



SERVICE MANUAL **DLB-1**



**marantz**

model DLB-1

*Dolby Plug-in Fm Decoder*

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## 1. INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for Marantz Model DLB-1 Dolby Plug in FM Decoder.

Service information and voltage data included in this manual are intended for use by the knowledgeable and experienced technician only. All instruction should be read carefully. No attempt should be made to proceed without a good understanding of the operation in the circuits.

The parts lists furnish information by which replacement parts may be ordered from the Marantz Company. A simple description is included for parts which can usually be obtained through local suppliers.

## 2. DESCRIPTION OF OPERATION

The Model DLB-1 uses 2 (1 for each channel) special Dolby IC's (Signetics NE545B).

A simple description of its operation is given below. (The figures in parenthesis are for the other channel.)

- 1) The input signal (580mV) from terminal 1 (19) is dropped to a level of approximately 30mV by means of semifixed resistor R603 (R604) and fed to the No. 5 pin of the IC.
- 2) The signal which was brought up to a level of 580mV in the 26dB gain amplifier is fed to one of the inputs of the mixing circuit through the No. 3 pin of the IC.
- 3) The output of the mixing circuit appears at the No. 7 pin of the IC and, passing through C623 (C624), appears at terminal 5 (15).
- 4) On one hand, a portion of the output from the No. 7 pin of the IC is passed through a high pass filter and an electronic attenuator and is impressed on the other input terminal of the mixing circuit. As this signal is of a negative phase (that is, the phases of the No. 3 and No. 7 pins of the IC are opposite), subtraction is carried out in the mixing circuit and the output of the No. 7 pin of the IC becomes a Dolby Decode Mode signal and operates as a decoder.

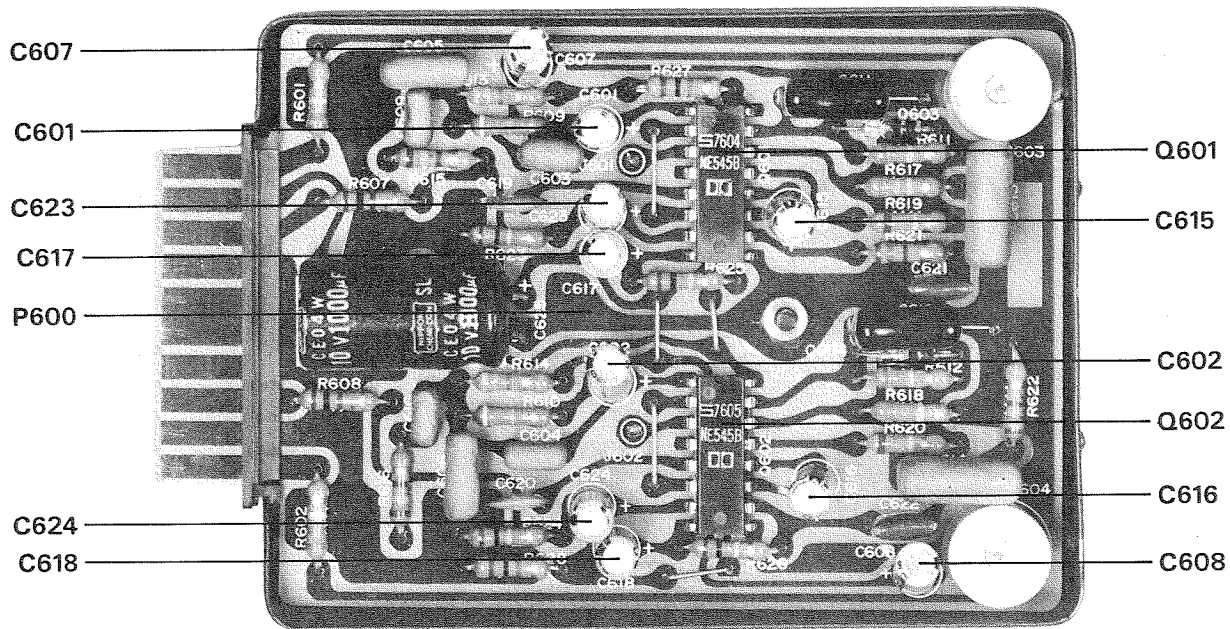
## 3. METHOD OF ADJUSTMENT

Apply a 580mV 400Hz signal to terminal 1 and adjust R603 (R604) until the level at the No. 3 pin of the IC is 580mV.

Also, a simplified method is to adjust R603 (R604) until the level at terminal 5 (15) is 580mV in place of the level at pin No. 3 of the IC.

ITEM	Manufacturer & Model No. (or equivalent)	USE
Distortion Analyzer	Hewlet Packard, Model 331A or 333A	Measures distortion and output signal level
Audio Oscillator	Krohn-Hite 4000A*	Sinewave signal source
VTVM	RCA Senior Volt-Ohmyst Model WV-98C	Voltage and resistance measurements
Oscilloscope	Taktronix, Model 503, Data, Model 555	Waveform analysis and trouble shooting
Regulated DC Power Supply (14V 0.5A)		Power source
DC Voltmeter (0-50V)	Commercial Grade	Line voltage measurement
DC Ammeter (0-100mA)	Commercial Grade	Current drain measurement
Output Load Resistor (47K ohm ±0.5% 1/2W)	Commercial Grade	Output termination

**Table 1. Test Equipment Required for Servicing**



**Figure 1. Component Locations (Top View)**

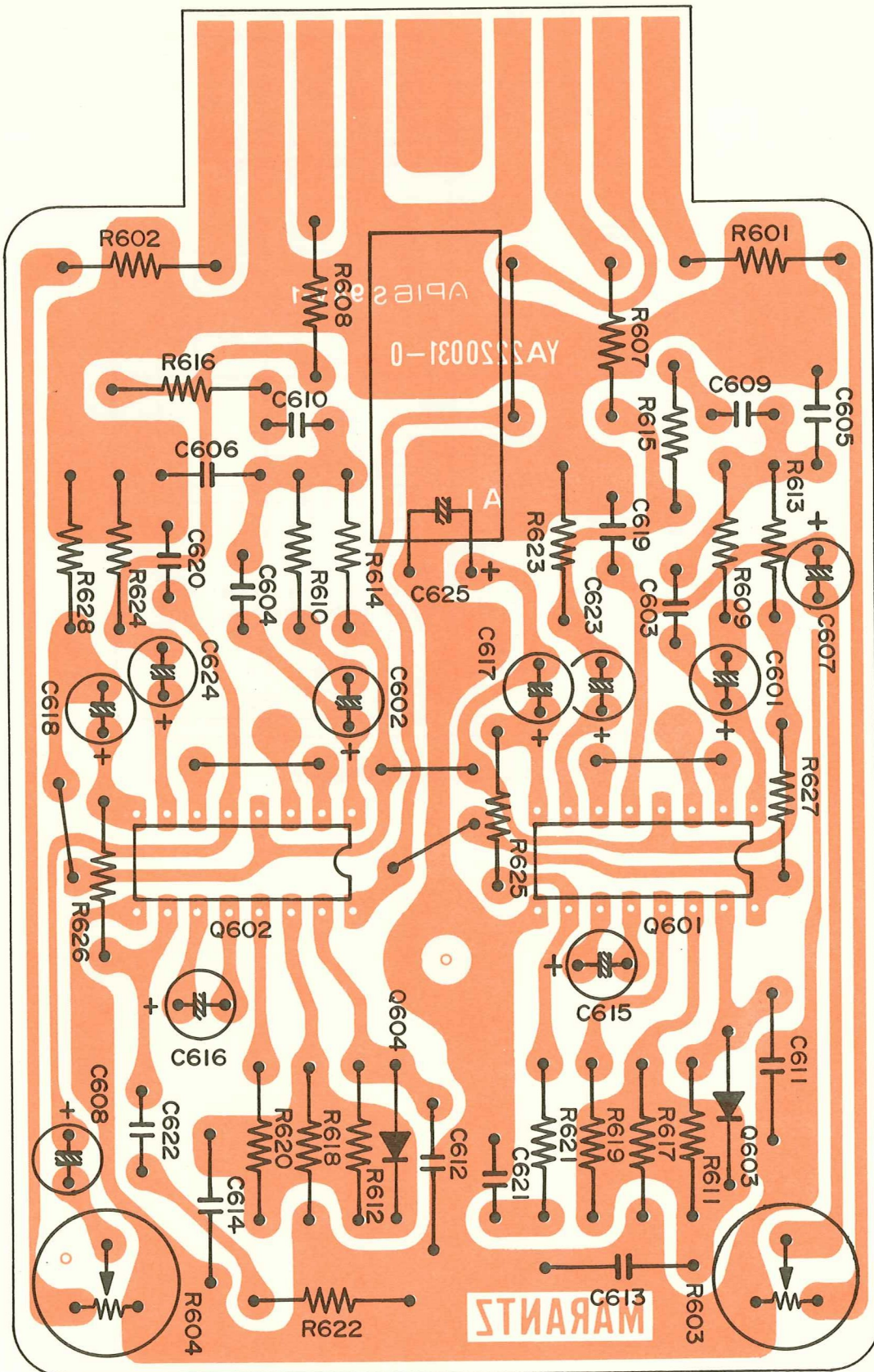


Figure 2. Printed Circuit Board Component Locations

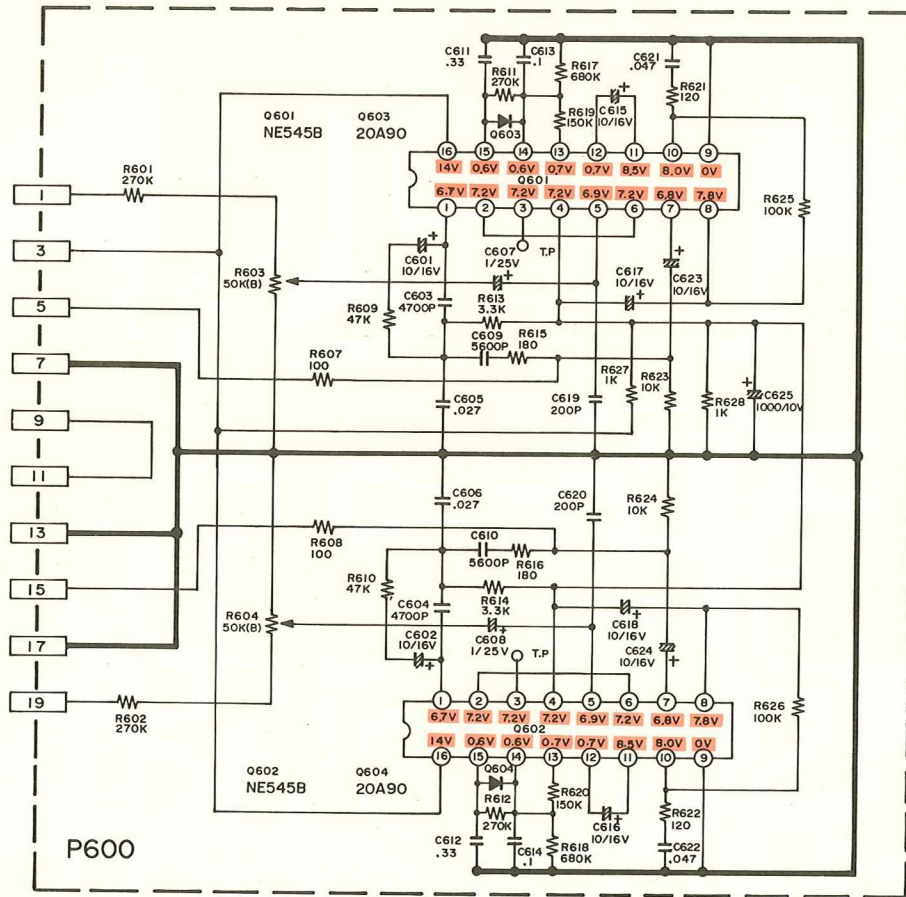


Figure 3. Schematic Diagram

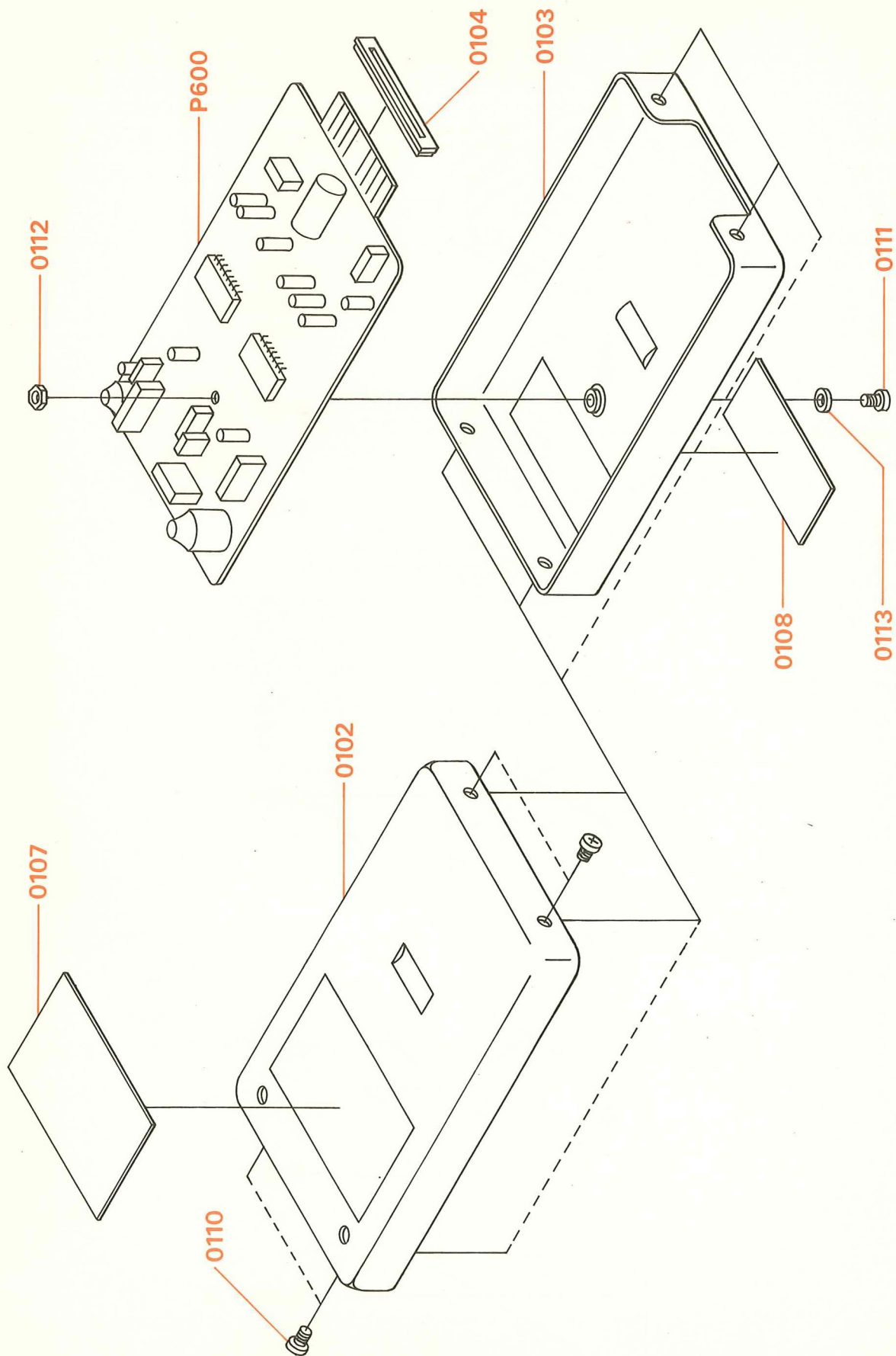


Figure 4. Exploded Mechanical Diagram

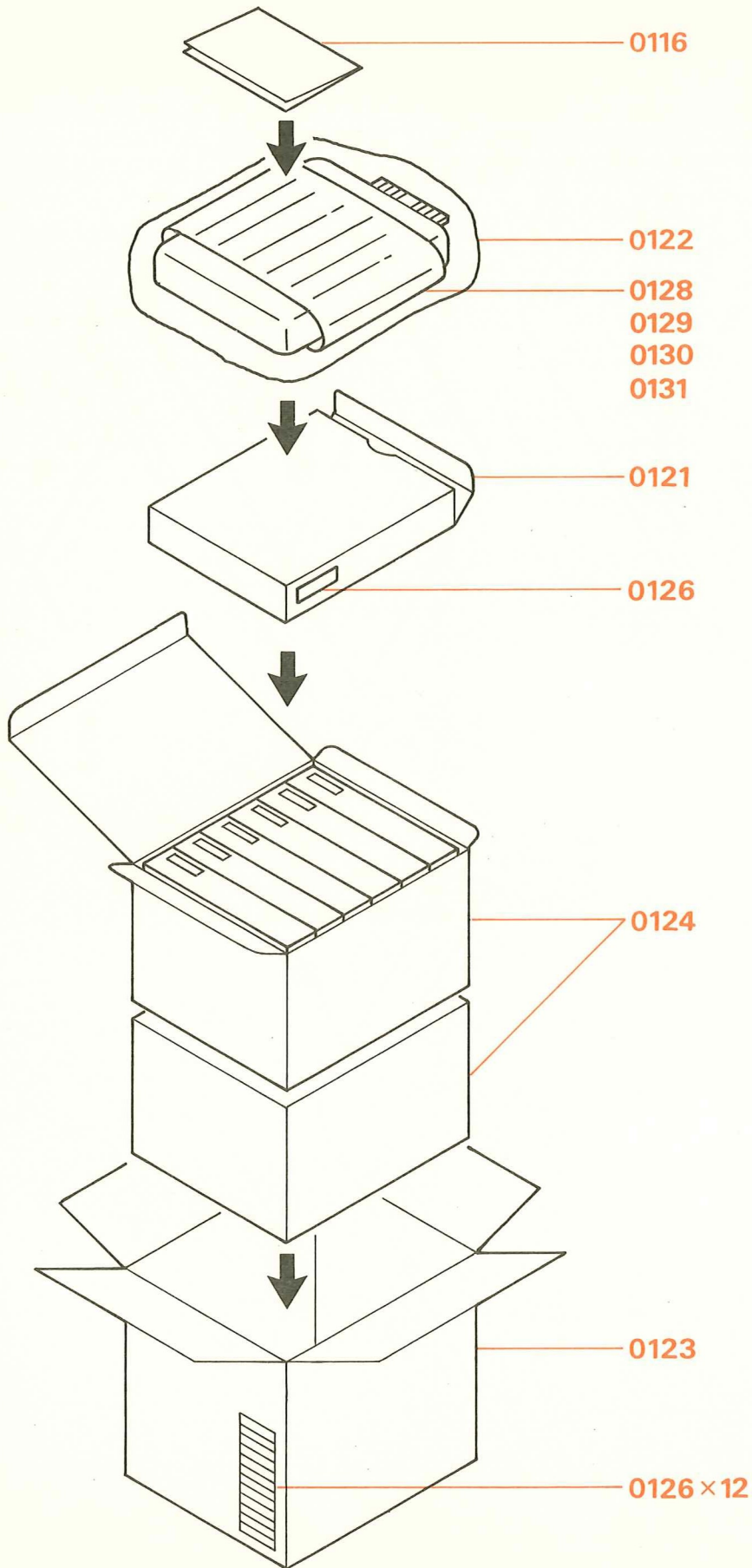


Figure 5. Packing Material Exploded View



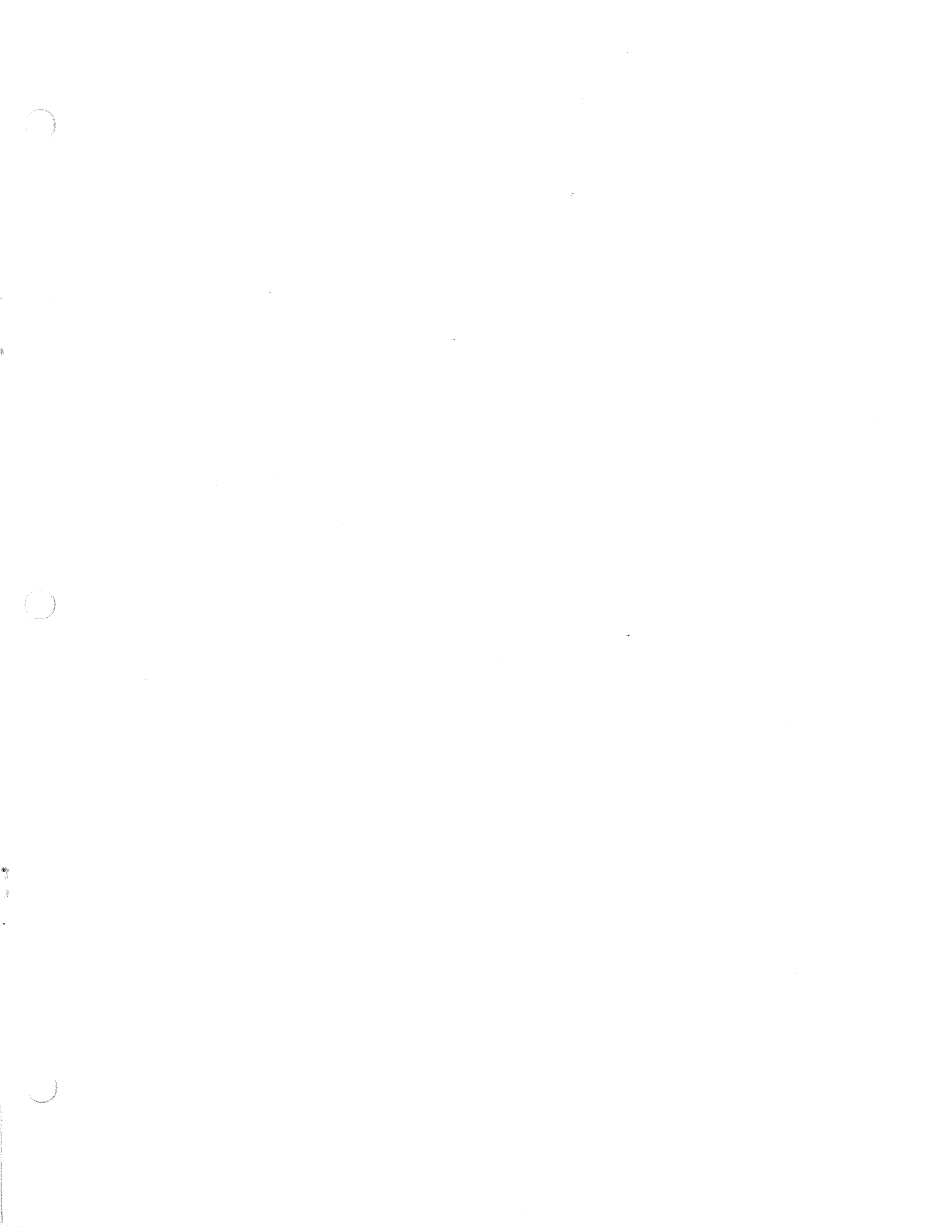
**PARTS LIST**

REF. DESIG.	PART NO.	DESCRIPTION
A	2220064400	Case Assembly (Upper)
0102	2220064012	Case
0107	2220203012	Name Plate
P600	YA22200310	P.W. Board
	ZZ22200310	P.W. Board Assembly
P611	75060751P0	Jumper
P612	75061001P0	Jumper
P613	75061251P0	Jumper
<b>RESISTORS</b>		
All resistors are $\pm 5\%$ and $\frac{1}{4}W$ , unless otherwise indicated.		
R601	RT05274140	270K $\Omega$
R602	RT05274140	270K $\Omega$
R603	RA05030120	Trimming 50K $\Omega$ (B)
R604	RA05030120	Trimming 50K $\Omega$ (B)
R607	RT05101140	100 $\Omega$
R608	RT05101140	100 $\Omega$
R609	RT05473140	47K $\Omega$
R610	RT05473140	47K $\Omega$
R611	RT05274140	270K $\Omega$
R612	RT05274140	270K $\Omega$
R613	RT05332140	3.3K $\Omega$
R614	RT05332140	3.3K $\Omega$
R615	RT05181140	180 $\Omega$
R616	RT05181140	180 $\Omega$
R617	RT05684140	680K $\Omega$
R618	RT05684140	680K $\Omega$
R619	RT05154140	150K $\Omega$
R620	RT05154140	150K $\Omega$
R621	RT05121140	120 $\Omega$
R622	RT05121140	120 $\Omega$
R623	RT05103140	10K $\Omega$
R624	RT05103140	10K $\Omega$
R625	RT05104140	100K $\Omega$
R626	RT05104140	100K $\Omega$
R627	RT05102140	1K $\Omega$
R628	RT05102140	1K $\Omega$
<b>CAPACITORS</b>		
C601	EA10601690	Electroly 10 $\mu$ F 16V
C602	EA10601690	Electroly 10 $\mu$ F 16V
C603	DF15472050	Film 4700pF $\pm 5\%$
C604	DF15472050	Film 4700pF $\pm 5\%$
C605	DF15273050	Film 0.027 $\mu$ F $\pm 5\%$
C606	DF15273050	Film 0.027 $\mu$ F $\pm 5\%$
C607	EV10502560	Electroly 1 $\mu$ F 25V
C608	EV10502560	Electroly 1 $\mu$ F 25V
C609	DF15562050	Film 5600pF $\pm 5\%$
C610	DF15562050	Film 5600pF $\pm 5\%$
C611	DF16334500	Film 0.33 $\mu$ F $\pm 10\%$
C612	DF16334500	Film 0.33 $\mu$ F $\pm 10\%$
C613	DF15104050	Film 0.1 $\mu$ F $\pm 5\%$
C614	DF15104050	Film 0.1 $\mu$ F $\pm 5\%$
C615	EA10601690	Electroly 10 $\mu$ F 16V
C616	EA10601690	Electroly 10 $\mu$ F 16V
C617	EA10601690	Electroly 10 $\mu$ F 16V
C618	EA10601690	Electroly 10 $\mu$ F 16V
C619	DD16201010	Ceramic 200pF $\pm 5\%$
C620	DD16201010	Ceramic 200pF $\pm 5\%$
C621	DF15473010	Film 0.047 $\mu$ F $\pm 5\%$
C622	DF15473010	Film 0.047 $\mu$ F $\pm 5\%$
C623	EA10601690	Electroly 10 $\mu$ F 16V
C624	EA10601690	Electroly 10 $\mu$ F 16V
C625	EA10801090	Electroly 1000 $\mu$ F 10V

REF. DESIG.	PART NO.	DESCRIPTION
<b>SEMICONDUCTORS</b>		
Q601	HC10002270	IC NE545B
Q602	HC10002270	IC NE545B
Q603	HD10003020	Diode 20A90
Q604	HD10003020	Diode 20A90
<b>GENERAL MISCELLANEOUS</b>		
0103	2220064022	Case
0104	2220259010	Bush
0108	2220265012	Indicator
0110	51102604S0	B.H.M. Screw
0111	51100306S9	B.H.M. Screw
0112	53110303E9	Hexagon Nut
0113	54050300R0	T.L. Washer OR
0116	2220851210	Instructions
0121	2220801010	Packing Case
0122	9011018010	Polyethy Bag
0123	2220805010	Master Carton
0124	2220805020	Master Carton
0126	9522815010	Serial No Card
0128	2818854023	Guarantee Card
0129	2577813010	Envelope
0130	2577851020	Instruction, Important
0131	2577854012	Guarantee Card

**5. TECHNICAL SPECIFICATIONS**

MEASUREMENTS	INPUT	OUTPUT
Signal to Noise Ratio (CCIR)		80dB
Decoding Response 0dB = 580mV	-22.3dB 100Hz -22.3dB 5KHz -30dB 100Hz -30dB 5KHz	-22.3dB -30dB -30dB -40dB
Residual Noise Input Shorted (Used 20Hz – 20KHz BPF)		0.29mV
Total Harmonic Distortion at 580mV Input (Used 20Hz – 20KHz BPF)	1KHz 15KHz	0.05% 0.05%
Crosstalk at 580mV Input Unused Input Terminated 10Kohms	1KHz 15KHz	60dB 60dB
Output Level at 580mV Input		580mV





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