



**Service Manual for  
KP038 Record Player**

**&**

**KA039 General Purpose Stereo Amplifier**

FOOTSCRAY, SIDCUP, KENT

01-300 7733

32 Milton Road, East Kilbride, Glasgow

East Kilbride 25101



	KP038	KA039
Dimensions :	Height 185 mm ( 7 $\frac{3}{8}$ " ) Width 400 mm (15 $\frac{7}{8}$ " ) Depth 510 mm (20 $\frac{1}{4}$ " )	175 mm (6 $\frac{7}{8}$ " ) 385 mm (15 $\frac{1}{4}$ " ) 170 mm (6 $\frac{3}{4}$ " )
Weight :	10 kg (22 lbs.)	3.6 kg (8 lbs.)
Power Consumption :	30 watts 45 V.A.	15 watts 18 V.A.
Power Supply :	240 volts 50 Hz.	
Power Output :	7 watts for 10% distortion.	
Frequency Response :	—3dB at 60 Hz and 15 kHz at any power level up to 6.5 watts.	
Semiconductor Complement :		
Transistors:	BC109—Pre-amplifier BC113—Amplifier AC176—Driver AD161 } — Complementary symmetry AD162 } — push-pull output	
Bridge Rectifier :	FG66E/1B	
Controls :	On/Off, Volume, Bass, Treble.	

## **CIRCUIT DESCRIPTION**

The outputs from the stereo cartridge, on the record player, are connected in parallel by the player's stereo adaptor socket and directly coupled to the input of the transistor amplifier module GMA21. The stereo adaptor incorporates the same transistor amplifier as the record player. When the adaptor is plugged into the record player, the outputs from the stereo cartridge are automatically separated.

The amplifier module GMA21 uses a low noise pre-amplifier transistor, TXa1, that is provided with capacitive feedback by Ra2 and Ca1 to capacitively load the cartridge. The output voltage, which is developed across Ra3 is fed via the volume and tone control network to the pre-driver TXa2 and then on to the driver TXa3. This transistor has d.c. feedback applied to it via Ra15. The output transistors TXa4 and TXa5 function in the common emitter mode due to the a.c. referencing action of Ca8. The signal voltage is developed across Ra12 and applied between the base and emitter of each output transistor.

The biasing of both the driver and output stages can be adjusted by Ra14, and the output stage quiescent current can be adjusted by Ra13.

## **CHASSIS REMOVAL INSTRUCTIONS**

Remove the two Philips screws from the loudspeaker compartment rear panel, near the top edge. Remove the two Philips screws that are just under the fascia panel. Lift up the top of the fascia panel and grip this edge with the fingers. Grip the carrying handle and lift the bottom of the fascia panel from the front of the cabinet. Lay the fascia panel face down in front of the cabinet, being careful not to overstrain the connecting leads.

To refit the panel reverse the procedure.

The logo for KB Museum.org.uk is positioned at the top of the page. It features a green stylized arrow pointing upwards and to the right, with the letters 'KB' in a large, green, sans-serif font to its left. The text 'Museum.org.uk' is written in a smaller, green, sans-serif font to the right of the 'KB'.

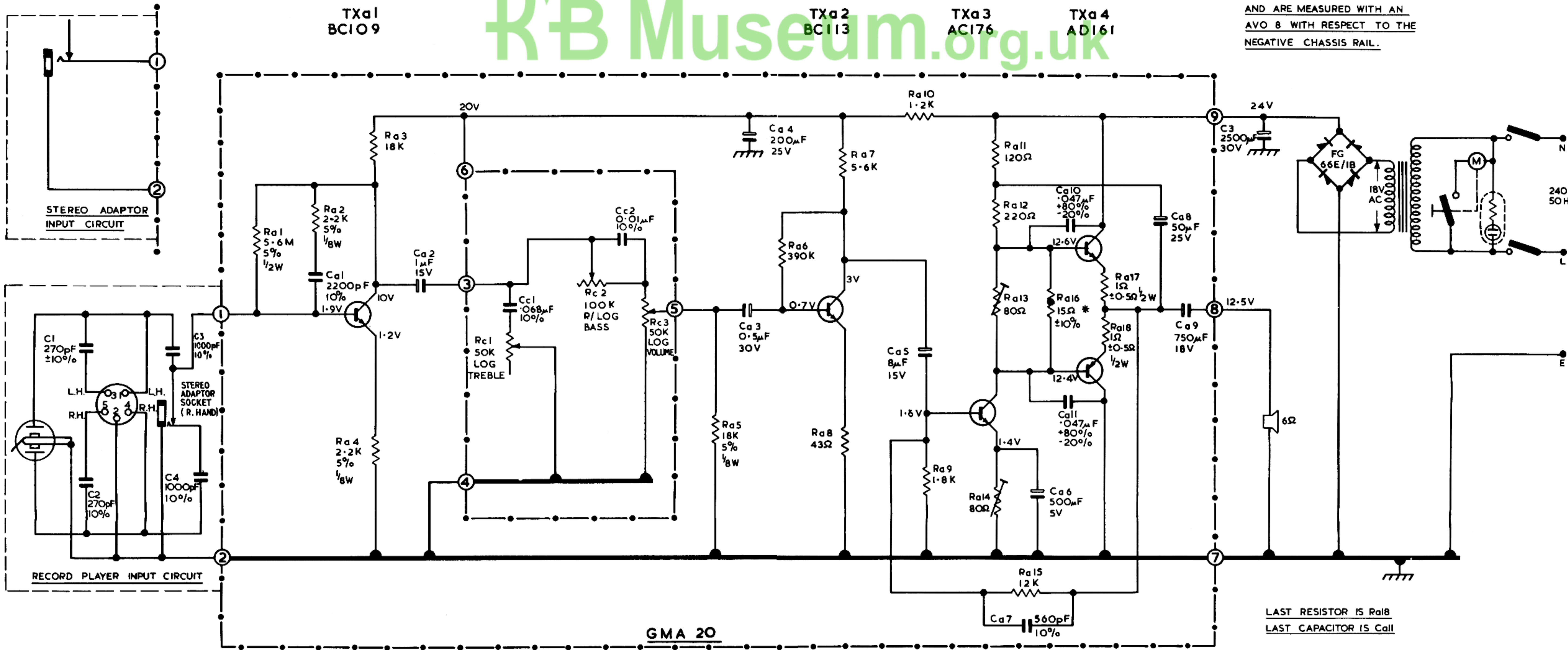
## **BIAS ADJUSTMENT**

Disconnect the cartridge from the input, and with the volume control set at maximum, use the following procedure.

Set the preset resistors Ra13 and Ra14 to the centre of their travel. Apply a 1kHz sine wave signal via a 1000pF capacitor to the base of the first transistor. Replace the loudspeaker by a 6 ohm resistor, and connect an oscilloscope across it. Adjust the amplitude of the input signal to obtain clipping of the output waveform. Adjust the preset resistor Ra14 in the emitter circuit of the driver stage for symmetrical clipping of the output waveform. If clipping does not occur after adjustment, increase the input signal and readjust Ra14 for symmetrical clipping.

Disconnect the input signal, and set the volume control to minimum. Insert a meter capable of registering 10mA in the collector lead of TXa4, by replacing the link shown in the view of the printed circuit by the meter. The preset resistor Ra13 should now be adjusted for a reading of 10mA on the meter. Replace the link and reconnect the cartridge.

ALL VOLTAGES ARE POSITIVE  
AND ARE MEASURED WITH AN  
AVO 8 WITH RESPECT TO THE  
NEGATIVE CHASSIS RAIL.



ADDENDUM TO THE CIRCUIT DIAGRAM

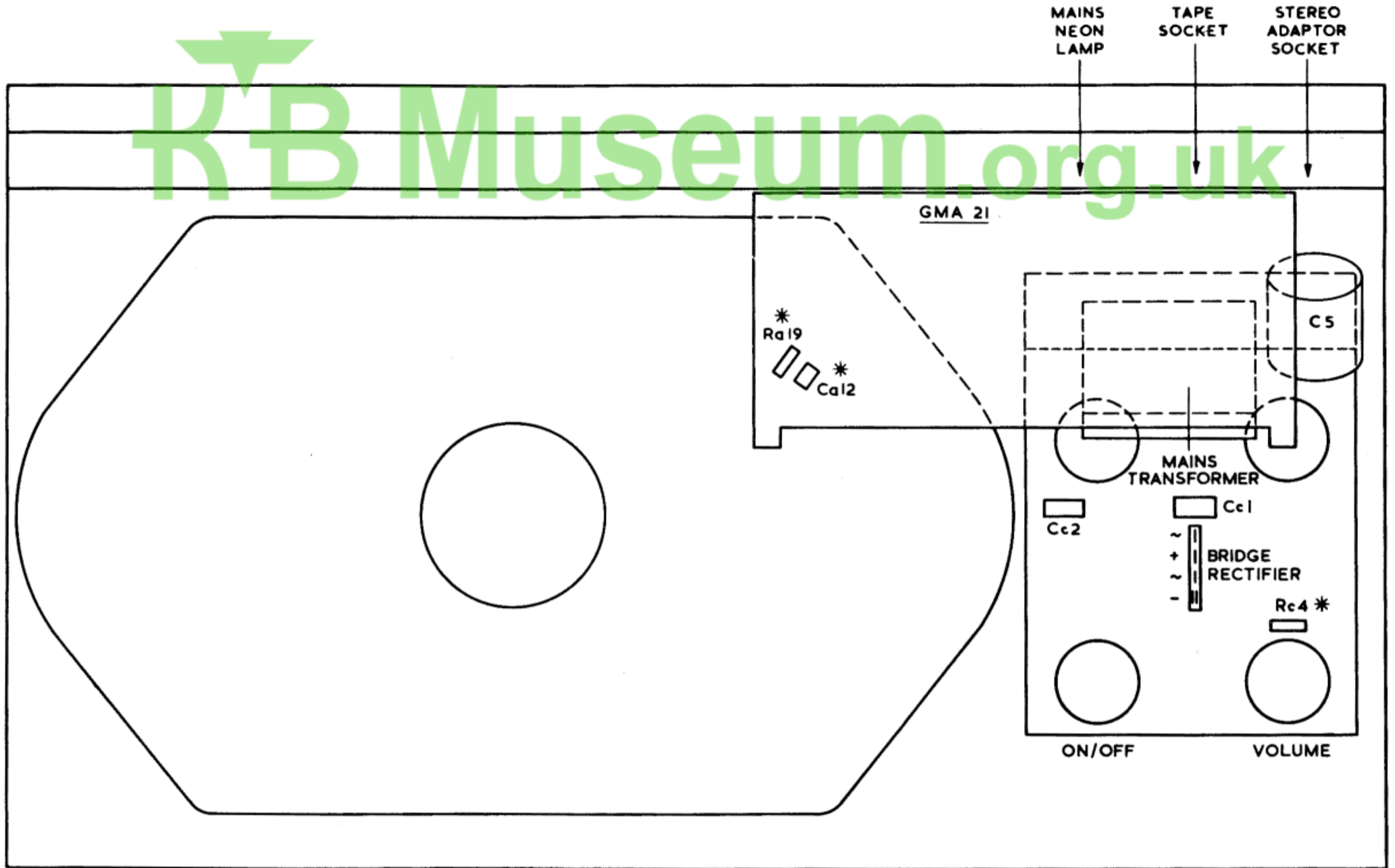
ALL RESISTORS 1/4 WATT 10%  
UNLESS OTHERWISE STATED

The amplifier module is now GMA21. This is similar to the GMA20 shown on the circuit diagram, except that a 22K 1/2 watt resistor (Rc4) is wired in parallel with the volume control (Rc3), and a series network consisting of a resistor 6.8K 1/2 watt (Ra19) and a capacitor .033mfd (Ca12) is connected in parallel with Ca7 on the amplifier printed circuit board.

TX a 5  
AD162

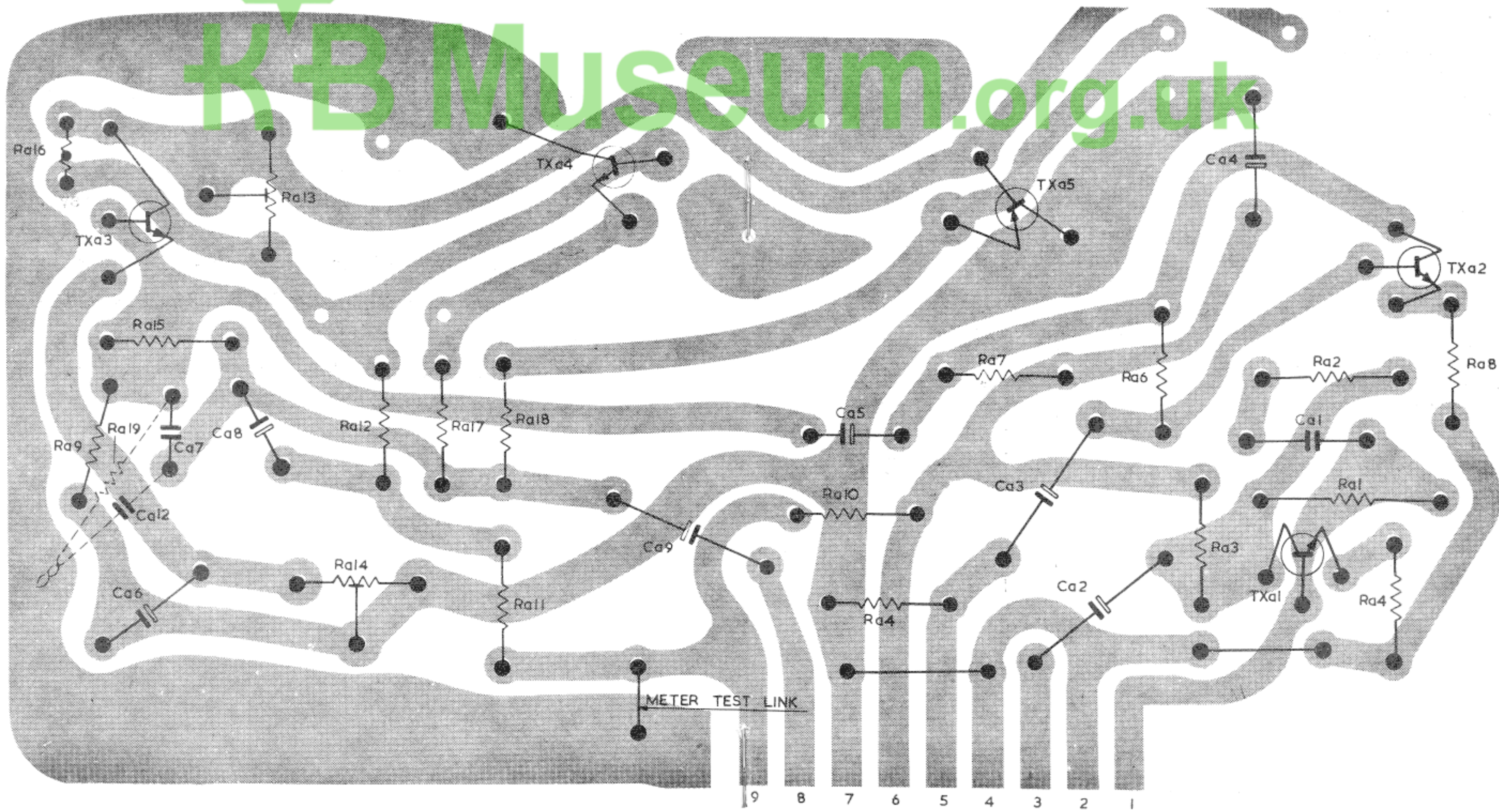
\*THE RESISTANCE OF THE THERMISTOR Ra16  
IS 15Ω AT 25°C  
MULLARD TYPE BB32001A/15E  
S.T.C. TYPE KR150BY

KP 038 & KA 039 CIRCUIT DIAGRAM



\* COMPONENTS Ra19, Ca12 & Rc4 ARE NOT SHOWN ON THE CIRCUIT DIAGRAM

Component Layout



GMA21 Printed Circuit Board Schematic

see addendum on schematic

SPARE PARTS LIST

DESCRIPTION	KP038 Part/Loc. Number	KA039 Part/Loc. Number
Cabinet	1546/220/21170	1549/220/21172
Handle	28/277/2/14211	—
Fascia Control Panel	28/324/13159	28/324/1/15013
Lid Catch	28/276/21384	—
Hinge	28/341/21176	—
Bottom Control Panel Trim	28/326/13188	28/326/1/13192
D.I.N. Socket 5 Way	13/437/25090	—
Record Changer MA 65 (BSR)	37/55/1/19024	—
Plug and Lead Assembly	—	5/189/25108
P.U. Cartridge, Type C1 (Diamond Stylus)	C1/D/19011	

Common Items	Circuit Reference	Part/Loc. Number
Ventilation Grille		28/331/13189
Foot, 7 off		28/241/0/21369
Top Control Panel Trim		28/325/13187
Miniature Jack Socket		13/435/2/25089
Loudspeaker 6 Ω: 10" x 6"		11/187/03003
Knob Assembly, 4 off		1546/120/01128
Mains Neon Assembly		13/369/12247
Duo-Tyne Housing 9 Way		13/426/1/25123
Potentiometer 50k. Log	Rcl. Rc3	9/367/5/02187
Potentiometer 100k. Rev. Log.	Rc2	9/367/6/02188
On/Off Switch		13/527/3/10101
Mains Transformer		39/S1/71/04012
Bridge Rectifier FG 66E/IB		14/43/12154
Capacitor 2,500μF 30v	C3	KEM241/S/C/08023

GMA21 MODULE			1646/1/16170	
Electrolytic capacitors				
0.5	μF	30V	Ca3	KEM251/08644
1	μF	15V	Ca2	KEM244/S/08626
8	μF	15V	Ca5	KEM234/S/08236
50	μF	25V	Ca8	KEM235/S/08239
200	μF	25V	Ca4	KEM242/S/08235
500	μF	5V	Ca6	KEM155/S/08648
750	μF	18V	Ca9	KEM250/S/08627
Heat sink clip				4/85/20701
Heat sink				33/532/2/20455
Preset 80 Ω ± 20%		Ra13, Ra14		9/303/02023
Thermistor KR150BY				12/77/07495
Power transistor insulating gasket				35/453/20579



## ADDENDUM TO THE CIRCUIT DIAGRAM

The amplifier module is now GMA21. This is similar to the GMA20 shown on the circuit diagram, except that a 22K  $\frac{1}{2}$  watt resistor (Rc4) is wired in parallel with the volume control (Rc3), and a series network consisting of a resistor 6.8K  $\frac{1}{2}$  watt (Ra19) and a capacitor .033mfd (Ca12) is connected in parallel with Ca7 on the amplifier printed circuit board.