Supplement to Electrical and Electronic Trader
17 November 1972

Goodmans module 80

3055

V.h.f./f.m. stereophonic tuner/amplifier

(DISMANTLING & AUDIO CHECKS)

Introduction

This *Service Sheet* is the continuation of, and must be used in conjunction with, *Service Sheet* 3054 in which the circuit alignment procedure for the Goodmans module 80 is given.

The circuit panels illustrated in this *Service Sheet* are viewed from the component side, and the text covers dismantling and audio amplifier information.

Dismantling

Removing top cover. – Invert tuner-amplifier on a non-abrasive surface, then unscrew and remove four screws and washers – two at each end – securing top cover. Replace tuner-amplifier on to its feet and ease the cover slightly rearwards to free the slot in front edge from lip on escutcheon.

Note: When replacing top cover, ensure that the slot and lip are properly engaged to prevent damage to the top cover when securing with screws.

Removing front escutcheon. – Pull off control knobs and free headphone jack socket. Unscrew and remove screw at each end of front panel securing nylon block, and the three screws along underside front edge of escutcheon to free the escutcheon.

The r.f.-i.f., decoder and tuning indicator panels can be lifted from their support brackets for normal servicing, but where complete removal of any panel is required, unsolder external wiring to tag connections, noting position of tags and colour coding of wiring.

Warning: The twin-feeder cable connecting the r.f. panel and the r.f.-i.f. panel must not be reduced in length, otherwise mis-matching may occur.

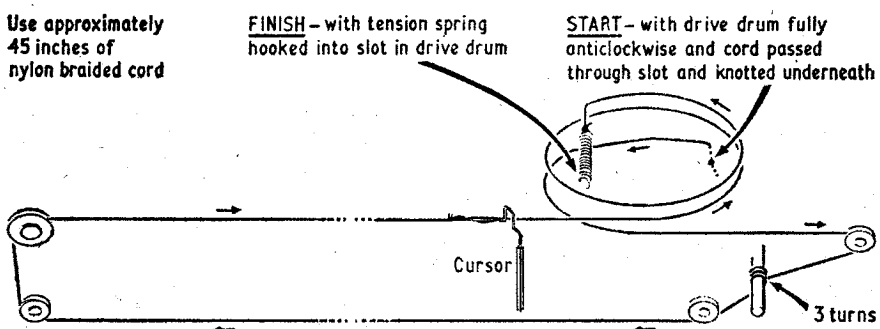
The screens on the r.f.-i.f. panel can be removed by unscrewing and removing three screws in each.

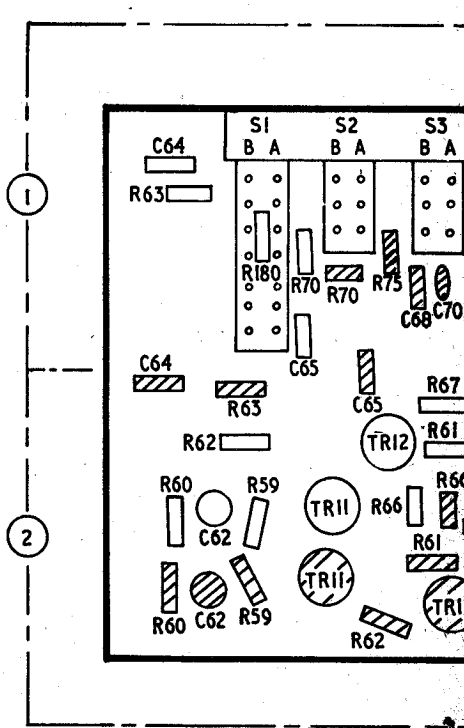
R.f. preamplifier panel. – Lift r.f.-i.f. panel from its supports to provide clearance, then remove In/Out socket screen. Unsolder earthing wire from tape socket and unsolder aerial socket connections from tags on r.f. panel, then ease panel clear of supports.

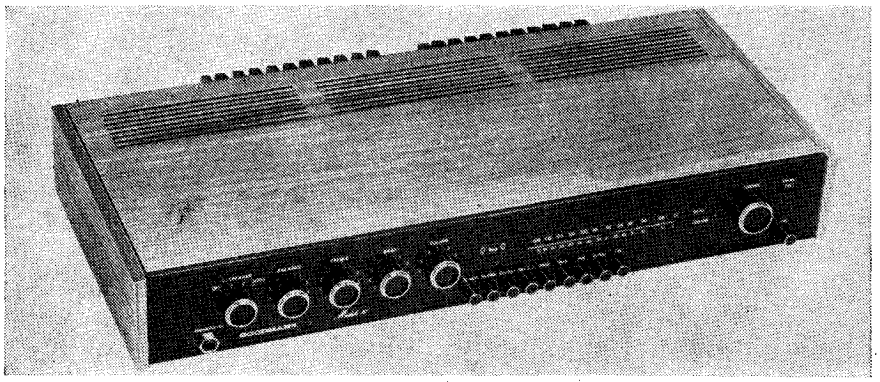
Decoder panel. – To completely remove the decoder panel, unsolder the connecting leads, detach stereo lamp from bracket and pull panel out of nylon retaining clips.

Preamplifier panel. – Remove front escutcheon and take off preamplifier screen (three screws). Unclip tuning indicator lamps from chassis and release tuning indicator panel from its mounting clips.

Unscrew and remove two screws securing press-button switch to captive nuts on chassis and unfasten Off/On, Bass, Treble, Balance and Volume controls from chassis. The preamplifier panel together with its controls can now be released from the mounting clips and







Goodmans module 80 hi-fi v.h.f./f.m. stereo tuner/amplifier. This equipment is available in teak, walnut or white finishes.

manoeuvred to give access to the foil side. When reassembling, note that tuning indicator lamp with yellow leads locates in the chassis hole nearest to the volume control.

Power amplifier panels. – Increased servicing access can be obtained by releasing the complete rear panel assembly from the chassis (within limits of connecting leads). Unscrew and remove the two screws located between the loudspeaker sockets, one screw nearest aerial socket end, and three screws along bottom edge of panel.

To remove power amplifier panels completely, unscrew and remove screws securing output transistors to respective heat sinks and pull panels clear of support brackets after unsoldering appropriate connections.

Stabilizer panel. – To release, unscrew and remove two screws securing the panel to chassis end bracket.

Audio checks

These tests should be made prior to i.f. and r.f. alignment to ensure that the a.f. amplifiers are functioning correctly. First check that the mains voltage selector is set to the correct voltage. Connect an output meter, set to 4Ω impedance and capable of measuring up to 30 watts, to the appropriate loudspeaker outlet. The maximum available output from each channel should not be less than 30 watts (both channels driven).

Output balance adjustment. – An output bias preset **R105** is fitted in each channel to permit balancing of the two halves of the output waveform.

Connect an oscilloscope across the loudspeaker or load of each channel and feed in an audio frequency signal at the auxiliary socket, of sufficient amplitude to produce clipping of the peaks on both channels. Adjust **R105** and **R105*** to give symmetrical clipping on both channels.
** L.h. channel.*

Audio sensitivity

1. – Release the mono, scratch, rumble and contour press-buttons.

2. – Set bass, treble and balance controls to their mid positions.

3. – Set volume control at maximum.

4. – Feed in a 1kHz signal at the levels given in the table into the individual sockets on the rear panel and depress the appropriate button on the front panel in each case. These input levels should produce 30 watts output.

Audio response

1. – Depress mono press-button.

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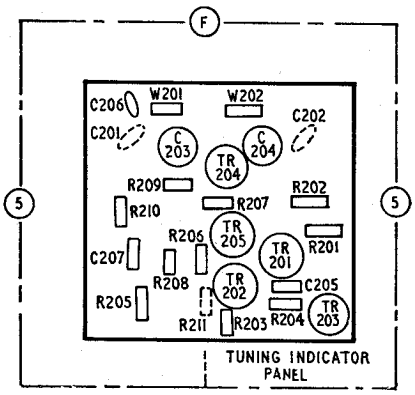

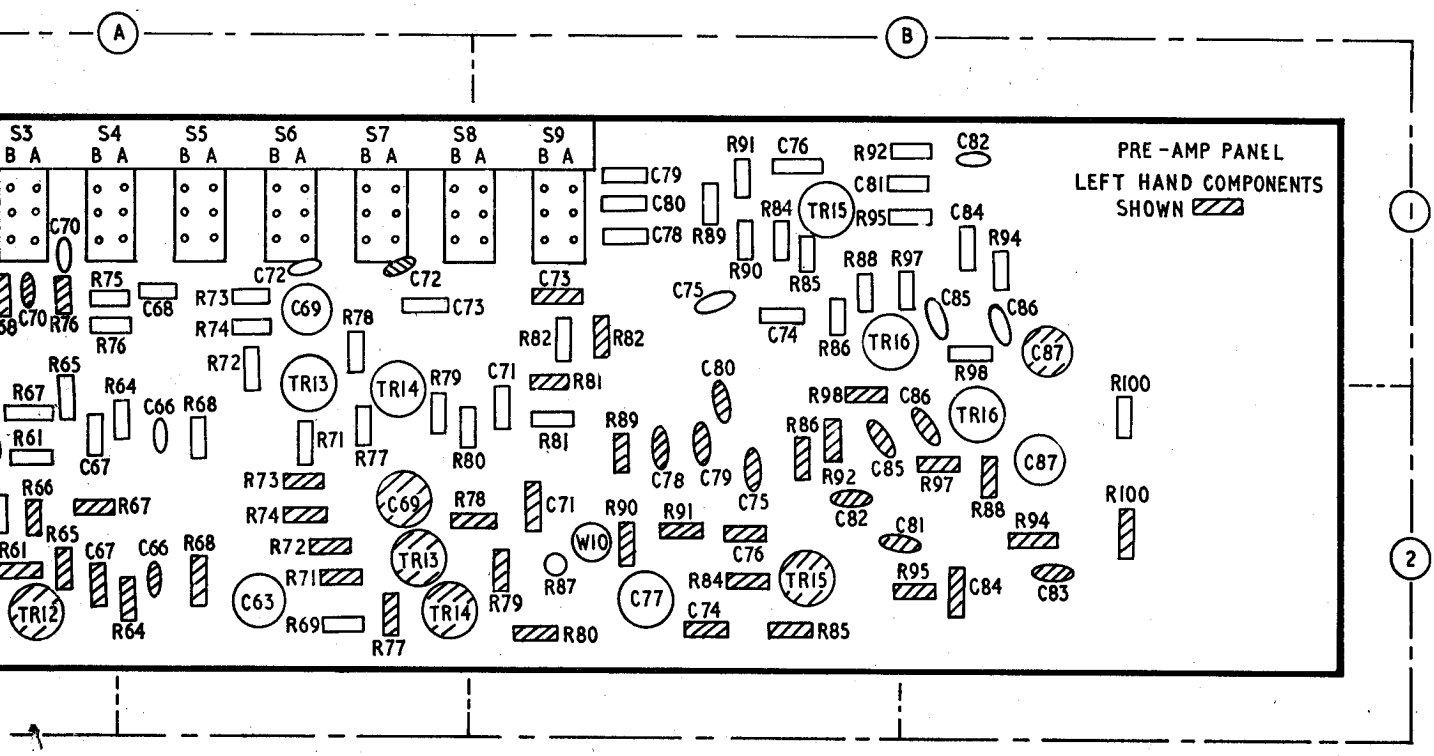

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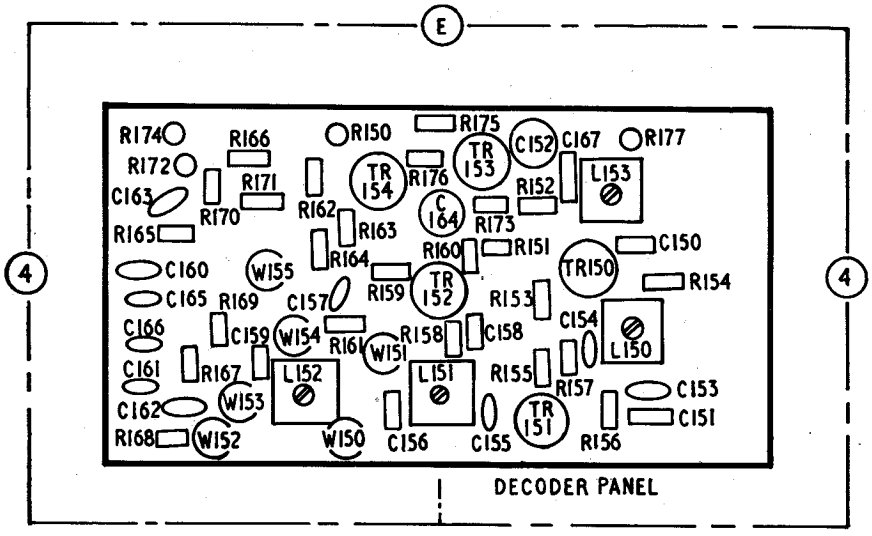
Continued from overleaf

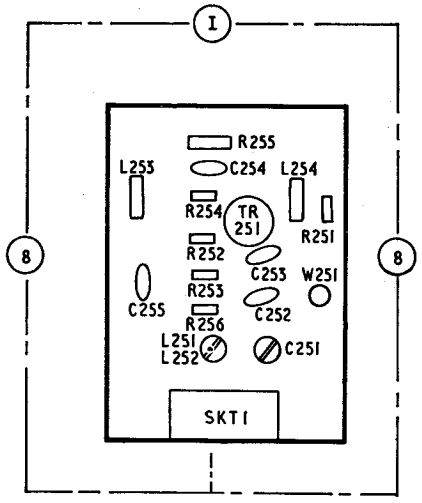
2. – Release scratch, rumble and contour press-buttons; set volume control to maximum.

3. – Feed in a 1kHz signal into Skt3 (Aux.) of sufficient amplitude to produce 5 watts output, each channel. If necessary, adjust balance control to give an identical output from both channels.

4. – Set audio generator to 100Hz and adjust bass control to give 5 watts output.

5. – Set audio generator to 10kHz and adjust treble control to give 5 watts output.





Tone controls

1. – Set up all controls as in 'Audio Response'.

2. – Feed in a 10kHz audio signal into Skt3 (Aux).

3. – Note audio signal input level to produce 5 watts output.

4. – Rotate treble control to maximum and adjust signal level to give 5 watts output; note input level.

5. – Turn treble control to minimum, adjust signal to give 5 watts output; note input level. The audio input range should be in the order of +17dB to −10dB.

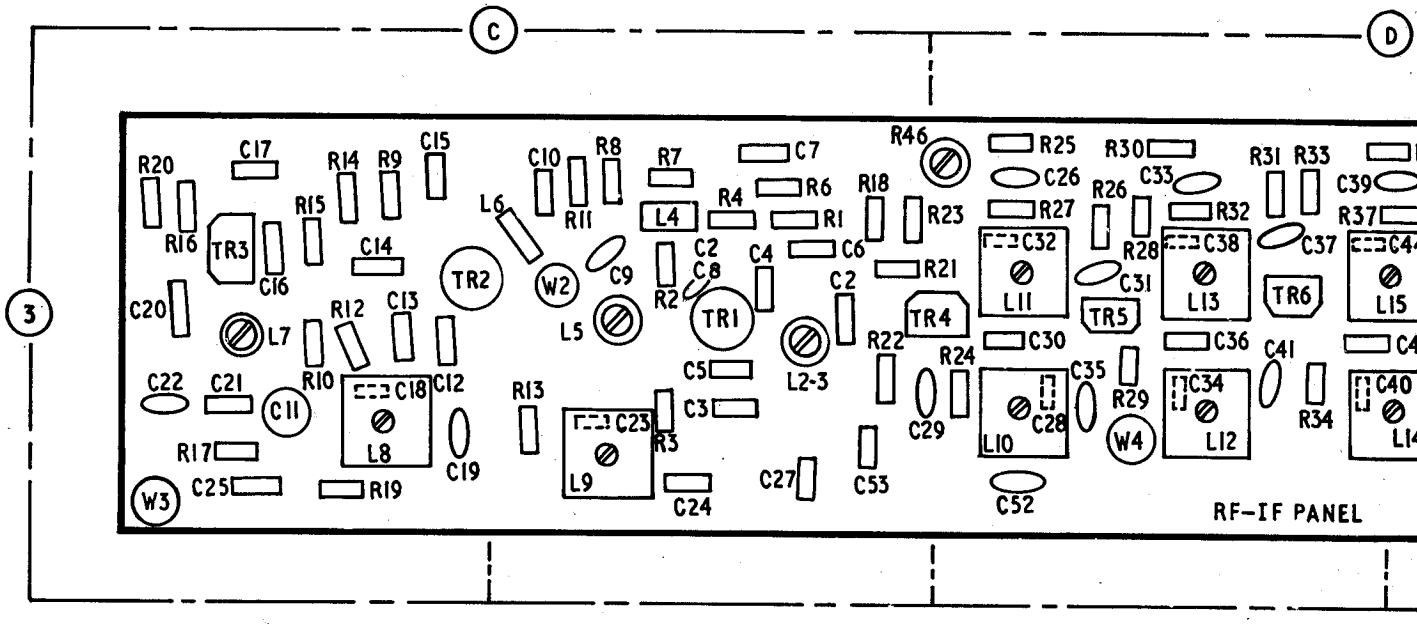
6. – Repeat operations 2 to 5 using the bass control and a 50Hz signal. In this case the audio input range should be of the order of ±13dB.

Throughout the tone control checks, the difference between the channel output levels should not exceed 3dB.

Filters and loudness

1. – Set all controls as in 'Audio Response'.

2. – Feed a 10kHz signal into Skt3 (Aux.) and note signal level to produce 5 watts output.



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Audio sensitivity

Socket	Pin connections	Input level (mV)
Skt. 4 (Magnetic p.u.)	3, 2 (LH) 1, 2 (RH)	1·6 – 2·2
Skt. 2 Tape (Playback)	3, 2 (LH) 5, 2 (RH)	250 – 300
Skt. 3 (Aux.)	3, 2 (LH) 1, 2 (RH)	50 – 60

3. – Depress scratch press-button on front panel.

4. – Increase signal level to produce 5 watts output and note level.

The change in level should be of the order of 11dB.

5. – Repeat operations 2 and 4 using a 25Hz input signal, with rumble press-button engaged. The change in level should be of the order of 11dB.

6. – Switch the generator to 1kHz and adjust level to give 30 watts output.

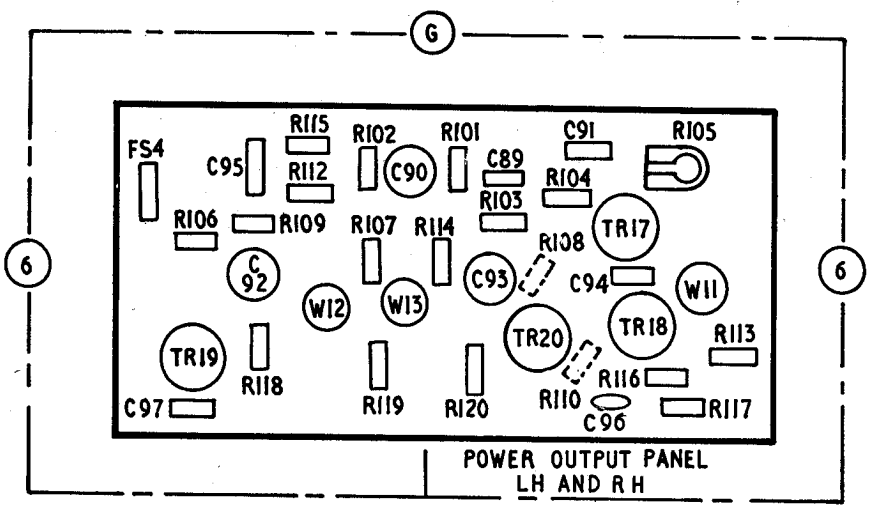
7. – Reduce output by 30dB by means of volume control.

8. – Switch generator to 10kHz and adjust signal level to give 30mW output and note signal level.

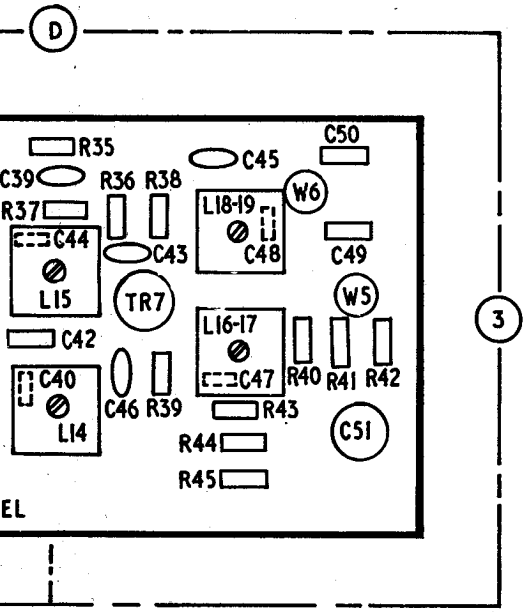
9. – Depress contour press-button and adjust signal level to give 30mW output; note level. The change in level should be of the order of 10dB.

10. – Repeat operations 8 and 9 with a signal frequency of 50Hz; the change in input level should be of the order of 11dB.

Distortion
Feed a 1kHz signal (approx 50mV) into Skt3 (Aux.) to give 30 watts output per channel. All controls should be adjusted as in 'Audio Response'. The total harmonic distortion from each channel should not exceed 0·1 per cent.



General
Check that the stereo reverse (Rev. L.S.) press-button is functioning. Also check that an output is obtained from the alternative loudspeaker sockets.



SPECIFICATIONS

Audio amplifier

Amplifier frequency response

30Hz to 20kHz, ±1·5dB (measured at constant output level of 5 watts with input to 'Aux' socket).

Power output

Speech and Music: 50 watts per channel into 4Ω for less than 1 per cent distortion.
Sine wave r.m.s. into both channels simultaneously at 1kHz.
35 watts per channel into 4Ω for less than 1 per cent distortion.
30 watts per channel into 4Ω for less than 0·1 per cent distortion.
25 watts per channel into 8Ω for less than 1 per cent distortion.
16 watts per channel into 15Ω for less than 1 per cent distortion.

Output impedance: Less than 0·1Ω.

Damping factor at 1kHz

4Ω load – 40; 8Ω load – 80; 15Ω load – 150.

Power bandwidth

Exceeds response bandwidth of amplifier.

Tone controls: (reference 0dB = 1kHz)

Bass: ±13dB at 50Hz.
Treble: −17dB to +10dB at 10kHz.
Loudness Compensation: +11dB at 50Hz, and +10dB at 10kHz (with volume control retarded 30dB).

Filters

Rumble: −11dB at 25Hz.
Treble: −11dB at 16kHz.

Input sensitivities

For 30 watts per channel stereo output.
Magnetic pickup input: 2mV into 50kΩ.
RIAA compensated within 1dB from 40Hz to 20kHz.
Auxiliary: 60mV into 600kΩ.
Tape input: 320mV into 50kΩ.
Tape output: 500mV at 330kΩ (for 40kHz deviation on f.m. or 3cm/sec on magnetic pickup).
Switched monitoring facility.
Overload characteristics: +23dB over above sensitivities.

Stereo headphone socket
Recommended impedance 300Ω-600Ω (8Ω minimum).

Hum & noise (unweighted)

Tape & Aux: Better than −80dB at 35 watts.
Magnetic PU: Better than −66dB at 35 watts.

Crosstalk

Between channels: Better than −45dB (40Hz-12kHz) all inputs.
Between inputs: Better than −60dB.

Radio

Aerial input

240Ω to 300Ω balanced.

Tuning range: 87·5MHz to 108MHz.

Tuner r.f. sensitivity

Better than 3μV for 3dB below limiting.
Better than 1·5μV for 26dB signal-noise ratio.

Stereo crosstalk

Better than −36dB at 1kHz.

Pilot tone rejection

−36dB at 19kHz and 38kHz (referred to 0dB at 67kHz deviation audio).

Indicator lamps

Scale: 6·5 volts 300mA.
Stereo: 14 volts 40mA.

General

Overall distortion

Less than 0·5 per cent with 1mV input at 95MHz, deviation 67·5kHz at 1kHz, 30 watts audio output.

Mains input: 120/220/245V, 50Hz.

Power consumption: 150 watts maximum.

Fuses

1 amp (slow blow) – mains transformer primary.
4 amp (slow blow) – rectifier and stabilizer.
1·6 amp – each power amplifier for protection against short-circuit loads.
1 amp – scale lamp protection

Dimensions (overall)

Width 56cm (22 in.); Height 9·4cm (3¾ in.); Depth 30cm (12 in.).

Weight: 9kg (19½ lb).