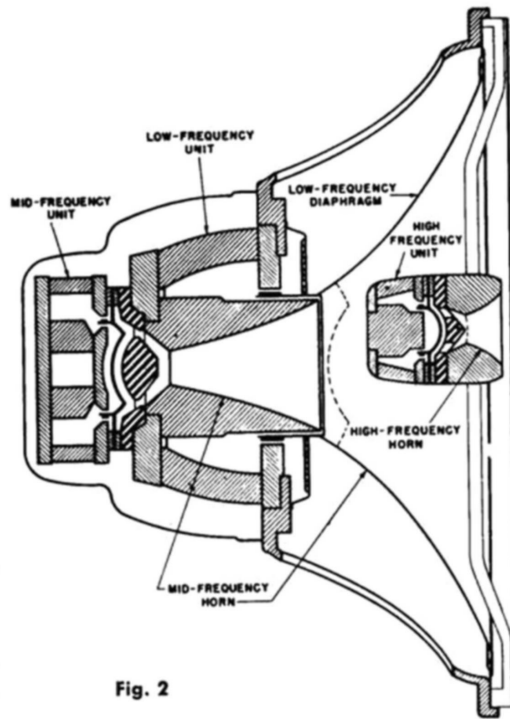


Fig. 2

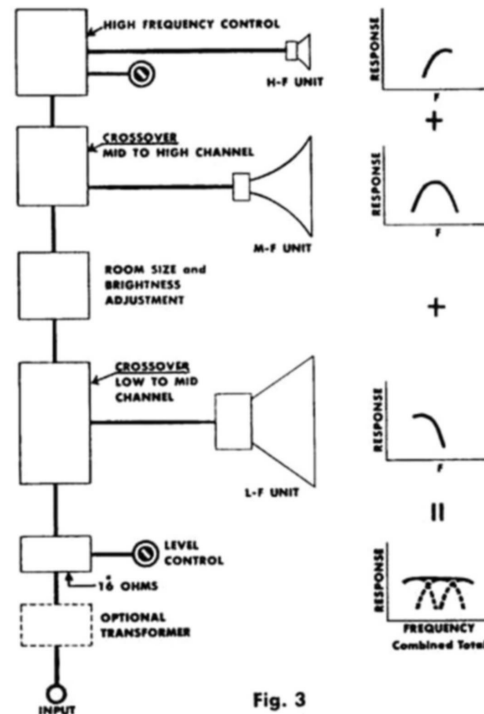


Fig. 3

## PLACING THE G-610 IN OPERATION . . .

Jensen Bass Reflex Reproducer Cabinets are available offering perfectly matched acoustical loading for the G-610 Triaxial. Figure 6 illustrates the new Jensen Model Imperial Cabinet especially designed for the G-610 and showing the convenient method of speaker installation. If you are not familiar with this Cabinet — write for descriptive literature.

The G-610 can of course be incorporated in any cabinet having sufficient space for a 15-inch loudspeaker, but since it is heavier than the usual 15-inch loudspeaker care must be taken to see that it is fastened securely to the cabinet. Eight fastenings must be used; they should be as long as possible without pushing out the front of the cabinet or baffle; if a sub-baffle is used be sure it also is fastened securely to the cabinet proper. Preferred practice when using a sub-baffle for the loudspeaker is to use eight bolts rather than wood screws for fastening. These bolts should be passed through the baffle after the speaker is in place and the mounting holes **carefully aligned**. This procedure will prevent puncture of the l-f diaphragm by the bolts. Note that the new Jensen Model M Cabinet comes complete with all mounting accessories.

A Bass Reflex cabinet is always recommended for optimum low frequency response characteristics. A preferred Bass Reflex cabinet would have a volume of 12,600 cubic inches and a port area of 73 square inches. The new **Jensen Type M Imperial Cabinet** illustrated on pages 13 and 14 is recommended. Corner cabinets offer some advantage; some horn loading type cabinets also give desirable results but the front of the G-610 Triaxial must be exposed (behind the grille) so that the m-f and h-f elements can radiate directly into the room. Write us about your own enclosure problems; we will be glad to discuss the details.

Model A-221 CROSSOVER AND CONTROL NETWORK can be mounted at any convenient location close enough to the loudspeaker proper so that the connecting plug can be inserted. Fasten the network with the four wood screws provided.

The complete loudspeaker-cabinet assembly should never be shipped in this form because the heavy loudspeaker may break loose and cause serious damage to the loudspeaker, cabinet or other equipment in the cabinet. We suggest that the shipping carton in which you received the loudspeaker be kept; use it when the loudspeaker must be shipped to another location. Extra shipping cartons with packing instructions can be obtained from us at a nominal price.

Mount the two network controls at some convenient position on the cabinet for easy adjustment. Jensen Reproducer Cabinets have cut-outs for these controls. The controls are supplied with escutcheon cups and three wood screws for mounting; unless you use a Jensen Cabinet 1-11/16 inch diameter cut-outs will be necessary. The bar knobs on the control shafts are held on by spring friction and may be removed by a firm pull. Drill small holes to serve as guides

for the wood screws used for attaching the cups and after securely fastening them, insert the control shafts and push on the bar knobs. Note that the thin flat washer is placed between the cup and control for proper spacing; locate the controls carefully so that the locating lug seats in the hole provided in the cup before tightening the lock-nut.

With the loudspeaker, network and controls installed the plug on end on flexible cord (attached to network) may now be inserted in the socket on the frame of the loudspeaker.

An "INPUT" terminal block is provided on the network for connection to the amplifier as indicated by the notes appearing on the network chassis. The nominal input impedance of this system as supplied is 16 ohms but in some cases the G-610 will be used with amplifiers designed for a load impedance other than 16 ohms; common values are 500 ohms, 8 ohms and 4 ohms. Two Jensen T-200 series transformers are available to provide perfect impedance match for these situations and they are available upon order. Figure 1 shows such a transformer attached to the network by the four machine screws and lock washers supplied. A note on the network chassis shows the exact position of the transformer which is equipped with a cable and 7-pin plug. Remove the shorting plug from socket marked "TRANSFORMER" and insert the transformer plug thus completing all the internal circuits. Input connections are then made to the "INPUT" terminal block as follows:

Input Impedance	Transformer Model	"INPUT" Terminals
4 ohms	T-201	1 & 2
8 ohms	T-201	1 & 3
16 ohms	None	1 & 3
500-600 ohms	T-202	1 & 3

The 4 ohm value is suitable for the RTMA standard value of 3.2 ohms used in many radio receivers. Note that the shorting plug is normally left in the "TRANSFORMER" socket when no supplementary transformer is used.

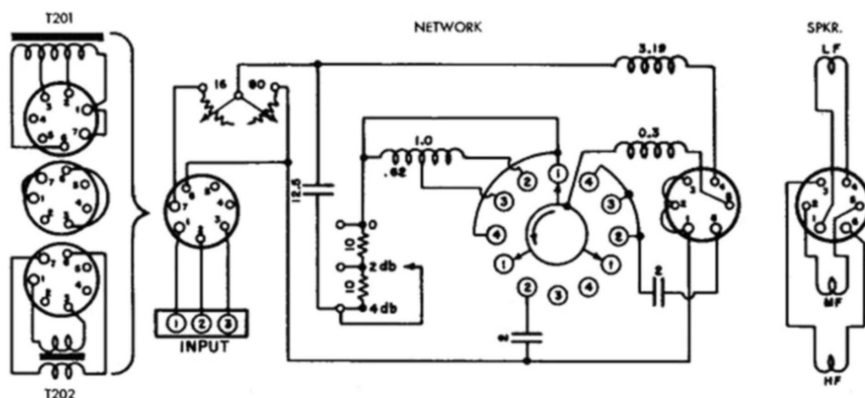


Fig. 4

Type SJ rubber covered cable is ideal for use between your amplifier and this loudspeaker system. Type POSJ rubber covered lamp cord is also satisfactory or in fact any stranded leads with good insulation of 18 gauge or larger. Maximum distances between the amplifier and network should not be greater than those indicated in the table below to prevent excessive loss in the line.

Impedance	Max. Line Loop Length
4 ohms	25 ft.
8 ohms	50 ft.
16 ohms	100 ft.
500-600 ohms	250 ft.

After installing your G-610 Triaxial certain adjustments should be made to obtain optimum results. The input "LEVEL CONTROL" is normally set at "MAX"; the prime use for this control is where the loudspeaker is located at some distance from the amplifier. If this level control is set too low, excessive level will be required from the amplifier; this may give rise to distortion in the amplifier which of course the loudspeaker will then reproduce.

The "HIGH FREQUENCY CONTROL" provides adjustable h-f cut-off. Position "4" yields the maximum range with no cut-off filter elements inserted; it provides the full frequency range capabilities of the loudspeaker system. Position "1" inserts filter elements so as to restrict the useful frequency range to approximately 5000 cycles. This is the lowest cut-off provided and should be used only when signals of high distortion or of limited frequency range are being reproduced. Positions "2" and "3" give equally noticeable intermediate steps between the above extremes. The following table will suggest positions for the usual types of program material:

**"HIGH FREQUENCY CONTROL"**

**Program Material**

1	Worn shellac phono. records, short wave broadcasts.
2	Standard shellac records, low speed wire and tape recordings.
3	High fidelity AM broadcasts, chain FM broadcasts, wire and tape recordings, high fidelity microgroove records, transcriptions.
4	Tape recordings of highest quality, FM direct pickup broadcasts, monitoring for broadcast and recording studios.

Users of fine loudspeakers are undoubtedly aware that cabinet and room characteristics do alter the performance of any loudspeaker somewhat. If the suggestions above have been followed only the room factors remain. It is generally not advisable to face the loudspeaker directly toward a highly reflecting

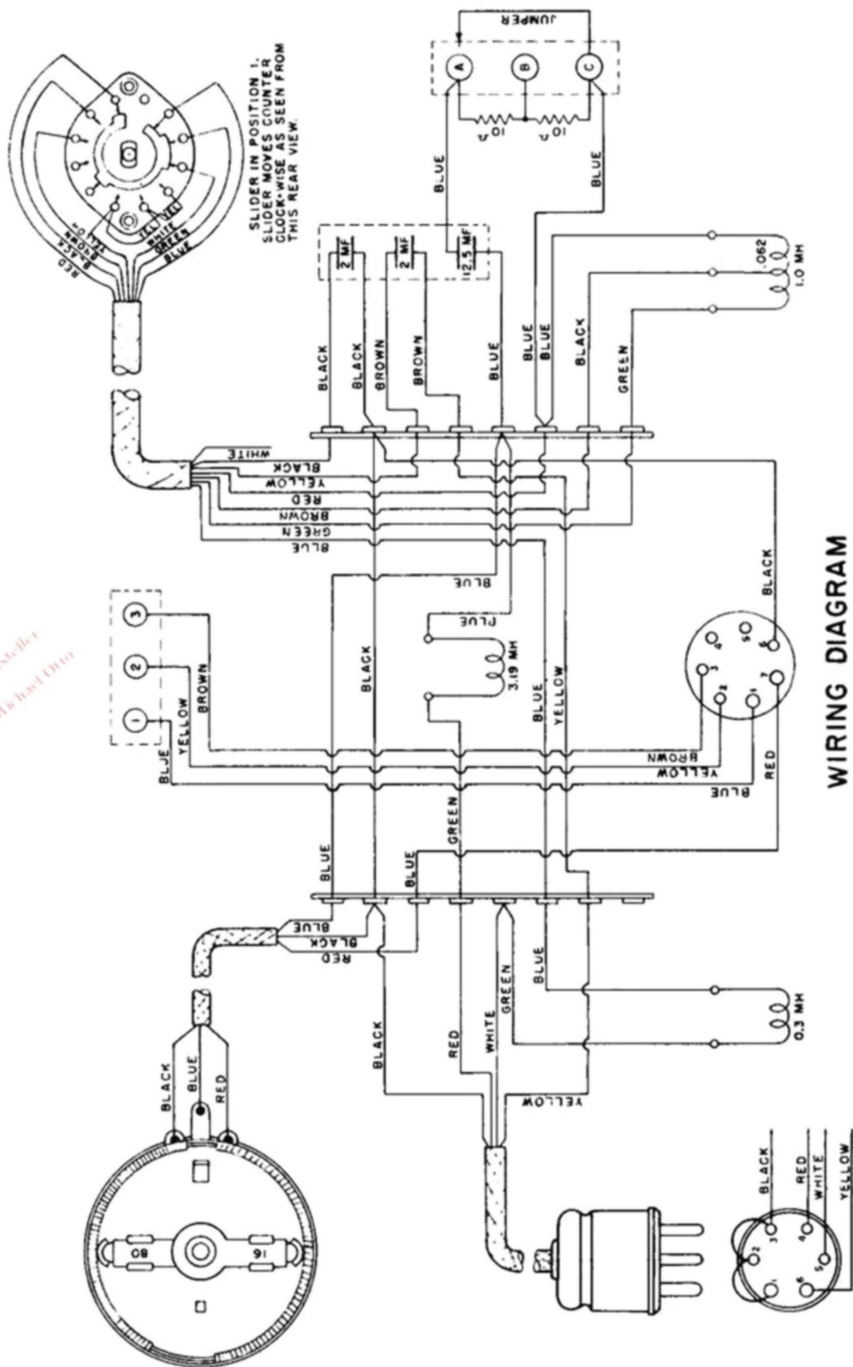


Fig. 5

wall if it can easily be avoided. Facing the loudspeaker along a diagonal of the room (from a corner position) or along the longer direction of the room are preferred arrangements. Obviously the amount of absorption material in the room will also exert its influence; if the room is heavily draped and has a lot of overstuffed furniture, a relatively greater portion of the h-f range will be absorbed rather than reflected many times about the room.

The MODEL A-221 CROSSOVER AND CONTROL NETWORK has provision for "balancing" the response "brightness" as stated in the instructions on the chassis. A terminal block with terminals "A", "B" and "C" is provided for "ROOM SIZE AND BRIGHTNESS CONTROL." The flexible lead and spade lug is fastened to terminal "A" for maximum "brightness" or on "B" or "C" for progressively decreased "brightness." Choose the setting that seems to give the best "balance" and the most natural, realistic reproduction of a wide range of musical selections.

A few final comments are now in order concerning the results you will obtain with your G-610. The system is designed for maximum possible frequency range with minimum possible transient and intermodulation distortion, and you will soon discover how very well these objectives have been realized. It has to an exceptional degree, that unusual property we call "distortion tolerance." The reproduction of program material having appreciable amounts of inherent noise and distortion is quite gratifying; there is no emphasis of the unwanted objectionable characteristics of the material. It is not necessary to reduce the h-f output by tone control or "HIGH FREQUENCY CONTROL" to obtain listenable quality. Often the signal to noise ratio is improved by adjusting the "HIGH FREQUENCY CONTROL" but still the reproduction is most realistic due to the smoother response characteristics and lower distortion in the loudspeaker itself. All of these factors give greater meaning to the term "high-fidelity" but of course you will want to eliminate all possible distortion from the source material and other equipment so that the maximum performance capabilities of the G-610 can be realized.

An important design feature of G-610 Triaxial provides "critical damping" at all frequencies; there is no "hang-over" of signals being reproduced. This effect is most noticeable in the l-f region which may sometimes seem deficient; this is actually a result of good l-f transient response and not a deficiency at all. Amplifiers used with the G-610 Triaxial should have adjustable l-f equalization which can be set to emphasize the l-f region as desired.

## MAINTENANCE AND REPAIR

This instrument should give many years of satisfactory trouble-free service; no parts or materials used are subject to noticeable aging or wear. Obviously such precision apparatus is subject to damage if exposed to abuse.

Since the instrument is naturally designed to reproduce speech and music type signals its power rating is based on the statistical energy-frequency distribution of such signals. This rating is conservative and considerable excess power for short time intervals should cause no permanent damage. When using sine wave signals or pure tones (such as an oscillator) the power should be limited to these values:

For frequencies above	Max. power
2000 cycles	20 watts
3000 cycles	10 watts
4000 cycles	5 watts

Extreme signal levels accidentally applied to the loudspeaker can cause permanent damage particularly to the h-f driver unit. The usual symptom is distortion in the h-f region often noted as buzzing or rattling. In all such cases we recommend that the loudspeaker be returned to our factory for repair under carefully controlled conditions with the necessary precision fixtures. This then permits comprehensive testing of the final product just as for a new instrument.

The switch of the "HIGH FREQUENCY CONTROL" may become broken if subjected to undue stress; replacement switches can be obtained from your dealer or from the factory. A drawing showing the correct color coding is supplied with these switches. Be sure to list the **specification number** appearing on the **network chassis**; this is the number having the letter prefix "C" followed by four or five digits.

Figure 5 is a pictorial wiring diagram for the MODEL A-221 CROSSOVER AND CONTROL NETWORK. Figure 4 is a schematic circuit diagram for the complete loudspeaker system. This information is supplied for your reference primarily for its academic interest; no trouble should arise in service and therefore no testing or repair is envisioned.

If for any reason your G-610 Triaxial becomes damaged and must be returned to the factory for repair and you have discarded the packing box, we urge you to write us and obtain a packing box and packing instructions to insure delivery to us without further damage.

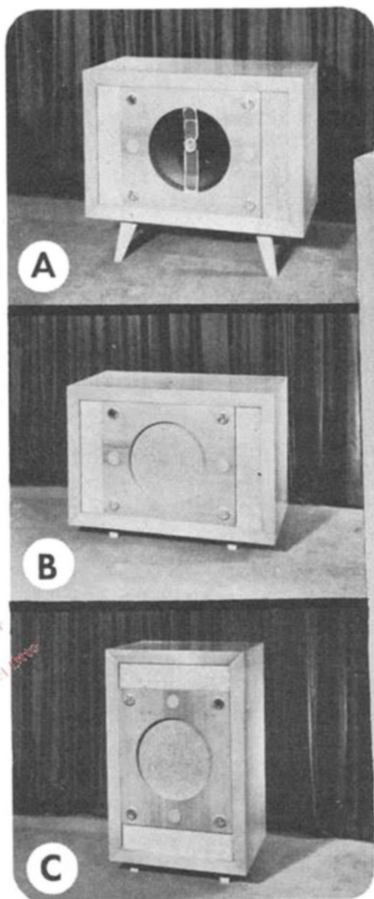
This company invites your inquiries at any time on matters of sound reproduction whether or not related to this particular loudspeaker system. We welcome inquiries which will lead to greater satisfaction in the use of our products and to other questions "In the Interest of Better Sound Reproduction."



Fig. 6

New Type M Customode reproducer cabinet

Illustrated with accessory leg assembly



Note how easily speaker may be installed or removed from the front of the cabinet! Anchor nuts and machine screws hold speaker to panel — no studs or wood screws.

## Jensen TYPE "M" Imperial Customode Reproducer Cabinet

Here is new, clean-lined modern beauty . . . adaptability to every decorative and functional requirement . . . plus uniquely convenient access for installation or modifications — and of course the fine acoustic performance of Jensen Bass Reflex. Never before have so many outstanding features been combined in a loudspeaker enclosure.

The cabinet may be placed on side or end as desired, standing on the wedge foot rails which are supplied (See B and C). Or, for the attractive "low-boy" effect, an accessory Leg Assembly may be purchased. Grille Cloth-Screen Assembly is removable thus permitting decorative use of the front appearance details of the loudspeaker if desired (See A).

The front panel (to which speaker is attached) is easily, quickly removed for installation or replacement by simply unscrewing four decorative brass discs as illustrated. Positive, easy aligning fastening of speaker to panel is accomplished by means of machine screws and anchor nuts which are set into the back of the panel. Will accommodate any 15-inch loudspeaker. Concealed cut-outs, covered by removable matching wood discs, are provided in the panel for H-F Range and Level Controls if used.

**TYPE M REPRODUCER CABINET.** Selected mahogany veneers, finished in Blonde or Cordovan. Dimensions: 36"x24"x18" overall. Complete with removable Grille Cloth-Screen Assembly and two wedge foot rails. Shipping weight, 80 lbs. Specify ST-838 for Blonde; ST-858 for Cordovan.

**LEG ASSEMBLY.** Modern self-supporting, X-stretcher leg assembly for "low-boy" effect. Raises cabinet 8" above floor. Not furnished with cabinet; must be ordered separately. Shipping weight, 15 lbs. Specify ST-843 for Blonde; ST-863 for Cordovan.