



LUXMAN 1500

SERVICE MANUAL

R 1500 CIRCUIT DESCRIPTION

Power Supply

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

1. A 11 volt winding for the panel lamps.
2. A 25 volt winding for the speaker protection circuit.
3. A 75 volt centre tapped winding providing after full-wave rectification \oplus and \ominus supplies for the audio power amp section.
4. A 30-0-30 volt winding to provide 45 volts DC for the preamp and tuner sections. A potential divider using a zener diode which is used to obtain from 45 volts a 12 volt DC supply for the AM and FM tuner sections. The 2SC1382 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 preamp.

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 (50 mA), 2 resistors and a condenser form the boots-trap 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 relay to the speaker selector switch to the speaker terminals and headphone socket via 680 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 R811, R813 which = 700 mv for full output, and the low frequency roll off is determined by the reactance of C806 to R811 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, PNP and NPN direct coupled triplet of transistors which are selected low noise types, the equalization and DC feedback are taken from the emitter of the NPN back to the emitter of the input NPN transistor. This amp has a gain of 36 db (2.3mv – 150mv) at 1 KHz. The linearity of this direct coupled combination offers high overload capabilities (100mv at 1 KHz). The 150mv nominal level is at the same level as the other functions. The Mic amplifier uses basically the same circuit without equalization, being flat from 20 – 50 KHz with 38 dB gain. The Function Switch selects AM, FM Aux 1 and 2 and Phono 1 and 2 the output of which can be mixed with the input from the mic amplifier. This audio then goes to the tape monitoring function switches.

There are two switches for the tape functions, these are mounted on the switch printed circuit board. 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. The right-hand switch enables monitoring from Tape 1 in the up position, tape 2 in the lower and programme source in the centre position.

The switch for the loudness works in conjunction with the volume control so that its greatest effect is at low volume settings, the audio then passes on the tone control circuit.

LINEAR EQUALIZER and TONE CONTROL

The required selection will then go to the tone control printed circuit board which contains 2 NPN transistors direct coupled linear equalizer amp and 2 NPN transistor amp for tone control. The income signal is linear equalized by selecting the feedback components of this amp. The audio then passes on the tone control circuit. Two direct coupled NPN transistors are used in the Lux-type active bass and treble control, operating in a virtual earth mode with the input at the boost point of the controls and the base of the transistor fed from the slider of the bass control via C741 and C742, the emitter being the feedback point to the controls and providing the output which is at unity gain with respect to the input, to drive the active filter circuit. Included on the tone control board are two switches for changing to bass and treble turn over frequency points.

FILTER BOARD

The Sallen Keyes type filter circuit has components selectable by the front panel low and high cut switches to provide a 12 dB/oct. roll off. The output is sufficiently low impedance to drive the power amp circuit.

SPEAKER PROTECTION

Speaker protection relay is provided in this receiver to protect speakers from damage. Speaker output terminals must always have no significant residual DC voltage, but if some plus or minus voltage appears these terminals, the

relay operates and cuts speakers connection from output stage.

This circuit is mounted on the power supply board.

AM SECTION

A superhet design using a tuned RF amplifier, a mixer/local oscillator and two stages of IF amplification at 455 KHz. A ferrite rod antenna with 3 windings is used, the first winding is connected to the external antenna terminal, the second is connected to the first section of a 3 gang tuning condenser, the last winding feeding the base of the RF transistor amplifier. 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 first IFT 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 noise filter and selector switch, and the signal strength meter is driven from the audio detector output. A silicon diode 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. C 116 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 μ sec. (American) or 50 μ sec. time constant.

R-1500 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 guide, but alternate instruments should be of similar quality.

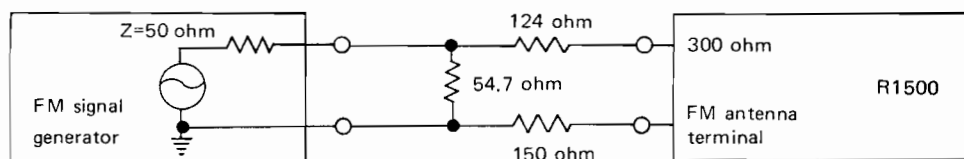
The following instruments are required for a complete alignment of the tuner.

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)	Oscillation freq. range 10-100,000Hz, calibration error within 0.2%, distortion 0.1%
	10-100KHz	
	0.2% accuracy, Dist. 0.1%	
Output indicator	6) AM standard loop antenna	Meguro MLA-1001B or equivalent
	7) Oscilloscope (CRO)	Iwatsu SS-5057V or equivalent
	Mid bandwidth 5MHz	
	8) Distortion meter (HDM)	Shibasoku 796E 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.

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", stereo only 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 if necessary
4	Sweep generator PB353 (1)	± 400KHz sweep centred at 10.7MHz generator output level 90-100dB	Quiet point on band	Oscilloscope PB353 TP-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 PB353 TP-3	T201 T202 core	Symmetrical response centred at the frequency noted by step 4
6				Oscilloscope PB353 TP-4	T204 core	
7				Oscilloscope PB353 (19)	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 receiving 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 minimum 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 30% modulation, generator output level 1mV	88MHz	Oscilloscope Distortion meter AC VTVM TAPE OUT 1	VR202	90% of full scale on signal meter reading
12					T204 core	The signal strength meter must indicate its maximum, at the same time as the centre tune meter indicates centre
13					L104	Accurate indication of pointer on dial to within ± 1 pointer width
14		TC104				
15		88MHz at 400Hz 30% modulation, generator output level 5 ~ 10μV	88MHz		T101 top core T101 bottom core	Maximum indication of signal strength meter
16			L101			

Step.	Signal Source Connected to	Set signal to	Set Radio Dial to	Output Indicator Connected to	Adjust	Adjust for		
17	FM signal generator Across FM antenna terminals (300Ω) through matching network	88MHz at 400Hz 30% modulation, generator output level 5 ~ 10μV	88MHz	Oscilloscope Distortion meter AC VTVM TAPE OUT 1	L102	Maximum indication of signal strength meter		
18					L103			
19		108MHz at 400Hz 30% modulation, generator output level 5 ~ 10μV	108MHz		TC101			
20					TC102			
21					TC103			
22	Repeat steps 13 ~ 21 as necessary to obtain correct tuning on dial scale and the maximum indication of signal meter with uniform sensitivity throughout the band							
23	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		
24		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.		
25		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		
26		108MHz at 400Hz 100% modulation	108MHz					
27	Set muting switch "on" & turn muting level to full clockwise							
28	FM signal generator Across FM antenna terminals (300Ω) through matching network	98MHz at 400Hz 100% modulation generator output level 4μV	98MHz	Oscilloscope AC VTVM TAPE OUT 1	VR201	Fix VR201 at the point where output signals appear		
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		

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 TP2 and TP3 on PB460							
37	Sweep generator PB460 (1) through 1 μ F mylar capacitor	$\pm 20 \sim 25$ KHZ sweep centred at 455KHz generator output level 3 \sim 10mV	Quiet point on band near 1600KHz	Oscilloscope AC VTVM PB460 (7)	T403 top core	Maximum symmetrical response centred at 455KHz		
38					T403 bottom core			
39					T404 top core			
40					T404 bottom core			
41					T405 core			
42	Disconnect TP2 and TP3 connected at step 36							
43	Adjust VR401 to mechanical center position							
44	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	T402 core	Accurate indication of pointer on dial to within ± 1 pointer width		
45					L001 core	Maximum reading on AC VTVM		
46					L401 core			
47		1400KHz at 400Hz 30% modulation, field strength 50dB/m	1400KHz		TC003	Accurate indication of pointer on dial to within ± 1 pointer width		
48					TC001	Maximum reading on AC VTVM		
49					TC002			
50					Repeat steps 44 \sim 49 as necessary to obtain exact tuning on dial scale and maximum sensitivity			
51		AM signal generator Standard radiating loop antenna placed near AM built in antenna	1000KHz at 400Hz 30% modulation, field strength 90dB/m		1000KHz	Oscilloscope AC VTVM TAPE OUT 1	VR401	To obtain 100mV at TAPE OUT 1

SEMICONDUCTOR SPECIFIC CHART

TRANSISTORS (Ta = 25°C)

TYPE	MAX. RATING			CHARACTERISTICS											
	Pc W	Vceo V	Ic mA	hfe				fT MHz			NF				
				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					
2SA679Y	100	120	12000	70	140	2000	5	6	2000	5					
2SA733P,Q	0.25	40	100		270	1	6	180	10	6	20	0.3	6	100	10K
2SA762-22	23	130	2000	100	240	400	2	80	100	2					
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
2SC1382O,Y	0.8	.80	750	70	240	150	2	100	150	2					
2SC1079Y	100	150	12000	70	140	2000	5	9	2000	5					
2SC945P,Q	0.25	40	100	135	270	1	6	300	10	6	20	0.5	6	1K	500
2SC1103A	0.8	250	100	100	200	10	10	80	10	30					
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
2SC1431-22	23	130	2000	100	240	400	2	80	100	2					

FIELD EFFECT TRANSISTOR (Ta = 25°C)

TYPE	MAX. RATING			CHARACTERISTICS							
	Pch mW	VG1SS, VG2SS V	IG1, IG2 mA	IDSS mA			Crss pF	NF			
				min	max	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	
2SK30A	100	-50	10	0.6	1.4	10	2.6	10	0.5	15	

DIODES (Ta = 25°C)

TYPE	MAX. RATING			CHARACTERISTICS			
	IF A	Vr V	Surge A	If		Ir	
				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		
KB-165	0.05	3		0.003	0.65		
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
IN4001	1	-50	30	1000	1.1	5	-50
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

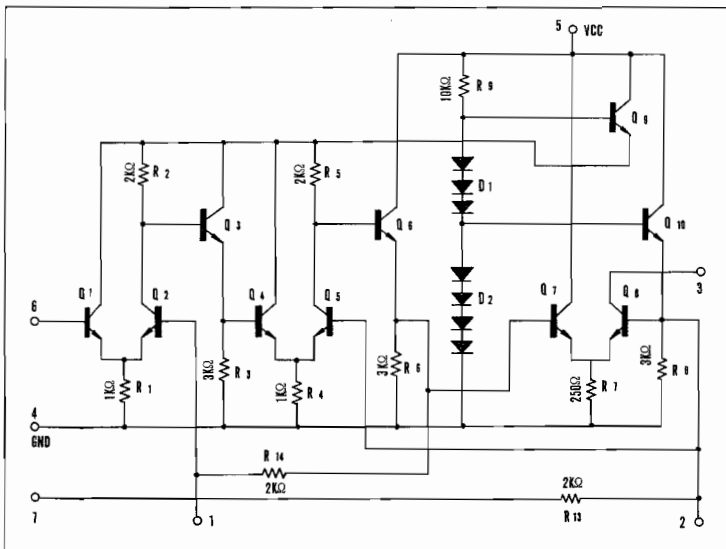
MAXIMUM LIMITS OF DEVICE (Ta = 25°C)

	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

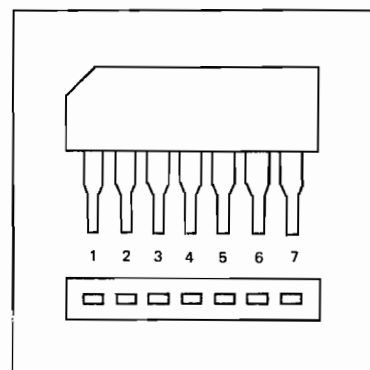
ELECTRICAL SPECIFICATION (Ta = 25°C)

	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 limiting	VI (lim)	Vcc = 7.5V, RL = 1KΩ		600		μV

EQUIVALENT CIRCUIT



PIN CONNECTOR



LM703

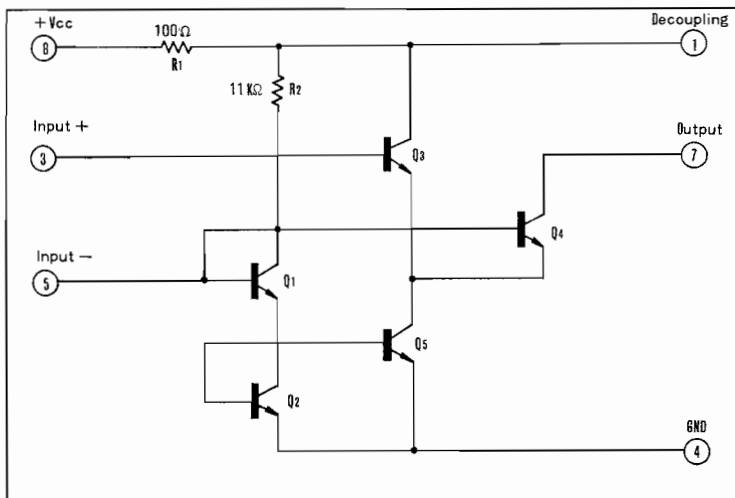
MAXIMUM LIMITS OF DEVICE (Ta = 25°C)

	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	0 ~ 70	°C
Storage temperature	Tstg	-65 ~ +150	°C

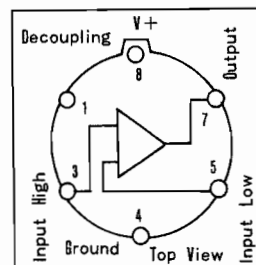
ELECTRICAL SPECIFICATION (Ta = 25°C Vcc = 12V)

	Symbol	Condition of measurement	Min.	Typ.	Max.	Unit
Power dissipation	PD	ein = 0		71	96	mW
Output collector current	I7	ein = 0	1.5	2.5	3.3	mA
Peak to peak current	iopp	ein = 400mVrms f = 10.7MHz	3.0	5.0		mA P-P
Output saturation	Vo (SAT)				1.7	V
Forward transfer admittance		ein = 10mVrms f ≤ 10.7MHz	24	33		mV
Input conductance	gin	ein ≤ 10mVrms f ≤ 10.7MHz		0.35	1.0	mV
Input capacitance	cin	ein ≤ 10mVrms f ≤ 10.7MHz		9.0	12.5	PF
Output capacitance	Co	f ≤ 10.7MHz		2.6	4.0	PF
Output conductance	go	eo ≤ 10mVrms f ≤ 10.7MHz		0.03	0.05	mV
Voltage gain	Gv	f = 100MHz		28		dB

EQUIVALENT CIRCUIT



PIN CONNECTOR (TOP VIEW)



μPC554C

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

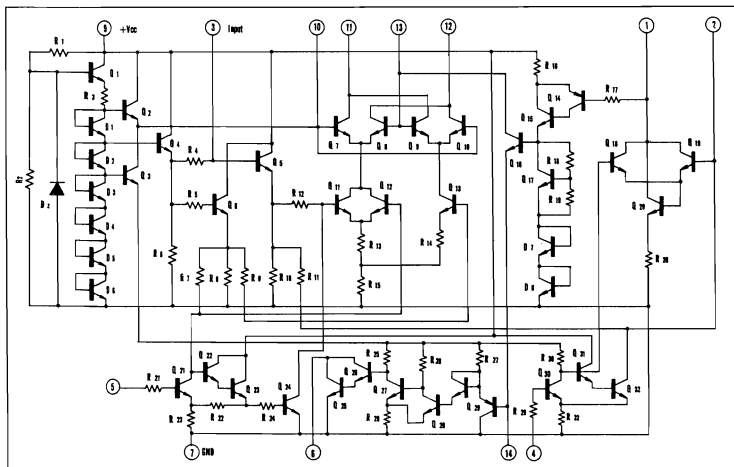
Note

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

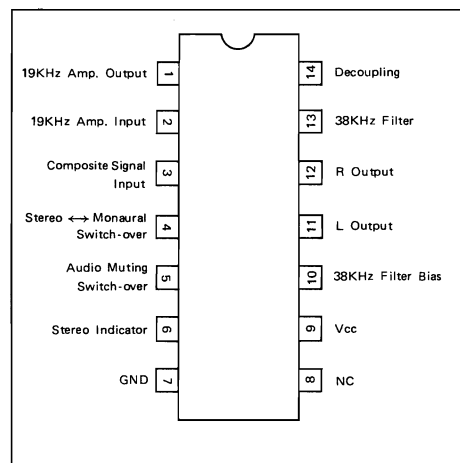
ELECTRICAL CHARACTERISTICS (Ta = 25°C, Vcc = +9.0V)

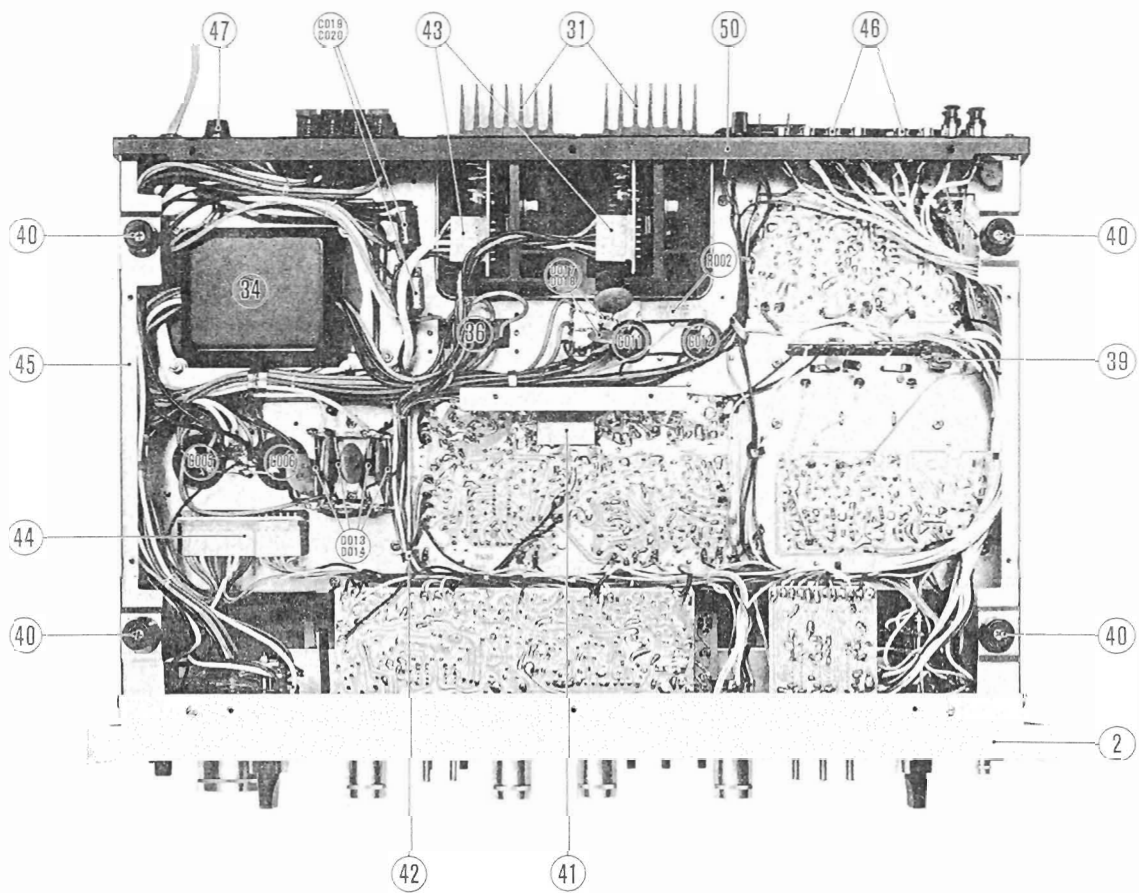
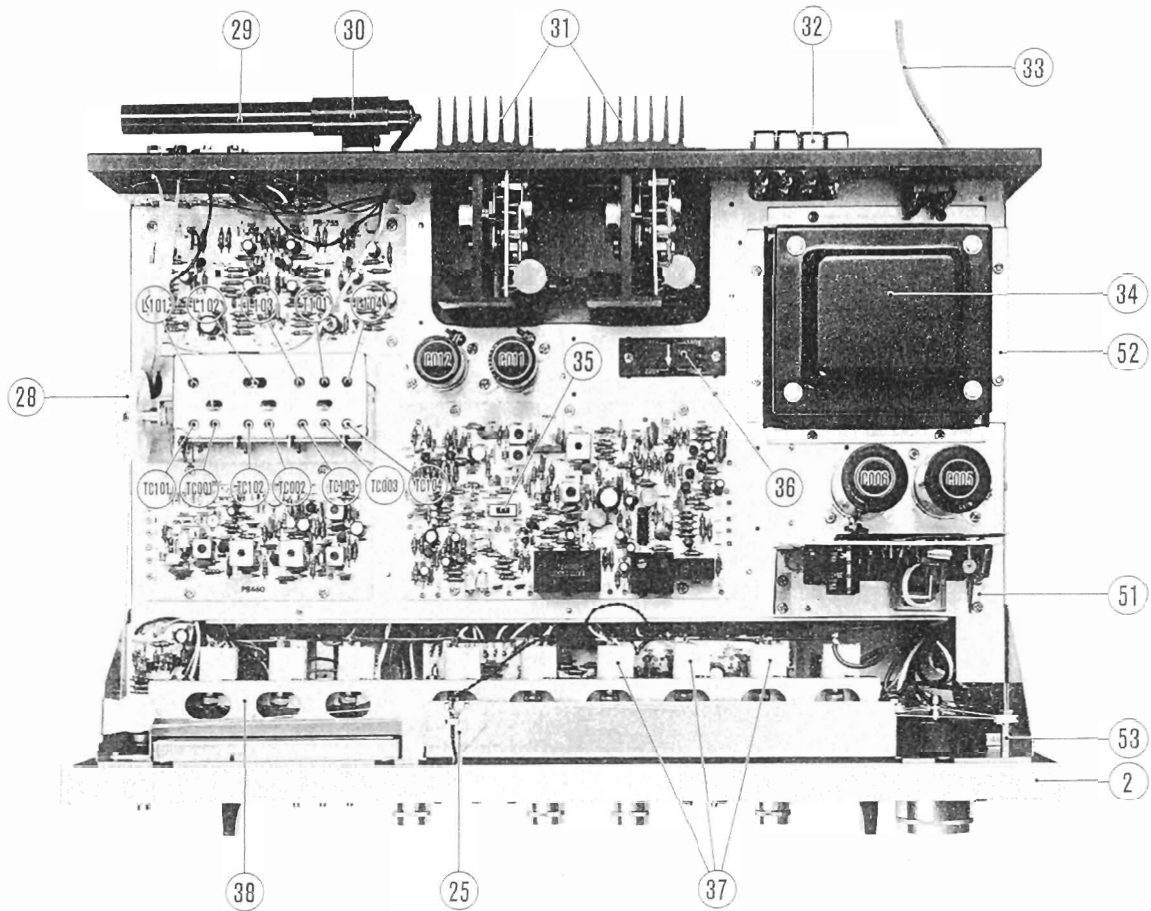
	Symbol	Circuit for measurement	Condition of measurement	Min.	Typ.	Max.	Unit
Circuit current	Icc	1	at zero signal		10	18	mA
Input impedance	Zi	1			20		KΩ
Separation			f = 100Hz		35		dB
			f = 1KHz		45		
			f = 10KHz		30		
Gain (dB)	Av	1	38KHz B.E.F.		-1.5		dB
Channel balance	ch. B	1	(Mono)		0.2	2.0	dB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

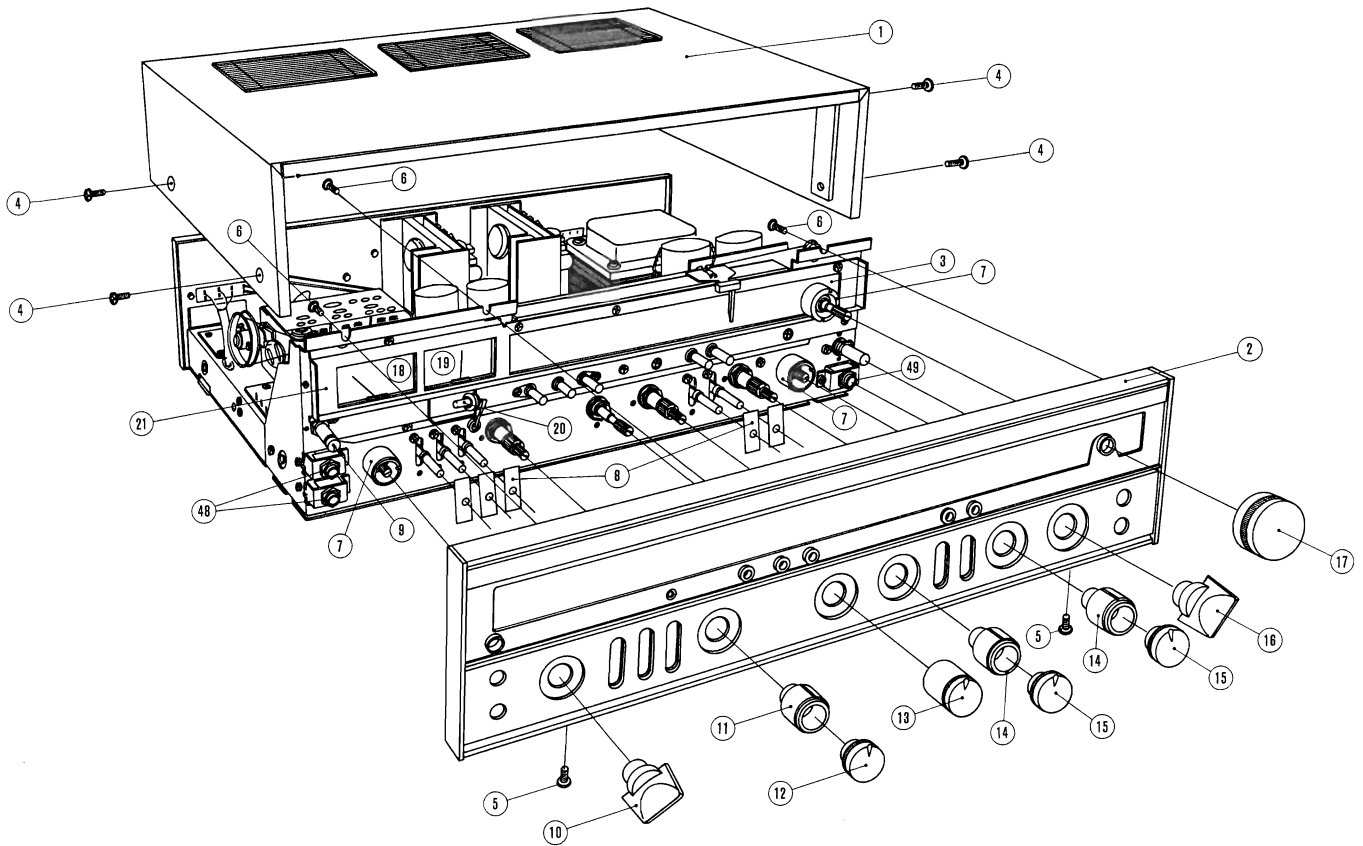
EQUIVALENT CIRCUIT



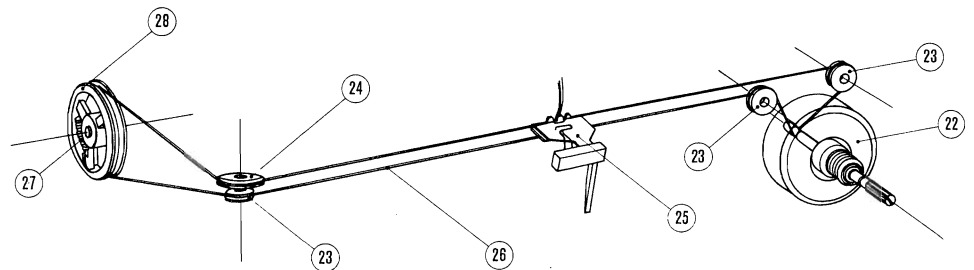
PIN CONNECTOR (Top view)



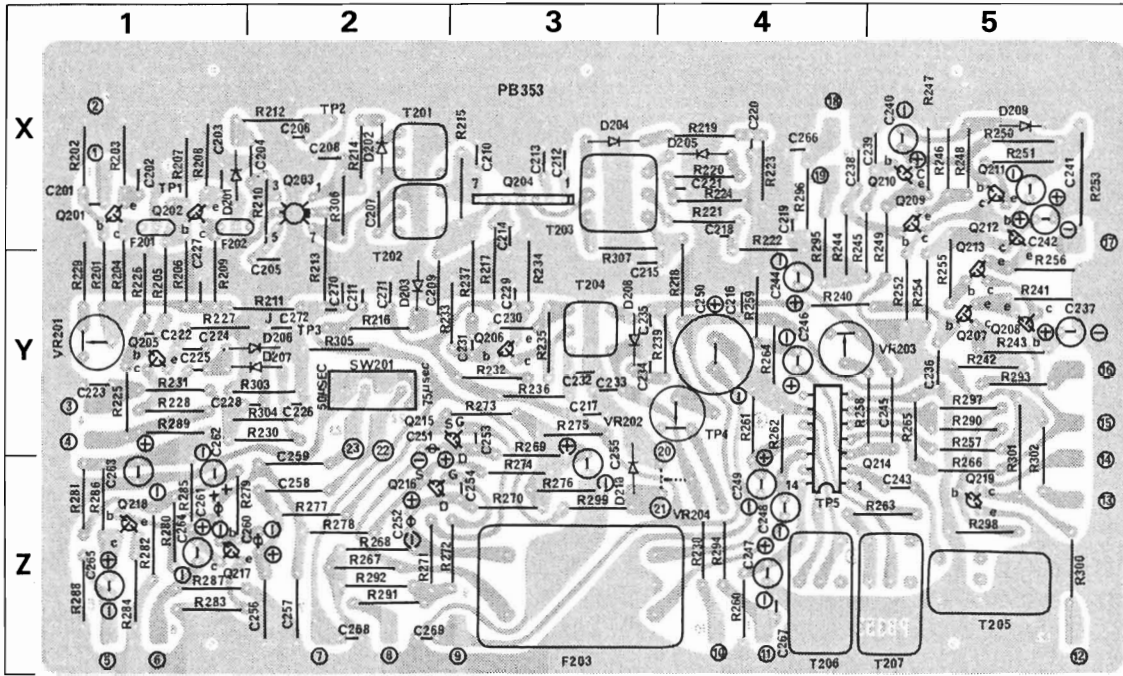




1. Cover
(Wood Finish, ex Rose wood)
2. Pannel
(Front complete Ass'y)
3. Dial Scale
4. Screw 5mm x 18mm
5. Screw 3mm x 6mm
6. Screw 4mm x 4mm
7. Bush, mounting
8. Mask, paper
9. Knob (Mic level)
10. Knob (Input selector)
11. Knob (Outer volume)
12. Knob (Inner volume)
13. Knob (Linear equalizer)
14. Knob (Outer tone control)
15. Knob (Inner tone control)
16. Knob (Speaker selector)
17. Knob (Tuning)
18. Singnal strength meter
19. FM fine tuning meter
20. Stereo beacon
21. Dial scale cover
22. Tuning shaft and flywheel ass'y complete with mounting collect
23. Pully 13mm
24. Pully 20mm
25. Tuning pointer ass'y (Complete with lamps)
26. Cord dial
27. Spring (Tension for dial cord)
28. Drum (Tuning capacitor)
29. AM ferrite core antenna
30. Braket, antenna
31. Power amp. complete ass'y
32. Speaker terminals
33. Mains cord
34. Power transformer



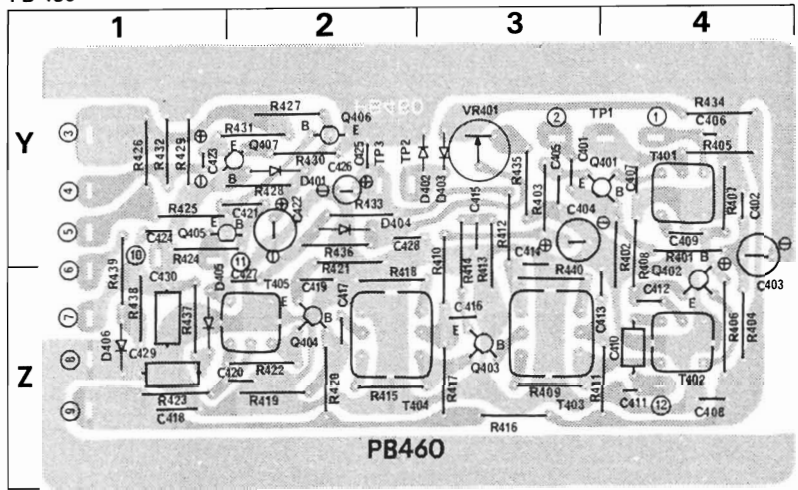
35. De-emphasis switch 50 μ sec \leftrightarrow 75 μ sec (E MODEL only)
36. Voltage selector 100-110-220-240V (E MODEL only)
37. Dial illumination lamps
38. Dial lamp holder
39. Antenna balun
40. Foot
41. Shield IF
42. Clamp, cable
43. Connector, power amp.
44. Connector, power supply
45. Chassis complete ass'y
46. Pin jack ass'y Female
47. Fuse holder (E & U MODEL only)
48. Microphone jack
49. Headphone jack
50. Pannel back
51. Braket, power supply board
52. Mounting, transformer
53. Stand, pully



PB-353 Component Location

R201	Y1	R239	Y4	R277	Z2	C212	X3	C250	Y4	Q210	X5
R202	X1	R240	Y4	R278	Z2	C213	X3	C251	Z2	Q211	X5
R203	X1	R241	Y5	R279	Z1	C214	X3	C252	Z2	Q212	X5
R204	Y1	R242	Y5	R280	Z1	C215	Y3	C253	Y3	Q213	Y5
R205	Y1	R243	Y5	R281	Z1	C216	Y4	C254	Z3	Q214	Y4
R206	Y1	R244	X4	R282	Z1	C217	Y3	C255	Z3	Q215	Y2
R207	X1	R245	X4	R283	Z1	C218	X4	C256	Z2	Q216	Z2
R208	X1	R246	X5	R284	Z1	C219	X4	C257	Z2	Q217	Z1
R209	Y1	R247	X5	R285	Z1	C220	X4	C258	Z2	Q218	Z1
R210	X2	R248	X5	R286	Z1	C221	X4	C259	Z2	Q219	Z5
R211	Y2	R249	X4	R287	Z1	C222	Y2	C260	Z2	D201	X1
R212	X2	R250	X5	R288	Z1	C223	Y1	C261	Z1	D202	X2
R213	Y2	R251	X5	R289	Y1	C224	Y1	C262	Z1	D203	Y2
R214	X2	R252	Y5	R290	Y5	C225	Y1	C263	Z1	D204	X3
R215	X3	R253	X5	R291	Z2	C226	Y2	C264	Z1	D205	X4
R216	Y2	R254	Y5	R292	Z2	C227	Y1	C265	Z1	D206	Y2
R217	Y3	R255	X5	R293	Y5	C228	Y2	C266	X4	D207	Y2
R218	Y4	R256	Y5	R294	Z4	C229	Y3	C267	Z4	D208	Y3
R219	X4	R257	Y5	R295	X4	C230	Y3	C268	Z2	D209	X5
R220	X4	R258	Y4	R296	X4	C231	Y3	C269	Z2	D210	Z3
R221	X4	R259	Y4	R297	Y5	C232	Y3	VR201	Y1	D211	(X5)
R222	Y4	R260	Z4	R298	Z5	C233	Y3	VR202	Y4	T201	X1
R223	X4	R261	Y4	R299	Z3	C234	Y3	VR203	Y4	T202	X1
R224	X4	R262	Y4	R300	Z5	C235	Y3	F201	X1	T203	X3
R225	Y1	R263	Z5	R301	Y5	C236	Y5	F202	X1	T204	Y3
R226	Y1	R264	Y4	R302	Y5	C237	Y5	F203	Z3	T205	Z5
R227	Y1	R265	Y5	C201	X1	C238	X4	Q201	X1	T206	Z4
R228	Y1	R266	Z5	C202	X1	C239	X5	Q202	X1	T207	Z5
R229	Y1	R267	Z2	C203	X1	C240		Q203	X2	(1)	X1
R230	Y2	R268	Z2	C204	X2	C241	X5	Q204	X3	(2)	X1
R231	Y1	R269	Y3	C205	Y2	C242	X5	Q205	Y1	(3)	Y1
R232	Y3	R270	Z3	C206	X2	C243	Z5	Q206	Y3	(4)	Y1
R233	Y2	R271	Z2	C207	X2	C244	Y4	Q207	Y5	(5)	Z1
R234	Y3	R272	Z2	C208	X2	C245	Y5	Q208	Y5	(6)	Z1
R235	Y3	R273	Y3	C209	Y2	C246	Y4	Q209	X5	(7)	Z2
R236	Y3	R274	Z3	C210	X3	C247	Z4				
R237	Y3	R275	Y3	C211	Y2	C248	Z4				
R238	Z4	R276	Z3			C249	Z4				

PB-460



PB-460 Component Location

(8 )	.....	Z2
(9 )	.....	Z3
(10)	.....	Z4
(11)	.....	Z4
(12)	.....	Z5
(13)	.....	Z5
(14)	.....	Z5
(15)	.....	Y5
(16)	.....	Y5
(17)	.....	X5
(18)	.....	X4
(19)	.....	X4
(20)	.....	Z4
(21)	.....	Z4
TP1	.....	X1
TP2	.....	X2
TP3	.....	Y2
TP4	.....	Y4
TP5	.....	Z4

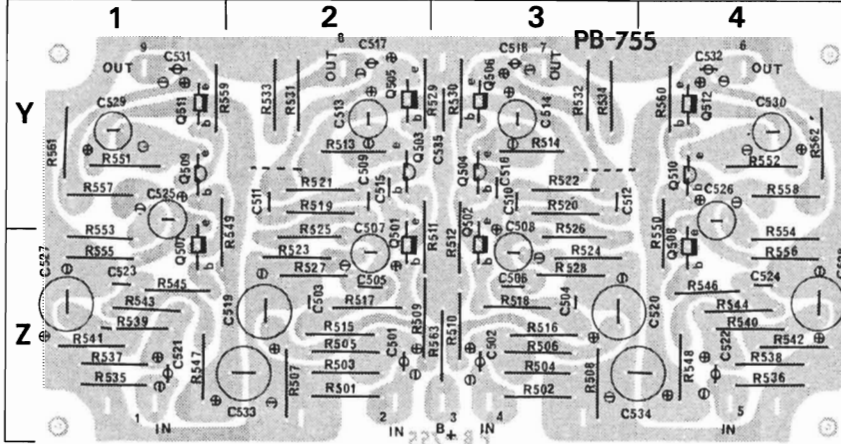
R401	.....	Y4	C415	.....	Y3
R402	.....	Y4	C416	.....	Y3
R403	.....	Y3	C417	.....	Z2
R404	.....	Z4	C418	.....	Z1
R405	.....	Y4	C419	.....	Z2
R406	.....	Z4	C420	.....	Z2
R407	.....	Y4	C425	.....	Y2
R408	.....	Y4	C426	.....	Y2
R409	.....	Z3	C427	.....	Z2
R410	.....	Z3	C428	.....	Y2
R411	.....	Z4	C429	.....	Z1
R412	.....	Y3	C430	.....	Z1
R413	.....	Y3			
R414	.....	Y3	VR401	.....	Y3
R415	.....	Z2			
R416	.....	Z3	T401	.....	Y4
R417	.....	Z3	T402	.....	Z4
R418	.....	Z2	T403	.....	Z3
R419	.....	Z2	T404	.....	Z2
R420	.....	Z2	T405	.....	Z2
R421	.....	Y2			
R422	.....	Z2	Q401	.....	Y4
R423	.....	Z1	Q402	.....	Z4
R433	.....	Y2	Q403	.....	Z3
R434	.....	Y4	Q404	.....	Z2
R435	.....	Y3			
R436	.....	Y2	D402	.....	Y3
R437	.....	Z1	D403	.....	Y3
R438	.....	Z1	D404	.....	Y2
R439	.....	Z1	D405	.....	Z1
R440	.....	Z3	D406	.....	Z1

C401	.....	Y3	(1 )	.....	Y4
C402	.....	Y4	(2 )	.....	Y3
C403	.....	Y3	(6 )	.....	Z1
C404	.....	Y3	(7 )	.....	Z1
C405	.....	Y3	(8 )	.....	Z1
C406	.....	Y4	(9 )	.....	Z1
C407	.....	Y4	(12)	.....	Z4
C408	.....	Z4			
C409	.....	Y4	TP1	.....	Y4
C410	.....	Z4	TP2	.....	Y2
C411	.....	Z4	TP3	.....	Y2
C412	.....	Z4			
C413	.....	Z3			
C414	.....	Y3			

PB-755 Components Location

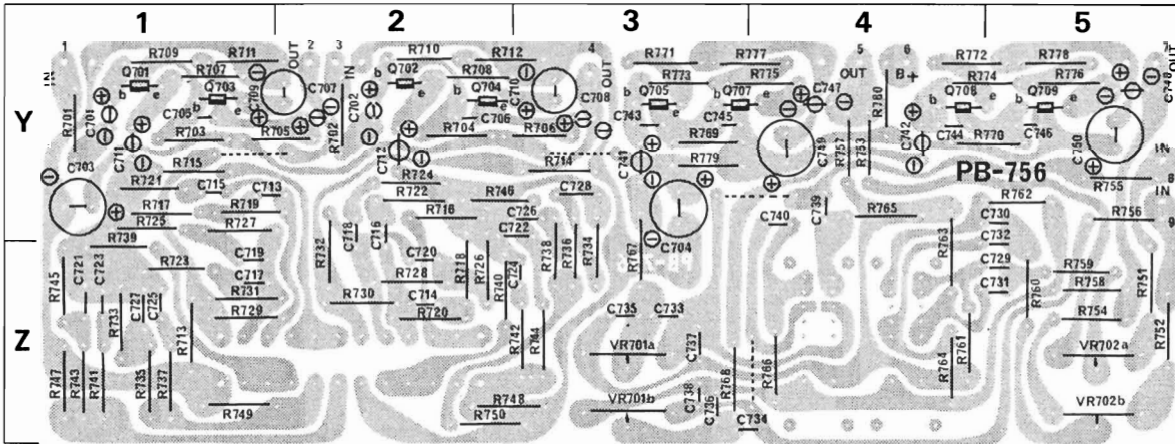
R501 Z2	R516 Z3	R531 Y2	R546 Z4	R561 Y1	C530 Y4
R502 Z3	R517 Z2	R532 Y3	R547 Z1	R562 Y4	C531 Y1
R503 Z2	R518 Z3	R533 Y2	R548 Z4	R563 Y3	C532 Y4
R504 Z3	R519 Y2	R534 Y3	R549 Z1		C533 Z2
R505 Z2	R520 Y3	R535 Z1	R550 Z4	C501 Z2	C534 Z3
R506 Z3	R521 Y2	R536 Z4	R551 Y1	C502 Z3	C535 Y3
R507 Z2	R522 Y3	R537 Z1	R552 Y4	C503 Z2	
R508 Z3	R523 Z2	R538 Z4	R553 Z1	C504 Z3	Q501 Z2
R509 Z2	R524 Z3	R539 Z1	R554 Z4	C505 Z2	Q502 Z3
R510 Z3	R525 Z2	R540 Z4	R555 Z1	C506 Z3	Q503 Y2
R511 Z2	R526 Z3	R541 Z1	R556 Z4	C507 Z2	Q504 Y3
R512 Z3	R527 Z2	R542 Z4	R557 Y1	C508 Z3	Q505 Y2
R513 Y2	R528 Z3	R543 Z1	R558 Y4	C509 Y2	Q506 Y3
R514 Y3	R529 Y2	R544 Z4	R559 Y1	C510 Y3	Q507 Z1
R515 Z2	R530 Y3	R545 Z1	R560 Y4	C511 Y2	Q508 Z4

PB-755



C512 Y3	Q509 Y1
C513 Y2	Q510 Y4
C514 Y3	Q511 Y1
C515 Y2	Q512 Y4
C516 Y3	
C517 Y2	(1) Z1
C518 Y3	(2) Z2
C519 Z2	(3) Z3
C520 Z3	(4) Z3
C521 Z1	(5) Z4
C522 Z4	(6) Y4
C523 Z1	(7) Y3
C524 Z4	(8) Y2
C525 Y1	
C526 Y4	
C527 Z1	
C528 Z4	
C529 Y1	

PB-756



PB-756 Components Location

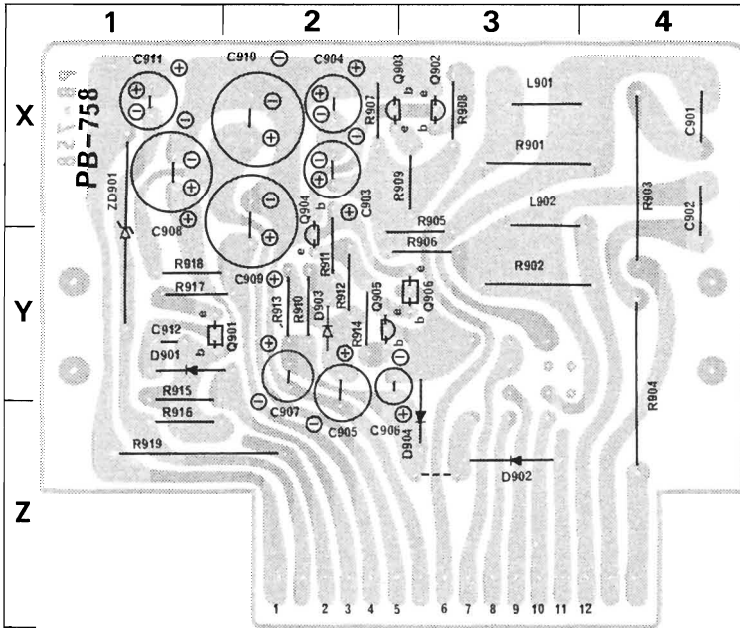
R701 Y1	R714 Y3	R727 Y1	R740 Z2	R753 Y4	R766 Z4
R702 Y2	R715 Y1	R728 Z2	R741 Z1	R754 Z5	R767 Z3
R703 Y1	R716 Y2	R729 Z1	R742 Z3	R755 Y5	R768 Z3
R704 Y2	R717 Y1	R730 Z2	R743 Z1	R756 Y5	R769 Y3
R705 Y2	R718 Z2	R731 Z1	R744 Z3	R757 Y4	R770 Y5
R706 Y3	R719 Y1	R732 Z2	R745 Z1	R758 Z5	R771 Y3
R707 Y1	R720 Z2	R733 Z1	R746 Z2	R759 Z5	R772 Y4
R708 Y2	R721 Y1	R734 Z3	R747 Z1	R760 Z5	R773 Y3
R709 Y1	R722 Y2	R735 Z1	R748 Z2	R761 Z4	R774 Y4
R710 Y2	R723 Z1	R736 Z3	R749 Z1	R762 Y5	R775 Y4
R711 Y1	R724 Y2	R737 Z1	R750 Z2	R763 Z4	R776 Y5
R712 Y2	R725 Y1	R738 Z3	R751 Z5	R764 Z4	R777 Y3
R713 Z1	R726 Z2	R739 Z1	R752 Z5	R765 Y4	R778 Y5 *

PB-758 Components Location

R901	.....	X3	C907	.....	Y2
R902	.....	Y3	C908	.....	X1
R903	.....	X4	C909	.....	X2
R904	.....	Y4	C910	.....	X2
R905	.....	Y3	C911	.....	X1
R906	.....	Y3	C912	.....	X1
R907	.....	X2			
R908	.....	X3	Q901	.....	Y1
R909	.....	X3	Q902	.....	X3
R910	.....	Y2	Q903	.....	X2
R911	.....	Y2	Q904	.....	Y2
R912	.....	Y2	Q905	.....	Y2
R913	.....	Y2	Q906	.....	Y3
R914	.....	Y2			
R915	.....	Y1	D901	.....	Y1
R916	.....	Z1	D902	.....	Z3
R917	.....	Y1	D903	.....	Y2
R918	.....	Y1	D904	.....	Z3
R919	.....	Z1			

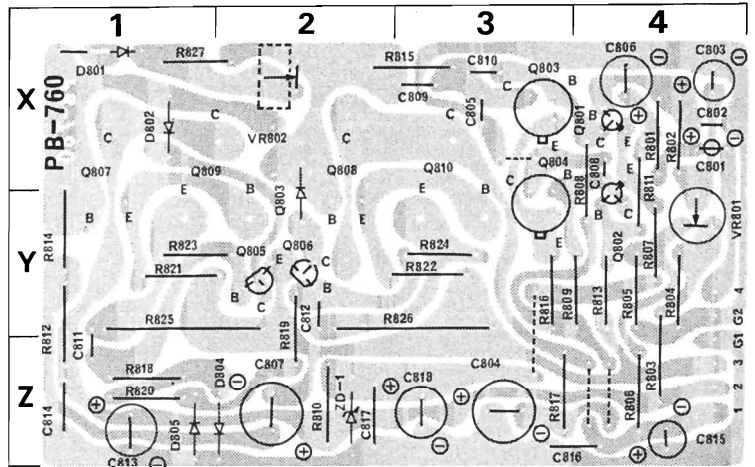
C901	.....	X4	ZD901	.....	Y1	(6)	.....	Z3
C902	.....	X4	(1)	.....	Z2	(7)	.....	Z3
C903	.....	X2	(2)	.....	Z2	(8)	.....	Z3
C904	.....	X2	(3)	.....	Z2	(9)	.....	Z3
C905	.....	Y2	(4)	.....	Z2	(10)	.....	Z3
C906	.....	Y2	(5)	.....	Z2	(11)	.....	Z3
						(12)	.....	Z3

PB-758



* R779	.....	Y3	C711	.....	Y1	C724	.....	Z3	C737	.....	Z3	C750	.....	Y5	VR701b	.....	Z3
R780	.....	Y4	C712	.....	Y2	C725	.....	Z1	C738	.....	Z3				VR702a	.....	Z5
			C713	.....	Y1	C726	.....	Y3	C739	.....	Y4	Q701	.....	Y1	VR702b	.....	Z5
C701	.....	Y1	C714	.....	Z2	C727	.....	Z1	C740	.....	Y3	Q702	.....	Y2			
C702	.....	Y2	C715	.....	Y1	C728	.....	Y3	C741	.....	Y3	Q703	.....	Y1	(1)	.....	Y1
C703	.....	Y1	C716	.....	Y2	C729	.....	Z5	C742	.....	Y4	Q704	.....	Y2	(2)	.....	Y2
C704	.....	Y3	C717	.....	Z1	C730	.....	Y5	C743	.....	Y3	Q705	.....	Y3	(3)	.....	Y2
C705	.....	Y1	C718	.....	Y2	C731	.....	Z5	C744	.....	Y4				(4)	.....	Y3
C706	.....	Y2	C719	.....	Z1	C732	.....	Z5	C745	.....	Y3	Q707	.....	Y3	(5)	.....	Y4
C707	.....	Y2	C720	.....	Z2	C733	.....	Z3	C746	.....	Y5	Q708	.....	Y4	(6)	.....	Y4
C708	.....	Y3	C721	.....	Z1	C734	.....	Z4	C747	.....	Y4	Q709	.....	Y5	(7)	.....	Y5
C709	.....	Y2	C722	.....	Y2	C735	.....	Z3	C748	.....	Y5				(8)	.....	Y5
C710	.....	Y3	C723	.....	Z1	C736	.....	Z3	C749	.....	Y4	VR701a	.....	Z3	(9)	.....	Y5

PB-760



PB-760 Component Location

R801	.....	X4	R808	.....	X4	C814	.....	Z1
R802	.....	X4	R809	.....	Y4	C815	.....	Z4
R803	.....	Z4	R810	.....	Z2	C816	.....	Z3
R804	.....	Y4	R811	.....	Y4	C817	.....	Z2
R805	.....	Y4	R812	.....	Y1	C818	.....	Z3
R806	.....	Z4	R813	.....	Y4			
R807	.....	Y4	R814	.....	Y1	VR801	.....	Y4
			R815	.....	X3	VR802	.....	X2
			R816	.....	Y3			
			R817	.....	Z3	Q801	.....	X4
			R818	.....	Z1	Q802	.....	Y4
			R819	.....	Y2	Q803	.....	X3
			R820	.....	Z1	Q804	.....	Y4
			R821	.....	Y1	Q805	.....	Y2
			R822	.....	Y3	Q806	.....	Y2
			R823	.....	Y1	Q807	.....	Y1
			R824	.....	Y3	Q808	.....	Y2
			R825	.....	Y1	Q809	.....	X1
			R826	.....	Y3	Q810	.....	X3
			R827	.....	X1			
						D801	.....	X1
						D802	.....	X1
						D803	.....	Y2
						D804	.....	Z2
						D805	.....	Z1
						C801	.....	X4
						C802	.....	X4
						C803	.....	X4
						C804	.....	Z3
						C805	.....	X3
						C806	.....	X4
						C807	.....	Z2
						C808	.....	X4
						C809	.....	X3
						C810	.....	X3
						C811	.....	Z1
						C812	.....	Y2
						C813	.....	Z1
						ZD-1	.....	Z2
						(1)	.....	Z4
						(2)	.....	Z4
						(3)	.....	Z4
						(4)	.....	Y4
						G1	.....	Z4
						G2	.....	Y4

REPLACEMENT PARTS

RESISTORS: $\pm 10\%$ $\frac{1}{4}$ Watt deposited carbon, unless noted otherwise

SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION
R001	100 Ω	R215	2.2K Ω	R260	4.7K Ω	R351	3.3K Ω
R002	150 Ω 7W	R216	47K Ω	R261	3.9K Ω	R352	6.8K Ω
	METAL OXIDE FIXED	R217	390 Ω	R262	3.9K Ω	R353	1M Ω
R003	180K Ω	R218	1K Ω	R263	47 Ω	R354	1M Ω
R004	180K Ω	R219	1K Ω	R264	100 Ω	R355	330K Ω
R005	180K Ω	R220	1K Ω	R265	39K Ω	R356	820K Ω
R006	180K Ω	R221	47 Ω	R266	100K Ω	R357	1K Ω
R007	680 Ω 2W	R222	100 Ω	R267	3.3K Ω	R358	5.6K Ω
	METAL OXIDE FIXED	R223	6.8K Ω	R268	3.3K Ω	R359	12K Ω
R008	680 Ω 2W	R224	6.8K Ω	R269	220K Ω	R360	1M Ω
	METAL OXIDE FIXED	R225	22K Ω	R270	220K Ω	R361	10K Ω
R009	10 Ω	R226	3.3K Ω	R271	1M Ω	R362	220K Ω
R010	150 Ω	R227	1K Ω	R272	1M Ω		
R011	2.2M Ω $\frac{1}{2}$ W	R228	4.7K Ω	R273	220K Ω	R401	4.7K Ω
	Ⓢ MODEL ONLY	R229	560 Ω	R274	220K Ω	R402	18K Ω
R012	2.2M Ω $\frac{1}{2}$ W	R230	10K Ω	R275	100K Ω	R403	1.5K Ω
	Ⓢ MODEL ONLY	R231	100K Ω	R276	33K Ω	R404	22K Ω
R101	100K Ω	R232	15K Ω	R277	33K Ω	R405	10K Ω
R102	22 Ω	R233	2.2K Ω	R278	33K Ω	R406	15K Ω
R103	22K Ω	R234	1K Ω	R279	150K Ω	R407	2.2K Ω
R104	4.7K Ω	R235	15K Ω	R280	150K Ω	R408	2.2K Ω
R105	1K Ω	R236	1K Ω	R281	100K Ω	R409	150K Ω
R106	220 Ω	R237	1K Ω	R282	18K Ω	R410	1.5K Ω
R107	1M Ω	R238	10 Ω	R283	1.2K Ω	R411	2.7K Ω
R108	100 Ω	R239	1K Ω	R284	1.2K Ω	R412	470 Ω
R109	10K Ω	R240	47K Ω	R285	10K Ω	R413	470 Ω
R110	10K Ω	R241	22 Ω	R286	10K Ω	R414	120 Ω
R111	100 Ω	R242	33K Ω	R287	470K Ω	R415	150K Ω
R112	3.3K Ω	R243	33K Ω	R288	470K Ω	R416	100 Ω
R201	1.8K Ω	R244	100K Ω	R289	470 Ω	R417	10K Ω
R202	560 Ω	R245	100K Ω	R290	10 Ω	R418	150K Ω
R203	1K Ω	R246	39 Ω	R291	100K Ω	R419	10K Ω
R204	470 Ω	R247	39 Ω	R292	47K Ω	R420	82K Ω
R205	1.5K Ω	R248	2.7K Ω	R293	6.8K Ω	R421	100 Ω
R206	2.2K Ω	R249	2.7K Ω	R294	2.2K Ω	R422	22K Ω
R207	680 Ω	R250	47K Ω	R295	10K Ω	R423	100 Ω
R208	1K Ω	R251	4.7K Ω	R296	39K Ω	R433	10K Ω
R209	470 Ω	R252	47K Ω	R297	15K Ω	R434	3.9K Ω
R210	560 Ω	R253	2.2K Ω 1W	R298	15K Ω	R435	3.3K Ω
R211	470 Ω	R254	12K Ω	R299	2.2K Ω	R436	10K Ω
R212	22K Ω	R255	47K Ω	R300	6.8K Ω	R437	470 Ω
R213	470 Ω	R256	220 Ω	R301	390 Ω $\frac{1}{2}$ W	R438	3.9K Ω
R214	470 Ω	R257	100K Ω	R302	6.8K Ω	R439	1.5K Ω
		R258	8.2K Ω			R440	150K Ω
		R259	47K Ω				

RESISTORS: $\pm 5\%$ TOLERANCE $\frac{1}{4}$ Watt deposited carbon, unless specified

SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION
R451	4.7K	R464	8.2K	R508	18K	R517	180
R452	4.7K			R509	82K	R518	180
R453	470K	R501	100K	R510	82K	R519	LO-NOISE
R454	470K	R502	100K	R511	LO-NOISE		39K
R455	680 Ω				47K	R520	LO-NOISE
R456	680K	R503	LO-NOISE		330K		39K
R457	33K			R512	LO-NOISE		
R458	33K	R504	LO-NOISE		47K	R521	LO-NOISE
R459	10K			R513	1K		470K
R460	10K	R505	LO-NOISE	R514	1K	R522	LO-NOISE
R461	470K				100K		470K
R462	470K	R506	LO-NOISE	R515	LO-NOISE	R523	1K
R463	8.2K				3.9K	R524	1K
		R507	18K	R516	LO-NOISE	R525	1K
					3.9K		

SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION
R526	1K	R606	½W 390	R733	1.8K	R807	8.2K X 2
R527	LO-NOISE 33K	R607	100	R734	1.8K	R808	3.9K X 2
R528	LO-NOISE 33K	R651	56K	R735	6.8K	R809	3.9K X 2
R529	68K	R652	56K	R736	6.8K	R810	METAL OXIDE
R530	68K	R653	220K	R737	22K	R811	5.6K-½W X 2
R531	10K	R654	220K	R738	22K	R812	1.2K X 2
R532	10K	R655	12K	R739	6.8K	R813	METAL OXIDE
R533	150K	R656	12K	R740	6.8K	R814	5.6K-½W X 2
R534	150K	R657	27K	R741	27K	R815	47K X 2
R535	100K	R658	27K	R742	27K	R816	METAL OXIDE
R536	100K	R659	1M	R743	4.7K	R817	3.9K-½W X 2
R537	LO-NOISE 560K	R660	1M	R744	4.7K	R818	METAL OXIDE
R538	LO-NOISE 560K	R661	1M	R745	6.8K	R819	22-½W X 2
R539	LO-NOISE 560K	R662	1M	R746	6.8K	R820	METAL OXIDE
R540	LO-NOISE 560K	R663	330K	R747	470K	R821	180-½W X 2
R541	12K	R664	330K	R748	470K	R822	METAL OXIDE
R542	12K	R665	560K	R749	470K	R823	47-½W X 2
R543	LO-NOISE 3.9K	R666	560K	R750	470K	R824	1K X 2
R544	LO-NOISE 3.9K	R667	5.6K	R751	1.5K	R825	1K X 2
R545	180	R668	5.6K	R752	1.5K	R826	100K X 2
R546	180	R669	330K	R753	1.5K	R827	METAL OXIDE
R547	68K	R670	330K	R754	1.5K	R828	100-½W X 2
R548	68K	R671	1K	R755	18K	R829	METAL OXIDE
R549	LO-NOISE 47K	R701	4.7K	R756	18K	R830	100-½W X 2
R550	LO-NOISE 47K	R702	4.7K	R757	18K	R831	180 X 2
R551	1K	R703	82K	R758	18K	R832	180 X 2
R552	1K	R704	82K	R759	3.3K	R833	CEMENT SEALED
R553	470	R705	4.7K	R760	3.3K	R834	0.47-5W X 2
R554	470	R706	4.7K	R761	1M	R835	CEMENT SEALED
R555	LO-NOISE 22K	R707	22K	R762	1M	R836	0.47-5W X 2
R556	LO-NOISE 22K	R708	22K	R763	1M	R837	120 X 2
R557	LO-NOISE 220K	R709	1.2M	R764	1M	R901	METAL OXIDE
R558	LO-NOISE 220K	R710	1.2M	R765	1M	R902	22-1W
R559	68K	R711	2.7K	R766	1M	R903	METAL OXIDE
R560	68K	R712	2.7K	R767	4.7K	R904	22-1W
R561	10K	R713	220K	R768	4.7K	R905	METAL OXIDE
R562	10K	R714	220K	R769	47K	R906	4.7-3W
R601	12K	R715	33K	R770	47K	R907	METAL OXIDE
R602	12K	R716	33K	R771	820	R908	4.7-3W
R603	27K	R717	27K	R772	820	R909	39K
R604	27K	R718	27K	R773	150K	R910	39K
R605	1W 300	R719	12K	R774	150K	R911	3.9K
		R720	12K	R775	5.6K	R912	6.8K
		R721	390K	R776	5.6K	R913	22K
		R722	390K	R777	470	R914	6.8K
		R723	56K	R778	470	R915	820
		R724	56K	R779	1K	R916	820
		R725	33K	R780	100	R917	10
		R726	33K	R801	3.9K X 2	R918	1M
		R727	18K	R802	47K X 2	R919	22K
		R728	18K	R803	METAL OXIDE	R920	10K
		R729	1M	R804	10K-½W X 2	R921	100K
		R730	1M	R805	47 X 2	R922	82
		R731	1M	R806	47 X 2	R923	820
		R732	1M		METAL OXIDE	R924	METAL OXIDE
					10K-½W X 2	R925	56-2W

CAPACITORS

SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION
C001	0.04μF +80% -20% 25V ceramic	C013	0.01μF
C002	10μF +50% -10% 16V electrolytic	C014	0.01μF
C003	5PF ±0.5PF 50V ceramic	C015	0.01μF
C004	47μF +50% -10% 16V electrolytic	C016	0.01μF
C005	4700μF +50% -10% 63V electrolytic	C017	0.01μF
C006	4700μF +50% -10% 63V electrolytic	C018	0.01μF
C007	0.1μF +80% -20% 25V ceramic	C019	2200PF
C008	0.1μF +80% -20% 25V ceramic	C020	2200PF
C009	0.1μF +80% -20% 25V ceramic	C021	0.047μF
C010	0.1μF +80% -20% 25V ceramic	C022	0.047μF
C011	1500μF +50% -10% 50V electrolytic	C023	0.1μF +80% -20% 25V ceramic
C012	3300μF +50% -10% 25V electrolytic		

SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION
C101	22PF	C106	100PF	C111	0.01μF	C116	33PF
C102	47PF	C107	5000PF	C112	5000PF	C117	5000PF
C103	22PF	C108	100PF	C113	1PF	C118	5000PF
C104	22PF	C109	100PF	C114	20PF	C119	5000PF
C105	7PF	C110	5000PF	C115	10PF		

SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION
C201	0.01μF +80% -20% 25V ceramic	C243	0.04μF +80% -20% 25V ceramic
C202	0.04μF +80% -20% 25V ceramic	C244	1μF +75% -10% 50V electrolytic
C203	0.04μF +80% -20% 25V ceramic	C245	560PF ±5% 50V polystyrol
C204	47PF ±10% 50V ceramic	C246	10μF +50% -10% 16V electrolytic
C205	0.04μF +80% -20% 25V ceramic	C247	4.7μF +75% -10% 25V electrolytic
C206	0.01μF +80% -20% 25V ceramic	C248	4.7μF +75% -10% 25V electrolytic
C207	2.7PF ±5% 500V ceramic	C249	4.7μF +75% -10% 25V electrolytic
C208	0.04μF +80% -20% 25V ceramic	C250	470μF +50% -10% 16V electrolytic
C209	470PF ±20% 50V ceramic	C251	0.22μF +50% -20% 35V solid tantalum
C210	0.04μF +80% -20% 25V ceramic	C252	0.22μF +50% -20% 35V solid tantalum
C211	0.01μF +80% -20% 25V ceramic	C253	470PF ±20% 50V ceramic
C212	0.04μF +80% -20% 25V ceramic	C254	470PF ±20% 50V ceramic
C213	0.04μF +80% -20% 25V ceramic	C255	10μF +50% -10% 16V electrolytic
C214	0.04μF +80% -20% 25V ceramic	C256	1800PF ±5% 50V polystyrol
C215	0.04μF +80% -20% 25V ceramic	C257	1800PF ±5% 50V polystyrol
C216	0.04μF +80% -20% 25V ceramic	C258	820PF ±5% 50V polystyrol
C217	0.04μF +80% -20% 25V ceramic	C259	820PF ±5% 50V polystyrol
C218	470PF ±20% 50V ceramic	C260	0.22μF +50% -20% 35V solid tantalum
C219	100PF ±10% 50V ceramic	C261	0.22μF +50% -20% 35V solid tantalum
C220	470PF ±20% 50V ceramic	C262	10μF +50% -10% 16V electrolytic
C221	470PF ±20% 50V ceramic	C263	47μF +50% -10% 16V electrolytic
C222	470PF ±20% 50V ceramic	C264	1μF +75% -10% 50V electrolytic
C223	0.04μF +80% -20% 25V ceramic	C265	1μF +75% -10% 50V electrolytic
C224	0.04μF +80% -20% 25V ceramic	C266	0.01μF +80% -20% 25V ceramic
C225	470PF ±20% 50V ceramic	C267	0.01μF +80% -20% 25V ceramic
C226	0.01μF +80% -20% 25V ceramic	C268	0.01μF +80% -20% 25V ceramic
C227	0.04μF +80% -20% 25V ceramic	C269	0.01μF +80% -20% 25V ceramic
C228	0.01μF +80% -20% 25V ceramic		
C229	0.01μF +80% -20% 25V ceramic	C351	0.04μF +80% -20% 25V ceramic
C230	0.47PF ±5% 500V ceramic	C352	0.015μF ±10% 50V mylar
C231	470PF ±20% 50V ceramic	C353	0.01μF ±10% 50V mylar
C232	0.04μF +80% -20% 25V ceramic	C354	3300PF ±10% 50V mylar
C233	0.04μF +80% -20% 25V ceramic	C355	2200PF ±10% 50V mylar
C234	0.01μF +80% -20% 25V ceramic	C356	2200PF ±10% 50V mylar
C235	0.01μF +80% -20% 25V ceramic	C357	3900PF ±10% 50V mylar
C236	0.1μF +80% -20% 25V ceramic	C358	0.033μF ±10% 50V mylar
C237	2.2μF +75% -10% 25V electrolytic		
C238	0.1μF +80% -20% 25V ceramic	C401	0.04μF +80% -20% 25V ceramic
C239	0.1μF +80% -20% 25V ceramic	C402	0.04μF +80% -20% 25V ceramic
C241	10μF +50% -10% 16V electrolytic	C403	47μF +50% -10% 16V electrolytic
C242	4.7μF +75% -10% 25V electrolytic		

SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION
C404	47 μ F +50% -10% 16V electrolytic	C602	0.033 μ F \pm 10% 50V mylar
C405	0.04 μ F +80% -20% 25V ceramic	C603	470PF \pm 5% 50V polystyrol
C406	10PF \pm 1PF 50V ceramic	C604	470PF \pm 5% 50V polystyrol
C407	0.04 μ F +80% -20% 25V ceramic	C605	10 μ F +50% -10% 16V electrolytic
C408	0.04 μ F +80% -20% 25V ceramic		
C409	0.04 μ F +80% -20% 25V ceramic	C651	0.1 μ F \pm 10% 50V mylar
C410	450PF \pm 5% 50V polystyrol	C652	0.1 μ F \pm 10% 50V mylar
C411	15PF \pm 10% 50V ceramic	C653	0.039 μ F \pm 10% 50V mylar
C412	0.04 μ F +80% -20% 25V ceramic	C654	0.039 μ F \pm 10% 50V mylar
C413	0.04 μ F +80% -20% 25V ceramic	C655	2.2 μ F \pm 10% 35V tantalum
C414	0.04 μ F +80% -20% 25V ceramic	C656	2.2 μ F \pm 10% 35V tantalum
C415	0.04 μ F +80% -20% 25V ceramic	C657	820PF \pm 10% 50V mylar
C416	0.04 μ F +80% -20% 25V ceramic	C658	820PF \pm 10% 50V mylar
C417	0.04 μ F +80% -20% 25V ceramic	C659	2200PF \pm 5% 50V polystyrol
C418	0.1 μ F +80% -20% 25V ceramic	C660	2200PF \pm 5% 50V polystyrol
C419	0.04 μ F +80% -20% 25V ceramic	C661	2.2 μ F \pm 10% 35V tantalum
C420	0.04 μ F +80% -20% 25V ceramic	C662	2.2 μ F \pm 10% 35V tantalum
C425	0.04 μ F +80% -20% 25V ceramic	C663	100 μ F +50% -10% 25V electrolytic
C426	2.2 μ F +75% -10% 25V electrolytic	C664	100 μ F +50% -10% 25V electrolytic
C427	100PF \pm 10% 50V ceramic		
C428	0.04 μ F +80% -20% 25V ceramic	C701	1 μ F \pm 10% 10V tantalum
C429	3300PF \pm 5% 50V polystyrol	C702	1 μ F \pm 10% 10V tantalum
C430	3300PF \pm 5% 50V polystyrol	C703	100 μ F +50% -10% 25V electrolytic
		C704	100 μ F +50% -10% 25V electrolytic
C451	1 μ F \pm 20% 35V solid tantalum	C705	10P \pm 10% 50V ceramic
C452	1 μ F \pm 20% 35V solid tantalum	C706	10P \pm 10% 50V ceramic
C453	0.33 μ F \pm 20% 35V solid tantalum	C707	2.2 μ F \pm 10% 25V tantalum
C454	0.33 μ F \pm 20% 35V solid tantalum	C708	2.2 μ F \pm 10% 25V tantalum
C455	10 μ F +50% -10% 50V electrolytic	C709	22 μ F +50% -10% 16V electrolytic
		C710	22 μ F +50% -10% 16V electrolytic
C501	2.2 μ F \pm 20% 10V solid tantalum	C711	10 μ F \pm 10% 10V tantalum
C502	2.2 μ F \pm 20% 10V solid tantalum	C712	10 μ F \pm 10% 10V tantalum
C503	47PF \pm 10% 50V ceramic	C713	0.015 μ F \pm 10% 50V mylar
C504	47PF \pm 10% 50V ceramic	C714	0.015 μ F \pm 10% 50V mylar
C505	150PF \pm 10% 50V ceramic	C715	100PF \pm 10% 50V ceramic
C506	150PF \pm 10% 50V ceramic	C716	100PF \pm 10% 50V ceramic
C507	33 μ F +50% -10% 16V electrolytic	C717	1000PF \pm 10% 50V mylar
C508	33 μ F +50% -10% 16V electrolytic	C718	1000PF \pm 10% 50V mylar
C509	1800PF \pm 10% 50V mylar	C719	0.022 μ F \pm 10% 50V mylar
C510	1800PF \pm 10% 50V mylar	C720	0.022 μ F \pm 10% 50V mylar
C511	6800PF \pm 10% 50V mylar	C721	0.047 μ F \pm 10% 50V mylar
C512	6800PF \pm 10% 50V mylar	C722	0.047 μ F \pm 10% 50V mylar
C513	22 μ F +50% -10% 16V electrolytic	C723	1000PF \pm 10% 50V mylar
C514	22 μ F +50% -10% 16V electrolytic	C724	1000PF \pm 10% 50V mylar
C515	180PF \pm 5% 50V polystyrol	C725	6800PF \pm 10% 50V mylar
C516	180PF \pm 5% 50V polystyrol	C726	6800PF \pm 10% 50V mylar
C517	0.33 μ F \pm 20% 35V tantalum	C727	0.068 μ F \pm 10% 50V mylar
C518	0.33 μ F \pm 20% 35V tantalum	C728	0.068 μ F \pm 10% 50V mylar
C519	100 μ F +50% -10% 10V electrolytic	C729	1800PF \pm 10% 50V mylar
C520	100 μ F +50% -10% 10V electrolytic	C730	1800PF \pm 10% 50V mylar
C521	2.2 μ F \pm 20% 10V tantalum	C731	3900PF \pm 10% 50V mylar
C522	2.2 μ F \pm 20% 10V tantalum	C732	3900PF \pm 10% 50V mylar
C523	47PF \pm 10% 50V ceramic	C733	1000PF \pm 10% 50V mylar
C524	47PF \pm 10% 50V ceramic	C734	1000PF \pm 10% 50V mylar
C525	33 μ F +50% -10% 16V electrolytic	C735	1000PF \pm 10% 50V mylar
C526	33 μ F +50% -10% 16V electrolytic	C736	1000PF \pm 10% 50V mylar
C527	100 μ F +50% -10% 10V electrolytic	C737	0.022 μ F \pm 10% 50V mylar
C528	100 μ F +50% -10% 10V electrolytic	C738	0.022 μ F \pm 10% 50V mylar
C529	33 μ F +50% -10% 16V electrolytic	C739	0.027 μ F \pm 10% 50V mylar
C530	33 μ F +50% -10% 16V electrolytic	C740	0.027 μ F \pm 10% 50V mylar
C531	0.33 μ F \pm 20% 35V tantalum	C741	10 μ F \pm 10% 10V tantalum
C532	0.33 μ F \pm 20% 35V tantalum	C742	10 μ F \pm 10% 10V tantalum
C533	33 μ +50% -10% 16V electrolytic	C743	4.7P \pm 10% 50V ceramic
C534	33 μ +50% -10% 16V electrolytic	C744	4.7P \pm 10% 50V ceramic
C535	0.04 +80% -20% 50V ceramic	C745	33P \pm 10% 50V ceramic
		C746	33P \pm 10% 50V ceramic
C601	0.033 μ F \pm 10% 50V mylar	C747	2.2 μ F \pm 10% 25V tantalum

SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION
C748	2.2 μ F \pm 10% 25V tantalum	C815	1 μ F X 2 +50% -10% 100V electrolytic
C749	47 μ F +50% -10% 50V electrolytic	C816	.01 μ F X 2 500V ceramic
C750	47 μ F +50% -10% 50V electrolytic	C817	.04 μ F X 2 +80% -20% 50V ceramic
C801	4.7 μ F X 2 \pm 10% 10V tantalum	C818	47 μ F X 2 +50% -10% 16V electrolytic
C802	470PF X 2 \pm 10% 50V ceramic	C901	0.22 μ F \pm 10% 50V ceramic
C803	33 μ F X 2 +50% -10% 10V electrolytic	C902	0.22 μ F \pm 10% 50V ceramic
C804	100 μ F X 2 +50% -10% 63V electrolytic	C903	220 μ F +50% -10% 10V electrolytic
C805	47P X 2 \pm 10% 50V ceramic	C904	220 μ F +50% -10% 10V electrolytic
C806	47 μ F X 2 +50% -10% 16V electrolytic	C905	100 μ F +50% -10% 10V electrolytic
C807	100 μ F X 2 +50% -10% 50V electrolytic	C906	4.7 μ F +50% -10% 50V electrolytic
C808	1000P X 2 \pm 10% 50V mylar	C907	22 μ F +50% -10% 50V electrolytic
C809	1000PF X 2 \pm 10% 50V mylar	C908	100 μ F +50% -10% 50V electrolytic
C810	47PF \pm 10% 50V ceramic	C909	330 μ F +50% -10% 35V electrolytic
C811	.022 μ F X 2 \pm 10% 50V mylar	C910	330 μ F +50% -10% 35V electrolytic
C812	.022 μ F X 2 \pm 10% 50V mylar	C911	220 μ F +50% -10% 16V electrolytic
C813	1 μ F x 2 +50% -10% 100V electrolytic	C912	100P \pm 10% 50V ceramic
C814	.01 μ F X 2 500V ceramic		

TRANSISTORS & IC

SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION		
Q101	FM RF AMPLIFIER	3SK30, 2SK19	Q801	POWER AMP	2SA620 X 2
Q102	FM MIXER	2SC535	Q802	POWER AMP	2SA620 X 2
Q103	FM LOCAL OSCILATOR	SE3001	Q803	POWER AMP	2SC1103A X 2
Q201	FM IF AMPLIFIER	2SC381	Q804	POWER AMP	2SC1103A X 2
Q202	FM IF AMPLIFIER	2SC381	Q805	POWER AMP	2SC945 X 2
Q203	FM IF AMPLIFIER & LIMITTER	LM703	Q806	POWER AMP	2SA733 X 2
Q204	FM LIMITTER	TA7061AP	Q807	POWER AMP	2SC1431 X 2
Q205	FM AGC AMPLIFIER	2SC381	Q808	POWER AMP	2SA762 X 2
Q206	FM SIGNAL METER AMPLIFIER	2SC381	Q809	POWER AMP	2SC1079 X 2
Q207	FM MUTING DC AMPLIFIER	2SC372	Q810	POWER AMP	2SA679 X 2
Q208	WIRED OR GATE FOR FM MUTING	2SC372	Q901	POWER SUPPLY	2SC1382
Q209	FM MUTING DC AMPLIFIER	2SC1000	Q902	PROTECTION CIRCUIT	2SC945
Q210	FM MUTING DC AMPLIFIER	2SA640	Q903	PROTECTION CIRCUIT	2SC945
Q211	FM MUTING DC AMPLIFIER	2SC372	Q904	PROTECTION CIRCUIT	2SA733
Q212	FM MUTING DC AMPLIFIER	2SC372	Q905	PROTECTION CIRCUIT	2SC1382
Q213	WIRED OR GATE FOR FM MUTING	2SC372	Q906	PROTECTION CIRCUIT	2SC945
Q214	FM STEREO DEMODULATOR	μ PC554C	Q505	PHONO AMP	2SC1345
Q215	FM MUTING	2SK30	Q506	PHONO AMP	2SC1345
Q216	FM MUTING	2SK30	Q507	MIC AMP	2SC1345
Q217	FM OUTPUT AMPLIFIER	2SC1000	Q508	MIC AMP	2SC1345
Q218	FM OUTPUT AMPLIFIER	2SC1000	Q509	MIC AMP	2SA640
Q219	ACTIVE DUMMY LOAD	2SC735	Q510	MIC AMP	2SA640
Q351	AM NOISE FILTER AMPLIFIER	2SC372	Q511	MIC AMP	2SC1345
Q401	AM RF AMPLIFIER	2SC381	Q512	MIC AMP	2SC1345
Q402	AM MIXER & OSCILATOR	2SC372	Q651	FILTER AMP	2SC1345
Q403	AM IF AMPLIFIER	2SC381	Q652	FILTER AMP	2SC1345
Q404	AM IF AMPLIFIER	2SC372	Q701	LINEAR EQ AMP	2SC1345
Q451	MIC MIXER AMP	2SC1345	Q702	LINER EQ AMP	2SC1345
Q452	MIC MIXER AMP	2SC1345	Q703	LINER EQ AMP	2SC1345
Q501	PHONO AMP	2SC1345	Q704	LINER EQ AMP	2SC1345
Q502	PHONO AMP	2SC1345	Q705	TONE AMP	2SC1345
Q503	PHONO AMP	2SA640	Q706	TONE AMP	2SC1345
Q504	PHONO AMP	2SA640	Q707	TONE AMP	2SC1345
			Q708	TONE AMP	2SC1345

DIODES

SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION
D001	RECTIFIER	HIFI SPECIAL	
D002	RECTIFIER	HIFI SPECIAL	
D003	RECTIFIER	HIFI SPECIAL	
D004	RECTIFIER	HIFI SPECIAL	
D005	RECTIFIER	IN4003	
D006	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	VOLTAGE STABILIZER	WZ120	
D210	TEMPERATURE COMPENSATION	KB165	
D211	NEGATIVE VOLTAGE PROTECTION	IS1554V	
D402	TEMPERATURE COMPENSATION	KB265	
D403	TEMPERATURE COMPENSATION	KB165	
D404	AGC DETECTOR	IS1554V	
D405	AUDIO & METER DETECTOR	IS188	
D406	METER PROTECTION	IS1554V	
D801	POWER AMPLIFIER	SV-03 X 2	
D802	POWER AMPLIFIER	IS1554 X 2	
D803	POWER AMPLIFIER	IS1554 X 2	
D804	POWER AMPLIFIER	IS1554 X 2	
D805	POWER AMPLIFIER	IS1554 X 2	
D901	POWER SUPPLY	IN4003	
D902	PROTECTION CIRCUIT	IN4003	
D903	PROTECTION CIRCUIT	IS188	
D904	PROTECTION CIRCUIT	IN4002	

ZENER DIODES

SYMBOL NO.	DESCRIPTION
ZD801	VOLTAGE BEGULATOR CZ-119 X 2
ZD901	VOLTAGE BEGULATOR CZ-119

VARIABLE RESISTORS

SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION
VR001	500Ω-B FOR FM MUTING LEVEL	VR401	1KΩ-B FOR AM AGC SETTING
VR002	200KΩ-B X 2 FOR VOLUME CONTROL	VR451	100KΩ-A X 2 FOR MIC-MIXING
VR201	4.7KΩ-B FOR FM IF GAIN	VR701	100KΩ-B X 2 FOR BASS CONTROL
VR202	4.7KΩ-B FOR FM SIGNAL METER SWING	VR702	50KΩ-B X 2 FOR TREBLE CONTROL
VR203	4.7KΩ-B FOR FM STEREO SEPARATION	VR801	4.7KΩ-B (X 2) FOR POWER AMP
		VR802	330Ω-B (X 2) FOR POWER AMP

SWITCHES

SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION
S001	4-8-6 ROTARY SW FUNCTION	S603	2-2 PUSH SW STEREO ONLY
S002	2-4-6 ROTARY SW SPEAKER	S651	2-2 PUSH SW LOW CUT
S003	(⊙, ⊕ MODEL) POWER	S652	4-2 PUSH SW HI CUT
	2-2 PUSH SW	S701	2-4-5 ROTARY SW LINEAR EQUALIZER
	(⊙ MODEL)	S702	2-3 LEVER SW BASS
	1-1 PUSH SW	S703	2-3 LEVER SW TREBLE
	(⊕ MODEL)	S751	2-2 PUSH & PULL SW MIC-MIXING
S201	2-2 SLIDE SW DE EMPHASIS	S901	2-3 LEVER SW MONITOR
S351	4-2 SLIDE SW AM NOSE FILTER	S902	4-3 LEVER SW DUBBING
S601	2-2 PUSH SW LOUDNESS	S903	3-3 LEVER SW MODE
S602	2-2 PUSH SW MUTING		

TRANSFORMERS & FILTERS

SYMBOL NO.	DESCRIPTION	SYMBOL NO.	DESCRIPTION
T001	POWER TRANS P-1875 ⊕ MODEL	T204	FM METER TRANS TKAC-14733K
	P-1876 ⊙ MODEL	T205	19KHz TRANS 02-1138
	P-1877 ⊙ MODEL	T206	38KHz TRANS 02-1139
T101	FM IF TRANS	T207	19KHz TRANS 02-1138
T201	FM IF TRANS TKAC-14733K	T401	AM RF TRANS YXR-19030BD
T202	FM IF TRANS TKAC-14733K	T402	AM OSCILATOR TRANS YXR-18909GN
T203	FM DESCRIMINATOR TRANS V4FCC-20693BCV	T403	AM IF TRANS V6AQC-20025AA

SYMBOL NO.		DESCRIPTION		SYMBOL NO.		DESCRIPTION	
T404	AM IF TRANS	V6AQC-20025AA		L103	FM RF COIL		
T405	AM IF TRANS	YMC-15002A		L104	FM OSCILATOR COIL		
L001	AM ANTENNA	LUX-16132		F201	FM IF FILTER	CF10M-12C	
L101	FM ANTENNA COIL			F202	FM IF FILTER	CF10M-12C	
L102	FM RF COIL			F203	FM LOW-PASS FILTER	LUX-14562	

LAMPS

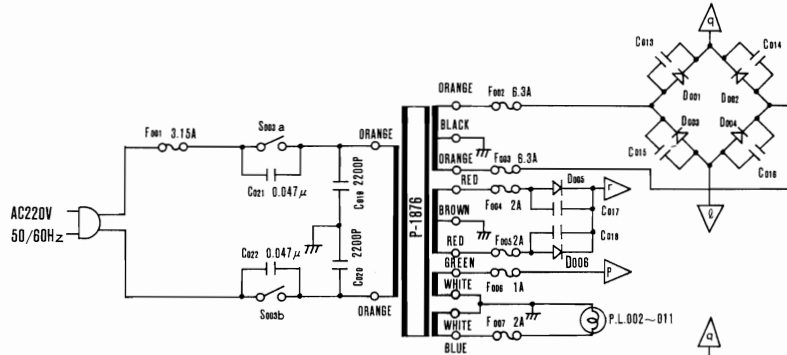
SYMBOL NO.		DESCRIPTION		SYMBOL NO.		DESCRIPTION	
PL001	12V 30mA	FOR FM STEREO INDICATOR		PL006	12V 1.5W	FOR DIAL ILLUMINATION	
PL002	12V 1.5W	FOR DIAL ILLUMINATION		PL007	12V 1.5W	FOR DIAL ILLUMINATION	
PL003	12V 1.5W	FOR DIAL ILLUMINATION		PL008	12V 1.5W	FOR DIAL ILLUMINATION	
PL004	12V 1.5W	FOR DIAL ILLUMINATION		PL009	12V 1.5W	FOR DIAL ILLUMINATION	
PL005	12V 1.5W	FOR DIAL ILLUMINATION		PL010	12V 1.5W	FOR DIAL ILLUMINATION	

LUX CORPORATION, JAPAN

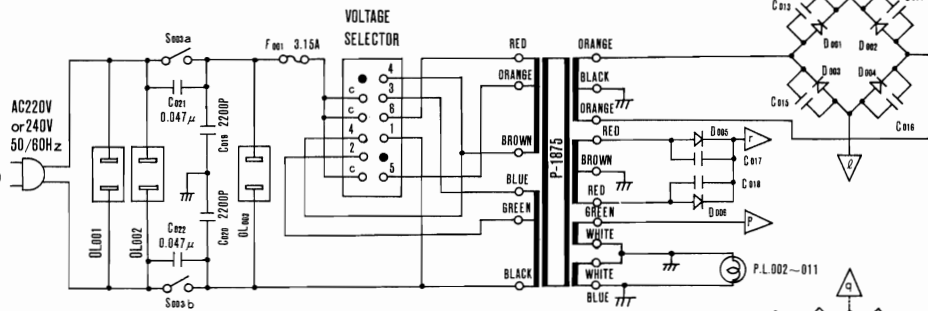
HEAD OFFICE & FACTORY 1-8-31 NAGAHASHI, NISHINARI-KU, OSAKA
 PHONES: 632 0031 CABLE: LUXELECT OSAKA
 TELEX: J63694

■ POWER SUPPLY DIAGRAM FOR THE THREE MODELS

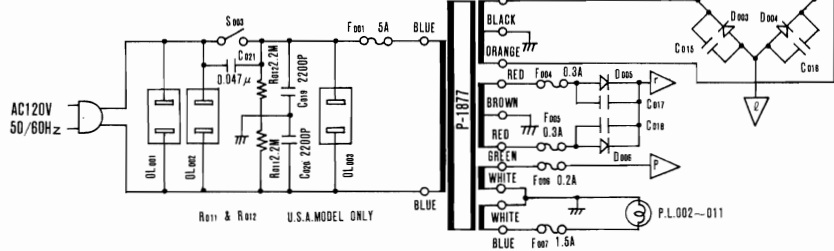
(1) SEMCO MODEL Ⓢ



(2) EUROPEAN MODEL Ⓣ



(3) U.S.A. & CANADIAN MODEL Ⓤ



SWITCH
S003 POWER

C013 ~ C016 0.01µF
D001 ~ D004 HI-FI SPECIAL
D005 ~ D006 IN4003