LUXMAN 800

SERVICE MANUAL R800

R 800 CIRCUIT DESCRIPTION

Power Supply

The mains input to the Receiver goes via a 2 pole power switch to the mains transformer which has three secondary windings:

1. A 12-volt winding for the panel lamps.
2. A 60-volt centre tapped winding providing after full-wave rectification + and – supplies for the audio power amp section, and
3. A 30-0-30 volt winding to provide 45 volts DC for the preamp and tuner sections. A potential divider using a zever diode which is used to obtain from the 45 volts a 12 volt DC supply for the AM and FM tuner sections. The 2SC1345 transistor is used as a ripple filter providing 40 volts to the audio preamps.

There are fuses in all the secondaries for transformer protection. A fuse is used as well in the pre-amp.

POWER AMPS

PNP transistors are used as a differential comparator; the audio input is fed to the first transistor and the feedback to the other. NPN metal can transistors are used as active loads for the differential comparator, the one NPN has its collector to ground, the other being the voltage amplifier for the entire output stage, which uses a PNP driver and a PNP output in the negative side connected as a darlington emitter follower configuration, and an NPN driver and NPN output is used in the positive side. These 4 transistors form what is known as a fully complementary symmetrical output stage.

Their input bases are bias with a 3 diode device (SV03) and a bias trim pot for idling current set (35 mA), 2 resistors and a condenser form the boostrap constant current load for the voltage amplifier to drive the output stage. The junction of the emitter resistors is as a feed point for the differential comparator, and at the same time goes via a 5 amp fuse to the speaker selector switch to the speaker terminals and headphone socket via 470 ohm.

The headphone socket is always active regardless of speaker selection. PNP and NPN transistors are used to sense output current and voltage and if the output is short circuited will limit the drive to the output devices, thereby protecting the amplifier from overload.

Input sensitivity of the power amp is defined by the ratio of R7136 RD12 which = 500 mv for full output, and the low frequency roll off is determined by the veactance of C706 to R712 which in this circuit is 10Hz.

PRE AMP

Phono RIAA equalization amplifier 2 phono inputs can be selected, both with the same input sensitivity. The RIAA amplifier uses a NPN and PNP direct coupled pair of transistors which are selected low noise types, the equalizatio[n] and DC feedback are taken from the collector of the PN[P] back to the emitter of the input NPN transistor. This am[p] has a gain of 36 db (2.3 mv – 150 mv) at 1 KHz. Th[e] linearity of this direct coupled combination offers hig[h] overload capabilities (100 mv at 1 KHz).

The 150 mv nominal level is at the same level as the othe[r] functions.

The Mic amplifier uses basically the same circuit withou[t] equalization, being flat from 20 – 50 KHz with 38 db gai[n]

The Function Switch selects AM, FM Aux 1 and 2 an[d] Phono 1 and 2 the output of which can be mixed wit[h] the input from the mic amplifier. This audio then goes t[o] the tape monitoring function switches.

There are two switches for the tape functions, these a[re] mounted on the same printed circuit board as the ton[e] control circuits. The left switch enables in the "up position dubbing from tape 1 – 2 and in the "lower position from Tape 2 → 1, when "centre", it is off. Th[e] right-hand switch enables monitoring from Tape 1 in th[e] up position, tape 2 in the lower and programme source [in] the centre position.

The required selection will then go to the printed circu[it] board which contains a 2 transistor NPN, PNP direc[t] coupled flat response amp with 12 db gain. Also containe[d] on the same board are CR type 6 db/oct hi and low cu[t] filters with hi cut selections of 6 KHz, 12 KHz and of[f] and low cut selections of 70 Hz, 20 Hz and off. The switc[h] for the loudness and bass boost, which is also on this boar[d] works in conjunction with the volume control so that th[e] greatest effect is at low volume settings, the audio the[n] passes on the tone control circuit.

TONE CONTROL BOARD

The tape functions previously described are mounted [on] this board. A NPN transistor is used in a Lux-type act[ive] bass and treble control, operating in a virtual earth mo[de] with the input audio at the boost point of the controls a[nd] the base of the transistor fed from the slider of the ba[ss] control via C405, the collector being the feedback po[int] to the controls and providing the output which is at uni[ty] gain with respect to the input to drive the power amplifie[r].

AM SECTION

A superhet design using a tuned RF amplifier, a mixer/loc[al] oscillator and two stages of IF amplification at 455 KH[z]. A ferrite rod antenna with 3 windings is used, the firs[t] winding is connected to the external antenna terminal, th[e] second is connected to the first section of a 3 gang tunin[g] condenser, the last winding feeding the base of the [R]F transistor amplifier; a clamp diode is used to protect th[e]

input against RF overload.
A tuned RF transformer is used to couple the collector to the base of the self-mixing oscillator. The oscillator operates at 455 KHz above the incoming signal to produce the intermediate frequency, which is passed through a ceramic filter and then amplified by two further transistor IF stages. The audio is then recovered by a germanium diode detector and passed on to the pre amp via the selector switch, and the signal strength meter is driven from the audio detector output.
A voltage doubler is used to provide an A.G.C. voltage which controls the gain of the first IF amplifier; the collector of this provides an amplified AGC back to the emitter of the RF transistor. This method used provides an audio output relatively constant with varying R.F. signal strength.

FM SECTION

An input balun transformer matches either 300 ohm or 75 ohm antenna input to the Front end, which has a 4 gang tuning capacitor and consists of a dual gate FET for the tuned RF amp feeding, via a two-section transformer, the bi-polar transistor mixer.
A bipolar transistor "Colpitts" oscillator operates at 10.7 mcs above the incoming signal. C115 is a negative temperature coefficient condenser to stabilize the oscillator to less than 25 KHz per 10 deg. Celsius. The output is then fed via a 1 pf condenser to the mixer, the resultant 10.7 MHz passes through a double tuned IFT included in the front end module.
The front end module is well shielded to prevent any spurious radiation, and to offer good image and selectivity responses.

IF

The IF strip is contained on the same printed circuit board as the stereo multiplex decoder and muting circuits.
The 10.7 MHz IF intermediate frequency is amplified by a transistor then passed through a ceramic filter with a side chain A.G.C. amplifier to provide a D.C. control voltage (A.G.C.) for the RF input FET to improve the front end overload capabilities. The main chain is again amplified by a further transistor and ceramic filter providing a wide pass band with steep sides.
A differential IC with a built-in constant current source provides partial limiting, this passing through an IF transformer into the final multistage I.C. which provides hard limiting characteristics for the ratio discriminator, which provides the composite audio output for the multiplex.
A second side chain amplifier and rectifier monitors the input to the first I.C. to provide a signal strength control command as well as driving the signal strength meter.
At the audio output when the receiver is off-tuned from centre either a positive or negative D.C. will appear which is monitored both by a centre tune meter and a bi-phase detector using one NPN and one PNP transistor which with another NPN forms an "AND" gate for one of two "shmitt" trigger circuits. The other shmitt trigger receives a command from the signal strength circuit previously mentioned. The collectors of the final transistor in each circuit form a "wired OR" gate which via the muting "On-Off" switch on the front panel controls the gate on the FET audio mute circuit if it is enabled. The composite audio passes on to the I.C. multiplex, which will derive the L and R audio output, the IC also is connected directly to the stereo indicator lamp.
The Left and Right go through L.C. type rejection filters to remove the 19 KHz pilot. These are both in one moulding.
Finally, a one transistor amplifier is used in each channel to raise the level to 400 m volts for the audio pre amp.
A de-emphasis switch has been incorporated on the P.C. board for selecting either 75 μsec. (American) or 50 μsec. time constant.

R-803 ALIGNMENT PROCEDURE

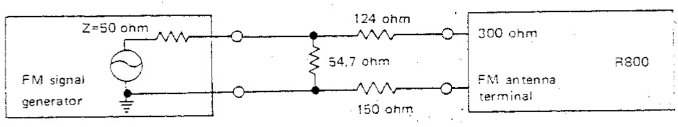
The alignment procedure described in each chart may be performed independently, without affecting the others.
Warm up the signal generators for at least 15 minutes to make certain that they are stabilized at their operating temperature particularly generators containing vacuum tubes. Consult the instruction manual supplied with the particular test instrument for specific information concerning connection and operation.
The test equipment listed here is intended only as a quide, but alternate instruments should be of similar quality.
The following instruments are required for a complete alignment of the tuner.

1. Measurement instruments and tools

Signal source	1) FM signal generator (FMSG)	Meguro MSG–285A or equivalent
	2) Sweep generator (SWG)	JRC NJM–5217C or equivalent
	3) AM signal generator (AMSG)	Meguro MSG–221C or equivalent
	4) FM stereo modulator (MPXSG)	Sound technology–1000A or equivalent
	5) Audio oscillator (AFO) 10-100KHz 0.2% accuracy, Dist. 0.1%	Oscillation freq. range 10-100,000Hz, calibration error within 0.2%, distortion 0.1%
	6) AM standard loop antenna	Meguro MLA-1001B or equivalent
Output indicator	7) Oscilloscope (CRO) Mid bandwidth 5MHz	Iwatsu SS-5057V or equivalent
	8) Distortion meter (HDM)	Shibaden CR-6S or equivalent
	9) AC volt meter (ACVTVM)	Kikusui 164 or equivalent
	10) DC volt meter (DCVTVM)	Kikusui 107A or equivalent
Tools	11) Hex head alignment tool	
	12 Thin plastic shaft alignment tool	

2. General alignment conditions

1) The normal test voltage is within 10% of what is indicated on the receiver with less than 2% harmonic distortion.
2) Unless otherwise specified, the normal ambient temperature is 15–25°C and humidity 55–75%. But if this is not possible, 5–35°C, 45–85% will provide acceptable results.
3) FM dummy antenna shall be as follows if not otherwise specified. The output voltage of the signal generator is 1/4 of the unloaded terminal voltage.



4) Connect the low side of signal source and the output indicator to the chassis ground as close as possible to the high side connection unless otherwise specified.
5) The 10.7MHz marker used in each section of the alignment should be the same.
6) Marker insertion and amplitude should not distort the oscilloscope trace.
7) The AM standard loop antenna should be set above the ferrite loopstick antenna.
8) The output level of the sweep generator is measured by the output attenuator regardless of its terminated impedance.
9) FM modulation is 100% with ±75 KHz
10) All tuner audio output measurement are at TAPEOUT 1.

SYMBOL NO.	DESCRIPTION
R604	18K
R605	1.5K
R606	220K
R607	3.3K
R608	68K
R609	5.6K
R610	2.2K
R611	150K
R612	10
R701	5.6K
R702	47
R703	47
R704	6.8K
R705	6.8K

SYMBOL NO.	DESCRIPTION
R706	47K
R707	8.2K
R708	3.3K
R709	3.3K
R710	1.5K ½W METAL OXIDE FIXED
R711	470
R712	1.2 K
R713	47K
R714	180 ½W METAL OXIDE FIXED
R715	47 ½W METAL OXIDE FIXED
R716	5.6K
R717	3.3K

SYMBOL NO.	DESCRIPTION
R718	22 ½W METAL OXIDE FIXED
R719	82
R720	1K
R721	100K
R722	1K
R723	82
R724	100 ½W METAL OXIDE FIXED
R725	100 ½W METAL OXIDE FIXED
R726	0.39 5W CEMENT SEALED
R727	0.39 5W CEMENT SEALED

SYMBOL NO.	DESCRIPTION
R728	22 1W METAL OXIDE FIXED
R801	
R802	10K
R803	47 2W METAL OXIDE FIXED
R804	33
R805	100K
R806	820
R807	
R808	4.7 1W METAL OXIDE FIXED
R809	4.7 1W METAL OXIDE FIXED

CAPACITORS

SYMBOL NO.	DESCRIPTION
C1	0.1μF 25V +80% −20% ceramic
C2	0.1μF 25V +80% −20% ceramic
C3	0.1μF 25V +80% −20% ceramic
C4	0.1μF 25V +80% −20% ceramic
C5	0.1μF 25V +80% −20% ceramic
C6	0.1μF 25V +80% −20% veramic
C7	0.022μF 250V
C8	0.022μF 250V
C9	0.0022μF 250V

SYMBOL NO.	DESCRIPTION
C10	0.0022μF 250V
C11	4700μF 50V +50% −10% electrolytic
C12	4700μF 50V +50% −10% electrolytic
C13	0.01μF 250V
C14	0.01μF 250V
C15	0.01μF 250V
C16	0.01μF 250V
C17	1500μF 50V +50% −10% electrolytic
C18	3300μF 50V +50% −10% electrolytic

SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION
C101	22PF	C106	100PF	C111	1000PF	C116	15PF
C102	47PF	C107	5000PF	C112	5000PF	C117	5000PF
C103	22PF	C108	100PF	C113	1PF	C118	5000PF
C104	22PF	C109	100PF	C114	20PF		
C105	7PF	C110	5000PF	C115	10PF		

SYMBOL NO.	DESCRIPTION
C201	0.01μF +80% −20% 50V ceramic
C202	0.04μF +80% −20% 25V ceramic
C203	0.04μF +80% −20% 25V ceramic
C204	47PF ±10% 50V ceramic
C205	0.04μF +80% −20% 25V ceramic
C206	0.01μF +80% −20% 50V ceramic
C207	2.7PF ±5% 500V ceramic
C208	0.04μF +80% −20% 25V ceramic
C209	470PF ±20% 50V ceramic
C210	0.04μF +80% −20% 25V ceramic
C211	0.01μF +80% −20% 50V ceramic
C212	0.04μF +80% −20% 25V ceramic
C213	0.04μF +80% −20% 25V ceramic
C214	0.04μF +80% −20% 25V ceramic
C215	0.04μF +80% −20% 25V ceramic
C216	0.04μF +80% −20% 25V ceramic
C217	0.04μF +80% −20% 25V ceramic
C218	470P ±20% 50V ceramic
C219	100P ±10% 50V ceramic
C220	470P ±20% 50V ceramic
C221	470P ±20% 50V ceramic
C222	470P ±20% 50V ceramic
C223	0.04μF +80% −20% 25V ceramic
C224	0.04μF +80% −20% 25V ceramic
C225	470P ±20% 50V ceramic

SYMBOL NO.	DESCRIPTION
C226	0.01μF +80% −20% 50V ceramic
C227	0.04μF +80% −20% 25V ceramic
C228	0.01μF +80% −20% 50V ceramic
C229	0.01μF +80% −20% 50V ceramic
C230	0.47PF ±5% 500V ceramic
C231	470PF ±20% 50V ceramic
C232	0.04μF +80% −20% 25V ceramic
C233	0.04μF +80% −20% 25V ceramic
C234	0.01μF +80% −20% 50V ceramic
C235	0.01μF +80% −20% 50V ceramic
C236	0.1μF +80% −20% 25V ceramic
C237	2.2μF +75% −10% 50V electrolytic
C238	0.1μF +80% −20% 25V ceramic
C239	0.1μF +80% −20% 25V ceramic
C240	4.7μF +75% −10% 35V electrolytic
C241	1μF +75% −10% 50V electrolytic
C242	10μF +50% −10% 16V electrolytic
C243	0.1μF +50% −20% 35V solid tantalum
C244	4.7μF +75% −10% 35V electrolytic
C245	4.7μF +75% −10% 35V electrolytic
C246	4.7μF +75% −10% 35V electrolytic
C247	470μF +50% −10% 16V electrolytic
C248	680PF ±5% 50V polystyrol
C249	1600PF ±5% 50V polystyrol
C250	680PF ±5% 50V polystyrol

SYMBOL NO.	DESCRIPTION
C251	1600PF ±5% 50V polystyrol
C252	0.22μF +50% −20% 35V solid tantalum
C253	0.22μF +50% −20% 35V solid tantalum
C254	1μF +75% −10% 50V electrolytic
C255	47μF +50% −10% 16V electrolytic
C256	1μF +75% −10% 50V electrolytic
C257	2.2μF +75% −10% 50V electrolytic
C258	0.01μF +80% −20% 50V ceramic
C259	2.2μF +75% −10% 50V electrolytic
C260	560PF ±5% 50V polystyrol
C261	10μF +50% −10% 16V electrolytic
C262	0.01μF +80% −20% 50V ceramic
C301	0.04μF +80% −20% 25V ceramic
C302	0.04μF +80% −20% 25V ceramic
C303	2.2μF +75% −10% 50V electrolytic
C304	15PF ±10% 50V ceramic
C305	0.04μF +80% −20% 25V ceramic
C306	0.04μF +80% −20% 25V ceramic
C307	0.04μF +80% −20% 25V ceramic
C308	0.04μF +80% −20% 25V ceramic
C309	0.04μF +80% −20% 25V ceramic
C310	2.2μF +75% −10% 50V electrolytic
C311	0.04μF +80% −20% 25V ceramic
C312	15PF ±10% 50V ceramic
C313	450PF ±5% 50V polystyrol
C314	0.04μF +80% −20% 25V ceramic
C315	0.01μF +80% −20% 50V ceramic
C316	0.04μF +80% −20% 50V ceramic
C317	0.04μF +80% −20% 25V ceramic
C318	0.04μF +80% −20% 25V ceramic
C319	0.04μF +80% −20% 25V ceramic
C320	0.01μF +80% −20% 50V ceramic
C321	0.04μF +80% −20% 25V ceramic
C322	220μF +50% −10% 16V electrolytic
C323	0.04μF +80% −20% 25V ceramic
C324	0.04μF +80% −20% 25V ceramic
C325	220PF ±10% 50V ceramic
C326	4700PF ±10% 50V mylar
C327	47μF +50% −10% 16V electrolytic
C328	0.04μF +80% −20% 25V ceramic
C329	4700PF ±10% 50V mylar
C330	0.04μF +80% −20% 25V ceramic
C331	220PF ±10% 50V ceramic
C332	1μF +75% −10% 50V electrolytic
C401	100μF 10V +50% −10% electrolytic
C402	2.2μF 25V ±20% solid tantalum
C403	47PF 50V ±10% ceramic
C404	150PF 50V ±10% ceramic
C405	33PF 50V ±10% ceramic
C406	33μF 10V +50% −10% electrolytic
C407	1800PF 50V ±10% mylar
C408	6800PF 50V ±10% mylar
C409	22μF 10V +50% −10% electrolytic
C410	0.04μF 50V +80% −20% ceramic
C411	0.47μF 35V ±20% solid tantalum
C412	47μF 10V +50% −10% electrolytic
C413	2.2μF 25V ±20% solid tantalum
C414	150PF 50V ±10% ceramic
C415	33μF 10V +50% −10% electrolytic
C416	22PF 50V ±10% ceramic
C417	22μF 10V +50% −10% electrolytic
C418	2.2μF 35V ±20% solid tantalum
C419	2.2μF 35V ±20% solid tantalum
C420	0.47μF 35V ±20% solid tantalum

SYMBOL NO.	DESCRIPTION
C501	0.033μF 50V ±10% mylar
C502	0.068μF 50V ±10% mylar
C503	2700PF 50V ±10% mylar
C504	1500PF 50V ±10% mylar
C505	470PF 50V ±10% ceramic
C506	0.033μF 50V ±10% mylar
C507	47μF 10V +50% −10% electrolytic
C508	2.2μF 25V ±20% solid tantalum
C509	10μF 16V +50% −10% electrolytic
C510	22PF 50V ±10% ceramic
C511	2.2μF 25V ±20% solid tantanlum
C512	220μF 25V +50% −10% electrolytic
C601	0.027μF 50V ±10% mylar
C602	1000PF 50V ±10% mylar
C603	2700PF 50V ±10% mylar
C604	1000PF 50V ±10% mylar
C605	4.7μF 10V ±20% solid tantalum
C606	47μF 6.3V +50% −10% electrolytic
C607	2.2μF 25V ±20% solid tantalum
C608	0.04μF 50V +80% −20% ceramic
C609	47μF 25V +50% −10% electrolytic
C701	4.7μF 10V ±20% solid tantalum
C702	330PF 50V ±10% ceramic
C703	47μF 10V +50% −10% electrolytic
C704	1000PF 50V ±10% ceramic
C705	100μF 50V +50% −10% electrolytic
C706	33μF 10V +50% −10% electrolytic
C707	47PF 50V ±10% ceramic
C708	100μF 50V +50% −10% electrolytic
C709	47μF 50V +50% −10% electrolytic
C710	0.022μF 50V ±10% mylar
C711	47PF 50V ±10% ceramic
C712	0.04μF 50V +80% −20% ceramic
C713	0.022μF 50V ±10% mylar
C714	0.022μF 50V ±10% mylar
C715	0.04μF 50V +80% −20% ceramic
C716	1μF 50V +75% −10% electrolytic
C717	0.04μF 50V +80% −20% ceramic
C718	1μF 50V +75% −10% electrolytic
C801	100PF 50V ±10% ceramic
C802	100μF 50V +50% −10% electrolytic
C803	220μF 35V +50% −10% electrolytic
C804	330μF 25V +50% −10% electrolytic
C805	
C806	0.1μF 50V ±10% mylar
C807	0.1μF 50V ±10% mylar
C808	220μF 16V +50% −10% electrolytic

Step.	Signal Source Connected to	Set signal to	Set Radio Dial to	Output Indicator Connected to	Adjust	Adjust for
35	Set selector switch to "AM"					
36	Connect CP1 and TP2 on PB458					
37	Sweep generator PB458 34 through 1μF mylar capacitor	± 20 ~ 25KHz sweep centred at 455KHz generator output level 3mV	Quiet point on band near 1600 KHz	Oscilloscope PB458 CP–2	F301 red core	Maximum amplitude. Do not adjust for two humps
38					F301 blue core	
39						Symmetrical response with flat top
40	Disconnect CP1 and TP2 connected at step 36					
41	Adjust VR301 to mechanical center position					
42	AM signal generator Standard radiating loop antenna placed near AM built in antenna	600KHz at 400Hz 30% modulation, field strength 50dB/m	600KHz	Oscilloscope AC VTVM TAPE OUT 1	T302 core	Accurate indication of pointer on dial to within ± 1 pointer width
43					L1 core	Maximum reading on AC VTVM
44					T301 core	
45		1400KHz at 400Hz 30% modulation, field strength 50dB/m	1400KHz		TC3	Accurate indication of pointer on dial to within ± 1 pointer width
46					TC1	Maximum reading on AC VTVM
47					TC2	
48	Repeat steps 42 ~ 47 as necessary to obtain exact tuning on dial scale and maximum sensitivity					
49	AM signal generator Standard radiating loop antenna placed near AM built in antenna	1000KHz at 400Hz 30% modulation, field strength 45dB/m	1000KHz		VR301	Audio output level should be 14dB below what is observed with the field strength of 70dB/m

SEMICONDUCTOR SPECIFIC CHART

TRANSISTORS (Ta = 25°C)

TYPE	MAX. RATING			CHARACTERISTICS											
	Pc	Vceo	Ic	hfe				fT MHz			NF				
	W	V	mA	min	max	Ic mA	Vce V	typ	Ic mA	Vce V	max dB	Ic mA	Vce V	fre Hz	Zg Ω
2SA620K	0.2	70	50	150	320	1	6	120	1	6	0.7	0.1	6	1K	10K
2SA640L	0.25	45	30	225	450	0.5	3	100	1	3					
2SA663Y	60	80	7000	50	120	1000	5	6	1000	5					
2SA733P,Q	0.25	40	100	135	270	1	6	180	10	6	20	0.3	6	100	10K
2SB536L,K	20	120	1500	80	250	300	5	60	100	5					
2SC372Y	0.2	30	100	120	240	2	12	200	1	10					
2SC381R	0.1	30	20	40	80	1	6	350	1	6					
2SC535	0.1	20	20					700	5	6	5.5	1	6	100M	50
2SC735Y	0.3	30	400	120	240	100	1	300	50	5					
2SC793Y	60	80	7000	50	120	1000	5	9	1000	5					
2SC945P,Q	0.25	40	100	135	270	1	6	300	10	6	20	0.5	6	1K	500
2SC959L	0.7	80	700	90	150	200	5	50	150	5					
2SC1000GR	0.2	50	100	200	400	2	6	80	1	6	3	0.1	6	100	10K
2SC1345E	0.2	50	100	400	800	2	12	230	2	12	1	0.1	6	1K	10K
2SD38/L,K	20	120	1500	80	250	300	5	60	100	5					

FIELD EFFECT TRANSISTOR (Ta = 25°C)

TYPE	MAX. RATING			CHARACTERISTICS						
	Pch	VG1SS, VG2SS	IG1, IG2	IDSS mA			Crss pF		NF	
	mW	V	mA	min	max	Vds V		Vds V	typ	Vds V
3SK30	200	−15	10	3	20	10	0.6	10	2.0	10
2SK19	200	−18	10	3	24	10	0.8	10	2.0	10

DIODES (Ta = 25°C)

TYPE	MAX. RATING			CHARACTERISTICS			
	IF	Vr	Surge	If		Ir	
	A	V	A	mA	Vf V	µA	Vr V
IS188	0.05	−35	0.5	0.004	0.1	−75	−10
IS1554	0.3	−50	1	100	1.0	0.5	−50
KB265	0.03			0.003	1.31		
SV−03	0.15			1	1.8	10	−100
WZ−120	0.04	−12		20	0.8	0 ~ 40mA	−12
CZ−117	0.085	−11.7		20	0.85	0 ~ 85mA	−11.7
IN4003	1	−200	30	1000	1.1	5	−200
HI-FI SPECIAL	3	−400	150	3000	1.25	5	−400

INTEGRATED CIRCUIT SPECIFIC CHART

TA7061AP

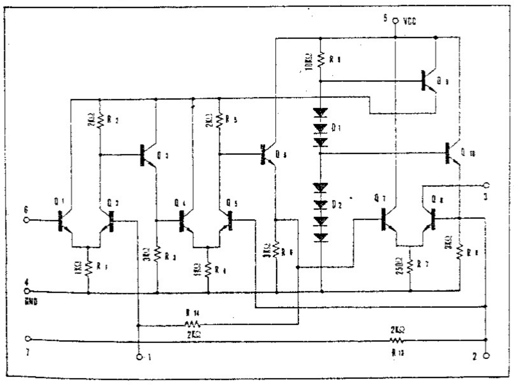
MAXIMUM LIMITS OF DEVICE (Ta = 25°C)

	Symbol	Rating	Unit
Max. Vcc	Vcc	15	V
Input voltage (terminals 6—7)	VI	±3	V
Max. dissipation	PD	300	mW
Operating temperature (Vcc = 7.5V)	Topr	−30~75	°C
Storage temperature	Tstg	−55~125	°C

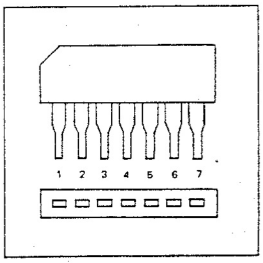
ELECTRICAL SPECIFICATION (Ta = 25°C)

	Symbol	Condition of measurement	Min.	Typ.	Max.	Unit
Current vs supply Vcc	Icc	Vcc = 6.0V		11	13	mA
		Vcc = 7.5V	7	8.5		
Gain (dB)	Gp	Vcc = 7.5V, f = 10.7MHz	66	69	72	dB
Input impedance	RI	Vcc = 7.5V, f = 10.7MHz		5		KΩ
Input capacitance	CI			6		pF
Output impedance	Ro	Vcc = 7.5V, f = 10.7MHz		10		KΩ
Output capacitance	Co			5		pF
Input voltage for full limitting	VI (lim)	Vcc = 7.5V, RL = 1KΩ		600		μV

EQUIVALENT CIRCUIT



PIN CONNECTOR



μPC555A

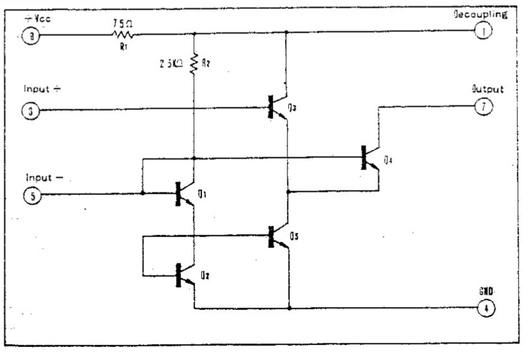
MAXIMUM LIMITS OF DEVICE (Ta = 25°C)

	Symbol	Rating	Unit
Max. supply voltage	Vcc	20	V
Output collector voltage	V7	24	V
Input voltage	V3−5	±5.0	V
Max. dissipation	PD	200	mW
Operating temperature	Ta	−55∼+125	°C
Storage temperature	Tstg	−65∼+150	°C

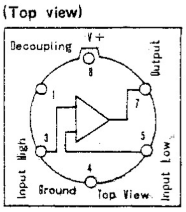
ELECTRICAL SPECIFICATION (Ta = 25°C Vcc = 12V)

	Symbol	Condition of measurement	Min.	Typ.	Max.	Unit
Power dissipation	PD	ein = 0		110	170	mW
Output collector current	I7	ein = 0	1.9	2.5	3.1	mA
Peak to peak current	iopp	ein = 400mVrms f ≦ 1KHz	3.6			mAP-P
Output saturation	Vo(SAT)				1.7	V
Forward transfer admittance		ein = 10mV rms f ≦ 1KHz	29	35		mV
Input conductance	gin	ein ≦ 10mV rms f ≦ 5MHz		0.30	0.43	mV
Input capacitance	cin	ein ≦ 10mV rms f ≦ 5MHz			16	PF
Output capacitance	Co	f ≦ 5MHz		2.0	3.0	PF
Output conductance	go	eo ≦ 10mV rms f ≦ 5MHz		0.015	0.04	mV
Voltage gain	Gv	f = 10.7MHz RL = 1KΩ Rin = 50Ω		31		dB

EQUIVALENT CIRCUIT



PIN CONNECTOR
(Top view)



ABSOLUTE MAXIMUM RATING (Ta = 25°C)

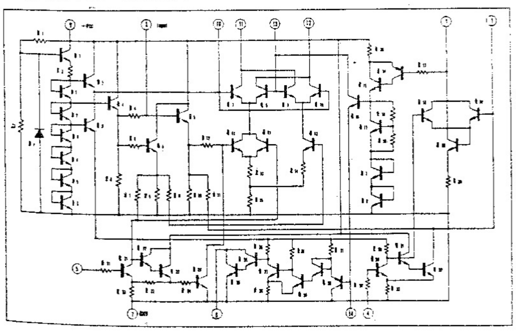
	Symbol	Rating	Unit
Supply voltage	Vcc	15	V
Max. device current	Icc	18	mA
Lamp driver current, max.	IL	100	mA
Device dissipation, max.	PD	400	mW
Operating temperature	Topr	0~±75	°C
Storage temperature	Tstg	40~±125	°C

Note
1. Condition of measurement = input signal 200mV rms (Pilot 10%), frequency 1KHz.
2. R.P.F. of f = 15KHz shall be used for separation measurement.

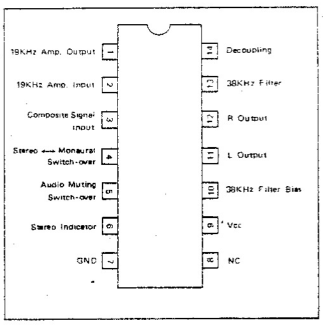
ELECTRICAL CHARACTERISTICS (Ta = 25°C, Vcc = +9.0V)

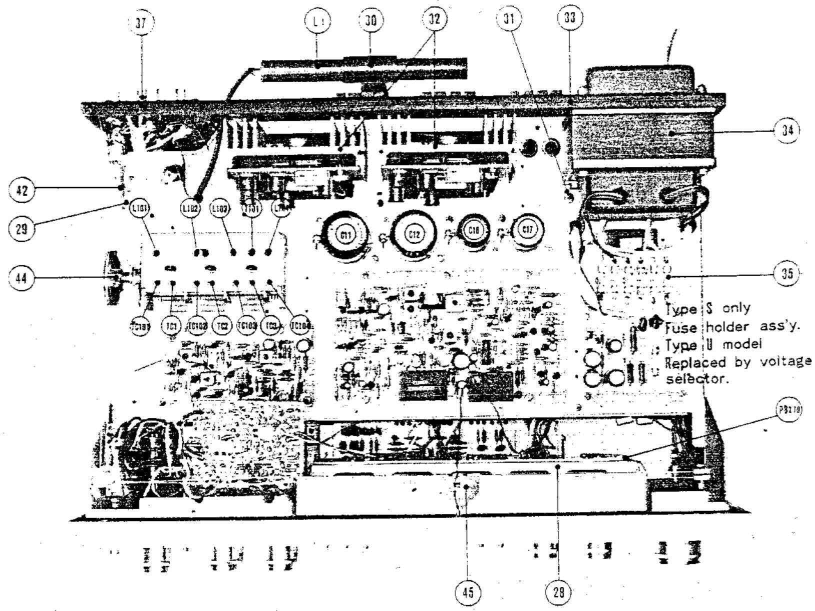
	Symbol	Circuit for measurement	Condition of measurement	Min.	Typ.	Max.	Unit
Circuit current	Icc	1	at zero signal		10	18	mA
Input impedance	Zi	1			20		KΩ
Separation			f = 100Hz		35		dB
			f = 1KHz		45		dB
			f = 10KHz		30		dB
Gain (dB)	Av	1	38KHz B.E.F.		−1.5		dB
Channel balance	ch. B	1	(Mono)		0.2	2.0	dB
Distortion	T.H.D.		(Mono)		0.5	1.0	%
Audio / muting changeover level	Mute OFF	1			0.85	1.00	V
	Mute ON	1		1.00	1.08		V
Sensitivity of Stereo indicator lamp	Lamp ON	1	(Pilot level)		12		mV
	Lamp OFF	1	(Pilot level)		8.4		mV
Stereo / mono Changeover level	STEREO	1		1.00	1.13		V
	MONO	1			0.82	1.00	V
AM suppression 19KHz			(within 1KHz)		30		dB
AM suppression 38KHz			(within 1KHz)		25		dB
SCA rejection	SCA Rejection				55		dB
Muting		1		45	55		dB

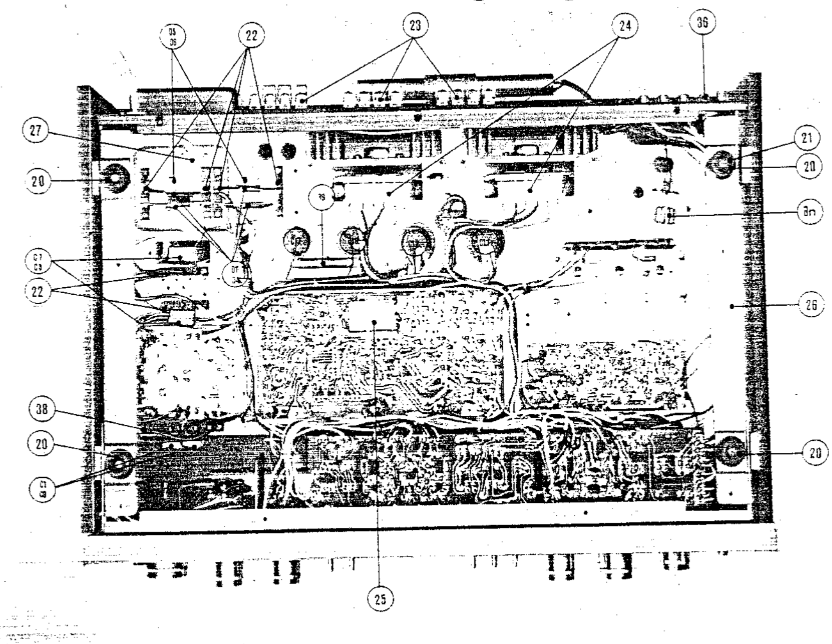
EQUIVALENT CIRCUIT

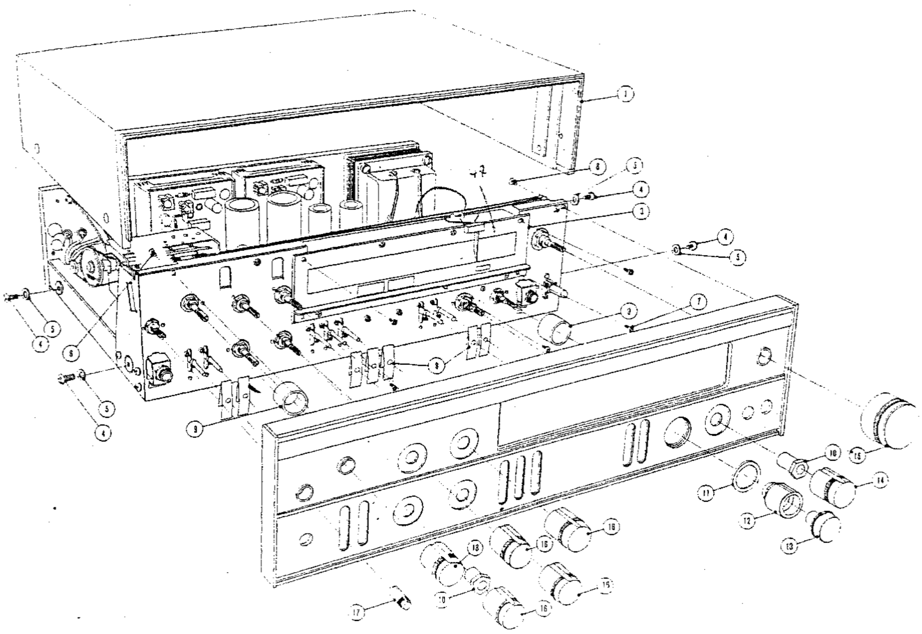


PIN CONNECTOR (Top view)

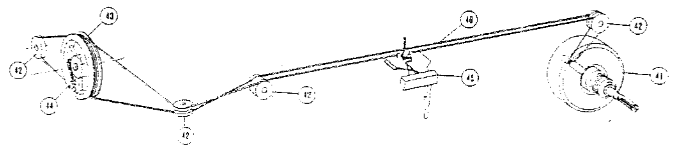



37
30
32
31
33
34
42
29
44
35
Type S only
Fuse holder ass'y.
Type U model
Replaced by voltage selector.
45
28


22
23
24
36
27
21
20
26
38
25



1. Cover (Wood Finish, ex. Rose wood)
2. Panel (Front complete Ass'y)
3. Dial Scale
4. Screw 5mm x 18mm
5. Washer, Nylon
6. Screw 4mm x 6mm
7. Screw 3mm x 8mm
8. Mask, paper (Switch)
9. Bush, mounting
10. Collet Nut
11. Ring



12. Knob (outer volume)
13. Knob (inner volume)
14. Knob (speaker selector)
15. Knob (Tuning)
16. Knob (Tone control and selector)
17. Knob (Mic. Level)

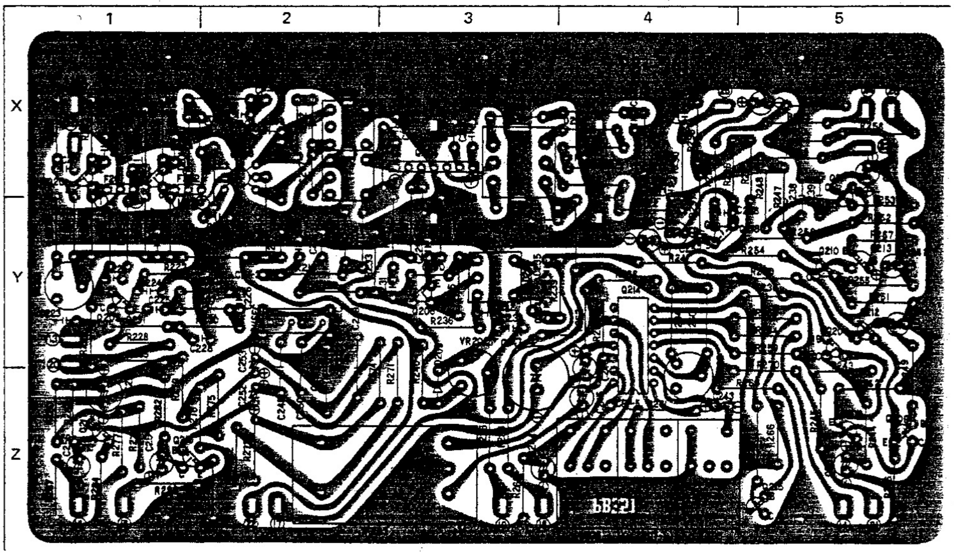
Bn Antenna Balun

20. Rubber Foot.
21. Screw 3 mm x 10mm
22. Stand off Insulator (3 bugs)
23. Speaker Terminal Ass'y (3 per Set)
24. Connector, Female, Ass'y.
25. Sheild I.F.
26. Chassis Complete Ass'y.
27. Clamp, Cable
28. Housing, Pilot lamp
29. Braket, Pully
30. Braket, Antenna
31. Braket, Transformer x 2
32. Power Amp. Complte Ass'y.
33. Panel Back
34. Power Trans = P-1847 U.S.A. & GENERAL EUROPE
    P-1837 Scandinavia
35. Type S model only Fuse Hold b section 20 x 5 mm
    Type U.E. and Model Replaced by Voltage selector
36. Pin Jack Ass'y. Female
37. Antenna Terminal Ass'y.
38. Stand off Insulator (S lugs)
41. Tuning shaft and flywheel assy complete with mounting collet
42. Pully (4.2mm x 13mm)
43. Drum (Tuning Capacitor)
44. Spring (tension for dial cord)
45. Tuning Pointer Ass'y (complete with lamps) → BX 0008
46. Cord, Dial (approx length 108 metre)

47 Dial Lamp AL 0014

Volume, Variable Resistor : RV 0015 200kΩ B x 2

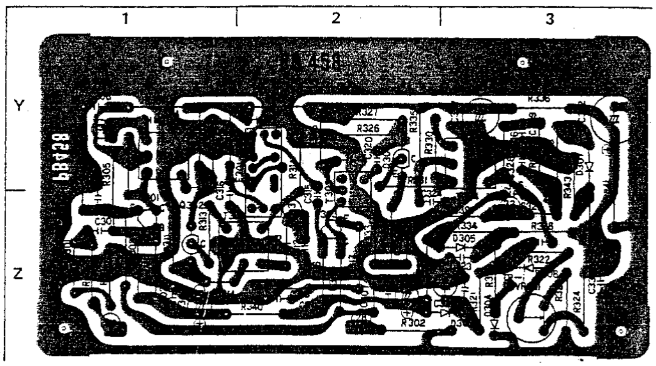
PB-351



PB-351 Component Location

R201	Y1	R234	Y3	R267	Z5	C201	X1	C234	Y3	VR201	Y1
R202	X1	R235	Y3	R268	Y4	C202	X1	C235	Y3	VR202	Y3
R203	X1	R236	Y3	R269	Z5	C203	X1	C236	Y5	VR203	Y4
R204	Y1	R237	Y3	R270	Y5	C204	X1	C237	Z5		
R205	Y1	R238	Z3	R271	Z3	C205	Y2	C238	Y5	Q201	X1
R206	Y1	R239	Y4	R272	Z2	C206	X2	C239	Y5	Q202	X1
R207	X1	R240	Z3	R273	Z2	C207	X2	C240	Y5	Q203	X2
R208	X1	R241	Y4	R274	Z3	C208	X2	C241	X5	Q204	X3
R209	Y1	R242	Z5	R275	Z2	C209	Y2	C242	Y5	Q205	Y1
R210	X2	R243	Z5	R276	Z1	C210	X3	C243	Z4	Q206	Y3
R211	Y2	R244	Z5	R277	Z1	C211	Y2	C244	Z3	Q207	Y5
R212	X2	R245	Z5	R278	Z1	C212	X3	C245	Z4	Q208	Z5
R213	Y2	R246	Z5	R279	Z1	C213	X3	C246	Y4	Q209	Z5
R214	X2	R247	Y5	R280	Z1	C214	Y3	C247	Z3	Q210	Y5
R215	X3	R248	Y5	R281	Z2	C215	Y3	C248	Z2	Q211	Y5
R216	Y2	R249	Z5	R282	Z1	C216	Y2	C249	Y2	Q212	Y5
R217	Y3	R250	Y5	R283	Z1	C217	Y2	C250	Z2	Q213	Y5
R218	Y4	R251	Y5	R284	Z1	C218	Y4	C251	Z2	Q214	Y4
R219	X4	R252	Y5	R285	Y1	C219	X4	C252	Z2	Q215	Z5
R220	X4	R253	Y5	R286	Z1	C220	X4	C253	Y2	Q216	Z1
R221	X4	R254	Y5	R287	Z1	C221	X4	C254	Z1	Q217	Z1
R222	Y4	R255	Y5	R288	Z3	C222	Y1	C255	Z1	Q218	Y4
R223	X4	R256	Y5	R289	X1	C223	Y1	C256	Z1		
R224	X4	R257	Y5	R290	X4	C224	Y1	C257	Y4	D201	X1
R225	Y1	R258	X5	R291	X4	C225	Y1	C258	Y4	D202	X2
R226	Y1	R259	Y5	R292	X5	C226	Y2	C259	Y4	D203	Y2
R227	Y1	R260	Z3	R293	X5	C227	Y1	C260	Y4	D204	X3
R228	Y1	R261	Z4	R294	Y4	C228	Y1	C261	X5	D205	X4
R229	Y1	R262	Y4	R295	X5	C229	Y3	C262	X4	D206	Y2
R230	Y2	R263	Y4	R296	X4	C230	Y3			D207	Y2
R231	Y1	R264	Y5	R297	Y4	C231	Y3			D208	Y3
R232	Y2	R265	Y5	R298	X4	C232	Y3			D209	Z3
R233	Y2	R266	Z5			C233	Y3			D210	X5

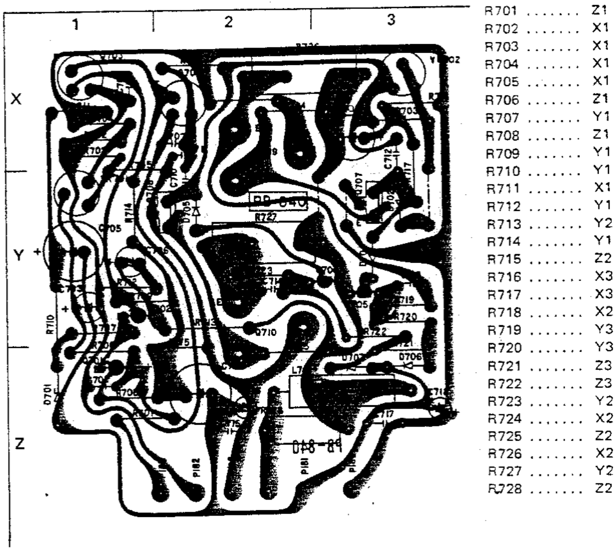
PB-458



PB-458 Component Location

F201	X1
F202	X1
F203	Z2
T201	X2
T202	X2
T203	X3
T204	Y3
T205	Z4
T206	Z4
T207	Z4
(11)	X1
(12)	X1
(13)	Y1
(14)	Z5
(15)	Z1
(16)	Z1
(17)	Z2
(18)	Z3
(19)	Z3
(20)	Y1
(21)	Z5
(22)	Z2
(23)	X5
(24)	X5
(25)	X4
(26)	X5
(36)	X5
CP-1	X1
CP-2	X2
CP-3	Y2
CP-4	Y3
CP-5	Z4
R300	Z1
R301	Z1
R302	Z2
R303	Z1
R304	Y1
R305	Y1
R306	Y1
R307	Y1
R308	Z1
R309	Y1
R310	Y1
R311	Z1
R312	Z2
R313	Z1
R314	Y2
R315	Y1
R316	Z2
R317	Z2
R318	Z2
R319	Y2
R320	Z2
R321	Z3
R322	Z3
R323	Z3
R324	Z3
R325	Y2
R326	Y2
R327	Y2
R328	Z3
R329	Z3
R330	Y2
R331	Y2
R332	Z2
R333	Z2
R334	Z3
R335	Y2
R336	Y3
R337	Y3
R338	Y3
R339	Z3
R340	Z2
R341	Y3
R342	Z3
R343	Y3
C301	Z1
C302	Z1
C303	Z1
C304	Y1
C305	Z1
C306	Y1
C307	Z2
C308	Y1
C309	Y2
C310	Z2
C311	Z2
C312	Z2
C313	Z2
C314	Z1
C315	Z2
C316	Y1
C317	Z3
C318	Z2
C319	Y2
C320	Y2
C321	Z2
C322	Y3
C323	Z3
C324	Z2
C325	Y3
C326	Y3
C327	Y3
C328	Z3
C329	Y3
C330	Z3
C331	Z3
C332	Z3
VR301	Z3
Q301	Z1
Q302	Z1
Q303	Z2
Q304	Y2
D301	Z1
D302	Z1
D303	Z2
D304	Z3
D305	Z3
D306	Y3
D307	Y3
F301	Y2
T301	Y1
T302	Z1
T303	Y2
T304	Y3
(27)	Z1
(28)	Z2
(29)	Z3
(30)	Z3
(31)	Y3
(32)	Z3
(33)	Z2
(34)	Y1
(35)	Z1
CP-1	Z2
CP-2	Y3
TP-1	Z3

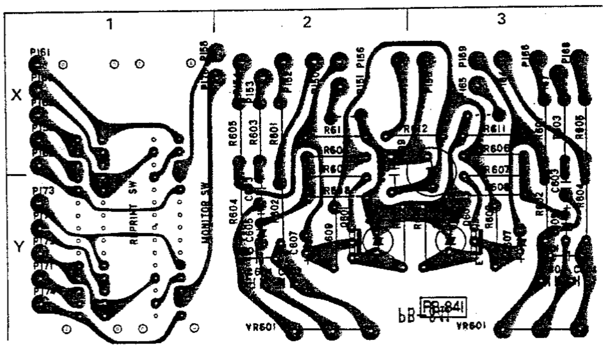
PB-840



PB-840 Component Location

R701	Z1	C701	Z1	D701	Z1
R702	X1	C702	Z1	D702	Y3
R703	X1	C703	Y1	D703	X3
R704	X1	C704	X1	D704	Y3
R705	X1	C705	Y1	D705	Y2
R706	Z1	C706	Y1	D706	Z3
R707	Y1	C707	X2	D707	Z3
R708	Z1	C708	Z2		
R709	Y1	C709	X3	L701	Z3
R710	Y1	C710	Y2	VR701	Y1
R711	X1	C711	X2	VR702	X3
R712	Y1	C712	X3		
R713	Y2	C713	Y3	P180	Z3
R714	Y1	C714	Y2	P181	Z2
R715	Z2	C715	Z2	P182	Z2
R716	X3	C716	Z2	P183	Z2
R717	X3	C717	Z3	P184	Z2
R718	X2	C718	Z3	P185	Z1
R719	Y3				
R720	Y3	Q701	Z1		
R721	Z3	Q702	Y1		
R722	Z3	Q703	X1		
R723	Y2	Q704	X2		
R724	X2	Q705	Y3		
R725	Z2	Q706	Y3		
R726	X2	Q707	Y3		
R727	Y2	Q708	Y2		
R728	Z2	Q709	X2		
		Q710	Y2		

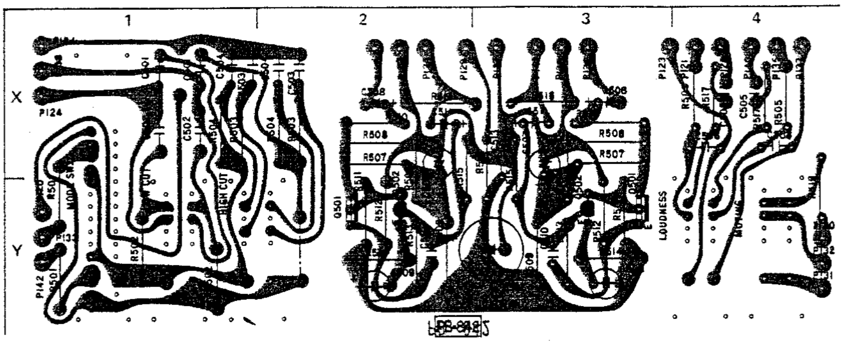
PB-841



PB-841 Component Location

R601	X3, X2	P150	X2
R602	Y3, Y2	P151	X2
R603	X3, X2	P152	X2
R604	Y3, Y2	P153	X2
R605	X3, X2	P154	X2
R606	X3, X2	P155	X3
R607	X3, X2	P156	X2
R608	Y3, Y2	P157	X2
R609	Y3, Y2	P158	X1
R610	Y3, Y2	P159	X1
R611	X3, X2	P160	X1
R612	X3	P161	X1
		P162	X1
C601	Y3, Y2	P163	X1
C602	Y3, Y2	P164	X3
C603	Y3, Y2	P165	X3
C604	Y3, Y2	P166	X3
C605	Y3, Y2	P167	X3
C606	Y3, Y2	P168	X3
C607	Y3, Y2	P169	X3
C608	X2	P170	X1
C609	X3	P171	Y1
		P172	Y1
Q601	Y3, Y2	P173	Y1
VR601	Y3, Y2	P174	Y1
		P175	Y1
REPRINT SW ...	Y1		
MONITOR SW ..	Y1		

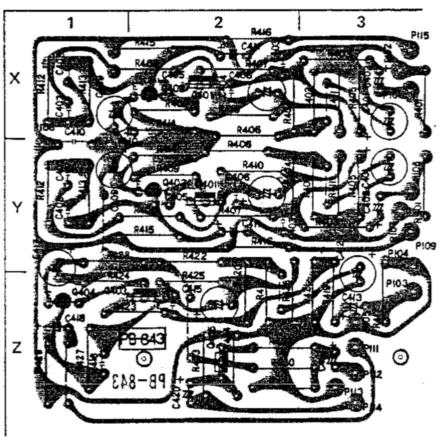
PB-842



PB-842 Component Location

R501 .... Y1	R514 ..... Y2, Y3	C507 ..... X2, X3	MUTING SW.... Y4	P131 .... Y4
R502 .... Y1	R515 ..... X2, X3	C508 ..... X2, X3		P132 .... Y4
R503 ..... X2, X1	R516 ..... X2, X3	C509 ..... Y2, Y3	P120 .... Y1	P133 .... Y1
R504 ..... X2, X1	R517 .... X4	C510 ..... Y2, Y3	P121 .... X4	P134 .... X1
R505 .... X4	R518 .... X3	C511 ..... X2, X3	P122 .... X2	P135 .... X4
R506 ..... X2, X3	R519 .... Y4	C512 .... Y3	P123 .... X3	P136 .... X3
R507 ..... X2, X3		C513 .... X3	P124 .... X1	P137 .... X4
R508 ..... X2, X3	C501 .... X1		P125 .... X2	P138 .... X1
R509 ..... Y2, Y3	C502 .... X1	Q501 ..... Y2, Y3	P126 .... X4	P139 .... X3
R510 ..... X2, X3	C503 ..... X1, X2	Q502 ..... Y2, Y3	P127 .... X3	P140 .... X4
R511 ..... X2, X3	C504 ..... X1, X2		P128 .... X2	P141 .... X3
R512 ..... Y2, Y3	C505 .... X4	LOW CUT SW... Y1	P129 .... X2	P142 .... Y1
R513 ..... Y2, Y3	C506 .... X3	HIGH CUT SW... Y1	P130 .... Y4	

PB-843



PB-843 Component Location

R401 ..... X3, Y3	R433 .... Z2	P103 .... Z3
R402 ..... X3, Y3	R434 .... Z2	P104 .... Y3
R403 ..... X3, Y3		P105 .... Z3
R404 ..... X2, Y3	C401 ..... X3, Y3	P106 .... Y3
R405 ..... X3, Y3	C402 ..... X3, Y3	P107 .... Y3
R406 ..... X2, Y2	C403 ..... X2, Y2	P108 .... Y1
R407 ..... X2, Y2	C404 ..... X2, Y2	P109 .... Y3
R408 ..... X2, Y2	C405 ..... X2, Y2	P110 .... Y1
R409 ..... X2, Y2	C406 ..... X2, Y2	P111 .... Z3
R410 ..... X2, Y2	C407 ..... X1, Y1	P112 .... Z3
R411 ..... X3, Y3	C408 ..... X1, Y1	P113 .... Z3
R412 ..... X1, Y1	C409 ..... X1, Y1	P114 .... Z3
R413 ..... X1, Y1	C410 .... Y1	P115 .... X3
R414 ..... X2, Y2	C411 ..... X2, Y2	
R415 ..... X2, Y2	C412 .... Y3	
R416 ..... X2, Y2	C413 .... Z3	
R417 .... Z3	C414 .... Z2	
R418 .... Z2	C415 .... Z2	
R419 .... Z3	C416 .... Z1	
R420 .... Z2	C417 .... Y1	
R421 .... Z3	C418 .... Z1	
R422 .... Y2	C419 .... Z3	
R423 .... Z1	C420 .... Z2	
R424 .... Z1		
R425 .... Z2	Q401 ..... X2, Y2	
R426 .... Z2	Q402 ..... X2, Y2	
R427 .... Z1	Q403 .... Z2	
R428 .... Y1	Q404 .... Z1	
R429 .... Z1	Q405 .... Z2	
R430 .... Z2		
R431 .... Z2	P101 .... X3	
R432 .... Z2	P102 .... X3	

REPLACEMENT PARTS

RESISTORS: ±10% ¼ watt deposited carbon, unless noted otherwise

SYMBOL NO.	DESCRIPTION
R1	8.2K
R2	33K
R3	33K
R4	8.2K
R5	180K
R6	180K
R7	180K
R8	180K
R9	150 – 5W METAL OXIDE FIXED
R10	680 – 1W METAL OXIDE FIXED
R11	680 – 1W METAL OXIDE FIXED
R101	100K
R102	22Ω
R103	22K
R104	4.7K
R105	1K
R106	220Ω
R107	1M
R108	100Ω
R109	10K
R110	10K
R111	100Ω
R112	3.3K
R201	1.8K
R202	560Ω
R203	1K
R204	470Ω
R205	1.5K
R206	2.2K
R207	680Ω
R208	1K
R209	470Ω
R210	560Ω
R211	470Ω
R212	22K
R213	470Ω
R214	470Ω
R215	2.2K
R216	47K
R217	390Ω
R218	1K
R219	1K
R220	1K
R221	47Ω
R222	100Ω
R223	6.8K
R224	6.8K
R225	22K
R226	3.3K
R227	1K
R228	4.7K
R229	1K
R230	10K
R231	100K
R232	15K
R233	2.2K
R234	1K
R235	15K

SYMBOL NO.	DESCRIPTION
R236	1K
R237	1K
R238	10Ω
R239	1K
R240	1.8K
R241	47K
R242	22Ω
R243	33K
R244	33K
R245	6.8K
R246	220Ω
R247	100K
R248	100K
R249	47K
R250	12K
R251	39Ω
R252	39Ω
R253	47K
R254	47K
R255	2.7K
R256	2.7K
R257	39K
R258	½W 2.2K
R259	100K
R260	4.7K
R261	47Ω
R262	3.9K
R263	3.9K
R264	10Ω
R265	15K
R266	15K
R267	½W 390Ω
R268	100Ω
R269	39K
R270	100K
R271	36K
R272	3.3K
R273	3.3K
R274	36K
R275	150K
R276	18K
R277	18K
R278	150K
R279	100K
R280	100K
R281	1.2K
R282	10K
R283	10K
R284	1.2K
R285	470Ω
R286	470K
R287	470K
R288	3.9K
R289	10K
R290	33K
R291	1M
R292	47K
R293	100K
R294	8.2K
R295	100K
R296	220K
R297	220K
R298	33K

SYMBOL NO.	DESCRIPTION
R300	150Ω
R301	560Ω
R302	½W 390Ω
R303	10K
R304	560Ω
R305	8.2K
R306	22K
R307	12K
R308	1K
R309	2.2K
R310	12K
R311	2.2K
R312	4.7K
R313	22Ω
R314	68K
R315	560Ω
R316	4.7K
R317	220Ω
R318	560Ω
R319	100Ω
R320	10K
R321	47K
R322	15K
R328	470Ω
R324	8.2K
R325	4.7K
R326	3.3K
R327	22K
R328	3.9K
R329	150Ω
R330	33K
R331	
R332	100Ω
R333	100Ω
R334	10K
R335	100Ω
R336	220Ω
R337	2.2K
R338	2.7K
R339	470K
R340	4.7K
R341	½W 680Ω
R342	4.7K
R343	33Ω
R401	68K LOW NOISE
R402	22K LOW NOISE
R403	3.9K LOW NOISE
R404	680K LOW NOISE
R405	1M LOW NOISE
R406	120K
R407	180 LOW NOISE
R408	470 LOW NOISE
R409	47K LOW NOISE

SYMBOL NO.	DESCRIPTION
R410	27K LOW NOISE
R411	820 LOW NOISE
R412	39K LOW NOISE
R413	470K LOW NOISE
R414	1.5K
R415	10K
R416	150K
R417	82K LOW NOISE
R418	22K LOW NOISE
R419	3.9K LOW NOISE
R420	560K LOW NOISE
R421	820K LOW NOISE
R422	120K
R423	180 LOW NOISE
R424	47K LOW NOISE
R425	12K LOW NOISE
R426	270 LOW NOISE
R427	110K LOW NOISE
R428	3.3K
R429	33K
R430	470K
R431	680K
R432	4.7K
R433	150K
R434	10K
R501	10K
R502	1M
R503	1M
R504	1M
R505	12K
R506	22K
R507	470K
R508	680K
R509	68K
R510	4.7K
R511	82K
R512	6.8K
R513	22K
R514	1K
R515	5.6K
R516	150K
R517	27K
R518	100
R519	6.8K
R601	1.5K
R602	18K
R603	2.2K

Step.	Signal Source Connected to	Set signal to	Set Radio Dial to	Output Indicator Connected to	Adjust	Adjust for
1	Set selector switch to "FM", muting switch to "off", and turn power switch "on"					
2				DC VTVM PB351 (17)		Check that voltage is between 11.5 ~ 12.3V
3				Refer circuit diagram		Check each part voltage is necessary
4	Sweep generator PB351 (11)	±400KHz sweep centred at 10.7MHz generator output level 90–100dB	Quiet point on band	Oscilloscope PB351 CP–2		Due to the fixed frequency of the ceramic filters, find the centre frequency of a symmetrical band pass response. Make a note of it (for example 10.75MHz)
5				Oscilloscope PB351 CP–3	T201 T202 core	Symmetrical response centred at the frequency noted by step 4
6				Oscilloscope PB351 CP–4	T204 core	
7				Oscilloscope PB351 (23)	T203 top core T203 bottom core	Maximum linearity and amplitude of "S" curve centred at the frequency noted by step 4
8	FM signal generator Across FM antenna terminals (300Ω) through matching network	Reduce the output level to zero (interstation recieving condition	93MHz		T203 top core	Centre indication of the tuning meter
9		93MHz at 400Hz 100% modulation, output level 1mV		Oscilloscope Distortion meter AC VTVM TAPEOUT 1	T203 bottom core	Minimum distortion. At the minumum distortion setting, the output level must be within 1/2dB of peak output.
10	Repeat steps 8 and 9 as necessary to obtain maximum output level and minimum distortion at centre point of tuning meter and the meter must also shows centre at interstation state.					
11	FM signal generator Across FM antenna terminals (300Ω) through matching network	88MHz at 400Hz 100% modulation, generator output level 1mV	88MHz	Oscilloscope Distortion meter AC VTVM TAPE OUT 1	T204 core	The signal strength meter must indicate its maximum, at the same time as the centre tune meter indicates centre
12					L104	Accurate indication of pointer on dial to within ± 1 pointer width
13		108MHz at 400Hz 100% modulation, generator output level 1mV	108MHz		TC104	
14		88MHz at 400Hz 100% modulation, generator output level 5 ~ 10μV	88MHz		T101 top core T101 bottom core	Maximum indication of signal strength meter
15					L101	

Step.	Signal Source Connected to	Set signal to	Set Radio Dial to	Output Indicator Connected to	Adjust	Adjust for
16	FM signal generator Across FM antenna terminals (300Ω) through matching network	88MHz at 400Hz 100% modulation, generator output level 5 ~ 10μV	88MHz	Oscilloscope Distortion meter AC VTVM TAPE OUT 1	L102	Maximum indication of signal strength meter
17					L103	
18		108MHz at 400Hz 100% modulation, generator output level 5 ~ 10μV	108MHz		TC101	
19					TC102	
20					TC103	
21	Repeat steps 11 ~ 20 as necessary to obtain correct tuning on dial scale and the maximum indication of signal meter with uniform sensitivity throughout the band					
22	FM signal generator Across FM antenna terminals (300Ω) through matching network	Reduce the output level to zero (interstation receiving condition	93MHz	Oscilloscope Distortion meter AC VIVM TAPE OUT 1	T203 top core	Center indication of the tuning meter
23		93MHz at 400Hz 100% modulation, output level 1mV			T203 bottom core	Minimum distortion. At the minimum distortion setting, the output level must be within 1/2 dB of peak output.
24		88MHz at 400Hz 100% modulation	88MHz			IHF maximum usable sensitivity which is the minimum output level of FMSG required for distortion and noise to be −30dB of total output
25		108MHz at 400Hz 100% modulation	108MHz			
26		98MHz at 400Hz 100% modulation output level 7μV	98MHz		VR201	Swing of signal strength meter to first indicator mark or if not possible ± 1/2 is acceptable
27	Set muting switch "on"					
28	FM signal generator Across FM antenna terminals (300Ω) through matching network	98MHz at 400Hz 100% modulation generator output level 7μV	98MHz	Oscilloscope AC VTVM TAPE OUT 1	VR202	Fix VR202 at the point where output signals appear (muting adjustment)
29		98MHz at 19KHz 3 ~ 4% modulation generator output level 1mV		Oscilloscope PB351 CP-5	T205 core	Maximum amplitude of oscilloscope trace
30					T207 core	
31					T206 core	
32	Repeat steps 29 ~ 31 as necessary for alignment of perfect tuning					
33	FM signal generator Across FM antenna terminals (300Ω) through matching network	98MHz at 19KHz 10% (L−R) 400Hz 45% output level 1mV	98MHz	Oscilloscope AC VTVM TAPE OUT 1	T206 core	To obtain peak output voltage
34		98MHz at 19KHz 10% L (or R) stereo 90% modulation output level 1mV			VR203	Maximum separation

TRANSISTORS & IC

SYMBOL NO.	DESCRIPTION	
Q101	FM RF AMPLIFIER	3SK30
Q102	FM MIXER	2SC535
Q103	FM LOCAL OSCILATOR	SE3001
Q201	FM IF AMPLIFIER	2SC381
Q202	FM IF AMPLIFIER	2SC381
Q203	FM IF AMP & LIMITTER	μPC555A
Q204	FM LIMITTER	TA7061AP
Q205	FM AGC AMPLIFIER	2SC381
Q206	FM SIGNAL METER AMPLIFIER	2SC381
Q207	FM MUTING DC AMPLIFIER	2SC372
Q208	WIRED OR GATE FOR FM MUTING	2SC372
Q209	WIRED OR GATE FOR FM MUTING	2SC372
Q210	FM MUTING DC AMPLIFIER	2SC1000
Q211	FM MUTING DC AMPLIFIER	2SA640
Q212	FM MUTING DC AMPLIFIER	2SC372
Q213	FM MUTING DC AMPLIFIER	2SC372
Q214	FM STEREO DEMODULATOR	μPC554C
Q215	ACTIVE DUMMY LOAD	2SC735
Q216	FM AUDIO AMPLIFIER	2SC1000
Q217	FM AUDIO AMPLIFIER	2SC1000
Q218	FM MUTING	2SK30
Q301	AM RF AMPLIFIER	2SC381
Q302	AM MIXER & OSCILATOR	2SC372
Q303	AM IF AMPLIFIER	2SC372
Q304	AM IF AMPLIFIER	2SC372

SYMBOL NO.	DESCRIPTION	
Q401	PHONO AMPLIFIER	2SC1345
Q402	PHONO AMPLIFIER	2SA640
Q403	MIC AMPLIFIER	2SC1345
Q404	MIC AMPLIFIER	2SA640
Q405	EMITTER FOLLOWER	2SC1345
Q501	A.F. AMPLIFIER	2SC1345
Q502	A.F. AMPLIFIER	2SA640
Q601	TONE AMPLIFIER	2SC1345
Q701	POWER AMPLIFIER	2SA620
Q702	POWER AMPLIFIER	2SA620
Q703	POWER AMPLIFIER	2SC959
Q704	POWER AMPLIFIER	2SC959
Q705	POWER AMPLIFIER	2SC945
Q706	POWER AMPLIFIER	2SA733
Q707	POWER AMPLIFIER	2SD381
Q708	POWER AMPLIFIER	2SB536
Q709	POWER AMPLIFIER	2SC793
Q710	POWER AMPLIFIER	2SA663
Q801	POWER SUPPLY	2SC1345

DIODES

SYMBOL NO.	DESCRIPTION	
D1	RECTIFIER	HIFI SPECIAL
D2	RECTIFIER	HIFI SPECIAL
D3	RECTIFIER	HIFI SPECIAL
D4	RECTIFIER	HIFI SPECIAL
D5	RECTIFIER	IN4003
D6	RECTIFIER	IN4003
D201	CHECK POINT DETECTOR	IS188
D202	FM LIMITTER	IS188
D203	CHECK POINT DETECTOR	IS188
D204	FM RATIO DETECTOR	IS188
D205	FM RATIO DETECTOR	IS188
D206	AGC DETECTOR	IS188
D207	AGC DETECTOR	IS188
D208	FM METER DETECTOR	IS188
D209	TEMPERATURE COMPENSATION	KB265
D210	VOLTAGE STABILIZER	WZ120

SYMBOL NO.	DESCRIPTION	
D301	INPUT CLAMP	IS1554
D302	INPUT CLAMP	IS188
D303	AGC CONTROL	IS1554
D304	TEMPERATURE COMPENSATION	KB265
D305	AGC DETECTOR	IS1554
D306	AUDIO & METER DETECTOR	IS188
D307	METER PROTECTION	IS188
D308	AGC DETECTOR	IS188
D701	POWER AMPLIFIER	WZ–120
D702	POWER AMPLIFIER	SV–03
D703	POWER AMPLIFIER	IS1554
D704	POWER AMPLIFIER	IS1554
D705	POWER AMPLIFIER	IS1554
D706	POWER AMPLIFIER	IS1554
D707	POWER AMPLIFIER	IS1554
D801	POWER SUPPLY	IN4003
D802	POWER SUPPLY	CZ–117

VARIABLE RESISTORS

SYMBOL NO.	DESCRIPTION	
VR1	100K–A (with S7)	FOR MIC MIXING
VR2	200K–BX2 with C.T	FOR VOLUME CONT.
VR3	50K–B	FOR TONE CONT.
VR201	4.7K–B SEMI FIXED	FOR FM IF GAIN
VR202	470Ω–B SEMI FIXED	FOR FM MUTING LEVEL
VR203	4.7KΩ–B SEMI FIXED	FOR FM SEPARATION

SYMBOL NO.	DESCRIPTION	
VR301	330Ω–B SEMI FIXED	FOR AM AGC SETTING
VR601	100K–B	FOR TONE CONT.
VR701	4.7K–B SEMI FIXED	FOR POWER AMP.
VR702	330Ω–B SEMI FIXED	FOR POWER AMP.

SWITCHES

SYMBOL	NO.	DESCRIPTION	
S1	4–8–6	ROTARY SW	FUNCTION
S2	2–3	LEVER SW	LOW CUT
S3	2–3	LEVER SW	HIGH CUT
S4	2–3	LEVER SW	LOUDNESS
S5	2–2	LEVER SW	MUTING
S6	6–3	LEVER SW	MODE
S7	(WITH VR1)		MIC MIXING

SYMBOL	NO.	DESCRIPTION	
S8	6–3	LEVER SW	MONITOR
S9	6–3	LEVER SW	DUBBING
S10	2–4–6	ROTARY SW	SPEAKER
S11	2–2		POWER
S201	2–2	SLIDE SW	FM DE EMPHASIS

TRANSFORMERS & FILTERS

SYMBOL NO.	DESCRIPTION	
T101	FM IF TRANS	
T201	FM IF TRANS	TKAC–14733K
T202	FM IF TRANS	TKAC–14733K
T203	FM DISCRIMINATOR TRANS	V4FCC–20693BCV
T204	FM METER TRANS	TKAC–14733K
T205	19KHz TRANS	02–1138
T206	38KHz TRANS	02–1139
T207	19KHz TRANS	02–1138
T301	AM RF TRANS	YXR–19030BD

SYMBOL NO.	DESCRIPTION	
T302	AM OSCILATOR TRANS	YXR–18909GN
T303	AM IF TRANS	101AC–101A
T304	AM IF TRANS	YMC–15002A
F201	FM IF FILTER	CF–10M12C
F202	FM IF FILTER	CF–10M12C
F203	FM LOW-PASS FILTER	LUX–14562
F301	AM IF FILTER	CFT–455B

SPECIFICATIONS

■ AUDIO SECTION

CIRCUIT:	Fully complimentary direct coupled D.C. output amp utilising dual rail power supply
RMS POWER:	40/40Watts (8ohms both channel driven) 45/45Watts (4ohms both channel driven)
T.H.D:	<0.05% (8ohms, 40Watts) <0.05% (4ohms, 45Watts)
FREQUENCY RESPONSE:	15Hz – 35KHz (–1dB) 5Hz – 75KHz (–3dB)
POWER BANDWIDTH:	5Hz – 40KHz (0.1%, –3dB)
INPUT SENSITIVITY:	PHONO 1, PHONO 2 2.3mV (at 40Watts, 8ohms) AUX 1, AUX 2 150mV (at 40Watts, 8ohms) TAPE MONITOR 1, 2 150mV (at 40Watts, 8ohms) MIC 2mV (at 40Watts, 8ohms)
REC OUT:	RCA type pin-plug 150mV, 100ohms DIN pin-plug 30mV, 90Kohms
EQUALIZER CURVE:	R.I.A.A.
PERMISSIBLE PHONO INPUT VOLTAGE:	100mV at 1KHz
TONE CONTROL:	Treble & Bass Lux type NF tone control turnover frequency Treble: 3KHz ±9.5dB Bass: 300Hz ±10.5dB
FILTER:	LOW CUT 70Hz, 20Hz 6dB/oct. HIGH CUT 6KHz, 12KHz 6dB/oct.
LOUDNESS CONTROL:	YES
SN RATIO:	Phono 1, Phono 2 >66dB MIC 60dB Aux 1, Aux 2 >85dB Monitor >85dB
RESIDUAL NOISE:	<0.9mV; 86dB
ACCESSORIES:	Head-phone Jack, Mode Selector (stereo-rev-mix) AC outlet, Voltage selector (100, 120, 220, 240V) Speaker selector (A, B, C, A+B, A+C) Dual monitor circuit (useful for tape to tape dubbing) Protection circuit for amp. Mic Mixing, etc. De-emphasis switch (50/75μsec.) for universal type.

■ FM SECTION

IHF SENSITIVITY:	1.8μV
SENSITIVITY FOR 50dB S/N:	3.6μV
ULTIMATE S/N:	70dB
THD, Mono:	0.3% (at 400Hz)
Stereo:	0.4% (at 400Hz)
ALTERNATE CHANNEL SELECTIVITY:	70dB
IF REJECTION:	90dB
IMAGE REJECTION:	90dB
SPURIOUS RESPONSE REJECTION:	90dB
AM SUPPRESSION:	55dB
CAPTURE RATIO:	1.3dB
STEREO SEPARATION:	(400Hz) 40dB
FROM 100Hz TO 10KHz:	30dB
MUTING THRESHOLD:	7μV
STEREO THRESHOLD:	7μV
FREQUENCY RESPONSE (MONO AND STEREO):	30 to 15,000Hz $^{-0.2}_{-1.5}$dB

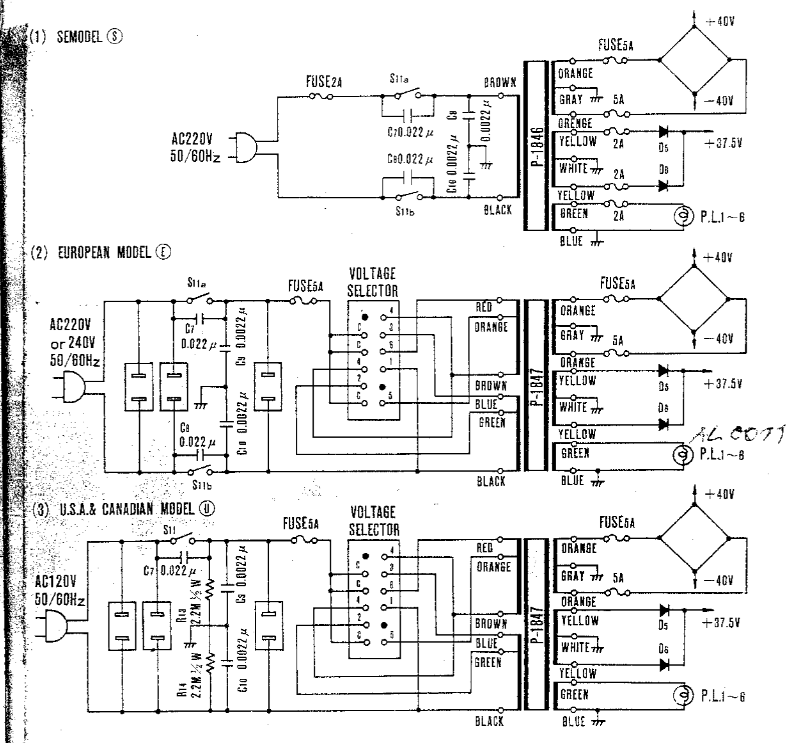
■ AM SECTION

IHF SENSITIVITY:	14μV
S/N RATIO:	48dB
IF REJECTION:	85dB
IMAGE REJECTION:	72dB
THD:	0.6%

■ GENERAL SPECIFICATIONS

POWER REQUIREMENTS:	100/120/220/240V 50-60Hz AC
POWER CONSUMPTION:	35-160 V. A.
DIMENSIONS:	(W) 480mm (18-1/8") x (D) 360mm (14-3/16") x (H) 345mm (13-5/8")

POWER SUPPLY DIAGRAM FOR THE THREE MODELES

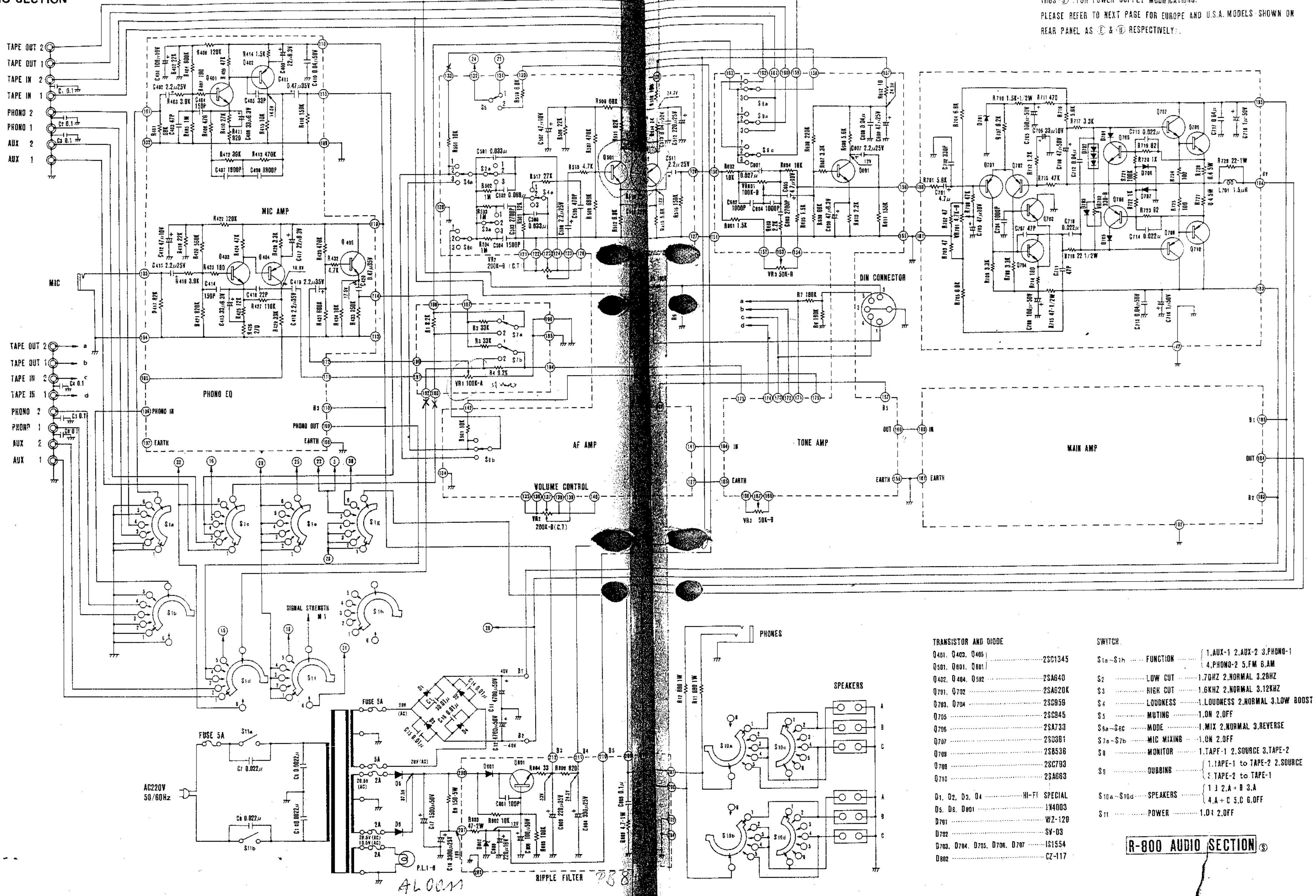


AM/FM STEREO RECEIVER
MODEL R800
CIRCUIT DIAGRAM

Printed in Japan

■ AUDIO SECTION

THIS DIAGRAM APPLIES ONLY TO "SEMKO" MODELS SHOWN ON REAR PANEL THUS Ⓢ. FOR POWER SUPPLY MODIFICATIONS.
PLEASE REFER TO NEXT PAGE FOR EUROPE AND U.S.A. MODELS SHOWN ON REAR PANEL AS Ⓔ & Ⓤ RESPECTIVELY.

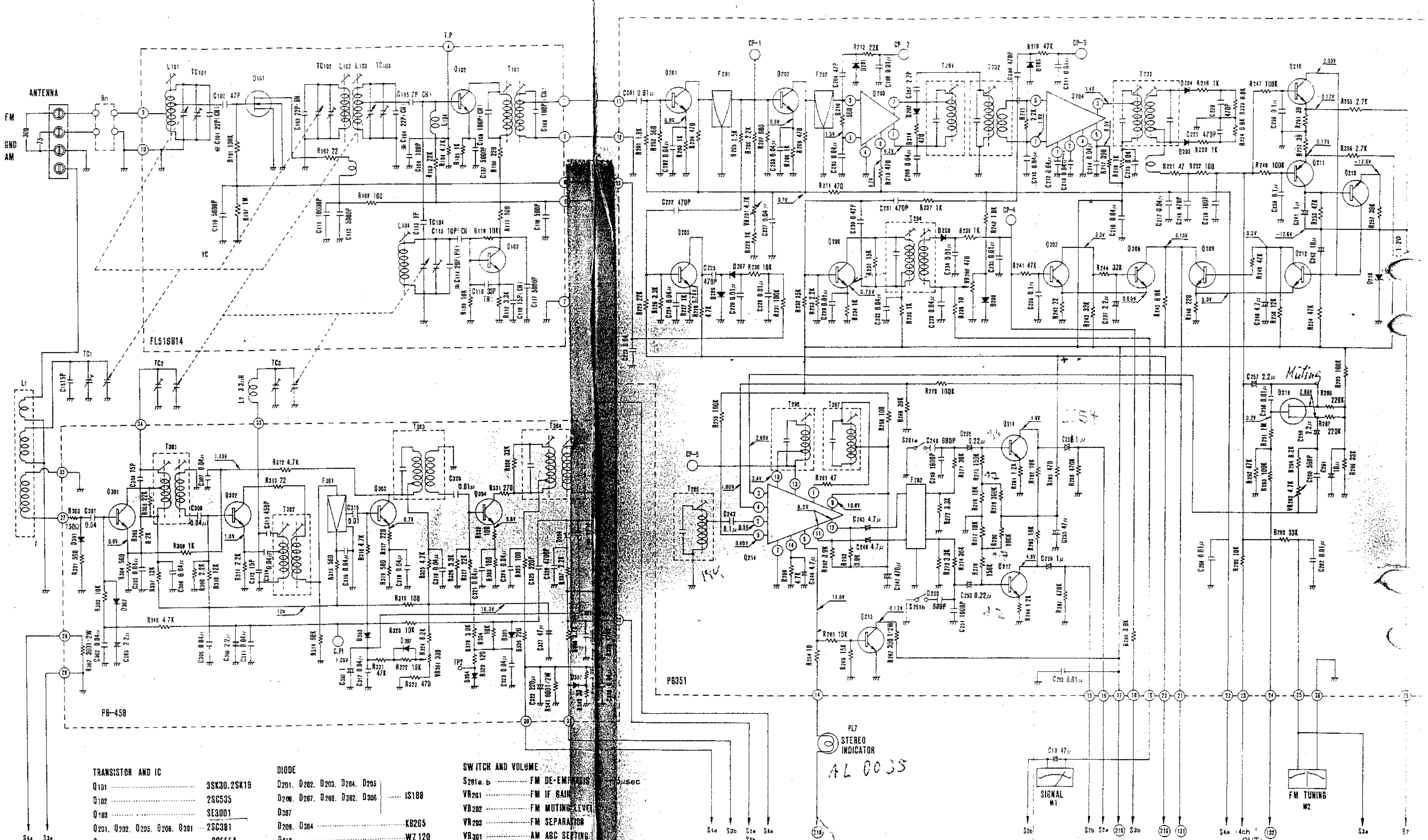


TRANSISTOR AND DIODE	
Q401, Q403, Q405, Q501, Q601, Q801	2SC1345
Q402, Q404, Q502	2SA640
Q701, Q702	2SA620K
Q703, Q704	2SC959
Q705	2SC945
Q706	2SA733
Q707	2SD361
Q708	2SB536
Q709	2SC793
Q710	2SA663
D1, D2, D3, D4	HI-FI SPECIAL
D5, D6, D801	1N4003
D701	WZ-120
D702	SV-03
D703, D704, D705, D706, D707	IS1554
D802	CZ-117

SWITCH		
S1a–S1h	FUNCTION	1.AUX-1 2.AUX-2 3.PHONO-1 4.PHONO-2 5.FM 6.AM
S2	LOW CUT	1.70HZ 2.NORMAL 3.20HZ
S3	HIGH CUT	1.6KHZ 2.NORMAL 3.12KHZ
S4	LOUDNESS	1.LOUDNESS 2.NORMAL 3.LOW BOOST
S5	MUTING	1.ON 2.OFF
S6a–S6c	MODE	1.MIX 2.NORMAL 3.REVERSE
S7a–S7b	MIC MIXING	1.ON 2.OFF
S8	MONITOR	1.TAPE-1 2.SOURCE 3.TAPE-2
S9	DUBBING	1.TAPE-1 to TAPE-2 2.SOURCE 3.TAPE-2 to TAPE-1
S10a–S10d	SPEAKERS	1.B 2.A+B 3.A 4.A+C 5.C 6.OFF
S11	POWER	1.ON 2.OFF

R-800 AUDIO SECTION Ⓢ

■ RF SECTION



TRANSISTOR AND IC	
Q101	3SK30, 2SK19
Q102	2SC535
Q103	SE3001
Q201, Q202, Q205, Q206, Q301	2SC381
Q203	μPC555A
Q204	TA7061AP
Q207, Q208, Q209, Q212, Q213, Q302, Q303, Q304	2SC372
Q211	2SA640
Q214	μPC554C
Q215	2SC735
Q210, Q216, Q217	2SC1000
Q218	2SK30

DIODE	
D201, D202, D203, D204, D205, D206, D207, D208, D302, D306	IS188
D307	
D209, D304	KB265
D210	WZ 120
D301, D303, D305, D307	IS1554

SWITCH AND VOLUME

S201a, b	FM DE-EMPHASIS ... μsec
VR201	FM IF GAIN
VR202	FM MUTING LEVEL
VR203	FM SEPARATION
VR301	AM ASC SETTING

NOTES :

1. ALL RESISTORS IN OHMS (K=x10³, M=x10⁶), 1/4, ±10%
2. ALL CAPACITORS IN FARADS (μ=x10⁻⁶, P=x10⁻¹²)
3. TRANSISTORS, IC AND DIODES MAY BE REPLACED WITH ANY TYPES HAVING COMPARABLE RATINGS.
4. VOLTAGES MEASURED WITH VTVM WITH NO SIGNAL INPUT.
5. THERE MIGHT BE SLIGHT CHANGES IN ACTUAL SET.

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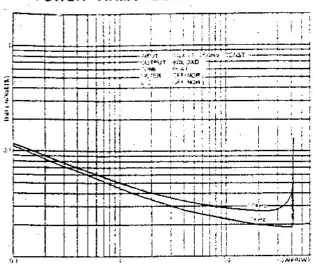
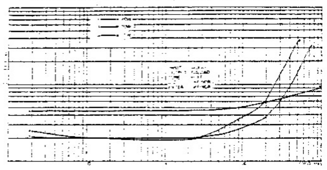
R-800 RF SECTION

AUDIO SECTION

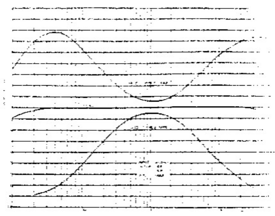
POWER T.H.D. (BOTH CH. DRIVEN)



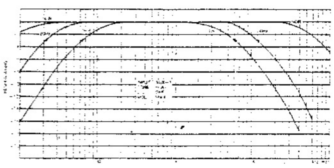
FREQUENCY T.H.D. (BOTH CH. DRIVEN)



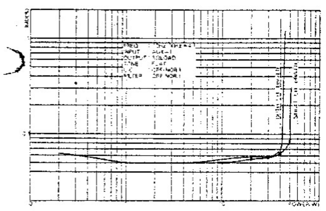
TONE CONTROL



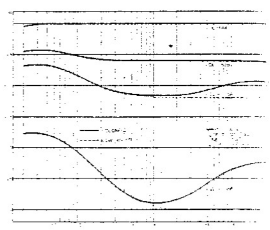
FILTER



POWER IMD

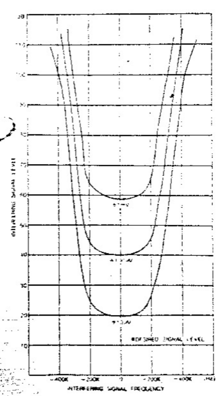


LOUDNESS/LOW BOOST

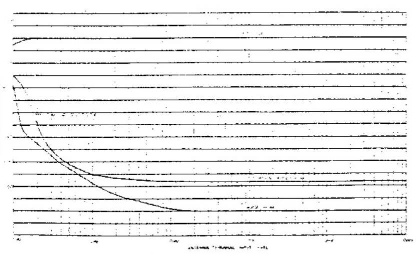


RF SECTION

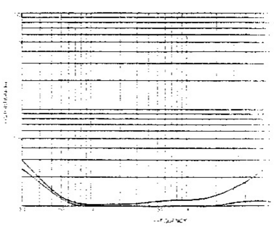
SELECTIVITY



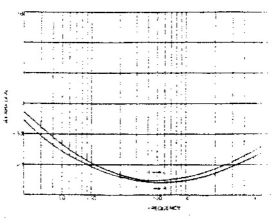
FM CHARACTERISTIC



DISTORTION



STEREO SEPARATION



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