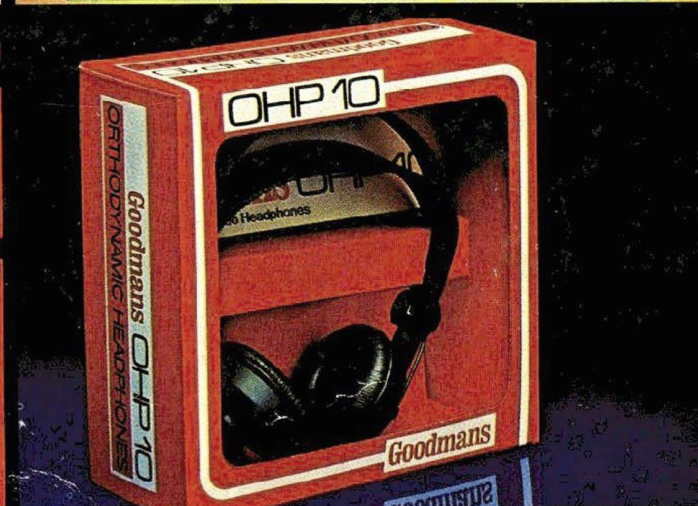
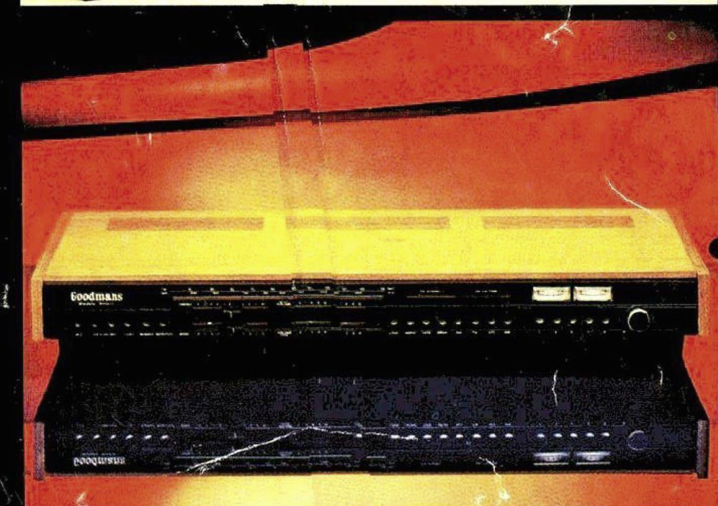
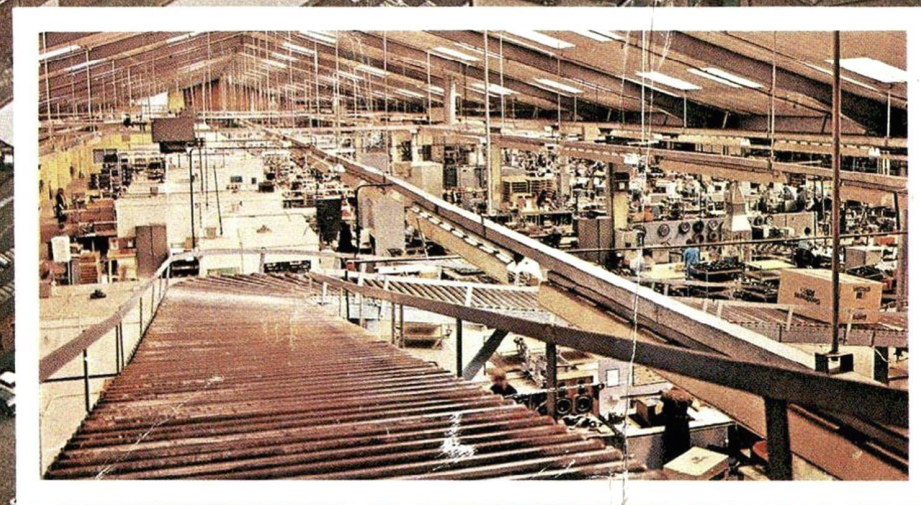
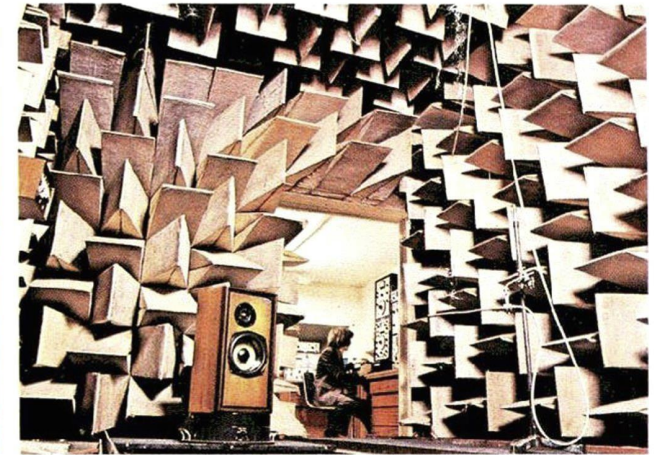
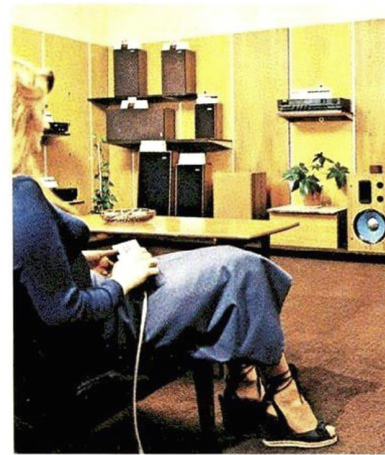
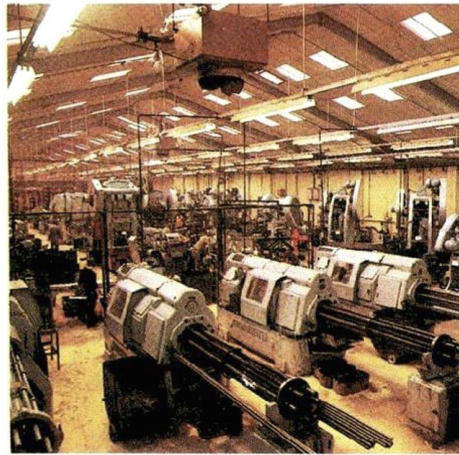
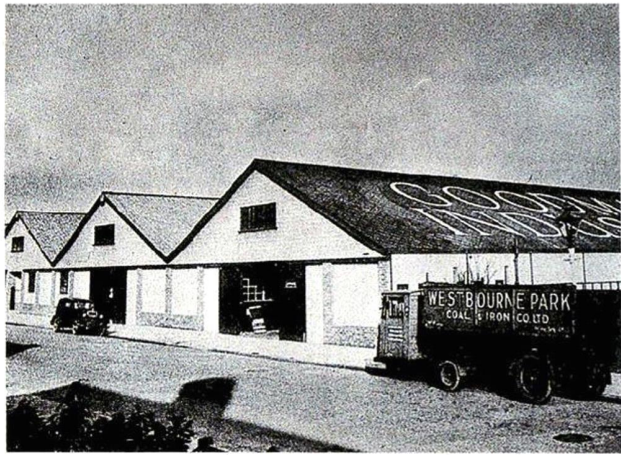


# Goodmans High Fidelity



Loudspeaker systems and  
electronic equipment



# Goodmans

## 50 years of sound experience

Founded as a family firm over 50 years ago, Goodmans is now the largest U.K. manufacturer of loudspeakers, serving the high fidelity, musical instrument, public address and general commercial markets. With a long-standing reputation for quality and value-for-money, Goodmans' loudspeakers and other high fidelity products are marketed all over the world with 52 overseas distributors covering 84 countries.

This high reputation is founded on a tradition of excellence of design and constant attention to the quality of manufacture. Goodmans were the first to realise the importance of proper facilities for research and installed an Anechoic Test Chamber to complement the domestic-styled listening room. The chamber (illustrated) provides acoustic measurements to the highest degree of accuracy.

*opposite page:* 155,000 sq. ft. Factory at Havant

*top left:* Axiom Works, Wembley 1937

*centre left:* Machine Shop

*centre right:* Listening Room

*top right:* Anechoic Chamber

*bottom:* Assembly Lines

## Brief basics: what is high fidelity?

Quite simply, high fidelity is faithful sound reproduction. Or, in the context in which the expression is generally used, the faithful reproduction of music.

A fuller definition is this by Percy Wilson, formerly Technical Editor of the 'Gramophone' and author of 'The Gramophone Handbook'.

'A high fidelity system is one which you can turn on at will to give a lively and vivid presentation of a musical performance which you and your guests, or anyone else knowledgeable in music, will instantly recognise as being both enjoyable and free from discomfort and as having a striking correlation with an original performance of the same work by the same artists.'

### Stereo sound

In nature sound reaches our ears from all directions. But a sound from the same source may reach one ear at one time and intensity, and the other ear at another time and intensity. It is this characteristic that gives natural sounds their three-dimensional effect. It was discovered during the 1930's that this natural 3-D could be closely imitated in reproduced sound by having two separate channels, i.e. two microphones feeding two amplifiers, each of which actuated separate loudspeakers spaced about 6-8 feet apart.

From this came stereo. Faithful sound reproduction—developed by Goodmans to the heights of richness and precision.

### The modern sound system: high performance plus good looks

For the most part, early high fidelity equipment matched only in the sense of technical compatibility. Individual pieces of equipment were often unnecessarily bulky, 'put together' rather than designed with any real aesthetic consideration for the setting in which they would be placed.

Even for the most demanding high fidelity enthusiast, this frustrating limitation is now a thing of the past.

The degree of detailed attention that the performance of Goodmans's equipment receives is fully reflected in the care that goes into its appearance.

Goodmans high fidelity looks the way it sounds; elegant, yet clean, precise and unfussy.

### The Goodmans range of high fidelity equipment

This booklet describes in full Goodmans high fidelity equipment that is 'ready-to-use'—see back page for other products.

### Building a System

It is not appropriate, nor is there space here to cover the whole field of high fidelity in detail. The following comments about system building will, however, help, but will not take the place of advice from a knowledgeable specialist dealer.

All Goodmans equipment is supplied with operating instructions written in straightforward terms. The loudspeaker systems come with a generous (7 metre) length of lead with the correct plugs attached ready to fit to a Goodmans receiver or amplifier.

In any area but the closest to the transmitter, a proper aerial will be needed for the reception of FM stereo radio broadcasts: this should be fitted by a reputable installation engineer who will have knowledge of local reception conditions.

**Matching the different elements** of a system together correctly is essential to maintain high fidelity performance. There is no single set of international standards but the nearest is probably the DIN standards, acceptable throughout most of Europe as well as elsewhere and Goodmans have chosen to follow them. Here again the assistance of a knowledgeable dealer is invaluable. Matching loudspeakers to amplifiers is one of the problems which seems to raise the most questions—this Goodmans have simply resolved by quoting in their specifications the range of amplifier music power rating and impedance to suit the speaker.

If there remains any question regarding Goodmans equipment our Technical Advisory Service is always ready to help.

# Specification



## RB range loudspeakers

This range of loudspeakers is the fruit of long research and development work to produce systems with high sensitivity AND high power handling worthy of Goodman's reputation for the highest quality and value for money. Employing recently developed long-throw bass drive units with foam surrounds, efficient mid-range and high frequency units, integrated with low loss networks, these systems ideally fulfil their role in high fidelity systems of medium power rating.

The **RB 18** is a two-way system, with 200mm bass unit and 26mm dome HF unit linked by a five element crossover network and suits amplifiers rated at 10 to 40 Watts undistorted music power.

The **RB 20** is a three-way system utilising the same bass and HF dome drive units as the RB 18 but with a mid-range unit in its own sealed enclosure. The RB 20 suits amplifiers rated at 10 to 50 Watts undistorted music power.

The **RB 35** is a three-way system with the same mid-range and HF dome radiator as in the RB 20 but combined with a larger bass unit giving extended low frequency response and

greater power handling. The RB 35 suits amplifiers rated at 10 to 60 Watts undistorted music power.

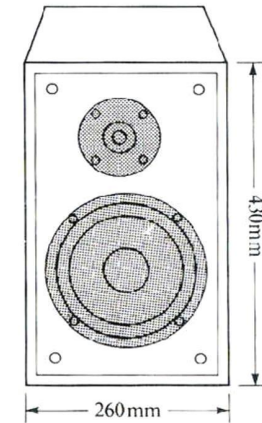
The **RB 65** is the largest in the range and is a three-way system with dome HF radiator, five inch cone mid-range unit in its own enclosure and twelve inch bass driver. The RB 65 suits amplifiers rated at 10 to 75 Watts undistorted music power.

All four systems suit amplifiers rated at 4 or 8 Ohms impedance, and are offered in Teak or Walnut effect finish, with recessed connector box with a choice of DIN or 4mm wander plugs and supplied with a generous 7m of lead fitted with DIN type speaker connectors.

### Three Year Warranty

*Because of the precision required in making loudspeakers to a predictable specification, we confidently predict that this loudspeaker will have a long and trouble-free life if installed and operated within its rating according to the instructions in the booklet.*

*We can therefore offer a three year warranty to the original purchaser of these loudspeakers.*



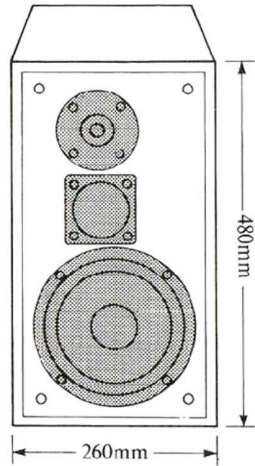
## RB 18

**Bass Unit** The 200mm long-throw bass unit has a cone with foam surround giving high efficiency with high power handling.

**High Frequency Dome Radiator** This unit, covering reproduction of frequencies above 2 kHz, has a 26mm rigid dome giving high sensitivity, clean transient response and wide angle sound dispersion.

**Frequency Dividing and Integrating Network** This five-element "crossover" network divides the audio signal at 2 kHz and incorporates a ferrite cored choke with its low DC resistance aiding total system sensitivity.

<b>Frequency Range (DIN):</b>	60-20,000 Hz
<b>Recommended Amplifier Impedance:</b>	4 or 8 Ohms
<b>Recommended Amplifier Music Power:</b>	10-40 Watts
<b>Sensitivity (DIN):</b>	5.6 Watts
<b>Drive Units:</b>	200mm Bass 26mm dome HF
<b>Crossover Frequency:</b>	2,000 Hz
<b>Effective Internal Volume:</b>	18 litres
<b>Weight:</b>	7.5 kg
<b>Finishes:</b>	Teak or Walnut effect
<b>Dimensions:</b>	430 x 260 x 250 mm (17 x 10 1/4 x 9 7/8 ins)



## RB 20

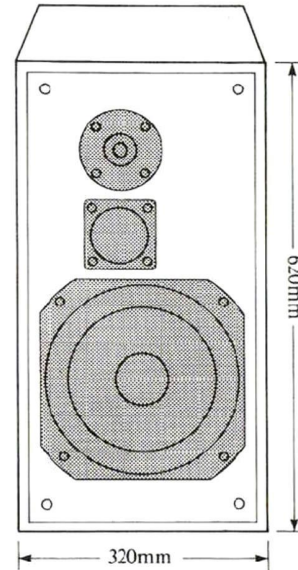
**Bass Unit** The cone of the long-throw 200mm bass unit is terminated with a foam surround for high efficiency and high power handling.

**Mid-Range Unit** This unit reproduces the frequencies between 1 kHz and 6 kHz in its own enclosure sealed to prevent interference from the rear radiation of the bass unit.

**High Frequency Dome Radiator** This 26mm rigid dome handles frequencies from 6 kHz upwards, giving clean transient response, with high sensitivity and wide angle sound dispersion.

**Frequency Dividing and Integrating Network** Dividing the audio signal at 1 kHz and 6 kHz this seven-element network retains high system sensitivity by utilising a ferrite-cored choke.

<b>Frequency Range (DIN):</b>	50 - 20,000 Hz
<b>Recommended Amplifier Impedance:</b>	4 or 8 Ohms
<b>Recommended Amplifier Music Power:</b>	10 - 50 Watts
<b>Sensitivity (DIN):</b>	5.5 Watts
<b>Drive Units:</b>	200mm Bass 85mm Mid-Range 26mm dome HF
<b>Crossover Frequencies:</b>	1 and 6 kHz
<b>Effective Internal Volume:</b>	20 litres, includes 0.4 litres for mid-range unit
<b>Weight:</b>	8.5 kg
<b>Finishes:</b>	Teak or Walnut effect
<b>Dimensions:</b>	480 x 260 x 250 mm (18 7/8 x 10 1/4 x 9 7/8 ins)



## RB 35

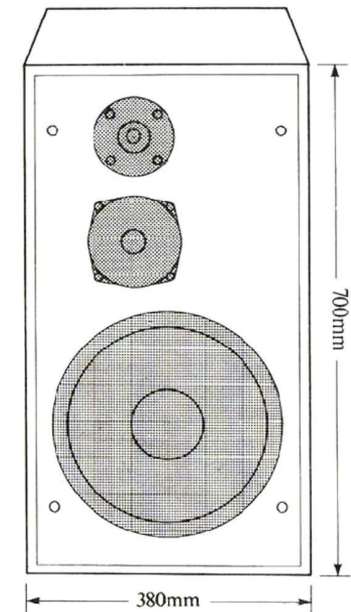
**Bass Unit** With foam surround and specially coated cone for damping un-wanted resonances this 260mm diameter bass unit has high sensitivity and power handling.

**Mid-Range Unit** This unit is loaded by its own enclosure sealed to avoid interaction with rear radiation of the bass unit and handles reproduction of frequencies between 1 and 6 kHz.

**High Frequency Dome Unit** Flush-mounted to give even and wide sound dispersion, this 26mm rigid dome handles frequencies above 6 kHz.

**Frequency Dividing and Integrating Network** Utilising a ferrite-cored choke of low DC resistance to maintain high system sensitivity, this seven-element network divides the audio signal at 1 kHz and 6 kHz.

<b>Frequency Range (DIN):</b>	40 - 20,000 Hz
<b>Recommended Amplifier Impedance:</b>	4 or 8 Ohms
<b>Recommended Amplifier Music Power:</b>	10 - 60 Watts
<b>Sensitivity (DIN):</b>	5.4 Watts
<b>Drive Units:</b>	260mm Bass 85mm Mid-range 26mm dome HF
<b>Crossover Frequencies:</b>	1 and 6 kHz
<b>Effective Internal Volume:</b>	35 litres includes 0.4 litres for mid-range unit
<b>Weight:</b>	12.5 kg
<b>Finishes:</b>	Teak or Walnut effect
<b>Dimensions:</b>	620 x 320 x 250 mm (24 1/2 x 12 1/2 x 9 7/8 ins)



## RB 65

**Bass Unit** A high sensitivity 300mm (12 inch) bass drive unit has a foam surround to the cone which is coated to damp unwanted resonances.

**Mid-Range Unit** A 130mm (5 inch) unit with treated cone, handles the frequencies between 1 and 6 kHz and is mounted in its own 3.5 litre enclosure so avoiding interaction with the rear radiation of the bass drive unit.

**High Frequency Dome Radiator** Reproducing frequencies from 6 kHz up to 20 kHz, this 26mm dome radiator is flush-mounted giving an even and wide dispersion.

**Frequency Dividing and Integrating Network** Maintaining high system sensitivity by making use of ferrite-cored chokes of low DC resistance a seven-element network divides the audio output at 1 and 6 kHz.

<b>Frequency Range (DIN):</b>	40 - 20,000 Hz
<b>Recommended Amplifier Impedance:</b>	4 or 8 Ohms
<b>Recommended Amplifier Music Power:</b>	10 - 75 Watts
<b>Sensitivity (DIN):</b>	4.5 Watts
<b>Drive Units:</b>	300mm Bass 130mm Mid-Range 26mm dome HF
<b>Crossover Frequencies:</b>	1 kHz and 6 kHz
<b>Effective Internal Volume:</b>	65 litres, includes 3.5 litres for mid-range unit
<b>Weight:</b>	18.5 kg
<b>Finish:</b>	Teak or Walnut effect
<b>Dimensions:</b>	700 x 380 x 310mm (27 1/2 x 15 x 12 1/8 ins)

# MCD 100

## Stereo Music Centre

### Record Player

- has two speed, belt driven turntable with automatic pick-up arm return.

### Cassette Recorder

- features Dolby Noise Reduction, auto-stop and twin microphone mixing with other sources, also CrO<sub>2</sub> tape selection.

### Radio Receiver

- has Stereo FM band with five pre-set station selectors, AM; Long, Medium and Short wavebands with Tuning and FM Frequency meters.

The MCD 100 is a fully integrated audio system, consisting of a 35 Watt-per-channel, low distortion amplifier, stereo FM tuner with five pushbutton preset station selectors, Medium, Long and Short (41-49 metre) AM wavebands, full Dolby cassette deck with Auto-Stop mechanism and a belt-driven two-speed turntable fitted with integral "S" shaped tone-arm; all compactly supplied within a sculpted satin black console protected by a counter-hinged full-width tinted perspex lid.

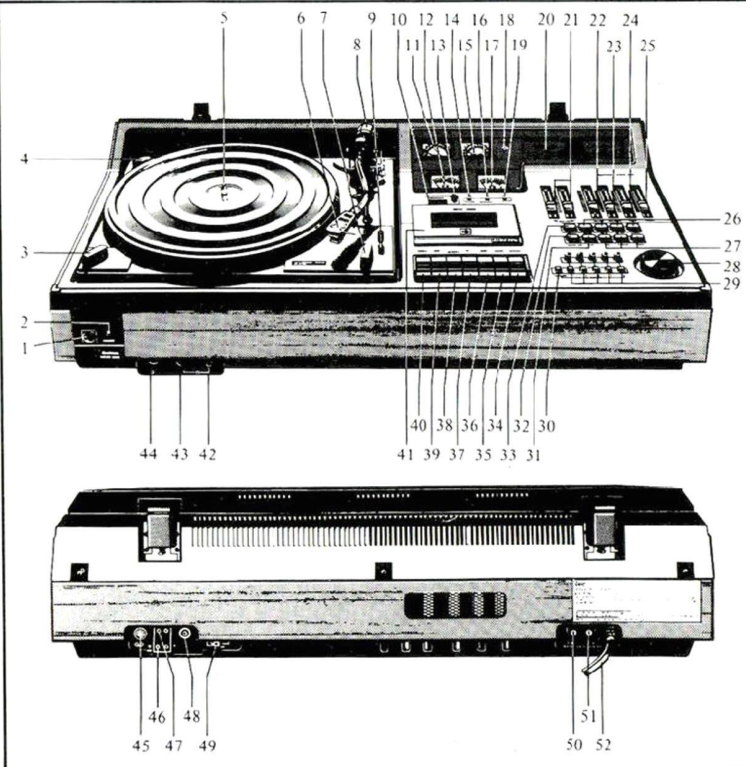
The Music Centre has a versatile range of controls and features permitting it to be used as the basis of a more extensive system. An external tape recorder, communications receiver or slave amplifier may be connected through the auxiliary socket. Careful design makes available tape-to-tape transfer, microphone mixing with other recording sources and Public Address facilities. The record levels, volume, bass, treble and balance controls are of the graduated slider type for ease of operation with a "click" centre position. A full complement of meters—Tuning, Frequency and twin VU for recording ensures optimum operation.

The performance has been obtained by the generous use of semi-conductors and complex integrated circuits including those for motor servo control, Dolby processing and the power amplifier modules.

**\*Also offered as a complete high fidelity system with a pair of RB 35 loudspeakers (see pages 4,5).**



# Specification



1. Mains ON/OFF Button
2. Mains ON Indicator Light
3. Record Player Turntable Speed Selector
4. Large Diameter 45 rpm Record Adaptor
5. Turntable Spindle
6. Headshell/Cartridge Assembly
7. Automatic Arm Lift and Return Lever
8. Counterweight
9. Lift/Lower Lever
10. Cassette Index Counter
11. Frequency Meter FM/VHF Band
12. Cassette Recording Level Meter - Left Hand Channel
13. Index Counter Reset Button
14. Recording Indicator Lamp
15. Tuning Meter
16. Dolby NR Indicator Lamp
17. Cassette Recording Level Meter - Right Hand Channel
18. Stereo Broadcast Beacon
19. CrO<sub>2</sub> Bias/Equalisation Indicator Lamp
20. Main Tuning Scale
21. Left and Right Channel Recording Level Controls
22. Volume Control Slider
23. Balance Control Slider
24. Bass Control Slider
25. Treble Control Slider
26. Receiver Waveband Selection Buttons - FM, MW, LW, SW
27. Source Function Selection Buttons - Tape, Phono, Radio
28. Manual Flywheel Tuning Knob
29. Preset FM Station Selector Buttons and Tuning Spindles
30. Manual Tuning Selector Button
31. CrO<sub>2</sub> Bias/Equalisation Button
32. Dolby Noise Reduction Button
33. Mono Button
34. PAUSE Key
35. STOP Key
36. FAST FORWARD Key
37. PLAY Key
38. RECORD Key
39. REWIND Key
40. EJECT Key
41. Cassette Compartment Lid
42. Headphone-Standard Jack Socket
43. Headphone-DIN Socket with Selectable Muting
44. Microphone DIN Input Socket
45. Aux/Tape Socket
46. AM Aerial Socket
47. FM Aerial Socket 300 Ohm
48. FM Aerial Socket 75 Ohm
49. Local/Remote Radio Selector Switch
50. RH Speaker Output - 2 Pin DIN Socket
51. LH Speaker Output - 2 Pin DIN Socket
52. Mains Power Lead

## Audio

<b>Power output</b>	35 Watts RMS per channel into 4 Ohms
<b>Total harmonic distortion</b>	Less than 1% at full output
<b>Total music power</b>	100 Watts
<b>Frequency response</b>	35 Hz to 20 kHz $\pm$ 1.5dB
<b>Input sensitivity</b>	Microphone: -60 dBm 600 Ohm Tape Recorder/Auxiliary: 500mV into 330 kOhms
<b>Tape output</b>	22mV into 22 k Ohm
<b>Headphone output</b>	8 Ohm (Std.) 8-200-400 Ohms (DIN)
<b>Tone Controls</b>	Bass: $\pm$ 15 dB at 40 Hz Treble: $\pm$ 12 dB at 15 kHz
<b>Hum and Noise</b>	-65 dB

## Radio

<b>Frequency coverage</b>	VHF/FM: 88-108 MHz Short wave: 5.9-10 MHz (41-49 metre band) Medium wave: 530-1605 kHz Long wave: 150-350 kHz
<b>Usable sensitivity</b>	VHF/FM: 3.5 $\mu$ V for 30 dB signal/noise Short wave: 100 $\mu$ V/m Medium wave: 200 $\mu$ V/m Long wave: 400 $\mu$ V/m
<b>FM capture ratio</b>	4 dB
<b>FM signal/noise ratio</b>	55 dB
<b>FM stereo separation</b>	30 dB

## FM frequency response Selectivity

40 Hz-15 kHz
VHF/FM: 35 dB at 400 kHz difference
AM: 30 dB at 10 kHz difference

## Record Player

<b>Drive system</b>	2 speed, belt
<b>Turntable</b>	30 cm diameter
<b>Speeds</b>	33 $\frac{1}{3}$ and 45 rpm
<b>Motor</b>	4 pole synchronous
<b>Cartridge</b>	Induced magnetic
<b>Stylus playing weight</b>	2 gm.
<b>Headshell fixing</b>	SME type
<b>Wow and flutter (DIN)</b>	0.1%

## Cassette Deck

<b>Motor</b>	Servo controlled DC motor
<b>Wow and flutter (DIN)</b>	0.2%
<b>Fast forwarding/rewinding time</b>	C60-90 seconds
<b>Bias and erase frequency</b>	105 kHz
<b>Frequency response (DIN)</b>	CrO <sub>2</sub> : 30 Hz-15 kHz FeO: 30 Hz-13 kHz
<b>Signal to Noise ratio (DIN)</b>	58 dB (Dolby IN)
<b>Channel separation</b>	25 dB
<b>Cross talk</b>	50 dB
<b>Erase ratio</b>	65 dB

## General

<b>Semiconductor complement</b>	73 including 10 ICs
<b>Mains supply</b>	240 V, 50 Hz
<b>Power consumption</b>	180 Watts
<b>Dimensions</b>	208 (H) $\times$ 772 (W) $\times$ 381 (D) mm (8 $\frac{1}{8}$ (H) $\times$ 30 $\frac{3}{8}$ (W) $\times$ 15 (D) ins)
<b>Weight</b>	18 Kg (40 lbs)

# Model 150

## AM/FM Stereo Receiver

**Achievement** in design is not measured in sheer size, it is getting things right for the right reasons.

This outstanding receiver is an **achievement** and can take its place flawlessly at the heart of any high fidelity system.

Reference to the performance data indicates that the Model 150 is approaching the ultimate. Whilst this has been said before and constant technological advance eventually makes such claims absurd, it is difficult to see how the Model 150 can be upstaged.

Its high output power (up to 110 watts per channel) and low distortion (typically 0.02%) ensure that only a true sound signal need ever reach the loudspeakers, however extreme the dynamic range.

At the radio receiving end the AM and FM circuits are independent for performance without compromise; seven FM stations can be pretuned and a logic controlled station 'Lock' eliminates any possible tuning error. Its all there, as it should be; facilities for using two tape recorders; the output stages and associated loudspeakers protected electronically should a fault condition arise; two approved power convenience sockets, and so on.

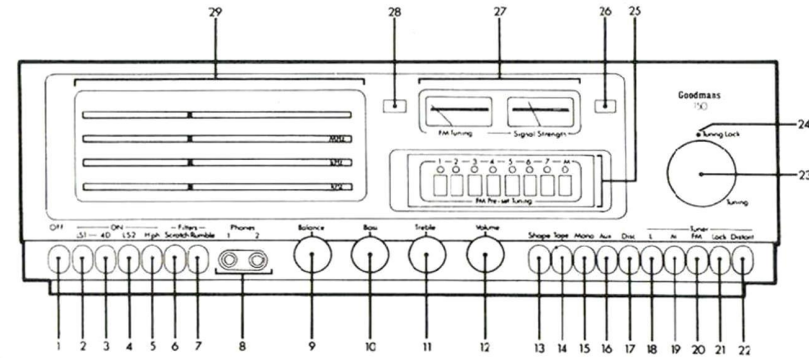
Handsomely styled, with wood veneered casework to complement the black soft-line fascia, the 150 is very impressive... in every way.



# Specification

Integrated AM/FM stereo tuner-amplifier conforming to DIN 45: 500, with instantaneous electronic overload protection.

- 1 Power Off
- 2 Loudspeakers, Room 1 On
- 3 4D - surround sound
- 4 Loudspeakers, Room 2 On
- 5 Headphones
- 6 Scratch filter
- 7 Rumble Filter
- 8 Two stereo headphone sockets
- 9 Stereo balance
- 10 Bass
- 11 Treble
- 12 Volume
- 13 Shape (Loudness contour)
- 14 Tape 1
- 15 Mono
- 16 Tape 2/Auxiliary
- 17 Disc
- 18 Long waveband
- 19 Medium waveband
- 20 VHF/FM waveband
- 21 Tuning Lock
- 22 Distant
- 23 Flywheel AM and FM tuning
- 24 Tuning lock light
- 25 FM station selector
- 26 Tape Indicator
- 27 Tuning meters
- 28 FM Stereo indicator
- 29 Tuning scales



## Facilities at rear

- |   |   |  |
|---|---|--|
| Voltage selector switch (120, 220, 240V)              | - Left and Right loudspeakers, Room 2                 | 2, FM aerial sockets (75 Ohms and 240 Ohms balanced)                 |
| 2, 3 pin mains facility sockets (2 amp total maximum) | - 2, Tape record/play/monitor (High and Normal level) | AM aerial socket (internal ferrite rod also fitted)                  |
| DIN sockets for:                                      | - Magnetic pick-up                                    | Slide switch interconnecting FM balanced aerial to AM Earth terminal |
| - Left and Right Front loudspeakers, Room 1           | - Second tape recorder/Auxiliary input                | Mains fuse, 2 amp  |
| - Left and Right Rear loudspeakers, Room 1            | 4, Phono sockets - Tape Line in/out                   |  |

## Typical Performance Data

### Audio

<b>Power output</b>	(measured 1kHz sine wave with both channels working) 110 Watts per channel into 4 Ohms 70 Watts per channel into 8 Ohms
<b>Total harmonic distortion</b>	0.02% for 100 Watts into 4 Ohms or 60 Watts into 8 Ohms
<b>Total music power</b>	275 Watts into 4 Ohms
<b>Preferred loudspeaker impedance</b>	8 Ohms, for the simultaneous use of 2 pairs
<b>Frequency response</b>	-3dB at 20Hz and 30kHz
<b>Power bandwidth</b>	10Hz to 30kHz
<b>Output impedance</b>	Less than 0.2 Ohm
<b>Damping factor</b>	50 into 8 Ohms
<b>Sensitivity</b>	(measured at 1kHz for maximum output) Magnetic pick-up: 2mV into 50k Ohms Auxiliary (Tape 2): 50mV into 500k Ohms. Tape: 100mV into 50k Ohms
<b>Overload capability</b>	38dB (any input)

<b>Tape output</b>	(quoted for 40kHz deviation on FM) Phono line sockets: 250mV into 100k Ohms DIN - High level socket: 50mV into 10k Ohms DIN - Normal level socket: 8mV into 10k Ohms Auxiliary (Tape 2): 8mV into 10k Ohms
<b>Tone controls</b>	(reference 0dB at 1kHz) Bass: ±12dB at 50Hz Treble: ±12dB at 15kHz
<b>Loudness contour</b>	(at -30dB volume control setting) +9dB at 50Hz, +6dB at 15kHz
<b>Scratch filter</b>	-3dB at 7kHz, -20dB at 20kHz
<b>Rumble filter</b>	-3dB at 60Hz, -20dB at 25Hz
<b>Hum and Noise</b>	(unweighted) Tape inputs -80dB Magnetic pick-up input -70dB Auxiliary input: -80dB
<b>Cross-talk</b>	(any input) -50dB
<b>Radio-FM</b>	
<b>Frequency coverage</b>	87.5MHz - 108MHz
<b>Sensitivity</b>	(for 30dB signal/noise ratio) Less than 1µV into co-axial input Less than 2µV into balanced input
<b>Capture ratio</b>	Better than 1.5dB
<b>Signal/Noise ratio</b>	(for 1mV input) 70dB
<b>Image rejection</b>	75dB
<b>Spurious rejection</b>	80dB
<b>IF rejection</b>	90dB

<b>Stereo separation</b>	40dB at 1kHz
<b>Pilot tone rejection</b>	Better than 65dB
<b>Pilot harmonic rejection</b>	Better than 75dB
<b>Overload capability</b>	120dB above 1µV input
<b>Distortion</b>	0.5% THD mono or stereo for 67.5kHz deviation
<b>Radio-AM</b>	
<b>Frequency coverage</b>	Long Wave 148kHz - 350kHz Medium Wave 520kHz - 162.5kHz
<b>Sensitivity</b>	(for 20dB signal/noise ratio) MW - 20µV LW - 40µV
<b>Image rejection</b>	65dB
<b>AGC range</b>	80dB
<b>General</b>	
<b>Mains input</b>	120, 220 or 240 volts, 50-60Hz
<b>Power consumption</b>	440 Watts maximum
<b>Transistor complement</b>	114, including 4 ICs, 4 Varicap silicon diodes, 4 FETs
<b>Dimensions</b>	Length 540mm (21 1/4 ins) Depth 360mm (14 1/8 ins) Height 200mm (7 7/8 ins)
<b>Finishes</b>	Black fascia with Teak or Walnut veneers
The performance figures quoted are subject to manufacturing tolerances.	

# Module 130

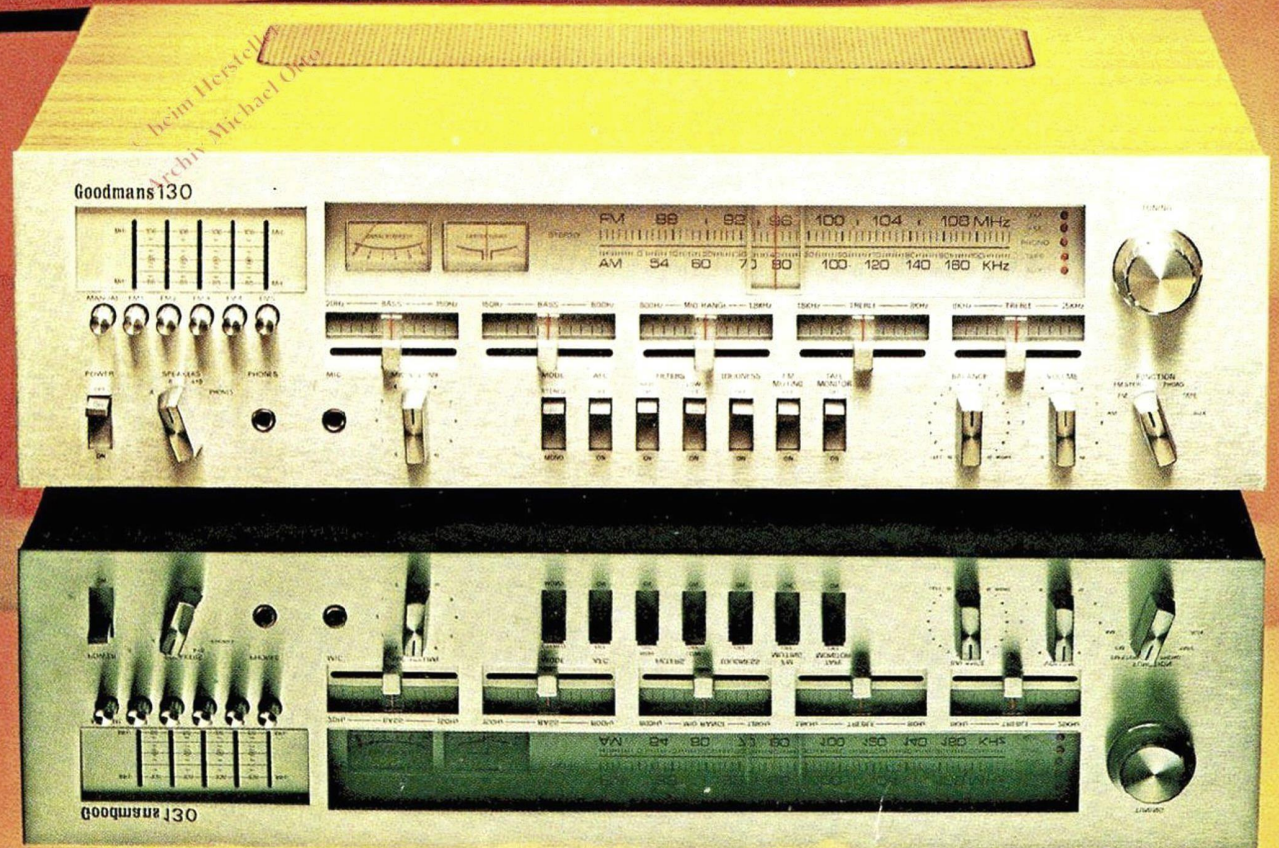
## AM/FM Stereo Receiver

Six special features combine with Goodmans usual high standard of performance to make the Module 130 real value for money:

- 65 Watts per channel into 4 Ohms
- five, two-octave slider tone controls
- full range of inputs, one for microphone, with separate gain control, and tape-to-tape transfer
- five presets on FM radio with twin meter tuning accuracy for full sound quality and ease of use
- radio section includes FET RF stages, 3 ICs, and 6 varicaps with buffered PLL multiplex decoder stage
- paired speaker switching.

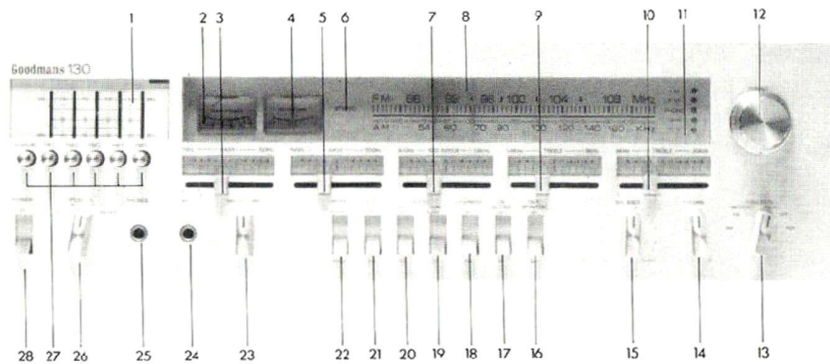
And all this performance with style—a brushed aluminium fascia and controls give the Module 130 a clean and unfussy look.

Additional to these special features, such refinements as electronic output protection, suppression of power-on and interstation muting noises, and reliable l.e.d. function indicators make the 130 a perfect choice as the heart of any home high fidelity system.



# Specification

Integrated AM/FM Tuner/Amplifier



**Facilities at rear:**  
**2 FM Aerial sockets**  
 (75 Ohms and 300 Ohms balanced)  
**AM Aerial socket**  
**Earthing terminal**  
**DIN sockets for:—**  
**2 pairs Left and Right speakers**  
**Magnetic pick-up Input**  
**Auxiliary Input**  
**Ceramic pick-up Input**  
**Tape In/Output**  
**Tape Input**

## Features and Controls

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. Preset Tuning Scale</li> <li>2. Signal Strength Meter</li> <li>3. Lower Bass Control</li> <li>4. Centre Tuning Meter</li> <li>5. Upper Bass Control</li> <li>6. FM Stereo Beacon</li> <li>7. Mid-range Control</li> <li>8. Tuning Scale Cursor</li> <li>9. Lower Treble Control</li> <li>10. Upper Treble Control</li> <li>11. Function Selected Indicators</li> <li>12. Tuning Control (Manual)</li> <li>13. Function Selector Switch</li> <li>14. Volume Control</li> <li>15. Balance Control</li> <li>16. Tape Monitor Keyswitch</li> <li>17. FM Muting Keyswitch</li> <li>18. Loudness Keyswitch</li> <li>19. Low Filter Keyswitch</li> <li>20. High Filter Keyswitch</li> <li>21. AFC Keyswitch</li> <li>22. Stereo/Mono Keyswitch</li> <li>23. Microphone Volume Control</li> <li>24. Microphone Input Socket</li> <li>25. Headphone Socket</li> <li>26. Loudspeaker Selector Switch</li> <li>27. Preset Tuning Buttons</li> <li>28. Power On/Off Keyswitch</li> </ol> | <p>Indicates the frequency tuned by its appropriate Preset Tuning button.</p> <p>Pointer demonstrates maximum received signal when the receiver is ideally tuned.</p> <p>Lifts (right) or cuts (left) frequencies within the range 20-150 Hz.</p> <p>Pointer is at centre, combined with Signal Strength Meter reading maximum when tuning is correct.</p> <p>Operates Bass Control on frequencies between 150 Hz and 800 Hz.</p> <p>Illuminates when a stereo transmission is received.</p> <p>Operates on frequencies between 800 Hz and 1.8 kHz.</p> <p>During tuning of the AM band and FM Manual the Cursor indicates the frequency selected.</p> <p>Operates on frequencies between 1.8 kHz and 8 kHz.</p> <p>Operates on frequencies between 8 kHz and 25 kHz.</p> <p>Each LED display illuminates to indicate the signal source selected by the Function switch.</p> <p>Tunes the receiver on AM band and when FM Manual is selected.</p> <p>Selects required signal source.</p> <p>Adjusts output sound level.</p> <p>Adjusts the relative output sound level between left and right channels but not between channels A and B.</p> <p>Overrides Function Selector to provide monitoring of tape recorder/deck during recording and playback.</p> <p>Provides cancellation of interstation noise on FM radio.</p> <p>Counteracts the subjective loss of bass and treble relative levels during quiet listening.</p> <p>Attenuates unwanted low frequency signals.</p> <p>Attenuates unwanted high frequency noise.</p> <p>'Holds' FM stations against drifting.</p> <p>Permits normal stereo operation or mixes monophonic sound into both loudspeaker channels.</p> <p>Independently adjusts microphone input level.</p> <p>Permits connection of a microphone via a standard 6.5 mm (1/4 inch) jack.</p> <p>Permits connection of low impedance headphones via a standard stereo 6.5 mm (1/4 inch) jack.</p> <p>Selects either or both pairs of loudspeakers connected and mutes for headphone only use.</p> <p>Give pretuning facility and selection of Manual Tuning on FM radio.</p> <p>Provides power to all functions of the receiver.</p> |
|--|--|

## Typical Performance Data

<p><b>AUDIO</b></p> <p><b>Power Output:</b> 50 Watts per channel into 8 Ohms 65 Watts per channel into 4 Ohms (both channels driven 1 kHz sine wave)</p> <p><b>Total Harmonic Distortion:</b> 0.09% for rated power output 0.05% for 10 Watts</p> <p><b>Preferred Loudspeaker Impedance:</b> 8 Ohms for the simultaneous use of 2 pairs</p> <p><b>Frequency Response:</b> 8 Hz—70 kHz (—3 dB ref. 1 kHz)</p> <p><b>Power Bandwidth:</b> 8 Hz to 55 kHz for rated power (—3 dB)</p> <p><b>Damping Factor:</b> 44 at 8 Ohms</p> <p><b>Sensitivity:</b> Phono, Magnetic 2.5 mV into 47 k Ohms Phono, Ceramic: 220 mV into 900 k Ohms Auxiliary: 160 mV into 58 k Ohms Tape: 160 mV into 58 k Ohms Microphone: 2.5 mV into 13 k Ohms</p> <p><b>Overload Capability:</b> Phono, Magnetic 31 dB</p> <p><b>Tape Output:</b> 1.3 mV/k Ohm (into 22 k Ohm from 330 k Ohm source) (for full deviation)</p> <p><b>Tone Controls:</b> ±10 dB at centre frequencies:— 100 Hz, 400 Hz, 1 kHz, 4 kHz, 10 kHz</p> <p><b>Loudness:</b> +8 dB at 100 Hz, +3 dB at 10 kHz at —30 dB volume control setting</p> <p><b>High Filter:</b> —8 dB at 10 kHz</p> <p><b>Low Filter:</b> —8 dB at 100 Hz</p> <p><b>Hum and Noise:</b> Residual —82 dB unweighted</p> <p><b>Cross-talk:</b> —60 dB at 1 kHz</p>	<p><b>RADIO</b></p> <p><b>FM</b></p> <p><b>Frequency Coverage:</b> 87—109 MHz</p> <p><b>Sensitivity:</b> 1.6 μV (for 30 dB S/N)</p> <p><b>Capture Ratio:</b> Better than 1.5 dB</p> <p><b>Signal/Noise Ratio:</b> 60 dB</p> <p><b>Spurious Response Rejection:</b> 75 dB</p> <p><b>Stereo Separation:</b> 40 dB at 400 Hz</p> <p><b>Pilot Tone Rejection:</b> 52 dB</p> <p><b>Suppressed 38 kHz Rejection:</b> 60 dB</p> <p><b>Muting Sensitivity:</b> 5 μV</p> <p><b>Distortion:</b> 0.4% at 400 Hz for full deviation at 1 μV input</p> <p><b>AM</b></p> <p><b>Frequency Coverage:</b> Medium wave 525—1650 kHz</p> <p><b>Sensitivity:</b> 250 μV (for 20 dB S/N)</p> <p><b>Image Rejection:</b> 40 dB</p> <p><b>AGC Range:</b> 50 dB</p> <p><b>GENERAL</b></p> <p><b>Mains Input:</b> 240 Volts 50 Hz</p> <p><b>Power Consumption:</b> 250 Watts</p> <p><b>Dimensions:</b> 536 (L) × 380 (D) × 155 (H) mm</p> <p><b>Finish:</b> Brushed aluminium fascia with teak effect cabinet</p>
--	--

# Module 90

## AM/FM Stereo Receiver

These main features place the Module 90 at the top of the list for value for money.

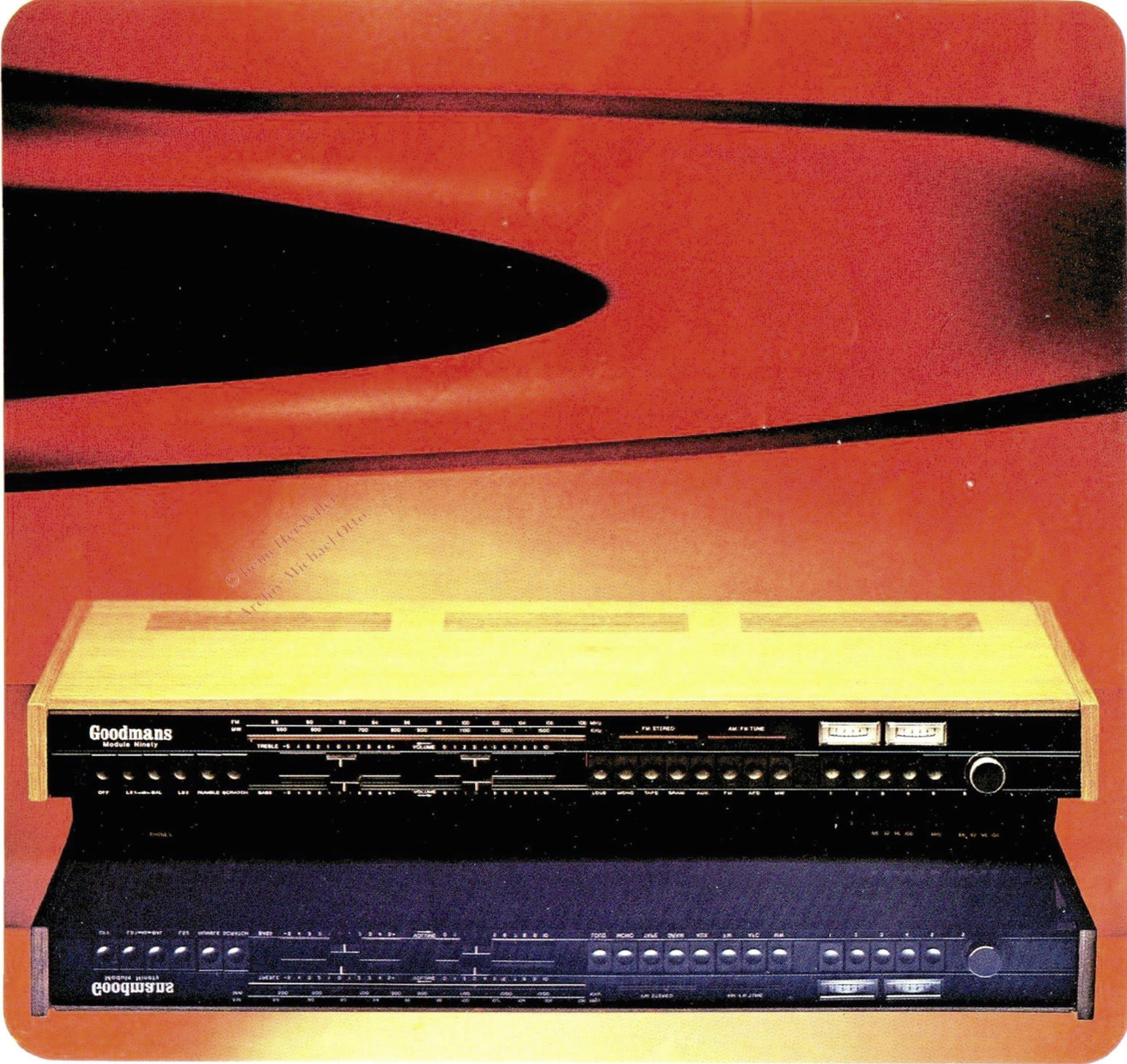
- FM and Medium Wavebands plus 45+45 Watts RMS into 4 Ohms
- Push button Selection and four pre-tuned FM stations
- Superb performance and insignificant distortion
- Up-to-the-minute circuit techniques and reliability
- Restrained elegant styling that sets a standard for years to come

A sophisticated alternative with medium waves to the proven and popular Module 80, this latest tuner-amplifier incorporates many of the advanced features of the higher powered Model One Ten.

The fascinating new experience of surround sound is readily available by the simple connection of two further speakers to the second pair of output sockets at the rear of the Module 90.

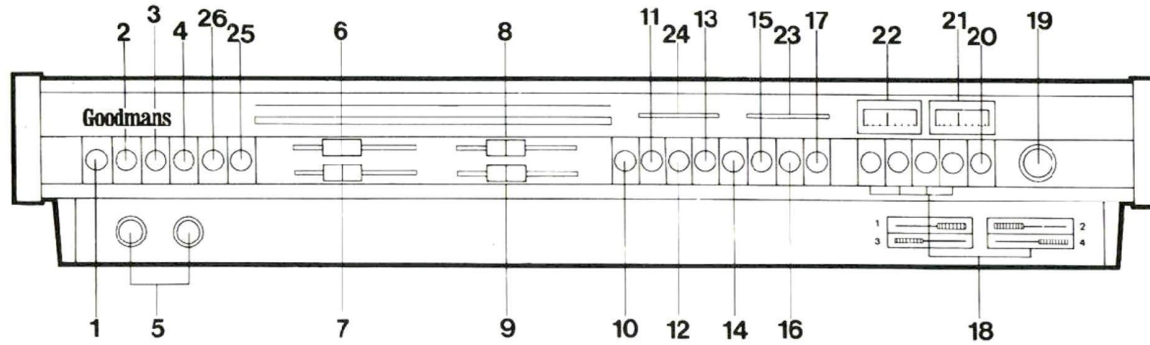
With its full complement of facilities, Goodmans Module 90 will enable precise and easy listening from the quietest to the most dynamic of orchestral passages at a full 45 Watts per channel.

\* Module 80 is now discontinued



# Specification

Integrated AM/FM stereo tuner-amplifier conforming to DIN 45:500



1. Power Off
2. { Power On/Local } surround  
    { Loudspeakers } sound
3. Balance
4. { Power On/Remote }  
    { Loudspeakers }
5. Headphone Sockets
6. Treble
7. Bass
8. Volume Left Channel } Stereo
9. Volume Right Channel } Balance
10. Contour-Linear response
11. Mono/Stereo with interstation muting
12. Tape replay and monitor
13. Magnetic pick-up
14. Auxiliary/Ceramic pick-up
15. FM Band Selector
16. AFC (FM only)
17. MW Selector
18. FM Preset Station Selectors 1,2,3,4  
    FM Pretuning Scales 1,2,3,4
19. FM and MW Flywheel Tuning
20. FM Manual Tuning Selector
21. Right Channel Output Meter
22. Left Channel Output Meter
23. Off-tune and Weak Signal Indicator
24. Stereo Transmission Light
25. Scratch Filter
26. Rumble Filter

## FACILITIES AT REAR.

### DIN sockets for:

- Left and right loudspeakers (local)
- Left and right loudspeakers (remote)  
(rear speakers on surround sound)
- Tape recording/playthrough/monitoring
- Magnetic pick-up
- Ceramic pick-up and auxiliary input
- 240 Ohms 2 pin and FM and AM  
aerials.

Earth terminal

## PERFORMANCE DATA

### AUDIO

**Power output** (measured with both channels working) 45 Watts per channel into 4 Ohms  
30 Watts per channel into 8 Ohms

**Total music power** 120 Watts

**Total harmonic distortion** less than 0.1% at 35 Watts into 4 Ohms

**Frequency response** 25Hz-30kHz, +0-3dB

**Sensitivity** for max. output at 1kHz

Magnetic pick-up: 3mV into 50k Ohms (RIAA equalised)

Ceramic pick-up: 100mV into 500k Ohms

Tape playthrough: 200mV into 33k Ohms

**Overload capability** +23dB on stated inputs

**Tape output** depends on signal level applied:  
typically 10mV into 10k Ohms-for 300mV into aux. or 10mV into magnetic input  
**Tone controls** Bass. Typically  $\pm 12$ dB at 40Hz. Treble. Typically  $\pm 12$ dB at 12kHz (reference 0dB at 1kHz)

**Loudness contour** Typically +15dB at 50Hz, +6dB at 12kHz (at -30dB volume setting)

**Rumble filter** -15dB at 20Hz

**Scratch filter** -15dB at 16kHz

**Hum and noise** (weighted with psophometric filter)

Tape input -75dB. Pick-up and Auxiliary -60dB.

**Cross talk** (any input) 45dB

**Output impedance** Less than 0.1 Ohms

### RADIO

**Frequency coverage**

Medium Wave 525-1630kHz  
VHF 87.5- 108MHz (87.5-101MHz on presets)  
Typically 2 $\mu$ V into 240 Ohms, 1 $\mu$ V into 75 Ohms for 30dB S/N with 75Hz deviation.  
Better than 1.5dB

**FM Sensitivity**

**Capture ratio**  
**Signal strength acceptance range**

120dB

**Stereo separation**

-35dB at 1kHz

**Pilot tone rejection**

Better than -40dB

**Distortion**

Typically 0.5% THD for 75kHz deviation

**IF Rejection**

better than 80dB

**Image rejection**

better than 60dB

**AM Sensitivity**

Typically 50 $\mu$ V for 20dB S/N at 30% modulation

**AGC Range**

70dB for 10dB change in output

### GENERAL

**Mains input** 220-245 volts 50-60 Hz 122 volts (dealer adjustable)

**Maximum power consumption**

160 Watts

**Semi-conductor complement**

75, including 5ICs, 5 Varicap diodes and 3 FETs

**Dimensions**

Length 614mm (24 $\frac{1}{8}$ ins)

Depth 318mm (12 $\frac{3}{8}$ ins)

Height 100mm (4ins)

**Finishes**

Teak or Walnut veneers

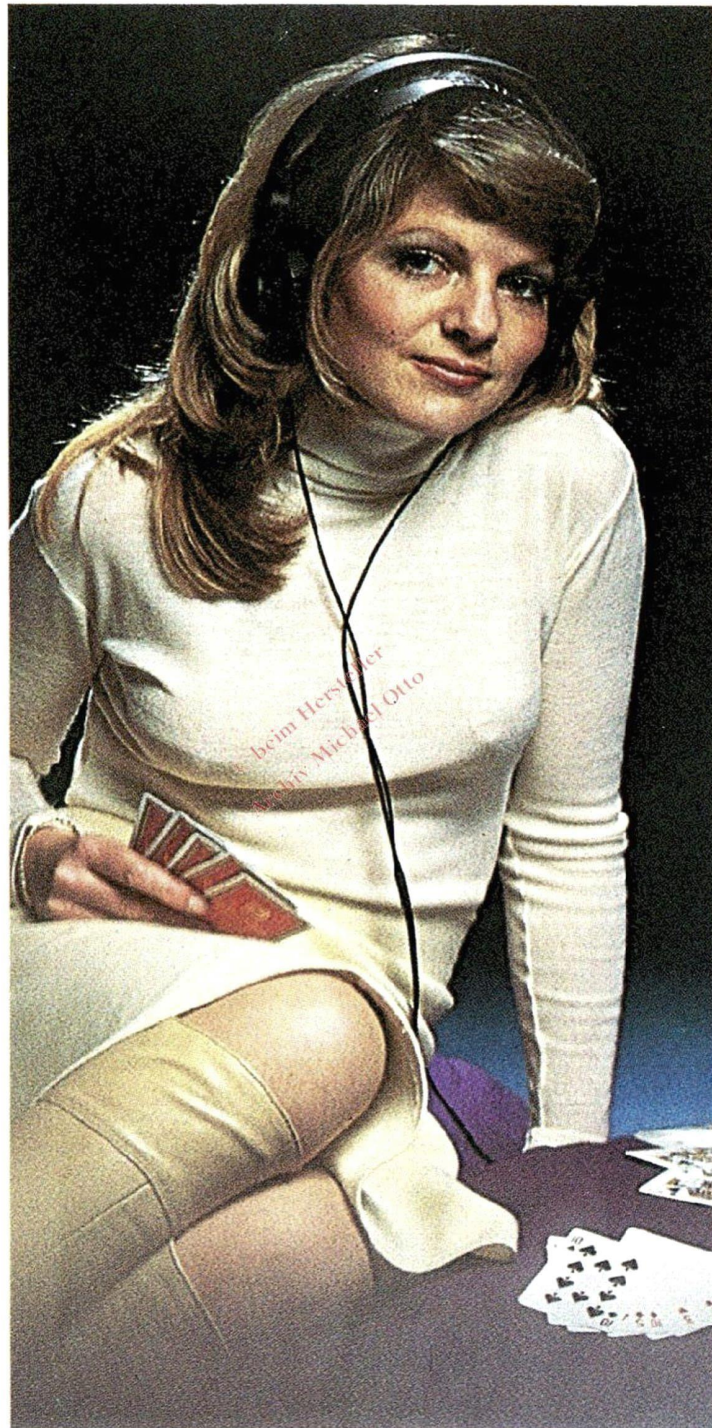
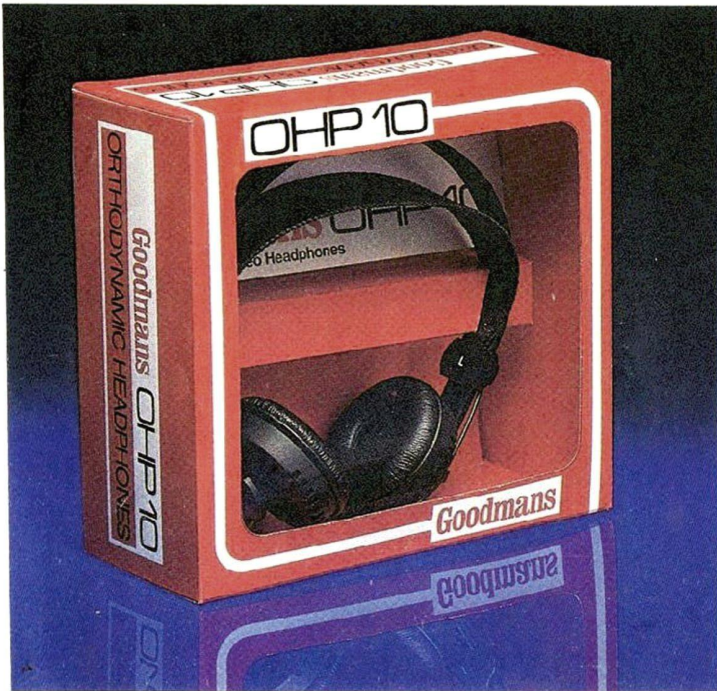
© beim Hersteller Archiv Michael Otko

# OHP 10

## Orthodynamic Stereo Headphones

The drive unit is designed on the patented orthodynamic principle in which a diaphragm is uniformly driven all over its surface giving high sensitivity with wide range near-flat response at low distortion.

Precision made and ruggedly constructed, the OHP 10 will last many years and give hours of enjoyment. The ear pieces have soft comfortable pads and are of the semi-open type which avoids any feeling of total isolation and permits urgent sounds, such as door-bell and telephone, to be heard. The headband adjusts easily and the total weight (210 grams / 7½ ozs.) is so light that listening for extended periods is wholly enjoyable.



## Specification

### Technical Features

Each drive unit consists of an ultra thin film diaphragm sandwiched between two ferrite discs, perforated so as to be acoustically transparent and whose fields are radially orientated.

The diaphragm, which is corrugated and suspended at its centre and circumference, has a spiral conductor deposited in four bands on its surface, alternate bands spiralling in opposite directions.

The drive units are mounted in ear cups of the semi-open type with bass loading slots and internal damping.

The standard stereo jack supplied fits the large majority of receivers, amplifiers and tape-recording equipment including all the Goodmans range.

Sensitivity, power handling and impedance suit typical amplifier headphone outputs without changing the volume control setting usually chosen for loudspeaker listening.

<b>Impedance</b>	140 Ohms
<b>Frequency Range</b>	16-20,000 Hz
<b>Sensitivity</b>	>90 dB for 1 mW
<b>Harmonic Distortion</b>	< 1%
<b>Power Handling (DIN)</b>	2 Watts
<b>Cable Length</b>	Approx. 2.5 metres
<b>Weight</b>	210 grams



# mini2

## A combination of size, performance and price

Following the original success of the Maxim and Double-Maxim, the Mini-2 is a two way system—100 mm cone bass and 25 mm dome HF drive units—in a 4 mm thick totally sealed aluminium cabinet less than 7½ × 4¾ × 3¾ inches.

Sensible sensitivity (8.4 Watts for 96 dB/1 m) makes it suitable for use with amplifiers rated between 10-50 Watts music (say 7-35 Watts RMS).

This combination of performance, size and price, means that Goodman's high fidelity will find its way into cars, caravans, motor cruisers and houseboats, in fact anywhere that a really small speaker with high fidelity performance is needed.

## Specification

Recommended amplifier load impedance	4 or 8 Ohms
Frequency response	60-20,000 Hz
Recommended amplifier music power rating	10-50 Watts
Sensitivity (DIN)	8.4 Watts
Crossover frequency	3.5 kHz
Dimensions/Weight	188 × 122 × 96 mm/2.04 kg (7½ × 4¾ × 3¾ ins./4½ lb.)
Finish	Matt Black

# Power Range

For public address, musical instrument amplifications and disco applications.

Goodmans Power Range Audiom 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.

## dB 50

Specially designed for clubs and discotheques, the dB50 offers high power handling with high sensitivity and wide sound dispersion.

The dB50 has a frequency range of 80-18,000 Hz and is recommended for amplifiers of 2-75 Watts, 4 or 8 Ohms. Sensitivity (DIN) is 0.4 Watts.

The dB50 is a two-way loudspeaker system with a 12" cone bass unit fitted with stainless steel centre diaphragm matched to a mid/high frequency pressure horn unit in a reflex enclosure of 50 litres.

The system is particularly suitable for use in permanent and semi-permanent disco installations in hotels, restaurants, discotheques, clubs and, when suitably protected, in outdoor sound re-inforcement applications.

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

Full details of connections to amplifier, wall mounting and multiple systems are supplied.



# Goodmans

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

Part No 551040 6

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.

### Credits

Designed by Owen Print and Graphics, printed by Owen Print  
Photography by RPM Photographic.

Antique reproduction equipment kindly loaned by Gem Antiques, Portsmouth.