

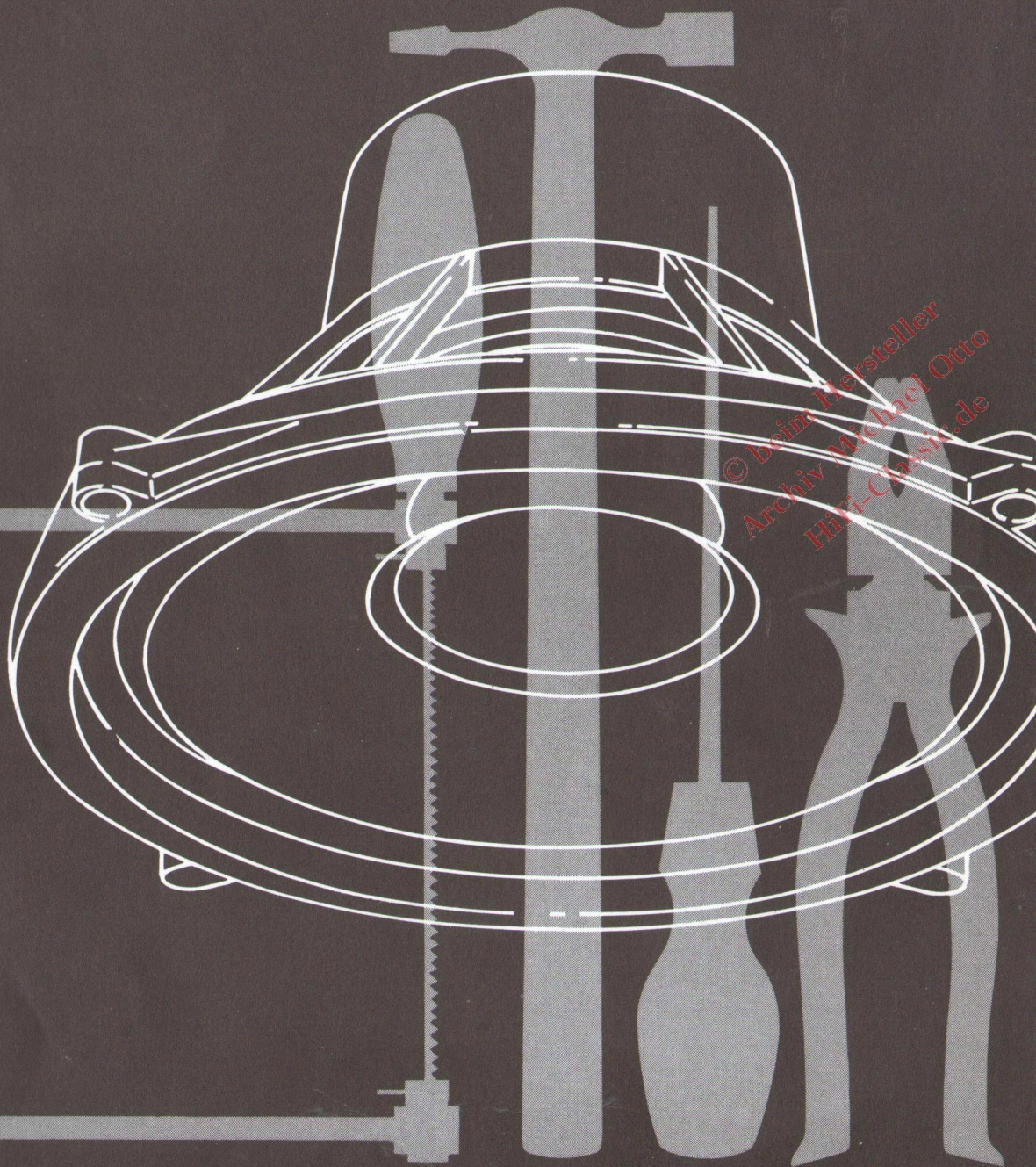
**Goodmans**  
High Fidelity



the  
natural  
sound

steller  
hael Otto  
Classic.de

© beim Hersteller  
Archiv Michael Otto  
Hifi-Classic.de



# Goodmans High Fidelity

This Manual contains full details of all Goodmans High Fidelity and Power loudspeaker units and associated accessories, together with recommended cabinet designs for each type, and notes on the means of obtaining the optimum results in each case.

By following the guidance given you can construct your own fine High Fidelity Loudspeaker System – large or small, complex or simple, according to your needs; or you can “Stage Build” your system; improving it in well defined steps as required.

If your requirement is for “Power” loudspeakers, for Public Address, Musical Instrument amplification, Discotheques, etc., you will find very helpful notes to assist your choice of the correct units, as well as clear guidance on the correct use of this unique series of Goodmans Loudspeakers.

Should any problems arise, please do not hesitate to write for assistance to The Technical Advisory Dept., Goodmans Loudspeakers Ltd., Axiom Works, Lancelot Road, Wembley, Middlesex, England.

For full details of Goodmans complete High Fidelity Loudspeaker Systems, Amplifiers, Tuners and Turntables, please ask for Goodmans High Fidelity Manual.

## FULL RANGE SINGLE UNIT HIGH FIDELITY LOUDSPEAKERS

### Twinaxiom 8

The Twinaxiom 8 is the smallest in the Axiom Range of full frequency, high fidelity, loudspeaker units.

The Twinaxiom 8 loudspeaker incorporates a powerful Feroba II anisotropic ceramic magnet mounted on a rigid light alloy die cast chassis. The completely new twin cone assembly with pure plastic roll suspension results in an improved performance over the frequency range.

The Twinaxiom 8 loudspeaker is for use in sealed enclosures with internal volumes of 1300 to 3000 cubic inches. The larger enclosures give an extension to the lower Bass output.

The Twinaxiom 8 is capable of handling the full output of music programme material from amplifiers with 15 watt (R.M.S.) rating, but the sensitivity is such that an adequate listening volume is obtained when used with equipment rated 4–5 watts.



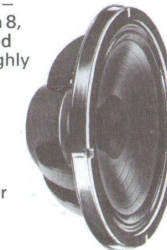
Frequency range: Infinite Baffle 40–18,000 Hz.
Maximum power handling capacity: 15 watts music.
Fundamental resonance: 35 Hz.
Flux density: 13,500 gauss.
Total flux: 53,000 Maxwells.
Voice coil: 1" (25.4 mm) dia.
Impedance: 8 ohms or 15 ohms.
Chassis: Light Alloy Diecast.
Overall diameter: 8½" (205 mm).
Overall depth: 4½" (107 mm).
Baffle hole diameter: 6½" (170 mm).
Fixing holes: 4 holes equispaced on circle of 7⅞" (194 mm) dia.

### Twinaxiom 10

The Twinaxiom 10 is the choice of the man who can afford – and has the room for – a larger speaker than the Twinaxiom 8, but does not need, or has not space for, one of the larger and more powerful 12" systems. Twinaxiom 10 possesses a highly efficient magnet system in Feroba II anisotropic ceramic material and plastic terminated diaphragm with curvilinear form. The chassis is a diecast precision-built housing combining strength with elegance.

The Twinaxiom 10 loudspeaker is for use in sealed enclosures with internal volumes of 1500 to 4000 cubic inches. The larger enclosures give an extension to the lower Bass output.

The Twinaxiom 10 is capable of handling the full output of music programme material from amplifiers with 15 watt (R.M.S.) rating, but the sensitivity is such that an adequate listening volume is obtained when used with equipment rated 4–5 watts.

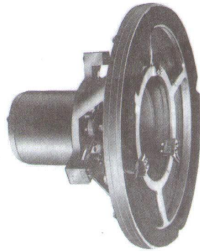


Frequency range: 40–18,000 Hz.
Maximum power handling capacity: 15 watts music.
Fundamental resonance: 40 Hz.
Flux density: 13,500 gauss.
Total flux: 53,000 Maxwells.
Voice coil: 1" (2.54 cm) dia.
Impedance: 8 ohms or 15–16 ohms.
Chassis: Diecast.
Overall diameter: 10½" (26.6 cm).
Overall depth: 4⅞" (10.9 cm).
Baffle hole diameter: 8½" (21.6 cm).
Fixing holes: 4 holes ¾" (0.6 cm) dia. equally spaced on a circle of 9⅞" (24.4 cm) dia.

## Axiom 80

A twin-cone transducer capable of the highest accuracy of sound reproduction at medium power levels. The moving assembly is 'free-edged', suspended on two sets of double-acting cantilevers which provide extremely low and linear axial stiffness combined with strong radial centering action.

The Axiom 80 employs a cast chassis and suspension frame, and a highly efficient ring magnet system. Hand built throughout.



Frequency range: 20–20,000 Hz
Maximum power handling capacity: 6 watts
Fundamental resonance: 20 Hz
Flux density: 17,000 gauss
Total flux: 62,000 Maxwells
Voice coil: 1" (2.54 cm) dia.
Impedance: 15 ohms
Chassis: Diecast
Overall diameter: 9 $\frac{1}{2}$ " (24.1 cm)
Overall depth: 6 $\frac{3}{8}$ " (16.2 cm)
Baffle hole diameter: 8 $\frac{1}{2}$ " (20.9 cm)
Fixing holes: 4 holes $\frac{1}{4}$ " (0.6 cm) dia. equispaced on a circle of 8 $\frac{1}{2}$ " (22.5 cm) dia.

## Axiom 201

The Axiom 201 is specially designed for the Audio Enthusiast who insists upon a 12" loudspeaker for its extended range, rich true bass, and very low distortion, but does not need the high power handling and efficiency of the Axiom 301.

This remarkable twin diaphragm 12" unit has smooth performance from 30–16,000 Hz and can be used with amplifiers up to 15 watts.



Frequency range: 30–16,000 Hz
Maximum power handling capacity: 15 watts
Fundamental resonance: 35 Hz
Flux density: 13,000 gauss
Total flux: 87,500 Maxwells
Voice coil: 1 $\frac{3}{4}$ " (4.4 cm) dia.
Impedance: 8 ohms or 15–16 ohms
Chassis: Diecast
Overall diameter: 12 $\frac{1}{4}$ " (31.2 cm)
Overall depth: 5 $\frac{3}{8}$ " (14.8 cm)
ARU 172 enclosure volume (internal): 7,800 cu. ins.
Baffle hole diameter: 11" (28 cm)
Fixing holes: 4 holes 0.312" (0.8 cm) dia. equally spaced on a circle of 11 $\frac{3}{4}$ " (29.8 cm) dia.

## Axiom 301

The latest model of the world's most popular 12" High Fidelity Twin Cone loudspeaker incorporates a highly efficient permanent magnet system using Feroba II anisotropic ceramic material. A very low level of distortion and exceptionally smooth and extended response is obtained from twin diaphragms and specially terminated to prevent standing waves and spurious resonances.

The Axiom 301 is ideal for single unit loudspeaker systems and is the recommended first step in the stage-built system. Both models have an all plastic suspension for extra flexibility, linearity with strength, extended high frequency response, mounted in a new and striking diecast chassis of great strength, combined with a slender and open profile; the construction is fully dustproof. Suitable for stereophonic or monophonic installations. Now available with 8 ohm voice coil or 15–16 ohm, as required.

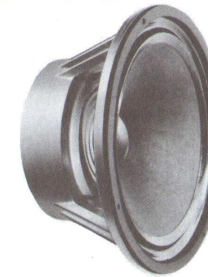


Frequency range: 30–16,000 Hz
Maximum power handling capacity: 20 watts
Fundamental resonance: 35 Hz
Flux density: 16,500 gauss
Total flux: 185,000 Maxwells
Voice coil: 1 $\frac{3}{4}$ " (4.4 cm) dia.
Impedance: 8 ohms or 15–16 ohms
Chassis: Diecast
Overall diameter: 12 $\frac{1}{4}$ " (31.2 cm)
Overall depth: 6 $\frac{1}{2}$ " (15.9 cm)
ARU 172 enclosure volume (internal): 7,800 cu. ins.
Baffle hole diameter: 11" (28 cm)
Fixing holes: 4 holes 0.312" (0.8 cm) dia. equally spaced on a circle of 11 $\frac{3}{4}$ " (29.8 cm) dia.

## BASS UNITS FOR MULTIPLE SPEAKER HIGH FIDELITY

### Audiom 51 Bass 12 inch – 15 watt

The Audiom 51 Bass is a rugged 12" single diaphragm unit handling up to 15 watts of power. It is specially designed for High Fidelity enthusiasts who need a 12" Loudspeaker as the Bass unit in their three-way systems but who do not need the high power handling capacity and the extra high efficiency of the Audiom 61. The Audiom 51 Bass has a fundamental resonance of 35 Hz and is fitted with a powerful Feroba II magnet system giving high efficiency and control. Now fitted with extra strength plastic edged cone for maximum flexibility, and a new rigid diecast chassis of open design, holding all parts in permanent alignment; connection is by means of binding posts. Now available with 8 ohm voice coil or 15–16 ohm as required.



Maximum power handling capacity: 15 watts (30 watts U.S.A.)
Fundamental resonance: 35 Hz
Flux density: 13,000 gauss
Total Flux: 87,500 Maxwells
Voice coil: 1 $\frac{3}{4}$ " (4.4 cm) dia.
Impedance: 15–16 or 8 ohms
Chassis: Diecast
Overall diameter: 12 $\frac{1}{4}$ " (31.2 cm)
Overall depth: 5 $\frac{3}{8}$ " (14.8 cm)
ARU 172 enclosure volume (internal): 7,800 cu. ins.
Baffle hole diameter: 11" (28 cm)
Fixing holes: 4 holes 0.312" (0.8 cm) dia. equally spaced on a circle of 11 $\frac{3}{4}$ " (29.8 cm) dia.

### Audiom 61 Bass 12 inch – 20 watt

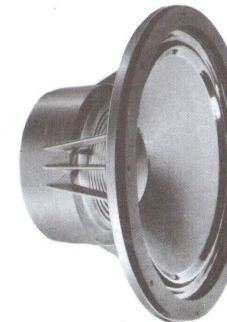
The Audiom 61 is a very robust 12" single diaphragm unit handling up to 20 watts of power. It is fitted with a massive Feroba II magnet system giving exceptional efficiency and control. Now fitted with extra strength plastic edged cone for maximum flexibility. With its low fundamental resonance of 35 Hz – it is the ideal choice as the Bass unit in a three-way system incorporating the Midax and Trebax (see pages 10 and 11). Enclosure details on page 9. A new rigid diecast chassis of advanced design holds all parts in permanent and accurate alignment. Binding posts are fitted for rapid and secure connection. Now available with 8 ohm or 16 ohm voice coil as required.



Maximum power handling capacity: 20 watts (40 watts U.S.A.)
Fundamental resonance: 35 Hz
Flux density: 16,500 gauss
Total flux: 185,000 Maxwells
Voice Coil: 1 $\frac{3}{4}$ " (4.4 cm) dia.
Impedance: 15–16 ohms or 8 ohms
Chassis: Diecast
Overall diameter: 12 $\frac{1}{4}$ " (31.2 cm)
Overall depth: 6 $\frac{1}{2}$ " (15.9 cm)
ARU 172 enclosure volume (internal): 7,800 cu. ins.
Baffle hole diameter: 11" (28 cm)
Fixing holes: 4 holes 0.312" (0.8 cm) dia. equally spaced on a circle of 11 $\frac{3}{4}$ " (29.8 cm) dia.

### Audiom 81 Bass 15 inch – 25 watt

The Audiom 81 Bass is a robust 15" single diaphragm Bass unit of new heavy duty construction and handling up to 25 watts. It is fitted with a massive Feroba II magnet system and 3" voice coil thus combining a shallower assembly and up-to-the-minute styling with exceptional ruggedness in use and the ability to handle high power. The rigid diecast chassis is of exceptional strength. The all plastic cone edge gives maximum flexibility with enormous strength. Binding posts are fitted for rapid and secure connection.



Maximum power handling capacity: 25 watts (50 watts U.S.A.)
Fundamental resonance: 30 Hz
Flux density: 14,000 gauss
Total flux: 269,000 Maxwells
Voice coil: 3" (7.6 cm) dia.
Impedance: 15–16 ohms or 8 ohms
Chassis: Diecast
Overall diameter: 15 $\frac{1}{8}$ " (38.2 cm)
Overall depth: 7 $\frac{7}{8}$ " (18.9 cm)
Baffle hole diameter: 13" (33 cm)
Fixing holes: 8 holes $\frac{3}{8}$ " (0.71 cm) dia. on a circle of 14 $\frac{3}{8}$ " (36.51 cm) dia.

# POWER RANGE LOUDSPEAKERS

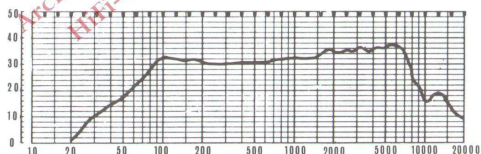
are for professional use, where reliability has to complement the total sound performance. The listed uses are typical, not an exhaustive detailing. Power range Loudspeakers are found in such diverse situations as acoustic research, pest control and alarm systems. Popular examples are shown for ease of selection.

		8P	10P	12P	15P	18P	
<b>Public Address</b>	Indoors	●	●				Single units or in columns for increased directional characteristics
	Outdoors		●	●			
	General Sound Reinforcements	●					
<b>Musical Instrument Amplification</b>	Guitars		●	●	●		For Church or Theatre Organs the Audiom 81 with Midax horn is very suitable.
	Bass Guitars			●		●	
	Pop Organs			●	●		Also the Axiom 301 where power does not exceed 20 watts/speaker.
	Discotheques and Dance Clubs		●		●		

## 8P



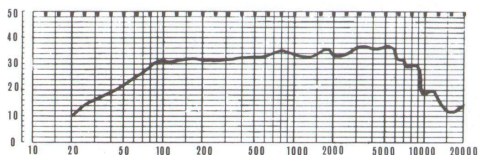
Nominal Power Rating: 15 watts  
 Fundamental Resonance (Typical): 85 Hz  
 Flux Density (Typical): 12,500 gauss  
 Voice Coil Diameter: 1" (25 mm)  
 Impedance: 8 or 15 ohms  
 Overall Diameter: 8 1/2" (204 mm)  
 Overall Depth: 3 1/2" (95 mm)  
 Baffle Hole Diameter: 7" (178 mm)  
 Fixing Holes: 4 holes 7/8" (6 mm) dia. on 7 8/8" (194 mm) PCD  
 Suitable Sealed Enclosure Volume (per loudspeaker): 1,300 cu. ins. (20 lts)



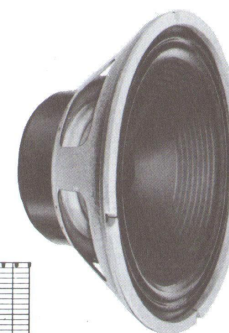
## 10P



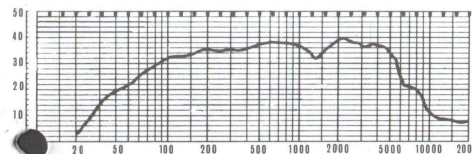
Nominal Power Rating: 15 watts  
 Fundamental Resonance (Typical): 85 Hz  
 Flux Density (Typical): 12,500 gauss  
 Voice Coil Diameter: 1" (25 mm)  
 Impedance: 8 or 15 ohms  
 Overall Diameter: 10 1/8" (259 mm)  
 Overall Depth: 3 3/8" (96 mm)  
 Baffle Hole Diameter: 9" (229 mm)  
 Fixing Holes: 4 holes 3/2" (7 mm) dia. on 9 3/2" (247 mm) PCD  
 Suitable Sealed Enclosure Volume (per loudspeaker): 2,000 cu. ins. (30 lts)



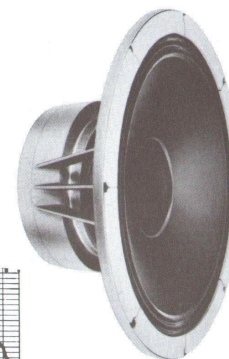
## 12P



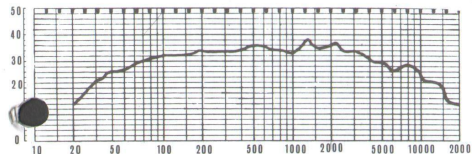
Nominal Power Rating: 50 watts  
 Fundamental Resonance (Typical): 85 Hz  
 Flux Density (Typical): 14,000 gauss  
 Voice Coil Diameter: 1 3/4" (44 mm)  
 Impedance: 8 or 15 ohms  
 Overall Diameter: 12 1/2" (311 mm)  
 Overall Depth: 6" (152 mm)  
 Baffle Hole Diameter: 11" (279 mm)  
 Fixing Holes: 4 holes 5/8" (8 mm) dia. on 11 3/4" (298 mm) PCD  
 Suitable Sealed Enclosure Volume (per loudspeaker): 3,000 cu. ins. (50 lts)



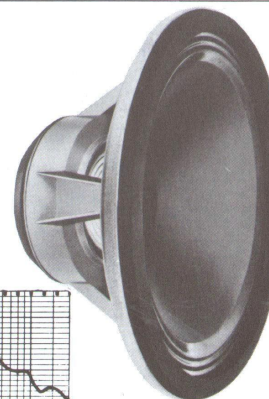
## 15P



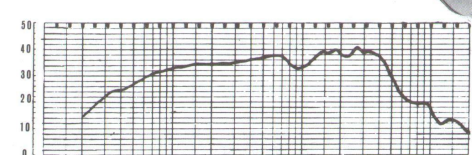
Nominal Power Rating: 50 watts  
 Fundamental Resonance (Typical): 56 Hz  
 Flux Density (Typical): 15,000 gauss  
 Voice Coil Diameter: 1 3/4" (44 mm)  
 Impedance: 8 or 15 ohms  
 Overall Diameter: 15 1/8" (383 mm)  
 Overall Depth: 6 7/8" (163 mm)  
 Baffle Hole Diameter: 13" (330 mm)  
 Fixing Holes: 8 holes 3/2" (7 mm) dia. on a 14 1/8" (370 mm) PCD  
 Suitable Sealed Enclosure Volume (per loudspeaker): 4,800 cu. ins. (80 lts)



## 18P



Nominal Power Rating: 100 watts  
 Fundamental Resonance (Typical): 45 Hz  
 Flux Density (Typical): 13,500 gauss  
 Voice Coil Diameter: 3" (76 mm)  
 Impedance: 8 or 15 ohms  
 Overall Diameter: 18 1/8" (459 mm)  
 Overall Depth: 8 3/4" (222 mm)  
 Baffle Hole Diameter: 16 1/2" (413 mm)  
 Fixing Holes: 8 holes 5/8" (8 mm) dia. 17 1/2" (438 mm) PCD  
 Suitable Sealed Enclosure Volume (per loudspeaker): 7,000 cu. ins. (120 lts)



# POWER RANGE LOUDSPEAKERS

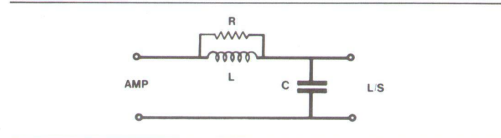
Goodmans Power Range Loudspeakers are rated as the maximum continuous sine wave power (average watts) that can be sustained when used in the recommended enclosures and within the frequency range from Resonance to 10,000 Hz.

Loudspeakers should be chosen to handle the maximum power of the driving amplifier and this is often considerably in excess of its rated sine wave power capability, due to power supply regulation and/or its overload characteristic.

Instantaneous and distorted outputs of 1.5 times the nominal amplifier rating, are commonplace, and the amplifier power should be multiplied by this factor when selecting suitable loudspeakers for use under these conditions.

Amplifiers which have low output impedances (i.e. Transistor Amplifiers and those with considerable negative feedback) generate fast rise, square waves at the output when overdriven; these can be damaging to the loudspeaker. By using a suitable network between the amplifier and the loudspeaker, not only will the loudspeaker be protected, but, the operating conditions of the amplifier will also improve – the load becoming almost purely resistive above 20 kHz. The

network, which does not alter the loudspeaker working range, may be fitted in the loudspeaker enclosure or at the amplifier output terminals, where one network may be used for a multiple 'speaker system', with the impedance chosen to suit.



Impedance	L	R	C
4	125μH	5	8μFD
8	250μH	10	4μFD
15	500μH	20	2μFD

The inductance L should have a resistance not greater than  $R \div 50$ . The capacitor C must be of the paper or Polyester type, with a suitable working voltage, typically 150 VDC. The resistor R power rating can be 1/20 the output power of the amplifier.

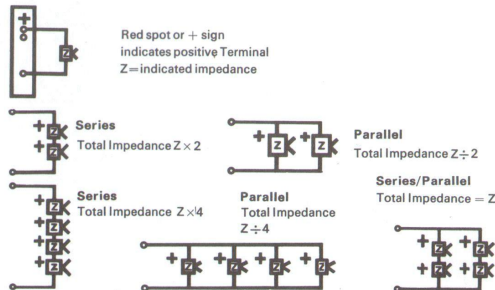
## ENCLOSURES

Goodmans Power Range Loudspeaker enclosures should be constructed from... Plywood or Chipboard (not Blockboard)... glued and screwed together... and completely airtight. For the best results the inside should be lined throughout with fibreglass, 2" thick, protective bars or material across the baffle hole must be recessed, or fitted so that the cone movement is not restricted.

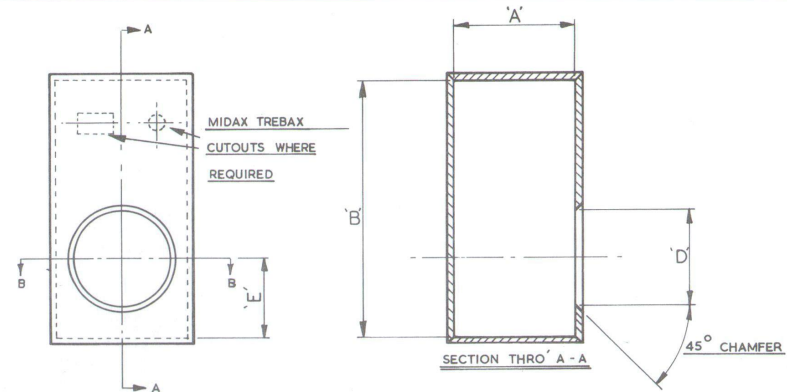
All dimensions are internal and are given in inches. The proportions can be varied but, the internal volume must not exceed that specified on pages 6 and 7 for each loudspeaker in one enclosure. If Goodmans Power Range speakers are used in open baffles or reflex cabinets, the low frequency response of the amplifier must be controlled to prevent excessive cone excursions at low frequencies where these cabinets present little or no acoustic loading. Loudspeakers can be wired in series or parallel, or indeed any combination of these to obtain a convenient total load impedance for the amplifier.

Do not use loudspeakers of differing impedances in one system, as this will cause uneven distribution of the audio power. Observe the polarity of the connections at all times, particularly where more than one loudspeaker is housed in an enclosure.

Power Audiums	8P	10P	12P	15P	18P
<b>Single Speaker Enclosure</b>					
A	15	18	22	24	28
B	12	14	16	18	21
C	7	8	9	11	12
D	7	9	11	13	16½
Thickness	½"	½"	¾"	¾"	¾"
<b>Twin Speaker Enclosure</b>					
E	20	24	28	35	40
F	15	18	20	25	28
Thickness	½"	¾"	¾"	¾"	1"
<b>Four Speaker Column</b>					
W	40	48	56		
X	10	12	14		
Y	6	7	9		
Z	9	11	13		
Thickness	¾"	¾"	¾"		



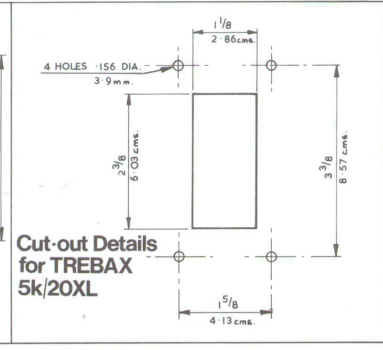
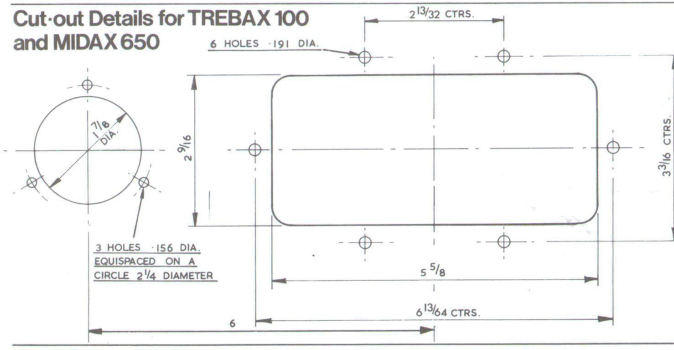
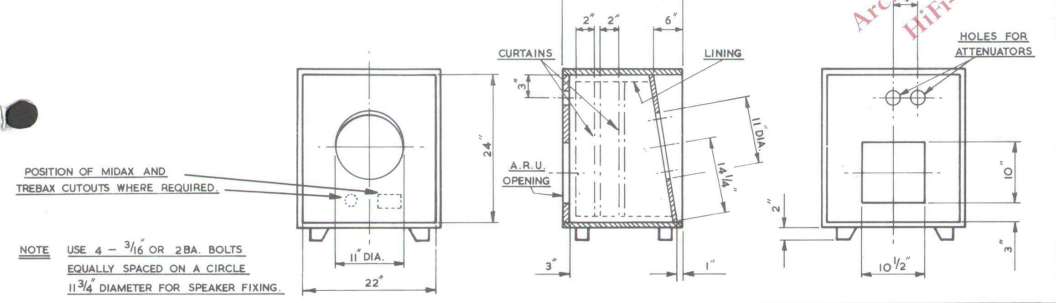
## RECOMMENDED ENCLOSURES



The loudspeaker enclosures shown should be rigidly constructed from high density chipboard or plywood ½" thick screwed and glued together. All joints should be airtight. The totally sealed enclosures should be loosely filled with layers of 2" thick fibreglass making sure that it does not interfere with the loudspeaker cone, and the Sherwood enclosure is lined with similar material as shown in the drawing.

Loudspeaker	TOTAL VOLUME CU. INS.	DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	DIMENSION E
Twinaxiom 8	3000	11	23	12	6 1/8	5 3/8
	1300	7 3/4	17 3/4	8 3/4	6 1/8	5 3/8
Twinaxiom 10	4000	11 1/2	22 1/2	15 1/2	8 1/2	6 1/2
	1500	7 3/4	18 1/4	10 3/4	8 1/2	6 1/2
Axiom 80	6000	12	26	19	8 1/2	6
Axiom 201/301 Aud. 51/61 Bass	10000	14	31	22 3/4	9 1/4	8
Audiom 81 Bass	12000	15	33	24	13	10

## SHERWOOD ENCLOSURE



## MID-RANGE AND HIGH FREQUENCY UNITS FOR MULTIPLE SPEAKER HIGH FIDELITY SYSTEMS

The pressure driven horn-loaded loudspeakers shown on this page have been designed specifically for use with Audiom Bass units to form very low distortion multiple-unit High Fidelity Loudspeaker Systems. The 12" Axioms on page 4 are equally suitable as bass units and should be used if you are 'stage-building' your system. If a two-way system only is required choose an Axiom loudspeaker to be used with one of the Trebax High Frequency units. The 'system power handling capacity' figures shown below imply that the units can be

incorporated (with the necessary crossovers - this page) in multiple systems of this power. Trebax and Midax units have a very high sensitivity so that if required they may be used with horn-loaded bass units. However it is more usual to use them with direct radiator bass loudspeakers such as the Audiom series. In these cases some attenuation of the inputs to the Trebax and Midax will be necessary to give a flat overall response. The attenuator has been specially designed for this purpose (this page).

### Trebax 100 High Frequency Unit

A very high efficiency horn-loaded pressure driven High Frequency unit designed to cover the treble register with complete freedom from irregularities in response, and with very low distortion. Trebax is a precision instrument, incorporating a self-centering coil and diaphragm assembly complete with plug connector. The frequency range is from 2,500 Hz to 20,000 Hz. To allow the proper overlap region the crossover frequency should be placed at 5 kHz.



Frequency range: 2,500-20,000 Hz  
Crossover frequency: 5,000 Hz  
System power handling capacity: 25 watts (50 watts U.S.A.)  
Impedance: For use with 8 to 15 ohm systems.  
Baffle hole diameter: 1 7/8" (4.8 cm)  
Fixing holes (Horn flange): 3 holes 0-156" (0.4 cm) dia. equally spaced on a circle of 2 1/4" (5.7 cm) dia.

### Trebax 5K/20XL High Frequency Unit

A high efficiency pressure driven horn-loaded High Frequency unit with built-in (twin 1/2-section L.C.) crossover network, ready wired, complete with L-pad on 2 ft. (61 cm) cable. The Trebax 5K/20XL has a frequency coverage of 2,500 Hz to 20,000 Hz and may be used in systems handling up to 20 watts (maximum). The crossover frequency of the built-in network is 5,000 Hz.



Frequency range: 2,500-20,000 Hz  
Crossover frequency: 5,000 Hz (built in network)  
System power handling capacity: 20 watts max.  
Impedance: For use with 8 to 15 ohm systems.  
Construction of Driver: Aluminium diaphragm with integral air chamber in removable self-aligning assembly.  
Baffle cut-out: 1 3/8" x 2 3/8" (2.9 cm x 6.0 cm) (see page 9)  
Attenuator fixing: 3 holes, 0-156" (0.4 cm) dia. equally spaced on a circle of 2 1/2" (6.3 cm) dia.  
Attenuator cut-out: 2 3/8" (5.5 cm) dia.

To add the unit to an existing loudspeaker system (e.g. Twinaxiom 10, 201, etc.) it is only necessary to transfer the input leads on the existing loudspeaker to the terminals marked 'Input' on the Trebax, and then to connect the existing unit to the terminals marked 'Bass' on the Trebax.

### Midax Mid-Range Pressure Driven Horn Unit

This unit is the correct choice when the major advantages of a horn-loaded middle register loudspeaker are required (i.e. freedom from distortion; smoothness of response, and high frequency). The total frequency range covered by the Midax 650 is 650 Hz to 8 kHz; to make a proper allowance for the overlap regions crossover frequencies should be 950 Hz and 5 kHz. The horn is an attractive and sturdy diecasting; reliable plug and socket connections are provided, and an easily replaced self-centering diaphragm is fitted.



Frequency range: 650-8,000 Hz.  
Crossover frequencies: 950 and 5,000 Hz.  
System power handling capacity: 25 watts (50 watts U.S.A.)  
Impedance: For use with 8 to 15 ohm systems.  
Baffle cut-out: 5 3/8" x 2 7/8" (14.3 cm x 6.5 cm) with 7/8" (0.79 cm) radii at corners.  
Fixing holes (Horn flange): 6 holes 0-191" (0.4 cm) dia. (see page 9).  
Overall length: 9 1/8" (25.3 cm).

### Attenuator, Variable, 12db 8-Step

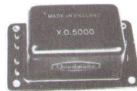
This accessory is designed for use with the Midax and Trebax units to enable easy and accurate balancing of the two-way or three-way systems. The attenuator is of the constant impedance type. It is variable in eight steps as follows: 0dB, 2dB, 4dB, 6dB, 8dB, 10dB, 12dB and off. In the 'off' position (full anti-clockwise) the loudspeaker under control is switched off altogether and a dummy load automatically replaces it to maintain correct matching. This position is useful when checking the operation of the various loudspeaker units in a multiple system. In the system described above, the setting of the attenuators for level response will normally lie between the 2dB and 8dB positions, depending

on the choice of bass units. There is thus effectively a facility for 'boost' or 'cut' available with these controls. This enables a system to be adjusted to suit the characteristics of any particular room in which it may be used. There is also sufficient scope to allow for individual preferences and special requirements. Another useful feature lies in the ability of these controls to 'tailor' the response to an extreme degree as is often necessary, for example, when playing pre-electric recordings. In such cases it is often desirable to remove all response above 5 kHz; and this is easily done by switching the Trebax attenuator to the 'off' position. The attenuator is supplied complete with knob and engraved escutcheon (Cut-out required 2 7/8" - 5.5 cm. dia.).



### Crossover XO/5000

A double half-section type Crossover network operating at 5 kHz, providing an attenuation of 12dB/octave beyond this frequency. As indicated on page 11, this network should be used when building up a two-way system, e.g. Trebax with either Axiom 201 or Axiom 301. The XO/5000 is housed in a moulded plastic case provided with easy flange fixing. For 8 to 15 ohm system.



### Crossover XO/950

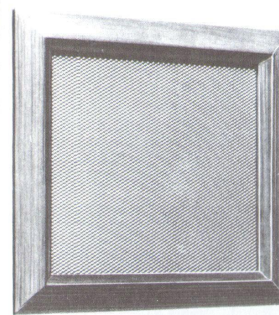
A double half-section type Crossover network, operating at 950 Hz with an attenuation of 12dB/octave, beyond this point. The XO/950 should be used when converting the two-way system to the three-way system (see page 11). For 8 to 15 ohm systems.



### Crossover XO/950/5000

A multiple Crossover network comprising four half-section filters. Crossover frequencies are 950 Hz and 5,000 Hz; all attenuation rates are 12dB/octave. For use in three-way systems complete from the start and not in stages. It is housed in a wooden case, provided with terminal block connectors, and a flange for easy mounting. For 8 to 15 ohm systems.

## ACOUSTICAL RESISTANCE UNIT A.R.U. 172



Optimum low frequency performance can be obtained from the Axiom 201, 301 and Audiom 51 Bass and 61 Bass loudspeakers by the use of the Sherwood type enclosure on page 9. The most important feature of this enclosure is the inclusion of an Acoustical Resistance Unit. This is a rectangular panel having specific acoustic properties, and it is fitted into an aperture cut in one wall of the enclosure. This system reduces the cone resonance both in amplitude and frequency and eliminates all serious resonances above this frequency. As a consequence, transient characteristics are improved and harmonic and inter-modulation distortion levels are reduced. No efficiency has been sacrificed; indeed these enclosures out-perform other

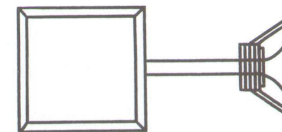
considerably larger enclosures; e.g. conventional reflex enclosures. Style and shape may be arranged to suit individual taste provided that the internal volume is between 7000 and 8,500 cu. inches. The A.R.U. may be fitted into any of the enclosure walls, but the shortest distance between the A.R.U. and the loudspeaker measured round or over the outside of the cabinet should not be less than one foot. There should be no obstruction within 3" of the front of the A.R.U. The wooden frame is decorative and is normally fitted outside the enclosure, but performance is not affected if the fitting of the A.R.U. is reversed, e.g. in the front panel to present an unobstructed flat surface for covering with a decorative woven fabric material.

## GOODMANS 'STAGE-BUILT' HIGH FIDELITY LOUDSPEAKER SYSTEMS

The 'Stage-Built' system is a method of building up a multiple-unit High Fidelity reproducer having a performance of the highest order. One of the advantages of a stage-built system is that the total outlay for the

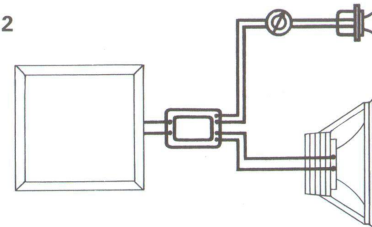
complete system can be split into three parts, thus dividing the 'expense load'. The main feature of the 'Stage-Built' system is that each stage is a complete full range High Fidelity Loudspeaker System which is improved by the addition of the next stage. Thus at no time is the user without an excellent High Fidelity loudspeaker; neither is there any wastage of components, since all parts used in one stage are automatically used in the next. In this way it is possible to improve the quality of the loudspeaker system in a most economical manner and when the remainder of the apparatus (pick-up, amplifier, etc.) is improved.

### STAGE 1



Start with one of the 12 inch twin-cone Axiom loudspeakers; either the Axiom 201 (15 watts) or the Axiom 301 (20 watts) depending upon the power handling capacity required (it should be remembered that at this stage the choice of power handling capacity fixes that figure for the remaining two stages); and an ARU 172, enabling an enclosure of only 7,800 cu. ins. internal volume to be used; or closed cabinet design on page 9. Full details of the Axiom 201 and Axiom 301 are given on page 4 and of the ARU 172 on this page. The choice of an enclosure is very important at this stage. If it is planned to ultimately proceed right through to Stage 3, it is then advisable to use the three-way system Enclosure from the start, with the apertures for the Midax and Trebax blanked off until required. Enclosure designs are on page 9.

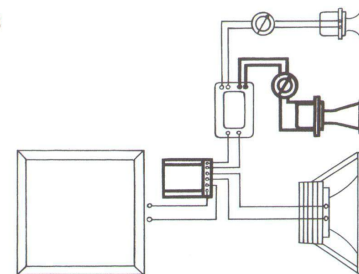
### STAGE 2



In this stage the 12" twin-cone Axiom loudspeaker chosen for Stage 1 is used to cover the bass and mid-frequency range only, up to 5,000 Hz from which point the Trebax pressure-driven horn-loaded high frequency unit (see opposite page) covers the remainder of the range up to 20,000 Hz. Crossover network XO/5000 (see opposite page) is used to perform the frequency division, and the eight-step 12db variable attenuator (see page 10) is used to provide adjustment of high frequency output. Note that, since the Trebax is more sensitive than the Axiom 201 or the Axiom 301, this control will have the useful function of treble 'cut' or 'boost'.

(Note: If the Stage 1 unit is AXIOM 201 and is not intended to go beyond Stage 2, the TREBAX 5K/20XL may be used in Stage 2. This unit is already complete with its own Crossover network and attenuator.)

### STAGE 3



This final stage is the conversion of the two-way system of Stage 2 to a three-way system, by the addition of the Midax pressure-driven horn-loaded unit. This takes over the reproduction of the mid-range frequencies (950-5,000 Hz) from the 12 inch twin-cone Axiom, which is now called on to cover the bass range only. A 950 Hz crossover network type XO/950 (see page 10) performs this extra frequency division and another eight-step 12dB variable attenuator is added to provide adjustment of the mid-range output.

The system is now completed. If all instructions have been correctly followed, the result will be an outstanding reproducer.

When a three-way system is to be built, complete from the start, and not in stages, a multiple crossover type XO/950/5000 (see page 10) may be used instead of separate crossover types XO/950 and XO/5000. Also in these circumstances an AUDIOM BASS Unit may be used instead of an AXIOM - but not in a two-way system.

© beim Hersteller  
Archiv Michael Otto  
HiFi-Classic.de

© beim Hersteller  
Archiv Michael Otto  
HiFi-Classic.de

The specifications in this brochure are correct at publication date.  
However, we reserve the right to make alterations, without notice,  
resulting from continuing development.



## Goodmans Loudspeakers Limited

Lancelot Road, Axiom Works, Wembley, Middx., England. Tel: 01-902 1200 Telex 264038.

**Brochure presented by:**