

KENWOOD

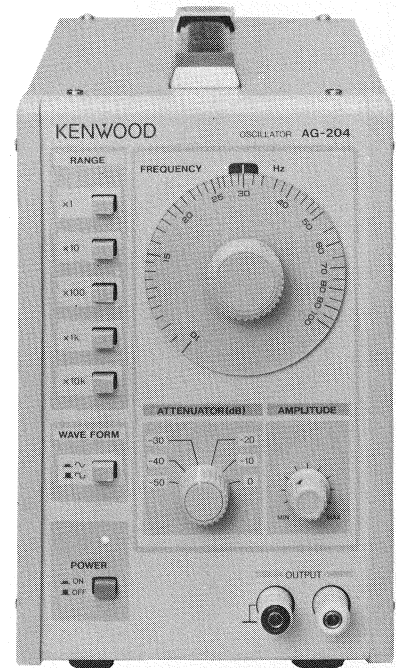
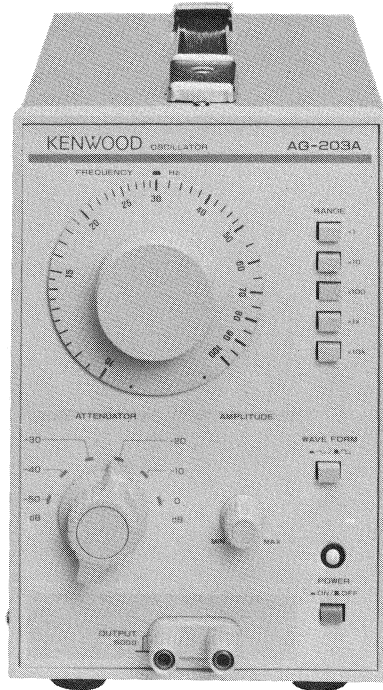
OSCILLATOR

AG-203A

AG-204

SERVICE MANUAL

KENWOOD CORPORATION



WARNING

The following instructions are for use by qualified personnel only. To avoid electric shock, do not perform any servicing other than contained in the operating instructions unless you are qualified to do so.

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ADJUSTMENT

To obtain the best performance, periodically calibrate the unit. Sometimes, only one mode need be calibrated, while at other times, all modes should be calibrated. When one mode is calibrated, it must be noted that the other modes may be affected. When calibrating all modes, perform the calibration in the specified sequence.

The following calibration required an accurate measuring instrument and an insulated adjusting flat blade screwdriver. If they are not available, contact your dealer. For optimum adjustment, turn the power on and warm up the unit sufficiently (more than 30 minutes) before starting.

Before calibrating the unit, check the power supply voltage.

TEST EQUIPMENT REQUIRED

The following instrument or their equivalent should be used for making adjustment.

Test Equipment	Model	Maker
Multi meter	45	Fluke
Sine-Wave generator	SG-502	Tektronix
Oscilloscope	CS-4025	KENWOOD
Frequency counter	FC-758	KENWOOD
600 Ω termination		

PREPARATION FOR ADJUSTMENT

Control Settings

The control settings listed below must be used for each adjustment procedure.

Exceptions to these settings will be noted as they occur.

After completing a adjustment, return the controls to the following settings.

NAME OF KNOBS	POSITION
FREQUENCY	10
ATTENUATOR (dB)	0
AMPLITUDE	MAX
RANGE	$\times 100$
WAVE FORM	~

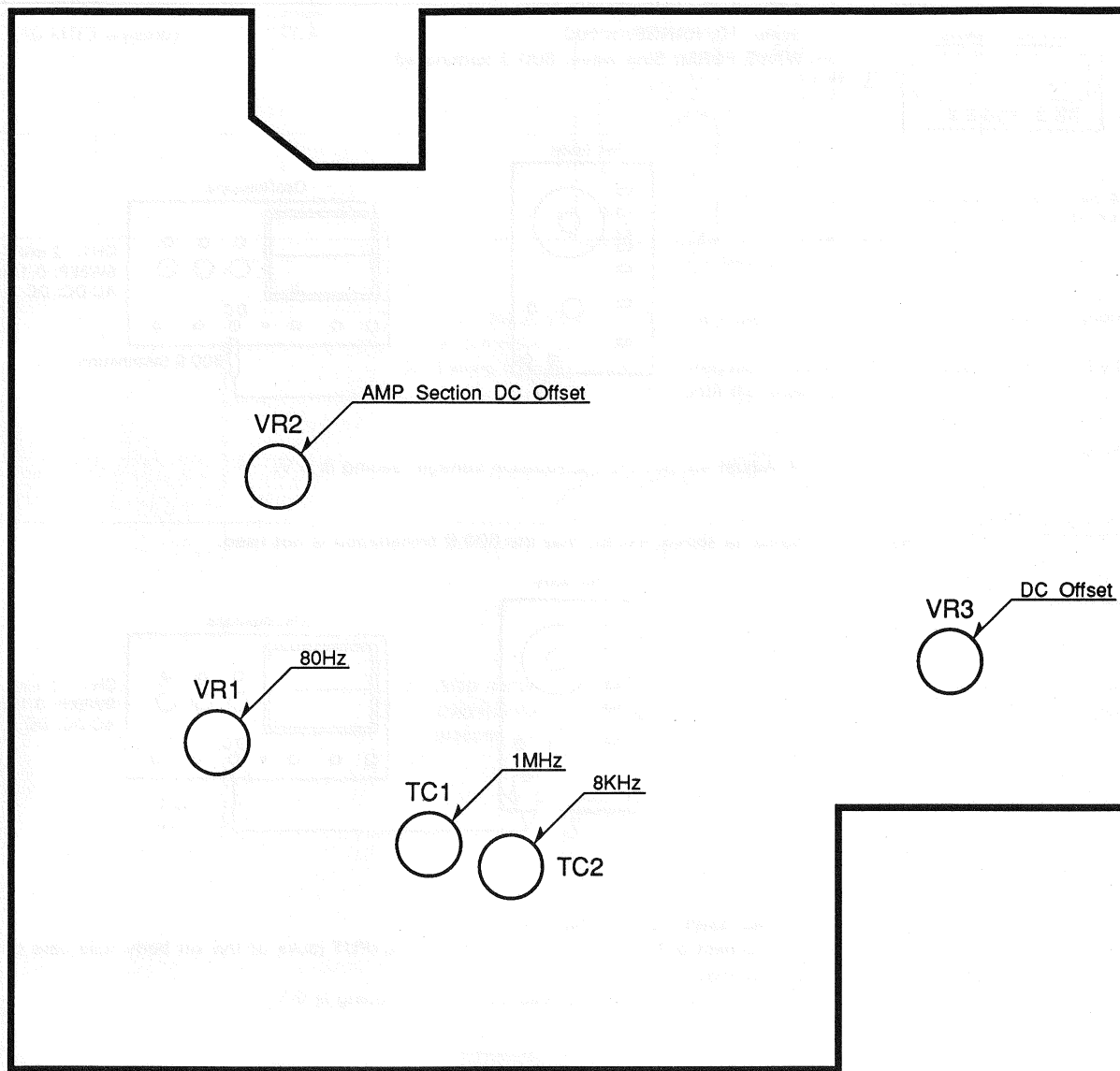
AG-203A ADJUSTMENT

Item	Adjustment VR (TC)	P.C.B.	Procedure
DC Offset	VR3	X65-1430-00	<p>WAVE FORM: RANGE : $\times 10$ kHz AMPLITUDE: MIN ATTENUATOR: 0 dB Dial Scale: COUNTER-CLOCKWISE Oscilloscope: 5 mV/DIV</p> <ul style="list-style-type: none"> ● Put a 600 Ω termination to the OUTPUT jack and connect with the oscilloscope. Adjust VR3 so that the offset becomes 0.
DC Offset	VR2		<p>WAVE FORM: ~ RANGE: $\times 100$ Hz AMPLITUDE: MAX ATTENUATOR: 0 dB Dial Scale: 10, Oscilloscope: 20 mV/DIV</p> <ul style="list-style-type: none"> ● Attach a chemical capacitor to the OUTPUT jack. Then adjust VR2 so that the DC offset voltage in the amplifier section is 0. <div style="text-align: center; margin-top: 10px;"> <p>The diagram shows two output terminals, each with a '+' sign. The left terminal is connected to ground. A 35V capacitor is connected between the left terminal and a central node. A 220μF capacitor is connected between the central node and the right terminal. Another 220μF capacitor is connected between the central node and the right terminal. A second 35V capacitor is connected between the central node and the right terminal.</p> </div>
2 KHz	—		<p>WAVE FORM: ~ RANGE: $\times 100$ Hz AMPLITUDE: MAX ATTENUATOR: 0 dB Dial Scale: 20</p> <ul style="list-style-type: none"> ● Put a 600 Ω termination to the OUTPUT jack and connect the frequency counter. Secure the dial scale plate aligning 20 to the position where the frequency is between 1.99 kHz and 2.01 kHz.

AG-203A ADJUSTMENT

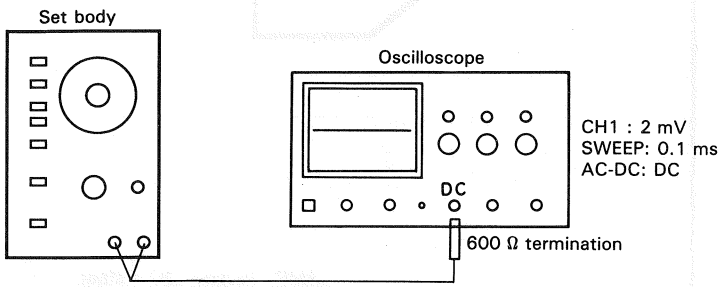
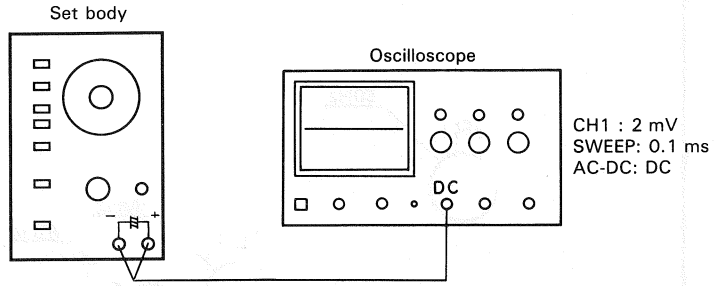
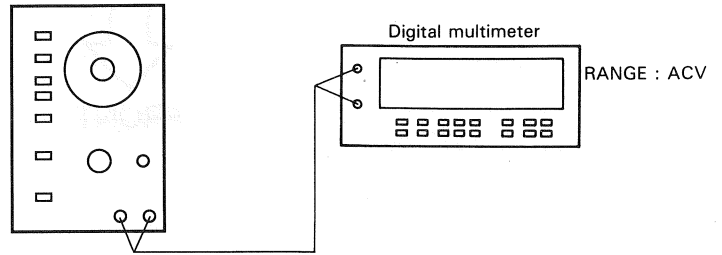
Item	Adjustment VR (TC)	P.C.B.	Procedure
8 kHz	TC2		<p>Put the cover on the jig case and fix it tightening the screws. WAVE FORM: ~ RANGE : $\times 100$ Hz AMPLITUDE: MAX ATTENUATOR: 0 dB Dial Scale: 80</p> <ul style="list-style-type: none"> ● Put a 600Ω termination to the OUTPUT jack and connect the frequency counter. Adjust TC2 so that the reading is between 7.96 kHz and 8.04 kHz.
80 Hz	VR1	X65-1430-00	<p>Same as the 8 kHz adjustment, except that RANGE is $\times 1$Hz.</p> <ul style="list-style-type: none"> ● Adjust VR1 so that the reading is between 79 Hz and 81 Hz.
1 MHz	TC1		<p>Same as the 8 kHz adjustment, except that RANGE is $\times 10$ kHz and Scale is 100.</p> <ul style="list-style-type: none"> ● Adjust TC1 so that the reading is between 995 kHz and 1005 kHz.

AG-203A ADJUSTMENT

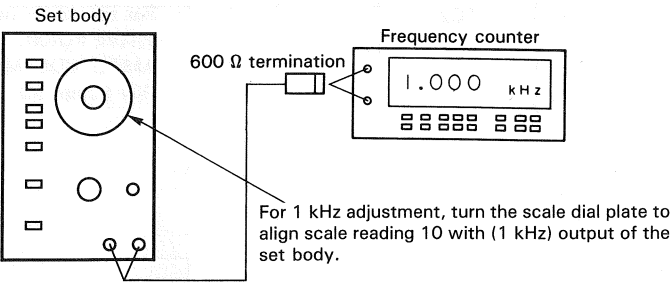
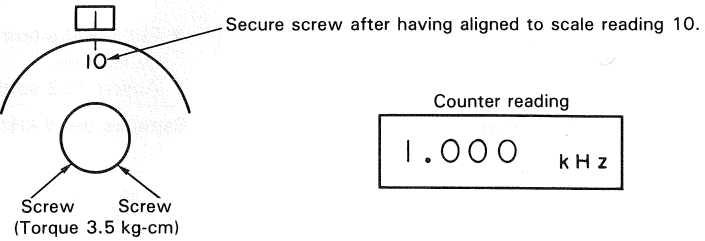
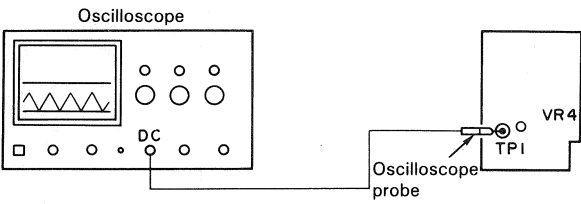
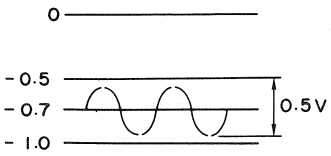
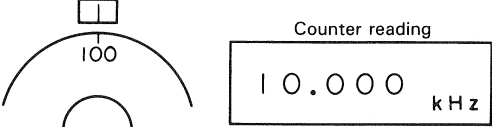
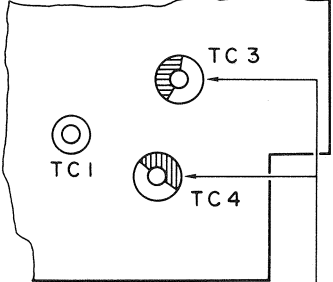


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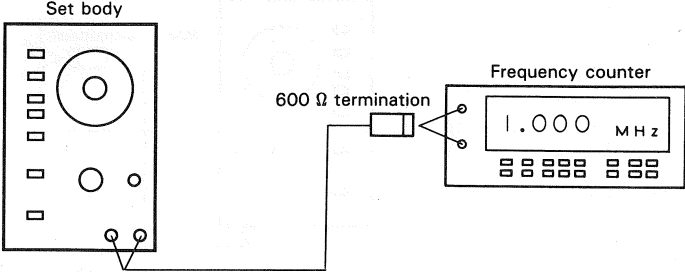
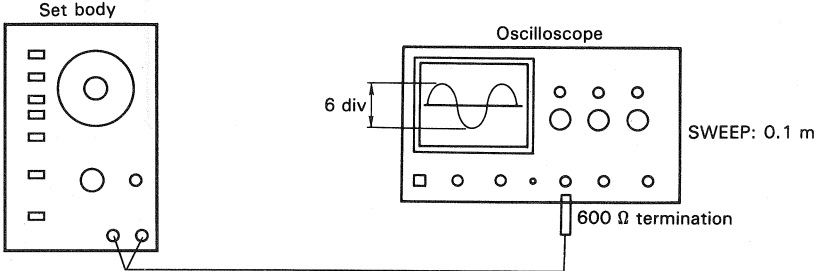
AG-204 ADJUSTMENT

Item	Adjustment VR (TC)	Procedure
Output amplitude offset	VR5	<p>ATT : 0 dB, AMPLITUDE: MIX. Scale: 10, RANGE: × 100 WAVE FORM: Sine wave, 600 Ω terminated</p>  <p>● Adjust so that the oscilloscope voltage reading is 0 V.</p>
Offset	VR1	<p>Same as above, except that the 600 Ω termination is not used.</p>  <ol style="list-style-type: none"> 1) Set AMPLITUDE to MAX. 2) Connect a 47 μF capacitor across the OUTPUT jacks of the set body (use care of the polarity). 3) Adjust so that the oscilloscope voltage reading is 0 V.
Output level	VR3	 <ol style="list-style-type: none"> 1) Remove the 47 μF (chemical capacitor) and connect a digital multimeter to the jacks. 2) Adjust so that the output voltage reads 11.00 V.

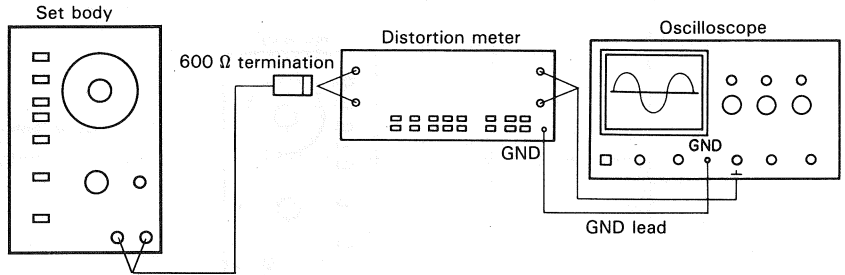
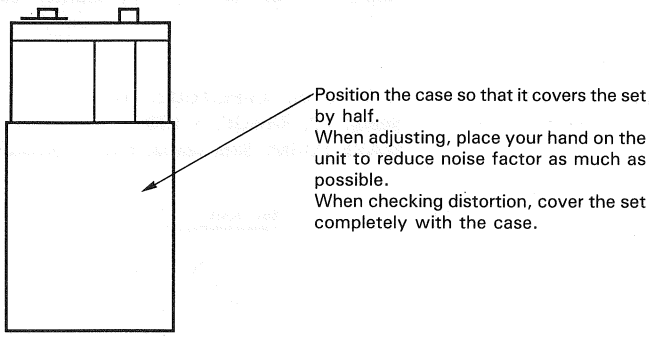
AG-204 ADJUSTMENT

Item	Adjustment VR (TC)	Procedure
<p>1 kHz frequency 10 kHz frequency</p>	<p>TC3 TC4</p>	<div data-bbox="740 289 1417 569">  </div> <ol style="list-style-type: none"> 1) Turn the scale dial so that the frequency counter reads 1.000 kHz. (Ignore the reading of the scale dial plate.) 2) Taking care not to vary the frequency reading, turn the scale dial plate (by loosening the scale dial retaining screw) until the scale reading becomes 10. <div data-bbox="707 743 1417 982">  </div> <ol style="list-style-type: none"> 3) After securing the dial scale plate retaining screw, turn the scale dial to read 100. Then, connect the oscilloscope probe to TP1 and perform adjustment while observing the oscilloscope waveform. <div data-bbox="723 1108 1308 1310">  </div> <ol style="list-style-type: none"> 4) Adjust TC3 and TC4 while balancing them so that the frequency counter reads 10.000 kHz/ * Adjust the waveform at TP1 to about -0.7 V. <div data-bbox="551 1451 918 1801"> <p>* TP1 waveform With scale 100</p>  <p>When TC3 and TC4 are well balanced, the waveform stabilizes at the position shown above even when the scale dial is varied between 10 and 100.</p> </div> <div data-bbox="948 1430 1443 1556">  </div> <div data-bbox="1037 1612 1372 1892">  </div> <ol style="list-style-type: none"> 5) Set the scale dial to 10 and check that the frequency counter reads 1,000 kHz. 6) If the correct frequency reading is not obtained, repeat steps 1) ~ 4) again. <p>Balance them so that the rotation angles are about half turns.</p>

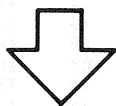
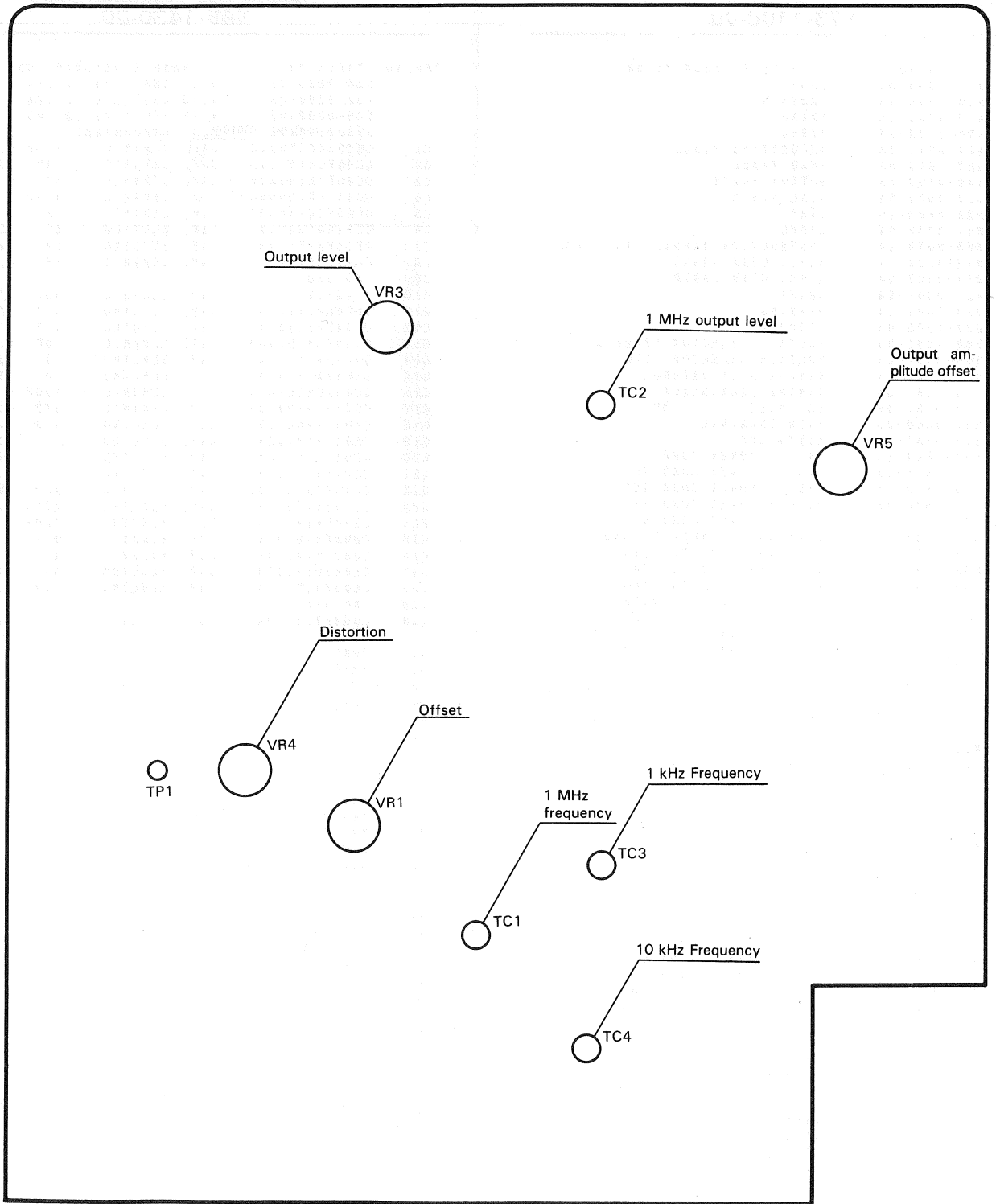
AG-204 ADJUSTMENT

Item	Adjustment VR (TC)	Procedure
1 MHz frequency	TC1	<p>ATT : 0 dB, AMPLITUDE: MAX. Scale: 100, RANGE: $\times 10k$ WAVE FORM: Sine wave, 600 Ω terminated</p>  <p>Adjust so that the frequency counter reading is 1.0000 MHz.</p>
1 MHz output level	TC2	<p>ATT : 0 dB, AMPLITUDE: MAX. Scale: 10, RANGE: $\times 100$ WAVE FORM: Sine wave, 600 Ω terminated</p>  <ol style="list-style-type: none"> 1) Apply 1 kHz sine wave to fill 6 divisions on the oscilloscope screen. (If an amplitude of 6 divisions cannot be obtained, adjust the ATT and variable controls of the oscilloscope.) 2) Then, turn the scale dial on the set body to scale 100 and set RANGE to $\times 10k$ to output 1 MHz. (Do not operate the controls on the oscilloscope.) 3) Adjust so that the amplitude on the oscilloscope screen becomes 5.8 divisions.

AG-204 ADJUSTMENT

Item	Adjustment VR (TC)	Procedure
Distortion	VR4	<p>ATT : 0 dB, AMPLITUDE: MAX. Scale: 10, RANGE: $\times 100$ WAVE FORM: Sine wave, 600 Ω terminated</p>  <p>● Adjust to the optimum point while observing the distortion meter reading and oscilloscope display waveform.</p> 

AG-204 ADJUSTMENT



FRONT

AG-203A PARTS LIST

AG-203A Y73-1100-00

REF. NO	PARTS NO	NAME & DESCRIPTION
	A01-0809-32	CASE
	A10-1409-43	CHASSIS
	A13-0702-13	FRAME
	A20-2708-13	PANEL
	A21-0811-23	DECORATIVE PANEL
	A23-1606-33	REAR PANEL
	A40-0703-33	BOTTOM PLATE
	B20-0904-54	DIAL SCALE
	B30-0902-15	LAMP
	B41-2025-04	LABEL
	B63-0070-10	INSTRUCTION MANUAL;ENG./JAP.
	D13-0502-14	BEVEL GEAR, SMALL
	D13-0503-04	BEVEL GEAR, LARGE
	D21-0901-24	SHAFT
	D23-0061-14	BEARING
	D32-0505-04	STOPPER
	E08-1081-05	VOLTAGE SELECTOR RECEPTACLE
	E09-0681-05	VOLTAGE SELECTOR PLUG
	E18-0106-05	BANANA JACK, NATURAL
	E18-0107-05	BANANA JACK, BLACK
	E18-0351-05	AC INLET 3P
	E21-0669-03	PAIR TERMINAL
	E23-0557-14	EARTH LUG
	E30-1644-15	BS POWER CORD
	E30-1818-05	JIS POWER CORD SET
	E30-1819-15	CEE POWER CORD SET
	E30-1820-05	UL/CSA POWER CORD SET
	E30-1821-05	SAA POWER CORD SET
	E31-2928-05	WIRE ASS'Y; INLET TO GND
	E38-0386-05	WIRE ASS'Y; P1 TO TRANS
	E38-0387-05	WIRE ASS'Y; P2 TO LED
	E38-0389-05	WIRE ASS'Y; P5 TO SYNC
	E38-0391-05	WIRE ASS'Y; P7 TO OUTPUT
	F05-1512-05	FUSE 0.15A
	F05-2012-05	FUSE(6X30MM) 0.2A/250V
	F06-1211-05	FUSE(5X20MM) T125MA/250V
	F10-1511-04	SHIELD PLATE
	F19-0703-04	PLATE, FOR VOLTAGE SELECTOR
	G01-0915-04	COIL SPRING
	H01-2812-24	CARTON BOX
	H10-2802-02	FOAMED STYRENE PAD
	H20-1703-04	VINYL COVER
	J02-0363-04	RUBBER FOOT, REAR
	J13-0033-15	FUSE HOLDER
	J19-1608-14	STOPPER
	J21-2877-14	BRACKET, SW
	J42-0038-04	BUSHING
	K01-0058-25	HANDLE
	K21-0908-04	KNOB, AMPLITUDE
	K21-0909-04	KNOB, ATTENUATOR
	K21-0922-03	KNOB, FREQUENCY
	K27-0504-04	BUTTON(6 USED)
	K27-0506-04	BUTTON; POWER
	L01-9026-05	POWER TRANSFORMER
	N09-0626-04	SCREW, SEMS PAN HD M3X10
	N09-0739-05	SCREW, SEMS BINDING TAPTITE 3X8
	N09-0741-04	SCREW, SEMS PAN HD M3X6
	N09-0757-05	SCREW, SEMS BINDING TAPTITE 3X6
	N10-2030-41	NUT, HEX M3
	N14-0620-05	FLANGE NUT M4
	N15-1026-41	WASHER M2.6
	N17-1030-41	LOCK WASHER M3
	N19-0703-04	WASHER M8
	N19-0704-04	WASHER M9
	N19-0709-05	WASHER M6
	N19-0715-05	NYLON WASHER M6
	N30-2606-41	SCREW, PAN HD M2.6X6
	N30-4008-41	SCREW, PAN HD M4X8
	N32-3006-41	SCREW, FLAT HD M3X6
	N33-4014-41	SCREW, OVAL HD M4X14
	N35-2608-41	SCREW, BINDING M2X4
	N88-3006-41	SCREW, FLAT HD TAPTITE 3X6
	N88-3008-41	SCREW, FLAT HD TAPTITE 3X8
	N89-3006-41	SCREW, BINDING TAPTITE 3X6
	X65-1430-00	OVERALL UNIT
	X67-1060-00	ACCESSORY CORD(CA-48)
	X81-3030-00	V.C UNIT

AG-203A OVERALL UNIT X65-1430-00

REF. NO	PARTS NO	NAME & DESCRIPTION
	E38-0388-05	WIRE ASS'Y; P4 TO JW4
	E38-0390-05	WIRE ASS'Y; P6 TO JW6
	E38-0392-05	WIRE ASS'Y; P3 TO JW3
	J73-0148-02	PCB (UNMOUNTED)
C1	CC45FCH1H0R5C	CAP. CERAMIC 0.5P 0.25P 50V
C2	CC45FCH1H120J	CAP. CERAMIC 12P 5% 50V
C3	CC45FCH1H080D	CAP. CERAMIC 8P 0.5P 50V
C4	CC45FCH1H0R5C	CAP. CERAMIC 0.5P 0.25P 50V
C5	CC45FCH1H030C	CAP. CERAMIC 3P 0.25P 50V
C6	CE04EW1E470M	CAP. ELECTRO 47 20% 25V
C7	CE04EW1V100M	CAP. ELECTRO 10 20% 35V
C8	CC45FCH1H060C	CAP. CERAMIC 6P 0.25P 50V
C9		NO USE
C10	CC45FCH1H390J	CAP. CERAMIC 39P 5% 50V
C11	CE04EW1H4R7M	CAP. ELECTRO 4.7 20% 50V
C12	CE04EW1H4R7M	CAP. ELECTRO 4.7 20% 50V
C13	CC45FCH1H100D	CAP. CERAMIC 10P 0.5P 50V
C14	CE04EW1V100M	CAP. ELECTRO 10 20% 35V
C15	CE04EW1V100M	CAP. ELECTRO 10 20% 35V
C16	CC45FCH1H101J	CAP. CERAMIC 100P 5% 50V
C17	CC45FCH1H470J	CAP. CERAMIC 47P 5% 50V
C18	CE04EW1H471M	CAP. ELECTRO 470 20% 50V
C19	CE04EW1V100M	CAP. ELECTRO 10 20% 35V
C20	CE04EW1V100M	CAP. ELECTRO 10 20% 35V
C21	CE04EW1V100M	CAP. ELECTRO 10 20% 35V
C22	CC45FCH1H560J	CAP. CERAMIC 56P 5% 50V
C23	CE04EW1V222M	CAP. ELECTRO 2200 20% 35V
C24	CE04EW1V222M	CAP. ELECTRO 2200 20% 35V
C25	CQ92FM1H104K	CAP. NYLAR 0.1 10% 50V
C26	CQ92FM1H104K	CAP. NYLAR 0.1 10% 50V
C27	CE04EW1V101M	CAP. ELECTRO 100 20% 35V
C28	CE04EW1V101M	CAP. ELECTRO 100 20% 35V
C29		NO USE
C30	CQ92FM1H223K	CAP. NYLAR 0.022 10% 50V
D1	W02G	DIODE
D2	MTZ24JC	DIODE, ZENER 23.72V
D3	MTZ24JC	DIODE, ZENER 23.72V
D4	DS442X	DIODE
D5	DS442X	DIODE
D6	DS442X	DIODE
D7	DS442X	DIODE
P1	E40-3238-05	PIN CONNECTOR 3P
P2	E40-3237-05	PIN CONNECTOR 2P
P3	E40-3237-05	PIN CONNECTOR 2P
P4	E40-3238-05	PIN CONNECTOR 3P
P5	E40-3237-05	PIN CONNECTOR 2P
P6	E40-3239-05	PIN CONNECTOR 4P
P7	E40-3299-05	PIN CONNECTOR 2P
Q1	2SK304(E)	FET, N-CHANNEL
Q2	2SK304(E)	FET, N-CHANNEL
Q3	2SC828A(Q)	TR. SI, NPN
Q4	2SC828A(Q)	TR. SI, NPN
Q5	2SC828A(Q)	TR. SI, NPN
Q6	2SC828A(Q)	TR. SI, NPN
Q7	2SA564A(Q)	TR. SI, PNP
Q8	2SA564A(Q)	TR. SI, PNP
Q9	2SC828A(Q)	TR. SI, NPN
Q10	2SC828A(Q)	TR. SI, NPN
Q11	2SC828A(Q)	TR. SI, NPN
Q12	2SC828A(Q)	TR. SI, NPN
Q13	2SC3419(Y)	TR. SI, NPN
Q14	2SA1356(Y)	TR. SI, PNP
Q15	2SD882	TR. SI, NPN
Q16	2SB772	TR. SI, PNP
R1	RN14BK2E4701D	RES. METAL FILM 4.7K 0.5% 1/4W
R2	RN14BK2E4701D	RES. METAL FILM 4.7K 0.5% 1/4W
R3	RN14BK2E4702D	RES. METAL FILM 47K 0.5% 1/4W
R4	RN14BK2E4702D	RES. METAL FILM 47K 0.5% 1/4W
R5	RN14BK2E4703D	RES. METAL FILM 470K 0.5% 1/4W
R6	RN14BK2E4703D	RES. METAL FILM 470K 0.5% 1/4W
R7	R92-1473-05	RES. METALGLACE 4.7M 1% 1/4W
R8	R92-1473-05	RES. METALGLACE 4.7M 1% 1/4W
R9	R92-1474-05	RES. FIXED 470M 1% 1W
R10	R92-1474-05	RES. FIXED 470M 1% 1W
R11	RD14BB2C152J	RES. CARBON 1.5K 5% 1/6W
R12	RD14BB2C102J	RES. CARBON 1K 5% 1/6W
R13	RD14BB2C471J	RES. CARBON 470 5% 1/6W
R14	RD14BB2C274J	RES. CARBON 270K 5% 1/6W
R15	RD14BB2C104J	RES. CARBON 100K 5% 1/6W

AG-203A PARTS LIST

AG-203A V.C UNIT

X81-3030-00

X65-1430-00

REF. NO	PARTS NO	NAME & DESCRIPTION			
R16	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R17	RD14BB2C153J	RES. CARBON	15K	5%	1/6W
R18	RD14BB2C152J	RES. CARBON	1.5K	5%	1/6W
R19	RD14BB2C393J	RES. CARBON	39K	5%	1/6W
R20	RD14BB2C330J	RES. CARBON	33	5%	1/6W
R21	RD14BB2C271J	RES. CARBON	270	5%	1/6W
R22	RD14BB2C471J	RES. CARBON	470	5%	1/6W
R23	RD14BB2C471J	RES. CARBON	470	5%	1/6W
R24	RD14BB2C100J	RES. CARBON	10	5%	1/6W
R25	RD14BB2C100J	RES. CARBON	10	5%	1/6W
R26	RD14BB2C470J	RES. CARBON	47	5%	1/6W
R27	RD14BB2C470J	RES. CARBON	47	5%	1/6W
R28	RD14BB2C470J	RES. CARBON	47	5%	1/6W
R29	RD14BB2E561J	RES. CARBON	560	5%	1/4W
R30	RD14BB2C103J	RES. CARBON	10K	5%	1/6W
R31	RD14BB2C103J	RES. CARBON	10K	5%	1/6W
R32	RD14BB2C103J	RES. CARBON	10K	5%	1/6W
R33	RD14BB2C473J	RES. CARBON	47K	5%	1/6W
R34	RD14BB2C562J	RES. CARBON	5.6K	5%	1/6W
R35	RD14BB2C682J	RES. CARBON	6.8K	5%	1/6W
R36	RD14BB2C362J	RES. CARBON	3.6K	5%	1/6W
R37	RD14BB2C122J	RES. CARBON	1.2K	5%	1/6W
R38	RD14BB2C562J	RES. CARBON	5.6K	5%	1/6W
R39	RD14BB2C302J	RES. CARBON	3K	5%	1/6W
R40	RD14BB2C103J	RES. CARBON	10K	5%	1/6W
R41	RD14BB2C103J	RES. CARBON	10K	5%	1/6W
R42	RD14BB2C103J	RES. CARBON	10K	5%	1/6W
R43	RD14BB2C100J	RES. CARBON	10	5%	1/6W
R44	RD14BB2C100J	RES. CARBON	10	5%	1/6W
R45	RD14BY2H220J	RES. CARBON	22	5%	1/2W
R46	RD14BY2H220J	RES. CARBON	22	5%	1/2W
R47	RD14BB2E122J	RES. CARBON	1.2K	5%	1/4W
R48	RD14BB2E122J	RES. CARBON	1.2K	5%	1/4W
R49	RD14BB2E222J	RES. CARBON	2.2K	5%	1/4W
R50	RN14BK2C6040F	RES. METAL FILM	604	1%	1/6W
R51	RD14BB2C101J	RES. CARBON	100	5%	1/6W
R52	RD14BB2C470J	RES. CARBON	47	5%	1/6W
R53	RD14BB2C121J	RES. CARBON	120	5%	1/6W

R102	RN14BK2C1151F	RES. METAL FILM	1.15K	1%	1/6W
R103	RN14BK2C1151F	RES. METAL FILM	1.15K	1%	1/6W
R104	RN14BK2C8450F	RES. METAL FILM	845	1%	1/6W
R105	RN14BK2C7320F	RES. METAL FILM	732	1%	1/6W
R106	RN14BK2C7320F	RES. METAL FILM	732	1%	1/6W
R107	RN14BK2C2941F	RES. METAL FILM	2.94K	1%	1/6W
R108	RN14BK2C6490F	RES. METAL FILM	649	1%	1/6W
R109	RN14BK2C6490F	RES. METAL FILM	649	1%	1/6W
R110	RN14BK2C9531F	RES. METAL FILM	9.53K	1%	1/6W
R111	RN14BK2C7320F	RES. METAL FILM	732	1%	1/6W
R112	RN14BK2C7320F	RES. METAL FILM	732	1%	1/6W
R113	RN14BK2C3650F	RES. METAL FILM	365	1%	1/6W
R114	RN14BK2C2941F	RES. METAL FILM	2.94K	1%	1/6W
R115	RN14BK2C2941F	RES. METAL FILM	2.94K	1%	1/6W
R116	RN14BK2C7320F	RES. METAL FILM	732	1%	1/6W
R117	RN14BK2C6490F	RES. METAL FILM	649	1%	1/6W
R118	RN14BK2C3400F	RES. METAL FILM	340	1%	1/6W
R119	RN14BK2C2941F	RES. METAL FILM	2.94K	1%	1/6W
R120	RN14BK2C9531F	RES. METAL FILM	9.53K	1%	1/6W

SW1	S68-0606-05	PUSH SWITCH			
SW2	S40-1535-05	PUSH SWITCH			

SW101	S40-2506-05	PUSH SWITCH			
SW102	S01-2502-05	ROTARY SWITCH			

TC1	C05-0454-05	CAP. TRIMMER	20P		
TC2	C05-0454-05	CAP. TRIMMER	20P		

TH1	STT300H	DIODE			
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VR1	R12-8001-05	RES. SEMI FIXED	2.2MB		
VR2	R12-5530-05	RES. SEMI FIXED	100KB		
VR3	R12-0575-05	RES. SEMI FIXED	100 B		

VR100	R29-2503-05	V. R.			
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REF. NO	PARTS NO	NAME & DESCRIPTION
	C02-0201-15	VARIABLE CAPACITOR
	J73-0147-03	PCB (UNMOUNTED)

AG-204 PARTS LIST

AG-204

Y73-1090-00

REF. NO	PARTS NO	NAME & DESCRIPTION
	A01-1242-02	CASE, TOP
	A01-1243-02	CASE, BOTTOM
	A13-0948-13	FRAME, SIDES
	A21-1179-12	DECORATIVE PANEL
	A22-0887-12	SUB PANEL
	A83-0012-12	REAR PANEL
	B01-0706-03	SIDE ESCUTCHEON
	B20-0935-14	DIAL SCALE
	B42-3699-04	SERIAL NO. PLATE
	B63-0037-00	INSTRUCTION MANUAL; ENG./JAP.
	C02-0201-15	VARIABLE CAPACITOR
	E18-0365-05	AC SELECTOR WITH 6X30MM FUSE
	E18-0366-15	AC SELECTOR WITH 5X20MM FUSE
	E21-0669-03	PAIR TERMINAL
	E21-0671-03	TERMINAL, BLACK
	E21-0672-03	TERMINAL, WHITE
	E29-0506-04	SHORTING BAR
	E30-1644-15	BS POWER CORD
	E30-1818-05	JIS POWER CORD SET
	E30-1819-05	CEE POWER CORD SET
	E30-1820-05	UL/CSA POWER CORD SET
	E30-1821-05	SAA POWER CORD SET
	E31-2928-05	WIRE ASS'Y; INLET TO GND
	E38-0136-15	WIRE ASS'Y; P1 TO SYNC
	E38-0137-15	WIRE ASS'Y; P8 TO OUTPUT
	F05-2012-05	FUSE(6X30MM) 0.2A/250V
	F05-2015-05	FUSE(5X20MM) T200MA/250V
	F05-3011-05	FUSE(6X30MM) 0.3A/250V
	H10-2802-02	FOAMED STYRENE PAD
	H20-1703-04	VINYL COVER
	H53-0033-14	CARTON BOX
	J02-0363-04	RUBBER FOOT, REAR
	J11-0510-04	CABLE CLAMP
	J19-1620-05	CORD KEEP
	J30-0633-04	SPACER
	J61-0408-05	WIRE WRAPPING BAND
	K01-0544-05	HANDLE
	K21-0908-04	KNOB; AMPLITUDE
	K21-0912-03	KNOB; FREQUENCY
	K21-0914-03	KNOB; ATTENUATOR
	K27-0504-04	BUTTON(6 USED)
	K27-0506-04	BUTTON; POWER
	L01-9954-15	POWER TRANSFORMER
	N09-0654-05	SCREW, SEMS PAN HD M4X8
	N09-0739-05	SCREW, SEMS BINDING TAPTITE 3X8
	N09-0742-04	SCREW, SEMS PAN HD M3X8
	N09-0777-05	SCREW, SEMS PAN HD M4X6
	N10-2030-41	NUT, HEX M3
	N17-1030-41	LOCK WASHER M3
	N19-0720-05	PLAIN WASHER D=11.8MM, T=1MM
	N30-2606-41	SCREW, PAN HD M2.6X6
	N30-3010-41	SCREW, PAN HD M3X10
	N88-2008-41	SCREW, FLAT HD TAPTITE 2X8
	N88-3008-41	SCREW, FLAT HD TAPTITE 3X8
	N89-3008-41	SCREW, BINDING TAPTITE 3X8
	W02-2026-05	V.C UNIT
	X65-1390-01	OVERALL UNIT
	X67-1060-00	ACCESSORY CORD(CA-48)

AG-204 OVERALL UNIT

X65-1390-01

REF. NO	PARTS NO	NAME & DESCRIPTION
	E38-0131-15	WIRE ASS'Y; P2 TO JW2
	E38-0132-15	WIRE ASS'Y; P3 TO JW3
	E38-0133-15	WIRE ASS'Y; P4 TO JW4
	E38-0134-05	WIRE ASS'Y; P5 TO JW5
	E38-0135-15	WIRE ASS'Y; P6 TO JW6
	F10-1636-03	SHIELD PLATE; FOR MAIN UNIT
	F10-1637-04	SHIELD PLATE; FOR ATTENUATOR
	J25-5397-23	PCB (UNMOUNTED)
	C1	CE04EW1A101M CAP. ELECTRO 100 20% 10V
	C2	CE04EW1A101M CAP. ELECTRO 100 20% 10V
	C3	CE04EW1H4R7M CAP. ELECTRO 4.7 20% 50V
	C4	CE04EW1H4R7M CAP. ELECTRO 4.7 20% 50V
	C5	CM93BD2A680J CAP. MICA 68P 5% 100V
	C6	CE04EW1C220M CAP. ELECTRO 22 20% 16V
	C7	CE04EW1H010M CAP. ELECTRO 1 20% 50V
	C8	CE04EW1C100M CAP. ELECTRO 10 20% 16V
	C9	CE04EW1C101M CAP. ELECTRO 100 20% 16V
	C10	CE04EW1C470M CAP. ELECTRO 47 20% 16V
	C11	CE04EW1C100M CAP. ELECTRO 10 20% 16V
	C12	CC45FCH1H100D CAP. CERAMIC 10P 0.5P 50V
	C13	CE04EW1H4R7M CAP. ELECTRO 4.7 20% 50V
	C14	CE04EW1H4R7M CAP. ELECTRO 4.7 20% 50V
	C15	NO USE
	C16	CC45FCH1H070D CAP. CERAMIC 7P 0.5P 50V
	C17	CE04EW1H102M CAP. ELECTRO 1000 20% 50V
	C18	CE04EW1H102M CAP. ELECTRO 1000 20% 50V
	C19	CE04EW1V471M CAP. ELECTRO 470 20% 35V
	C20	CK45F1H473Z CAP. CERAMIC 0.047 50V
	C21	CE04EW1V471M CAP. ELECTRO 470 20% 35V
	C22	CK45F1H473Z CAP. CERAMIC 0.047 50V
	C23	CM93BD2A060D CAP. MICA 6P 0.5P 100V
	C24	CM93BD2A060D CAP. MICA 6P 0.5P 100V
	C25	CK45FB1H222K CAP. CERAMIC 2200P 10% 50V
	C26	CM93BD2A681J CAP. MICA 680P 5% 100V
	C27	CK45F1H473Z CAP. CERAMIC 0.047 50V
	C28	CE04EW1V100M CAP. ELECTRO 10 20% 35V
	C29	CE04EW1V100M CAP. ELECTRO 10 20% 35V
	C30	CE04EW1H4R7M CAP. ELECTRO 4.7 20% 50V
	C31	CE04EW1H4R7M CAP. ELECTRO 4.7 20% 50V
	C32	CK45F1H473Z CAP. CERAMIC 0.047 50V
	C33	CK45F1H473Z CAP. CERAMIC 0.047 50V
	C34	CE04EW1V101M CAP. ELECTRO 100 20% 35V
	C35	CE04EW1V101M CAP. ELECTRO 100 20% 35V
	C36	CC45FCH1H040C CAP. CERAMIC 4P 0.25P 50V
	C37	CK45F1H473Z CAP. CERAMIC 0.047 50V
	C38	CE04EW1V101M CAP. ELECTRO 100 20% 35V
	C39	CK45F1H473Z CAP. CERAMIC 0.047 50V
	C40	CC45FCH1H220J CAP. CERAMIC 22P 5% 50V
	C41	CE04EW1E471M CAP. ELECTRO 470 20% 25V
	D1	DS442X DIODE
	D2	DS442X DIODE
	D3	DS442X DIODE
	D4	DS442X DIODE
	D5	DS442X DIODE
	D6	DS442X DIODE
	D7	D2SBA40 DIODE, BRIDGE
	D100	AR4133S LED; RED
	P1	E40-3237-05 PIN CONNECTOR 2P
	P2	E40-3237-05 PIN CONNECTOR 2P
	P3	E40-3237-05 PIN CONNECTOR 2P
	P4	E40-3237-05 PIN CONNECTOR 2P
	P5	E40-3237-05 PIN CONNECTOR 2P
	P6	E40-3240-05 PIN CONNECTOR 5P
	P7	E40-3238-05 PIN CONNECTOR 3P
	P8	E40-3299-05 PIN CONNECTOR 2P
	Q1	2SK304(E) FET, N-CHANNEL
	Q2	NO USE
	Q3	2SK192A(GR) FET, N-CHANNEL
	Q4	2SK192A(GR) FET, N-CHANNEL
	Q5	2N3906RLRA TR, SI, PNP
	Q6	2N3906RLRA TR, SI, PNP
	Q7	2SC828A(Q) TR, SI, NPN
	Q8	2SA564A(Q) TR, SI, PNP
	Q9	2SK30ATM(GR2) FET, N-CHANNEL
	Q10	2N3906RLRA TR, SI, PNP
	Q11	2N3906RLRA TR, SI, PNP
	Q12	2SC828A(Q) TR, SI, NPN
	Q13	2SC828A(Q) TR, SI, NPN
	Q14	2SA564A(Q) TR, SI, PNP

AG-204 PARTS LIST

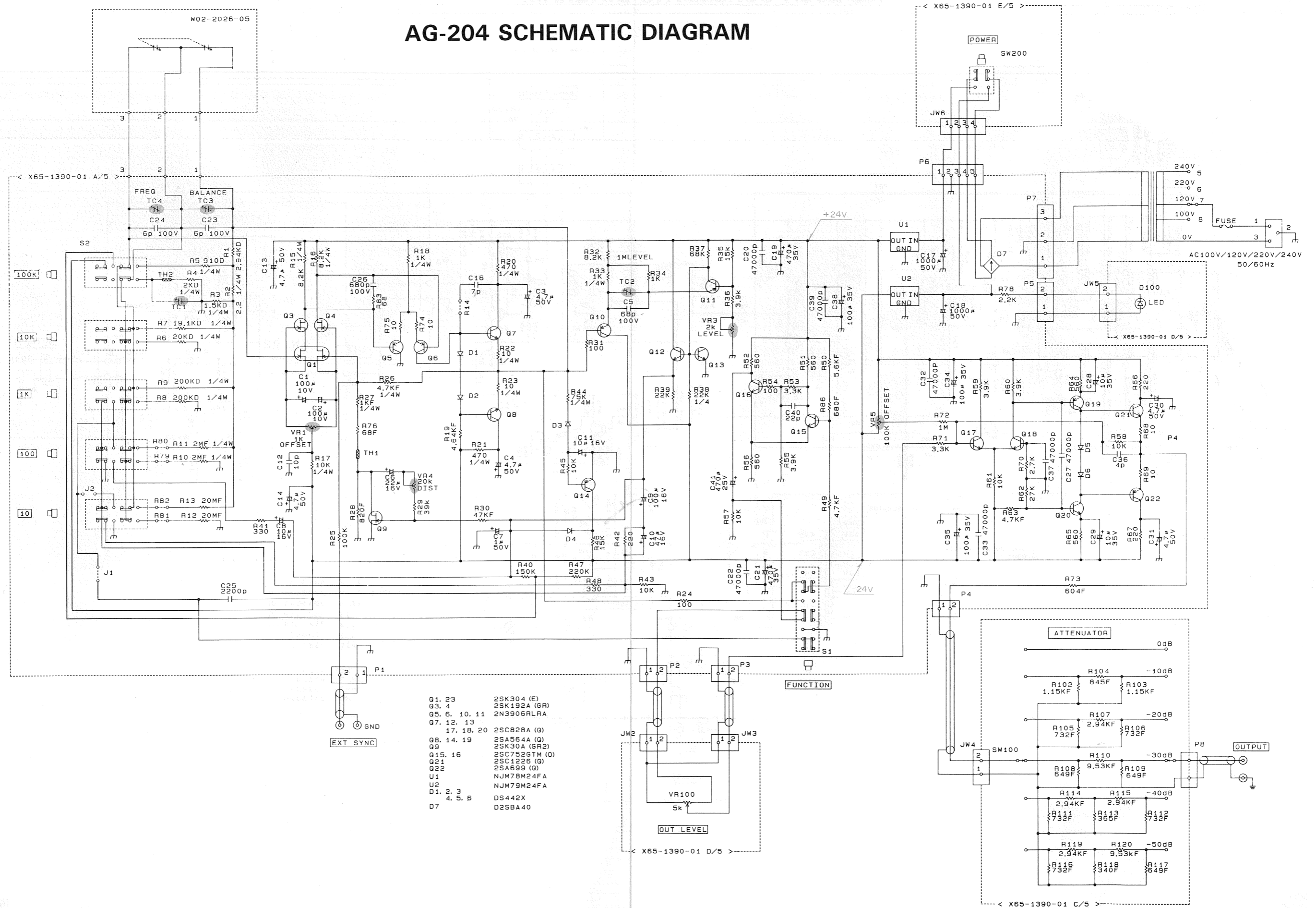
X65-1390-01

REF. NO	PARTS NO	NAME & DESCRIPTION
Q15	2SC752GTM(O)	TR. SI, NPN
Q16	2SC752GTM(O)	TR. SI, NPN
Q17	2SC828A(Q)	TR. SI, NPN
Q18	2SC828A(Q)	TR. SI, NPN
Q19	2SA564A(Q)	TR. SI, PNP
Q20	2SC828A(Q)	TR. SI, NPN
Q21	2SC1226(Q)	TR. SI, NPN
Q22	2SA699(Q)	TR. SI, PNP
Q23	2SK304(E)	FET, N-CHANNEL
R1	RN14BK2E2941D	RES. METAL FILM 2.94K 0.5% 1/4W
R2	RD14BB2E2R2J	RES. CARBON 2.2 5% 1/4W
R3	RN14BK2E1501D	RES. METAL FILM 1.5K 0.5% 1/4W
R4	RN14BK2E2001D	RES. METAL FILM 2K 0.5% 1/4W
R5	RN14BK2E9100D	RES. METAL FILM 910 0.5% 1/4W
R6	RN14BK2E2002D	RES. METAL FILM 20K 0.5% 1/4W
R7	RN14BK2E1912D	RES. METAL FILM 19.1K 0.5% 1/4W
R8	RN14BK2E2003D	RES. METAL FILM 200K 0.5% 1/4W
R9	RN14BK2E2003D	RES. METAL FILM 200K 0.5% 1/4W
R10	RN14BK2E2004F	RES. METAL FILM 2M 1% 1/4W
R11	RN14BK2E2004F	RES. METAL FILM 2M 1% 1/4W
R12	R92-1470-05	RES. METALGLACE 20M 1% 1/2W
R13	R92-1470-05	RES. METALGLACE 20M 1% 1/2W
R14	NO USE	
R15	RD14BB2E822J	RES. CARBON 8.2K 5% 1/4W
R16	RD14BB2E822J	RES. CARBON 8.2K 5% 1/4W
R17	RD14BB2E103J	RES. CARBON 10K 5% 1/4W
R18	RD14BB2E102J	RES. CARBON 1K 5% 1/4W
R19	RN14BK2E4641F	RES. METAL FILM 4.64K 1% 1/4W
R20	RD14BB2E471J	RES. CARBON 470 5% 1/4W
R21	RD14BB2E471J	RES. CARBON 470 5% 1/4W
R22	RD14BB2E100J	RES. CARBON 10 5% 1/4W
R23	RD14BB2E100J	RES. CARBON 10 5% 1/4W
R24	RD14BB2C101J	RES. CARBON 100 5% 1/6W
R25	RD14BB2C104J	RES. CARBON 100K 5% 1/6W
R26	RN14BK2E4701F	RES. METAL FILM 4.7K 1% 1/4W
R27	RN14BK2E1001F	RES. METAL FILM 1K 1% 1/4W
R28	RN14BK2C8200F	RES. METAL FILM 820 1% 1/6W
R29	RD14BB2C393J	RES. CARBON 39K 5% 1/6W
R30	RD14BB2C473J	RES. CARBON 47K 5% 1/6W
R31	RD14BB2C101J	RES. CARBON 100 5% 1/6W
R32	RD14BB2C822J	RES. CARBON 8.2K 5% 1/6W
R33	RD14BB2E102J	RES. CARBON 1K 5% 1/4W
R34	RD14BB2E102J	RES. CARBON 1K 5% 1/4W
R35	RD14BB2C153J	RES. CARBON 15K 5% 1/6W
R36	RD14BB2C392J	RES. CARBON 3.9K 5% 1/6W
R37	RD14BB2C683J	RES. CARBON 68K 5% 1/6W
R38	RD14BB2E223J	RES. CARBON 22K 5% 1/4W
R39	RD14BB2C223J	RES. CARBON 22K 5% 1/6W
R40	RD14BB2C154J	RES. CARBON 150K 5% 1/6W
R41	RD14BB2C331J	RES. CARBON 330 5% 1/6W
R42	RD14BB2C221J	RES. CARBON 220 5% 1/6W
R43	RD14BB2C100J	RES. CARBON 10 5% 1/6W
R44	RD14BB2E753J	RES. CARBON 75K 5% 1/4W
R45	RD14BB2C103J	RES. CARBON 10K 5% 1/6W
R46	RD14BB2C153J	RES. CARBON 15K 5% 1/6W
R47	RD14BB2C224J	RES. CARBON 220K 5% 1/6W
R48	RD14BB2C331J	RES. CARBON 330 5% 1/6W
R49	RN14BK2C4701F	RES. METAL FILM 4.7K 1% 1/6W
R50	RN14BK2C5601F	RES. METAL FILM 5.6K 1% 1/6W
R51	RD14BB2C561J	RES. CARBON 560 5% 1/6W
R52	RD14BB2C561J	RES. CARBON 560 5% 1/6W
R53	RD14BB2C332J	RES. CARBON 3.3K 5% 1/6W
R54	RD14BB2C101J	RES. CARBON 100 5% 1/6W
R55	RD14BB2C392J	RES. CARBON 3.9K 5% 1/6W
R56	RD14BB2C561J	RES. CARBON 560 5% 1/6W
R57	RD14BB2C103J	RES. CARBON 10K 5% 1/6W
R58	RD14BB2C103J	RES. CARBON 10K 5% 1/6W
R59	RD14BB2C392J	RES. CARBON 3.9K 5% 1/6W
R60	RD14BB2C392J	RES. CARBON 3.9K 5% 1/6W
R61	RD14BB2C103J	RES. CARBON 10K 5% 1/6W
R62	RD14BB2C273J	RES. CARBON 27K 5% 1/6W
R63	RN14BK2C4701F	RES. METAL FILM 4.7K 1% 1/6W
R64	RD14BB2C561J	RES. CARBON 560 5% 1/6W
R65	RD14BB2C561J	RES. CARBON 560 5% 1/6W
R66	RD14BB2C221J	RES. CARBON 220 5% 1/6W
R67	RD14BB2C221J	RES. CARBON 220 5% 1/6W
R68	RD14BB2C100J	RES. CARBON 10 5% 1/6W
R69	RD14BB2C100J	RES. CARBON 10 5% 1/6W
R70	RD14BB2C272J	RES. CARBON 2.7K 5% 1/6W
R71	RD14BB2C332J	RES. CARBON 3.3K 5% 1/6W
R72	RD14BB2C105J	RES. CARBON 1M 5% 1/6W
R73	RN14BK2C6040F	RES. METAL FILM 604 1% 1/6W

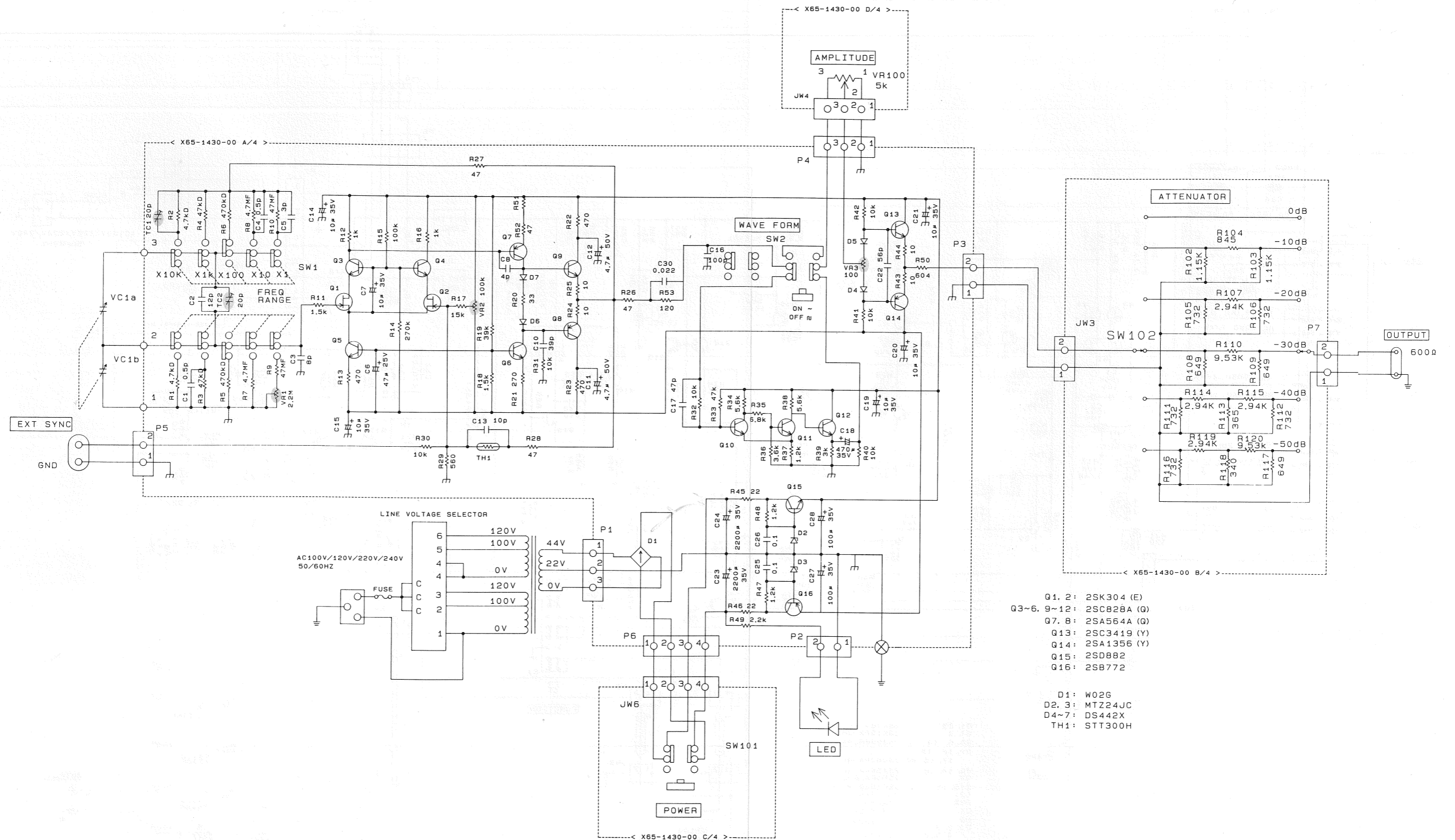
X65-1390-01

REF. NO	PARTS NO	NAME & DESCRIPTION
R74	RD14BB2C100J	RES. CARBON 10 5% 1/6W
R75	RD14BB2C100J	RES. CARBON 10 5% 1/6W
R76	RN14BK2C680F	RES. METAL FILM 68.0 1% 1/6W
R77	NO USE	
R78	RD14BB2C222J	RES. CARBON 2.2K 5% 1/6W
R83	RD14BB2C680J	RES. CARBON 68 5% 1/6W
R86	RN14BK2C6800F	RES. METAL FILM 680 1% 1/6W
R102	RN14BK2C1151F	RES. METAL FILM 1.15K 1% 1/6W
R103	RN14BK2C1151F	RES. METAL FILM 1.15K 1% 1/6W
R104	RN14BK2C8450F	RES. METAL FILM 845 1% 1/6W
R105	RN14BK2C7320F	RES. METAL FILM 732 1% 1/6W
R106	RN14BK2C7320F	RES. METAL FILM 732 1% 1/6W
R107	RN14BK2C2941F	RES. METAL FILM 2.94K 1% 1/6W
R108	RN14BK2C6490F	RES. METAL FILM 649 1% 1/6W
R109	RN14BK2C6490F	RES. METAL FILM 649 1% 1/6W
R110	RN14BK2C9531F	RES. METAL FILM 9.53K 1% 1/6W
R111	RN14BK2C7320F	RES. METAL FILM 732 1% 1/6W
R112	RN14BK2C7320F	RES. METAL FILM 732 1% 1/6W
R113	RN14BK2C3650F	RES. METAL FILM 365 1% 1/6W
R114	RN14BK2C2941F	RES. METAL FILM 2.94K 1% 1/6W
R115	RN14BK2C2941F	RES. METAL FILM 2.94K 1% 1/6W
R116	RN14BK2C7320F	RES. METAL FILM 732 1% 1/6W
R117	RN14BK2C6490F	RES. METAL FILM 649 1% 1/6W
R118	RN14BK2C3400F	RES. METAL FILM 340 1% 1/6W
R119	RN14BK2C2941F	RES. METAL FILM 2.94K 1% 1/6W
R120	RN14BK2C9531F	RES. METAL FILM 9.53K 1% 1/6W
S1	S40-6503-05	PUSH SWITCH
S2	S42-5511-05	PUSH SWITCH
SW100	S01-2502-05	ROTARY SWITCH
SW200	S40-2506-05	PUSH SWITCH
TC1	C05-0472-05	CAP. TRIMMER 6PF TO 50PF
TC2	C05-0472-05	CAP. TRIMMER 6PF TO 50PF
TC3	C05-0478-05	CAP. TRIMMER 1.4PF TO 10PF
TC4	C05-0478-05	CAP. TRIMMER 1.4PF TO 10PF
TH1	SDT02	THERMISTOR
TH2	SDT02	THERMISTOR
TP1	E23-0401-05	PIN TERMINAL
U1	NJM78M24FA	IC,3-TERMINAL REGULATOR
U2	NJM79M24FA	IC,3-TERMINAL REGULATOR
VR1	R12-1545-05	RES. SEMI FIXED 1KB
VR2	NO USE	
VR3	R12-1546-05	RES. SEMI FIXED 2KB
VR4	R12-3550-05	RES. SEMI FIXED 20KB
VR5	R12-5530-05	RES. SEMI FIXED 100KB
VR100	R01-2523-05	V. R.

AG-204 SCHEMATIC DIAGRAM



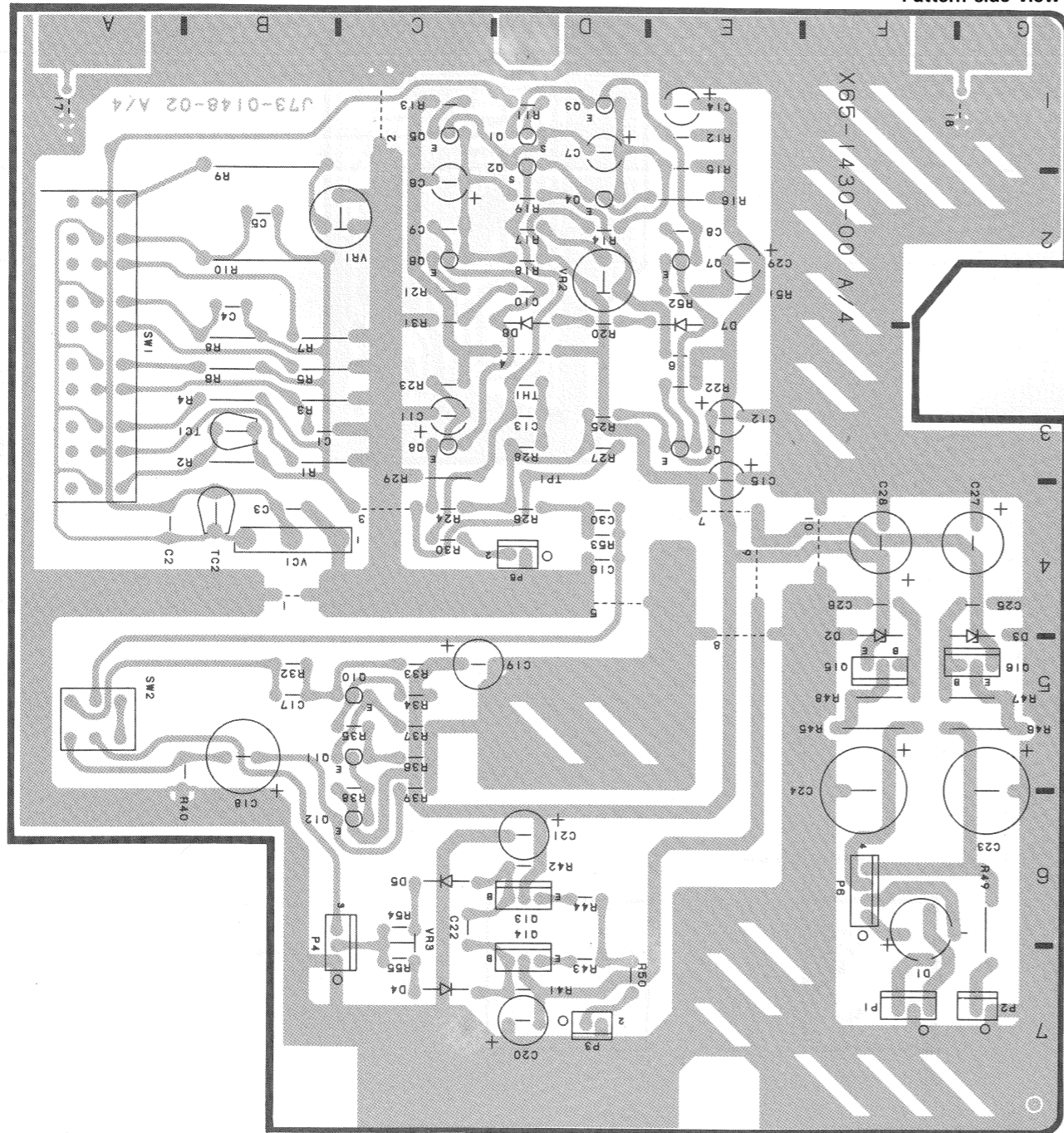
AG-203A SCHEMATIC DIAGRAM



AG-203A P.C. BOARD

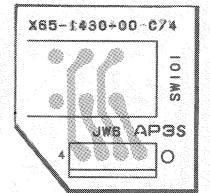
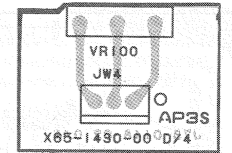
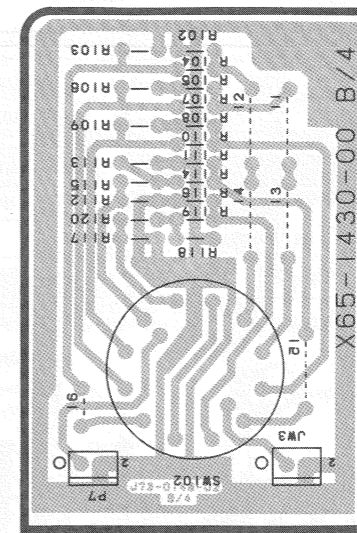
OVERALL UNIT (X65-1430-00)

Pattern side view

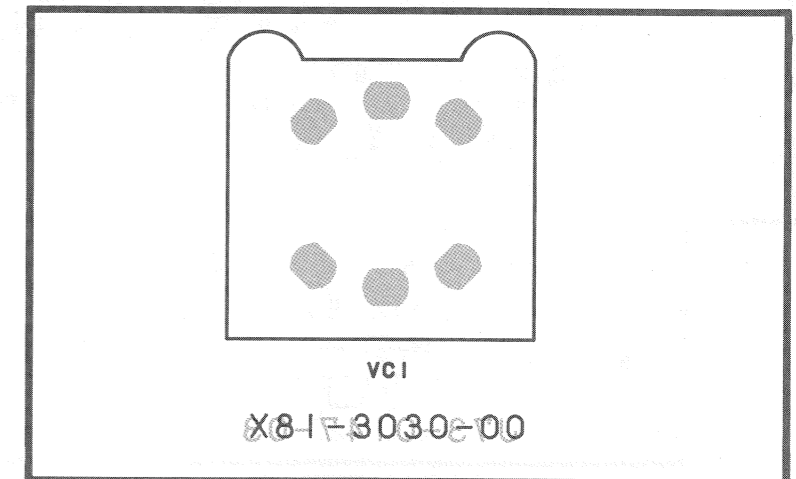


2A

Pattern side view



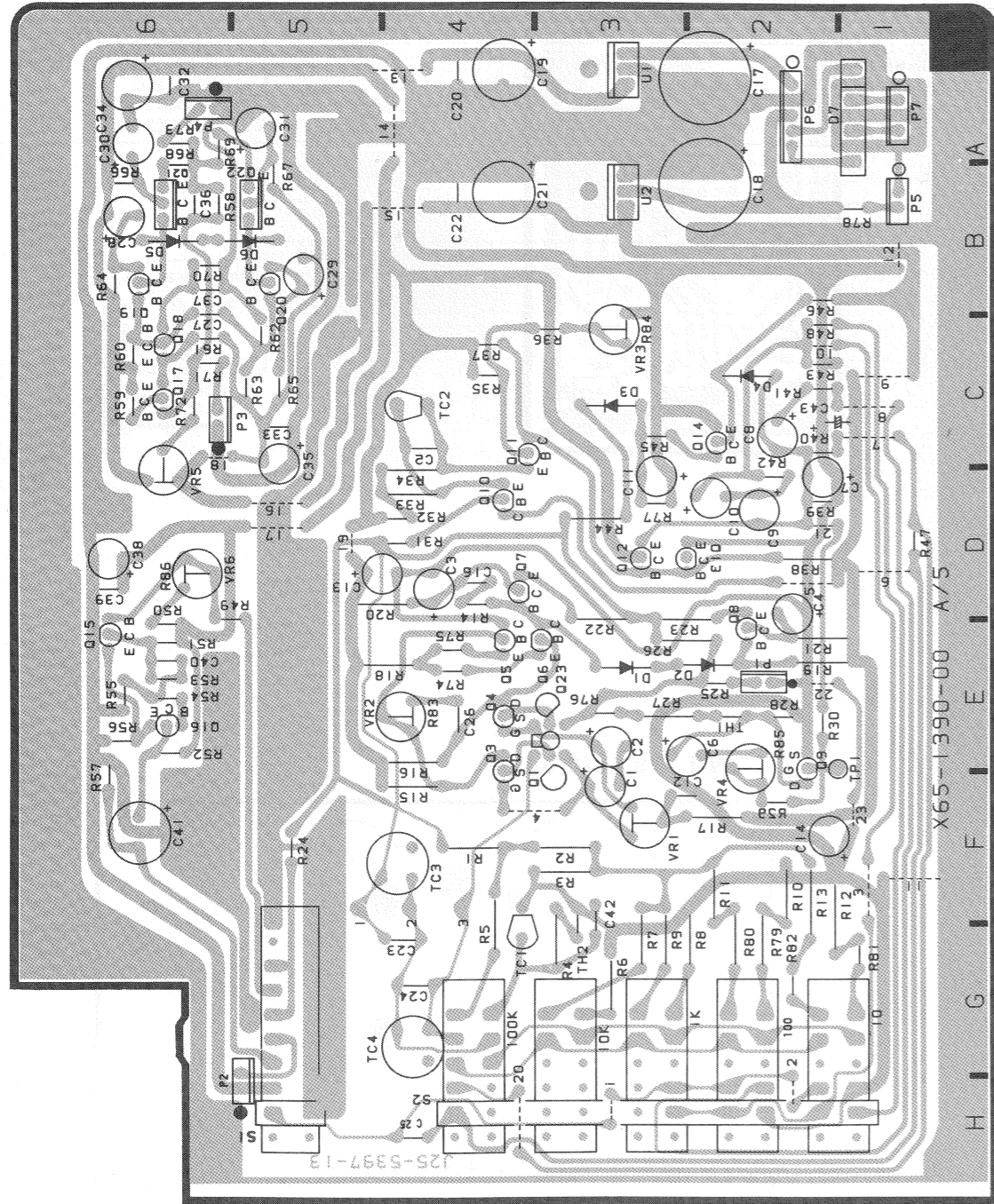
V.C UNIT (X81-3030-00)



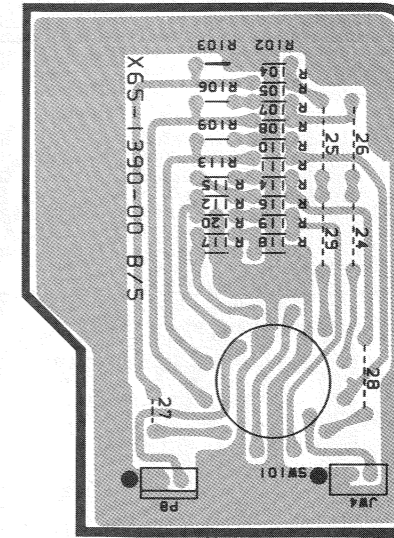
AG-204 P.C. BOARD

OVERALL UNIT (X65-1390-01)

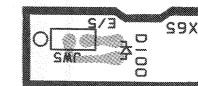
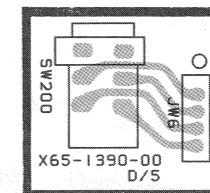
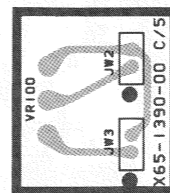
Pattern side view



Pattern side view



Pattern side view



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