



Goodmans Power Range

steller
Michael Otto
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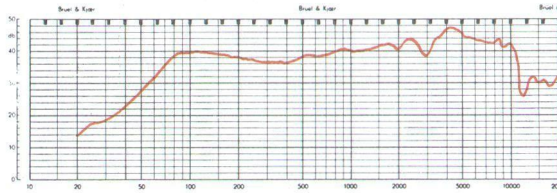
Goodmans Power Range loudspeakers are for professional use, where reliability has to complement the total sound performance. Power range loudspeakers are found in such diverse situations as acoustic research, pest control and alarm systems. The most usual applications with suggested units are shown on the table.

Dimensions of suitable cabinets are given overleaf together with advice on impedance matching, systems with high-frequency horns, and measuring conditions.

Typical Applications		Audioms		ProPower			Audiomax	Hifax
		8PA	18P	PP12	Di12	Gr12	12AX, 15AX	50HX
Public Address	Indoors Outdoors	●		●	●	●	●	●
Musical Instrument Amplification	Electronic Organs Electric Guitars Bass Guitars		●	●	●	●	●	●
Discotheques			●	●	●			●
Theatres		●		●				
Clubs		●		●				

Audiom 8PA

Nominal impedance: 8 or 15 Ohms
Nominal power handling: 15 Watts
Fundamental resonance: 85 Herz
Sensitivity (96 dB at 1 m): 3.5 Watts
Recommended enclosure volume for single unit: 20 Litres
Depth, overall: 90 mm
Diameter, overall: 204 mm
Baffle hole diameter: 178 mm
Fixing hole diameter: 4 off 6 mm
Fixing hole centres: 194 mm (PCD)

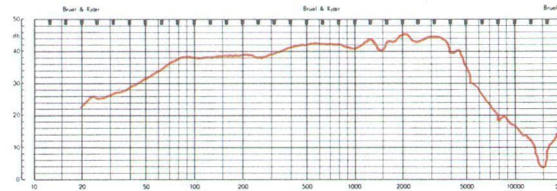


Especially developed as a low cost unit for use singly for general sound coverage or in columns with increased directional characteristics for larger sound reinforcement installations.

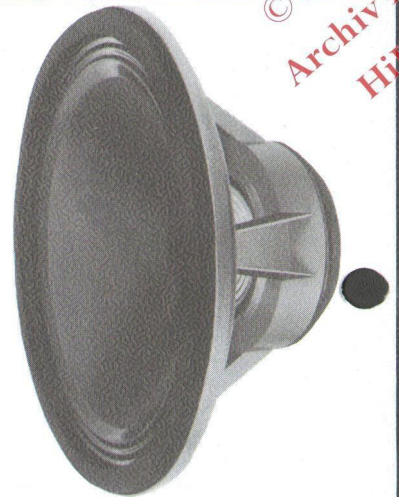


Audiom 18P

Nominal impedance: 8 Ohms
Nominal power handling: 100 Watts
Fundamental resonance: 45 Herz
Sensitivity (96 dB at 1 m): 0.6 Watts
Recommended enclosure volume for single unit: 120 Litres
Depth, overall: 222 mm
Diameter, overall: 459 mm
Baffle hole diameter: 413 mm
Fixing hole diameter: 8 off 8 mm
Fixing hole centres: 438 mm (PCD)

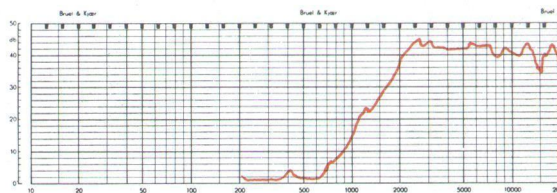


A showman's loudspeaker. It is easily able to deal with the massive response required by bass guitars and also the specialist applications in fairgrounds.



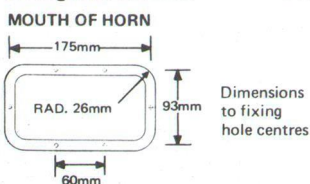
Hifax 50HX

Impedance: For use with systems rated at 8 or 15 Ohms
Nominal power handling: Systems rated at 50 Watts
Sensitivity: (96 dB at 1 m) 0.11 Watts
Depth, overall: 250 mm
Baffle hole: 163 x 81 mm
Fixing hole diameter: 6 off 5 mm
Fixing hole centres: See diagram



The Hifax 50HX is a high power high frequency unit with an integral filter, that operates over the upper octaves of a 50 Watt system when used with Goodmans Power Range loudspeakers.

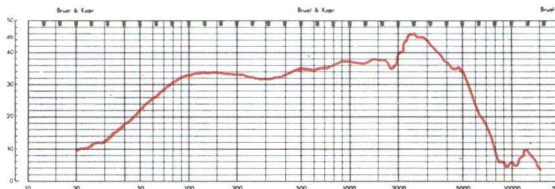
In high power systems one Hifax 50HX is required for each nominal 50 Watts of the total power available and should be connected in parallel with the bass unit(s).



Goodmans ProPower Range

ProPower PP12

Nominal impedance:	8 or 15 Ohms
Nominal power handling:	75 Watts
Fundamental resonance:	75 Herz
Sensitivity (96 dB at 1 m):	0.65 Watts
Recommended enclosure volume for single unit:	50 Litres
Depth, overall:	135 mm
Diameter, overall:	311 mm
Baffle hole diameter:	278 mm
Fixing hole diameter:	4 off 8 mm
Fixing hole centres:	298 mm (PCD)

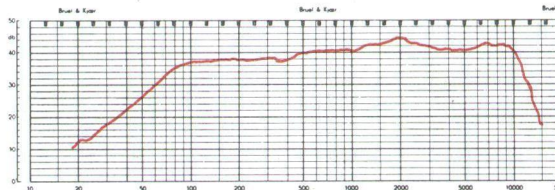


The ProPower PP12 is the successor to the Audiom 12P, the popular "work-horse" in the Power Range but offers an increase in power handling capacity to 75 Watts.



ProPower Di12

Nominal impedance:	8 or 15 Ohms
Nominal power handling:	90 Watts
Fundamental resonance:	85 Herz
Sensitivity (96 dB at 1 m):	0.7 Watts
Recommended enclosure volume for single unit:	50 Litres
Depth, overall:	142 mm
Diameter, overall:	311 mm
Baffle hole diameter:	278 mm
Fixing hole diameter:	4 off 8 mm
Fixing hole centres:	298 mm (PCD)



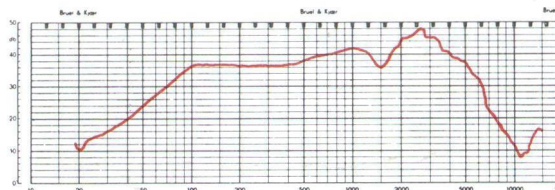
frequency response are required.

For high quality PA, either singly or in multiples to increase the directional characteristics, it may be used to reproduce music in a variety of conditions from discotheques to dance clubs and theatres. It gives good results when used for musical instrument amplification (organs, etc.) at home or at medium powers for cabaret clubs and theatre performances.



ProPower Gr12

Nominal impedance:	8 or 15 Ohms
Nominal power handling:	90 Watts
Fundamental resonance:	75 Herz
Sensitivity (96 dB at 1 m):	0.6 Watts
Recommended enclosure volume for single unit:	50 Litres
Depth, overall:	142 mm
Diameter, overall:	311 mm
Baffle hole diameter:	278 mm
Fixing hole diameter:	4 off 8 mm
Fixing hole centres:	298 mm (PCD)



The frequency response curve shows a rising output with a maximum at about 3 kHz. This gives "carry" and good articulation to speech in difficult Public Address situations.

The built-in high frequency lift gives good attack and a clean sharp sound when used for guitar and organ amplifiers in pop music groups. Its robust construction allows it to handle the output of amplified bass guitars particularly well especially when used in multiples.

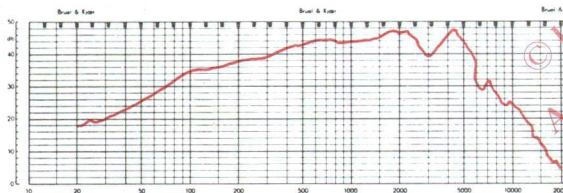
The ProPower Gr 12 follows the Audiom 12P-G with a frequency characteristic particularly suited to amplification of rock musical instruments and outdoor PA, but with improved power handling up to 90 Watts.



Audiomax Speakers

Audiomax 12AX

Nominal impedance:	8 Ohms
Nominal power handling:	100 Watts
Fundamental resonance:	70 Herz
Sensitivity (96 dB at 1 m):	0.12 Watts
Recommended enclosure volume for single unit:	40 Litres
Depth, overall:	125 mm
Diameter, overall:	312 mm
Baffle hole diameter:	278 mm
Fixing hole diameter:	4 off 8 mm
Fixing hole centres:	299 mm (PCD)



These useful loudspeakers combine the extremes of high power handling capacity and high sensitivity. Where high sound levels are required, the Audiomax speakers will show their economy. Their high efficiency simplifies the design of high level sound systems compared with the alternative of a multiplicity of less sensitive loudspeakers coupled to extremely high power amplifiers.

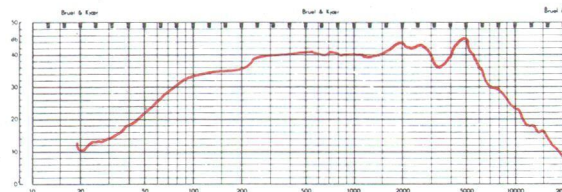
The Audiomax has a very high flux magnet system and a 10 cm diameter voice coil which combine to give unsurpassed control of the plastic terminated fibre cone. The combination of magnetic, acoustic and mechanical damping throughout the operational frequency range is manifested in its crisp sound and fast response to signals of a transitory form.

The 15AX, the 15" version, will find many uses in common with the 12AX.

Recommended Enclosures

In order to exploit the maximum potential of the Audiomax 12AX and 15AX, its enclosure or housing must be designed and constructed with care. For the reproduction of signals which have relatively narrow bandwidths, e.g. speech for P.A. and electric guitars, sealed enclosures of the specified volume are adequate. For extended low frequency range, Audiomaxes can be fitted in tuned resonance reflex enclosures and for increased efficiency used as a drive unit for a low frequency horn.

If the maximum power is to be realised with low distortion, high-pass filters should be fitted to amplifiers to remove frequencies that are lower than the system resonance or horn cut-off frequency.



Audiomax 15AX

Nominal impedance:	8 Ohms
Nominal power handling:	100 Watts
Fundamental resonance:	60 Herz
Sensitivity (96 dB at 1 m):	0.25 Watts
Recommended enclosure volume for single unit:	80 Litres
Depth, overall:	144 mm
Diameter, overall:	395 mm
Baffle hole diameter:	356 mm
Fixing hole diameter:	8 off 8 mm
Fixing hole centres:	375 mm (PCD)



Using Power Range Loudspeakers

Recommended Enclosures

The recommended enclosures for Goodmans Power Range loudspeakers should be rigidly constructed from high density chipboard or plywood (not blockboard) screwed and glued together. All joints should be airtight.

The totally sealed enclosures should be loosely lined with layers of 2" thick fibreglass making sure that it does not interfere with the loudspeaker cone. Protective bars or material across the baffle hole must be recessed or fitted so that the movement of the cone is not restricted.

All dimensions are internal to allow for choice of material thickness. The proportions can be varied but the volume must remain the same.

If Goodmans Power Range speakers are used in open baffles or reflex cabinets, the low frequency response must be controlled to prevent excessive cone excursions at low frequencies where these cabinets present little or no acoustic loading.

Connecting the Loudspeakers

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 impedance in one system, as this will cause uneven distribution of audio power. Observe the polarity of the connections at all times, particularly where more than one loudspeaker is housed in an enclosure.

Nominal Power Rating and Test Conditions

Goodmans Power Range loudspeakers have a nominal rating based on actual working conditions when used for reproducing the complex random waveforms of music and speech.

The loudspeakers are tested at 20°C in the recommended enclosure using the standard filtered noise signal as defined in DIN 45:573.

The nominal rated power, measured as a true RMS voltage across a resistance equal to the loudspeaker impedance value, is applied continuously for periods of 3 hours with a cooling time of not less than one hour between. This test is repeated for a minimum of 100 hours actual operation.

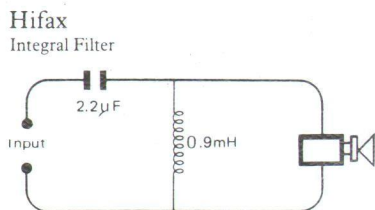
Sine wave testing should be carried out with caution and only within the frequency range from resonance to 10kHz with the loudspeaker fitted in its recommended enclosure. The maximum input voltage should not exceed

$$\sqrt{\text{Nominal impedance} \times \text{Nominal rating (Watts)}}$$

shown on the loudspeaker label and this can be sustained for a maximum period of 1 minute. It is recommended that if the test is for a longer period, the input voltage is reduced to 0.7 of the above figure.

The power output may have to be reduced if the loudspeaker is to be used at ambient temperatures exceeding 20°C.

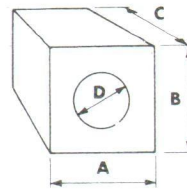
In multiple systems the power available to individual units must not exceed the nominal after taking into account a $\pm 10\%$ impedance tolerance. Where high frequency units form part of the system, the recommended filters must be used and the system power not exceeded.



Enclosure Dimensions

NOTE: All dimensions in millimetres

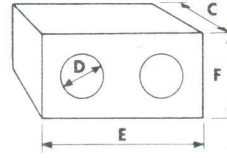
8 in. 12 in. 15 in. 18 in.



Single Speaker Enclosure

A	380	500	600	710
B	280	360	450	550
C	190	250	280	310
D	178	278	356	413

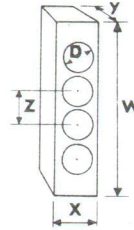
Thickness	12	18	18	18
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Twin Speaker Enclosure

E	500	700	900	1100
F	380	500	650	700

Thickness	12	18	18	24
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Four Speaker Column

W	1100	1500
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X	250	350
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Y	150	230
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Z	230	330
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Thickness	18	18
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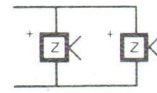
Impedance Matching

2 Loudspeakers

Series
Total impedance $Z \times 2$



Parallel
Total impedance $\div 2$

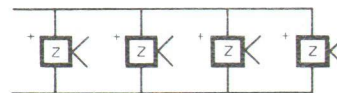


4 Loudspeakers

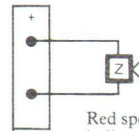
Series
Total impedance $Z \times 4$



Parallel
Total impedance $\div 4$

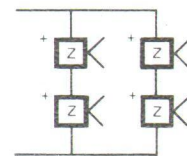


Polarity



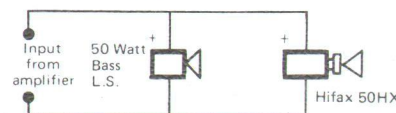
Red spot or + sign indicates positive terminal
Z = indicated impedance

Series/Parallel
Total impedance = Z

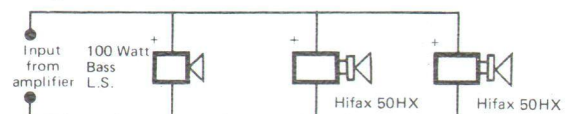


Systems with Hifax 50HX

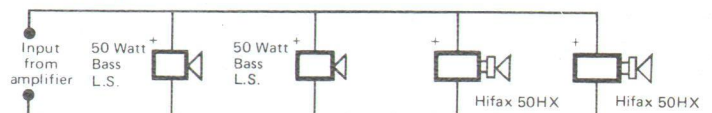
50 watt system circuit



100 watt system circuits
— Single Bass unit



— Two Bass units



Selecting Suitable Power Loudspeakers

Loudspeakers should be chosen to handle the maximum power of the driving amplifier and this is often in excess of its rated sine wave power capability due to power supply regulation and/or its overload characteristics. Instantaneous and distorted outputs of 1.5 times the amplifier rating are commonplace and the amplifier power should be multiplied by this factor when selecting suitable loudspeakers for use under these conditions.

Loudspeaker Life

The quality of sound from and the length of life of a loudspeaker depends largely on the performance of the amplifier with which it is used. A well designed amplifier having good stability, fast recovery from an overload condition and freedom from power consuming spurious or unwanted signals outside the loudspeaker pass band will not only give a cleaner sound but also improve the life expectation of the loudspeaker. The converse also applies.

dB50

For Clubs, Discotheques and Stage Monitor Systems

- High power handling
- High sensitivity
- Wide sound dispersion

The dB 50 is a two-way loudspeaker system in a reflex enclosure of 50 litres.

The system combines high efficiency with high power handling capacity, wide sound dispersion and a smart appearance which will make it particularly suitable for use in permanent and semi-permanent disco installations in hotels, discotheques and clubs. Its popular sound gives it great appeal for reproducing popular music for parties and at home.

Other applications include use by groups and bands in studios and as stage monitors.

Technical Data

Type of system	Twin-ported reflex of 50 litres
Drive Units	12" bass unit Mid/HF horn
Crossover frequency	2 kHz
Useful frequency range (-3dB points)	80-18,000 Hz
Recommended amplifier (music) power rating	2-75 Watts
Recommended amplifier impedance	4 or 8 ohms
Sensitivity (96dB at 1 metre)	0.4 Watts
Weight	17 Kg (37 lbs)
Dimensions	380 x 620 x 305 mm
Finishes	Teak effect finish brown grille



other Goodmans products

Goodmans, with sales in more than 100 countries world-wide is the largest U.K. manufacturer of loudspeakers and has an international name in the field of high-fidelity equipment.

The Goodmans range of high-fidelity equipment includes: bookshelf and floor standing loudspeakers, music centres and headphones.

Specifications

The specifications printed in this leaflet are correct at the time of going to press but, as Goodmans policy is one of continual development, the right to modify them is reserved. Full instructions for all Goodmans products are available on data sheets from the Technical Advisory Department.

Goodmans

Goodmans Loudspeakers Ltd.,
Downley Road, Havant,
Hampshire PO9 2NL England.

Designed by Owen Print and Graphics, Havant 486566.

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