



# Goodmans Power Range

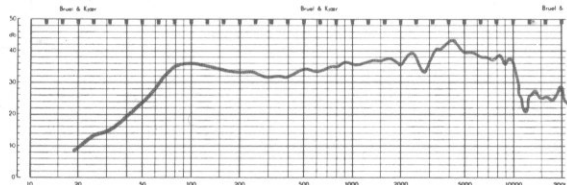
Goodmans Power Range loudspeakers are for professional use, where reliability has to complement the total sound performance. Power range loudspeakers are found in such diverse situations as acoustic research, pest control and alarm systems. The most usual applications with suggested units are shown on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

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

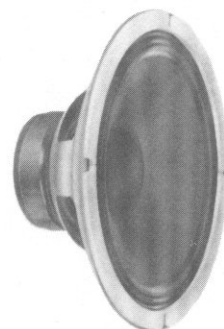
Typical Applications		Audiom		ProPower		Audiom		Hifax 100HX
		8PA	12	Di 12	Gr 12	18P	18P	
Public Address	Indoors Outdoors	●	●	●	●			●
Musical Instrument Amplification	Electronic Organs Electric Guitars Bass Guitars		●	●	●	●	●	●
Discotheques			●	●	●			●
Theatres		●		●				
Clubs		●		●				

## 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)

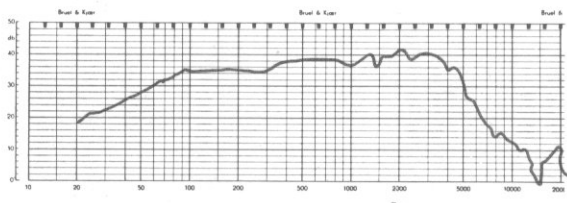


Especially developed as a low cost unit for use singly for general sound coverage or in columns with increased directional characteristics for larger sound reinforcement installations.

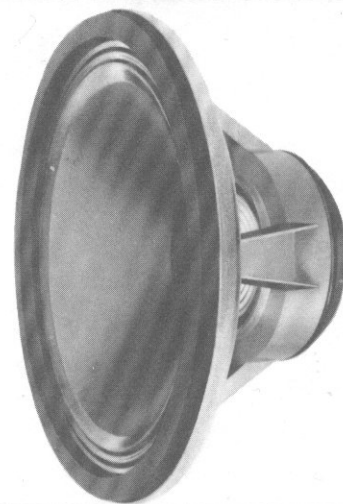


## Audiom 18P

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)



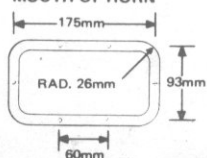
A showman's loudspeaker. It is easily able to deal with the massive response required by bass guitars and also the specialist applications in fairgrounds.



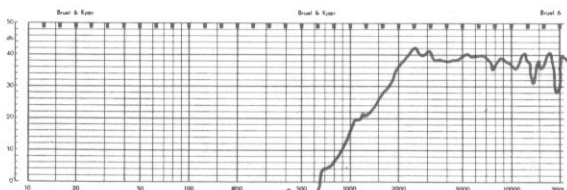
## Hifax 100HX

Impedance:	For use with systems rated at 8 or 15 Ohms
Nominal power handling:	Systems rated at 100 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

MOUTH OF HORN

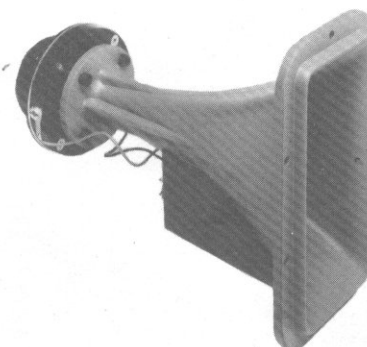


Dimensions to fixing hole centres



The Hifax 100HX is a high power high frequency unit with an integral filter, that operates over the upper octaves of a 100 Watt system when used with Goodmans Power Range loudspeakers.

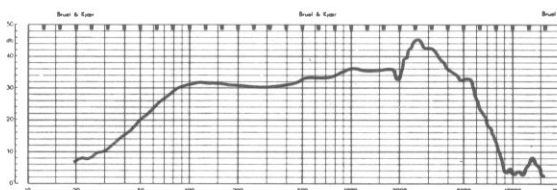
In high power systems one Hifax 100HX is required for each nominal 100 Watts of the total power available.



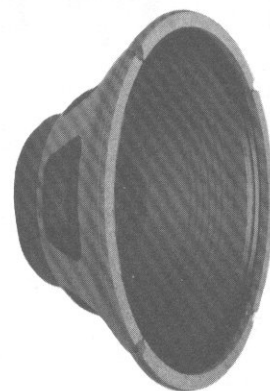


## ProPower 12

Nominal impedance:	8 or 15 Ohms
Nominal power handling:	65 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)



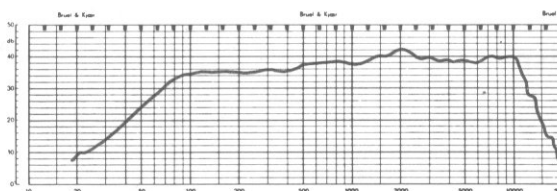
The ProPower 12 is the successor to the Audiom 12P, the popular "work-horse" in the Power Range but offers an increase in power handling capacity to 65 Watts.



## ProPower Di 12

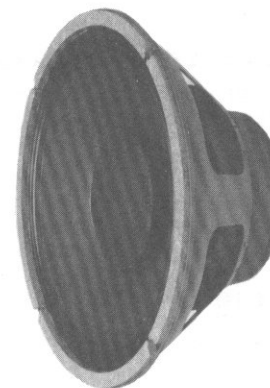
Nominal impedance:	8 or 15 Ohms
Nominal power handling:	75 Watts
Fundamental resonance:	85 Herz
Sensitivity (96 dB at 1 m):	0.7 Watts
Recommended enclosure volume for single unit:	50 Litres
Depth, overall:	142 mm
Diameter, overall:	311 mm
Baffle hole diameter:	278 mm
Fixing hole diameter:	4 off 8 mm
Fixing hole centres:	298 mm (PCD)

The ProPower Di 12, twelve inch twin cone loudspeaker succeeds the successful Audiom 12P-D and is engineered with a higher power handling capacity — 75 Watts — for a range of applications where high sensitivity and a wide



frequency response are required.

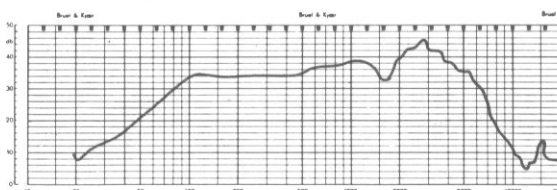
For high quality PA, either singly or in multiples to increase the directional characteristics, it may be used to reproduce music in a variety of conditions from discotheques to dance clubs and theatres. It gives good results when used for musical instrument amplification (organs, etc.) at home or at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



## ProPower Gr 12

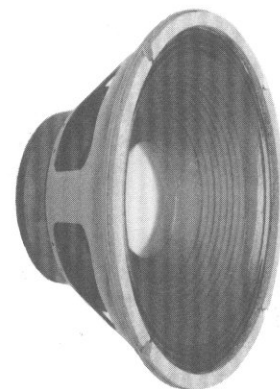
Nominal impedance:	8 or 15 Ohms
Nominal power handling:	75 Watts
Fundamental resonance:	75 Herz
Sensitivity (96 dB at 1 m):	0.6 Watts
Recommended enclosure volume for single unit:	50 Litres
Depth, overall:	142 mm
Diameter, overall:	311 mm
Baffle hole diameter:	278 mm
Fixing hole diameter:	4 off 8 mm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

The 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 75 Watts.



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.



## dB50

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

## 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.



# 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 movements 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 accordance.

## 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

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

as shown in 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.

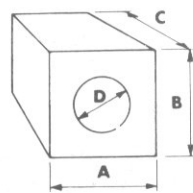
## Selecting Suitable Power Loudspeakers

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

### Enclosure Dimensions

NOTE: All dimensions in millimetres

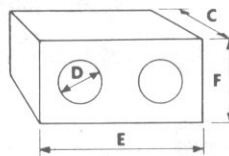
8 in. 12 in. 15 in. 18 in.



### Single Speaker Enclosure

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

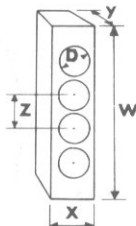
Thickness 12 18 18 18



### Twin Speaker Enclosure

E	500	700	900	1100
F	380	500	650	700

Thickness 12 18 18 24



### Four Speaker Column

W	1100	1500
X	250	350
Y	150	230
Z	230	330

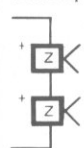
Thickness 18 18

### Impedance Matching

#### 2 Loudspeakers

##### Series

Total impedance  $Z \times 2$

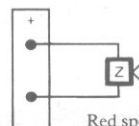


##### Parallel

Total impedance  $Z \div 2$



### Polarity



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

#### 4 Loudspeakers

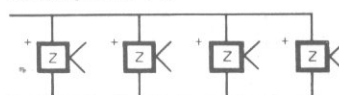
##### Series

Total impedance  $Z \times 4$



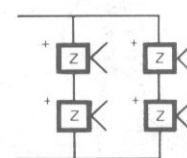
##### Parallel

Total impedance  $Z \div 4$



##### Series/Parallel

Total impedance = Z



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.

### Specifications

The specifications printed in this leaflet are correct at the time of going to press and are subject to the usual 10% manufacturing tolerances, but, as Goodmans policy is one of continual development, the right to modify them is reserved.

# Goodmans

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



# Goodmans

## *POWER RANGE*

It could be said that over half a century of intensive research and development have gone into the Power Plus range of Goodmans drivers. Indeed, the reputation of the company, who have sales in over 100 countries across the world is certainly a result of their continual development.

Founded as a family firm, working from a small factory complex in Wembley, Goodmans are now the largest speaker manufacturers in the UK with their purpose-built factory in Havant, Hants., turning out an extensive range of high power, high quality audio equipment from bookshelf speakers up to the most efficient public address equipment available.

Not all of this extensive factory space is devoted to the assembly lines, there is also the research division which is furnished with an anechoic chamber containing equipment which provides acoustic measurements to the highest degree of accuracy. To ensure that the products are ideally suited to the environments where they are to be used, they also have a fully furnished living room for listening to domestic sound systems.

Goodmans place the reliability of their speakers on a par with their efficiency and response. This attention to the design and development is mirrored in the quality of the products themselves.

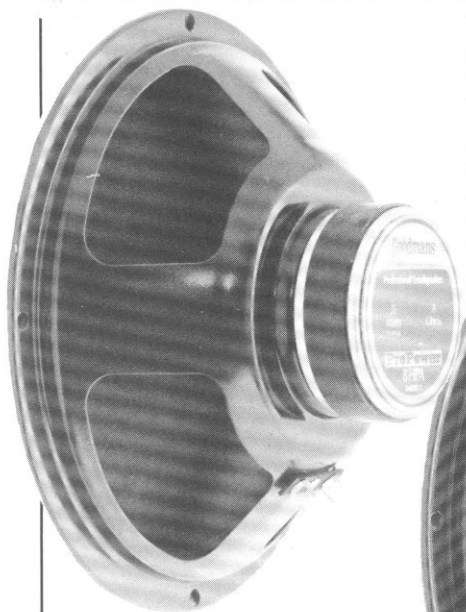


### Applications

	8 HPA	8 HG	8 HB	Axiom 80	12 HPA	12 HPG	12 HPD	15 HP	18 HP	100 HX
<b>Public Address</b>										
Indoor										
Outdoor										
<b>Live Music</b>										
Electronic Organ										
Electronic Guitar										
Electronic Bass										
<b>Discotheques</b>										
<b>Theatres</b>										
<b>Clubs</b>										
<b>Hi-Fi/Monitoring</b>										

*The people worth listening to!*

# 8HPA



**Nominal Impedance:**  
8 and 15 ohms

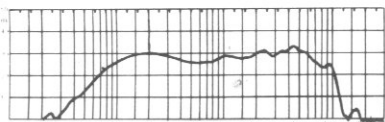
**Nominal Power Handling:**  
35 Watts

**Fundamental Resonance:**  
80Hz

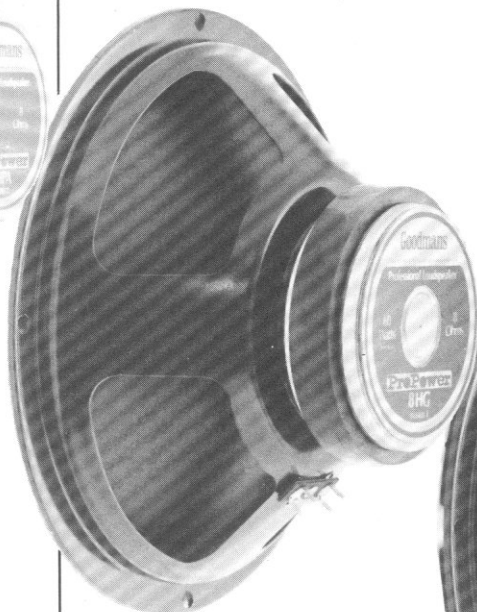
**Sensitivity:**  
89dB/W/m

**Frequency Response:**  
-10dB 55-11K

Perhaps the most efficient 8" driver available. Exceptional clarity and response are the principle characteristics of this versatile 8" driver for general purpose use.



# 8HG



**Nominal Impedance:**  
8 and 15 ohms

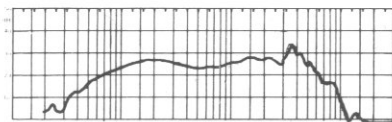
**Nominal Power Handling:**  
60 Watts

**Fundamental Resonance:**  
40Hz

**Sensitivity:**  
88dB/W/m

**Frequency Response:**  
-10dB 32-10K

The 8HG offers excellent bass response, attack and a clean, clear sound not often found in small drivers of this power.



# 8HB



**Nominal Impedance:**  
8 ohms

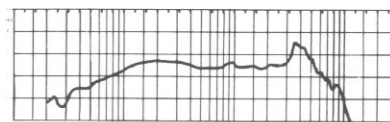
**Nominal Power Handling:**  
60 Watts

**Fundamental Resonance:**  
30Hz

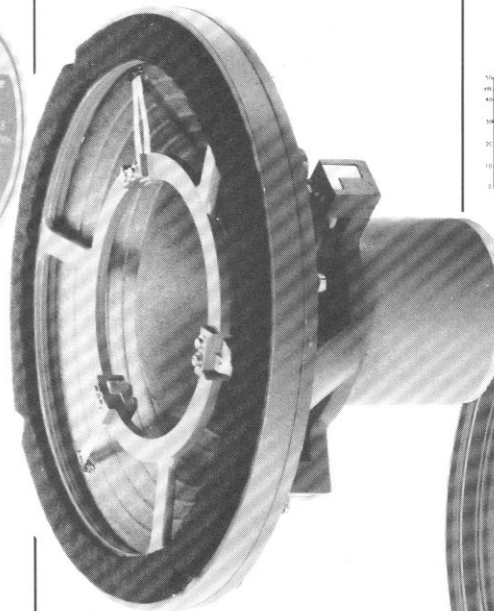
**Sensitivity:**  
88dB/W/m

**Frequency Response:**  
-10dB 25-9K

This low cost, high power bass unit is fitted with a specialised high temperature coil which gives a rich, powerful response. This unit is especially suited to the exacting applications of disco systems and monitoring equipment.



# Axiom 80



**Nominal Impedance:**  
15 ohms

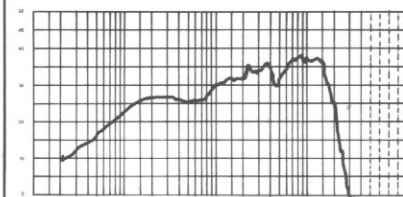
**Nominal Power Handling:**  
6 Watts

**Fundamental Resonance:**  
20Hz

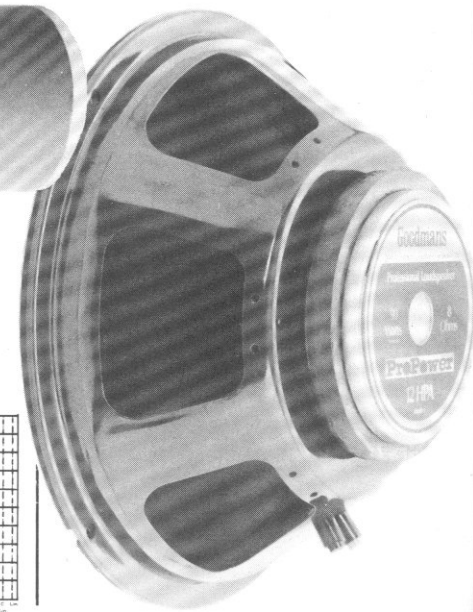
**Sensitivity:**  
97dB/1W/1M

**Frequency Response:**  
-10dB 20-20K

The Axiom 80 is capable of high accuracy of sound reproduction from 20Hz to 20kHz. Its high efficiency gives phenomenal output from low-power amplifiers.



# 12HPA



**Nominal Impedance:**  
8 and 15 ohms

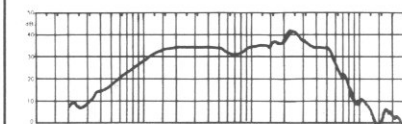
**Nominal Power Handling:**  
90 Watts

**Fundamental Resonance:**  
75Hz

**Sensitivity:**  
95dB/W/m

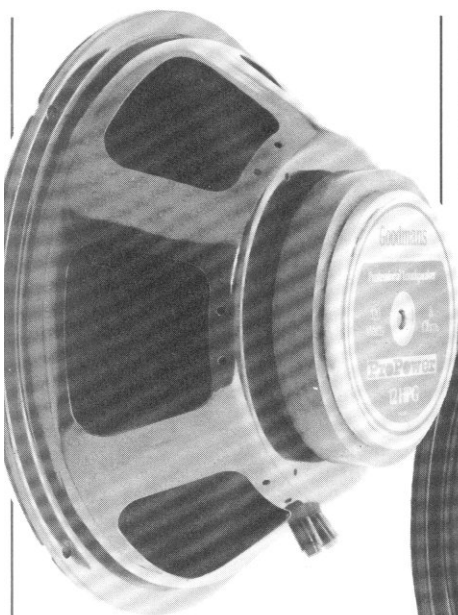
**Frequency Response:**  
-10dB 60-6K

The 'vented piston' technology applied to the 12HPA ensures an excellent bass response while the overall response of the unit gives a versatility that allows use in applications as diverse as PA and club systems.





# 12 HPG



**Nominal Impedance:**  
8 and 15 ohms

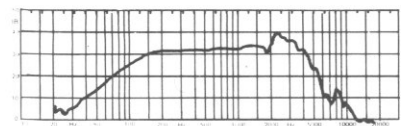
**Nominal Power Handling:**  
120 Watts

**Fundamental Resonance:**  
75Hz

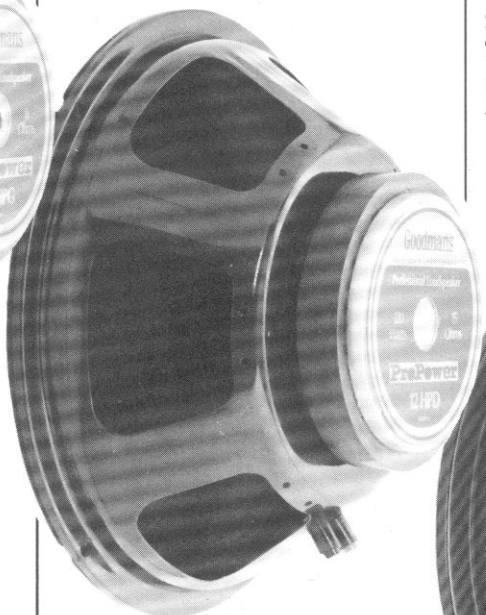
**Sensitivity:**  
97dB/W/m

**Frequency Response:**  
-10dB 65-5K

The robust construction, plus phenomenal output makes the 12HPG one of the most efficient 12" speakers available. Used singly or in multiples the 12HPG can be relied on for high power with an immaculate sound.



# 12HPD



**Nominal Impedance:**  
8 and 15 ohms

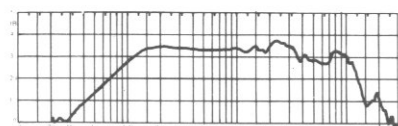
**Nominal Power Handling:**  
120 Watts

**Fundamental Resonance:**  
60Hz

**Sensitivity:**  
95dB/W/m

**Frequency Response:**  
-10dB 60-12K

Up-rated to 120 Watts, this is an ideal speaker for the disco and theatre environments where crystal clarity plus wide frequency response are a necessity. It is particularly useful when used in columns for controlled directional displacement, especially in stereo.



# 15HP



**Nominal Impedance:**  
8 ohms

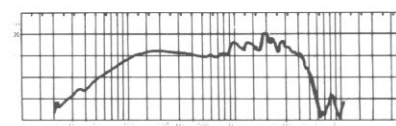
**Nominal Power Handling:**  
250 Watts

**Fundamental Resonance:**  
40Hz

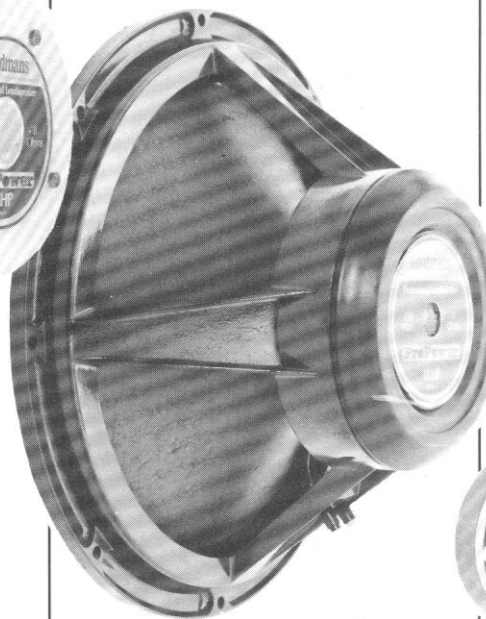
**Sensitivity:**  
95dB/W/m

**Frequency Response:**  
-10dB 45-5K

The latest addition to the range uses similar coil winding techniques as used on the 18HP. As a result of this, Goodmans have produced in the 15HP—a 15" driver of outstanding durability.



# 18HP



**Nominal Impedance:**  
8 ohms

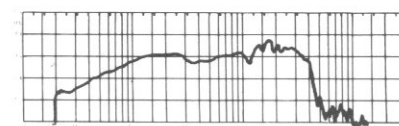
**Nominal Power Handling:**  
230 Watts

**Fundamental Resonance:**  
25Hz

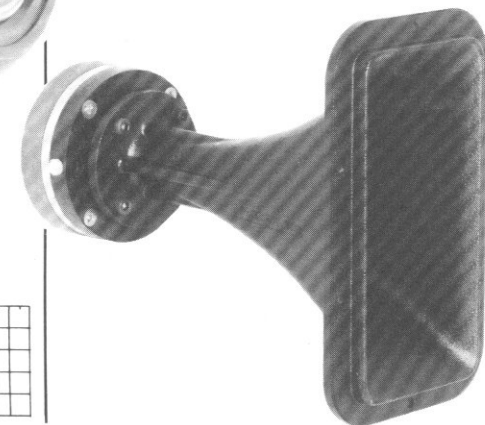
**Sensitivity:**  
95dB/W/m

**Frequency Response:**  
-10dB 40-5K

Extensive research and development has increased the power of the 18HP from just 100 Watts to a space filling 230 Watts. The innovatory 'treated linen edge' coupled to the famous Goodmans quality gives the 18HP an unbeatable strength and reliability.



# 100HX



**Minimum Impedance**  
Thru x-over:  
9 ohms

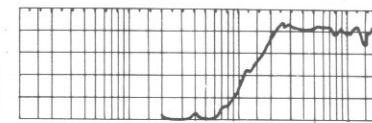
**Nominal Power Handling:**  
100 Watts

**Sensitivity:**  
98dB/W/m

**Depth Overall:**  
250mm

**Baffle Hole:**  
163 x 81mm

The Hifax 100HX is a high power, high frequency unit that operates over the upper octaves of a 100 Watt system. In high power systems, one Hifax is required for each nominal 100 Watts of the total power available.





Designed and produced by Owen Print and Graphics Ltd  
Havant 486566