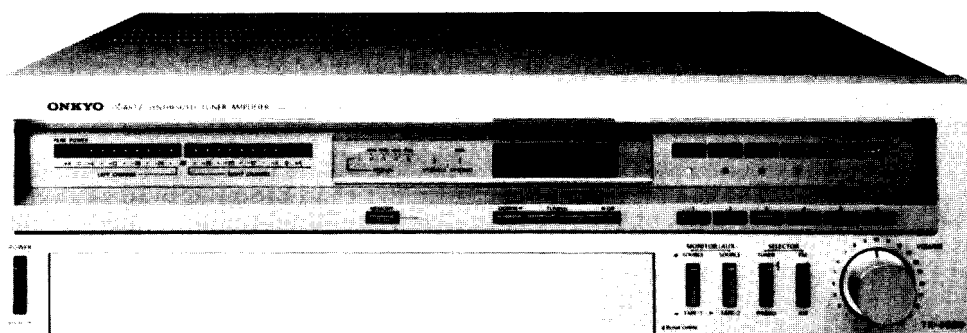


# ONKYO® SERVICE MANUAL

## SYNTHESIZED FM/AM STEREO RECEIVER MODEL TX-4000



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**ONKYO®**  
**AUDIO COMPONENTS**

## SPECIFICATIONS

### Amplifier Section

Power Output:	45 watts per channel, min. RMS, at 8 ohms both channels driven, from 20 – 20,000 Hz, with no more than 0.04% total harmonic distortion
Total Harmonic Distortion:	0.04% at rated output
IM Distortion:	0.04% at 1 watt output 0.1% at rated output
Frequency Response:	20 – 30,000 Hz $\pm$ 1 dB
Damping Factor:	40 at 8 ohms
Sensitivity and Impedance:	Phono: 2.5 mV, 50 kohms Tape Play: 150 mV, 50 kohms Tape Rec: 150 mV, 3.5 kohms (PH)
Input Sensitivity:	Phono: 0.35 mV, 1 watt output Tape Play: 22 mV, 1 watt output
Phono Overload:	180 mV RMS at 1 kHz, 0.04% THD
RIAA Deviation:	20 – 20,000 Hz $\pm$ 0.8 dB
Tone Controls:	Treble: $\pm$ 12 dB at 10 kHz Bass: $\pm$ 12 dB at 100 Hz
High Filter:	6 kHz, 6 dB/oct.
Loudness (–30 dB):	+9 dB at 40 Hz, +5 dB at 20 kHz
Residual Hum & Noise:	0.8 mV at volume control min. ("A" weighted)
Signal-to-Noise Ratio:	Phono: 76 dB (IHF "A" weighted, 1 watt output, 5 mV input) 85 dB (IHF "A" weighted, 10 mV input) Tape: 80 dB (IHF "A" weighted, 1 watt output, 0.5V input) 95 dB (IHF "A" weighted)

### Tuner Section

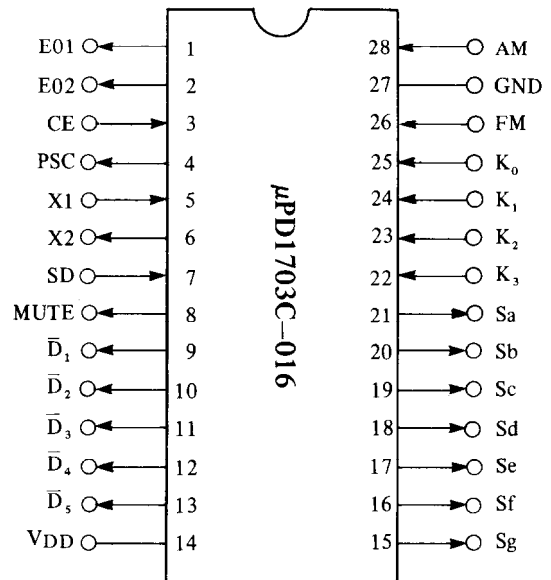
FM:	
Tuning Range:	87.9 – 107.9 MHz (200 kHz steps)
Usable Sensitivity:	Mono: 11.2 dBf, 2 $\mu$ V (IHF) Stereo: 19.2 dBf, 5 $\mu$ V
50 dB Quieting Sensitivity:	Mono: 17.2 dBf, 4 $\mu$ V Stereo: 37.2 dBf, 40 $\mu$ V
Capture Ratio:	1.5 dB
Image Rejection Ratio:	45 dB

IF Rejection Ratio:	85 dB
Spurious Rejection Ratio:	1/2 IF: 80 dB
Signal-to-Noise Ratio:	Mono: 70 dB Stereo: 65 dB
Alternate Channel Att:	60 dB
AM suppression Ratio:	52 dB
Harmonic Distortion:	Mono: 0.15% Stereo: 0.25%
Stereo Separation:	40 dB at 1 kHz 30 dB at 100 – 10,000 Hz
Frequency Response:	30 – 15,000 Hz $\pm$ 1.5 dB
Muting Level:	14.7 dBf, 3 $\mu$ V
Stereo Threshold:	14.7 dBf, 3 $\mu$ V
AM:	
Tuning Range:	530 – 1,620 kHz (10 kHz steps)
Usable Sensitivity:	25 $\mu$ V
Image Rejection Ratio:	45 dB
IF Rejection Ratio:	30 dB
Signal-to-Noise Ratio:	40 dB
Harmonic Distortion:	0.8%

### General

Power Supply:	AC 120V, 60 Hz
Outputs:	Speakers A & B, phones, tape rec out 1 & 2, AC outlet (SWITCHED $\times$ 1, UNSWITCHED $\times$ 1)
Inputs:	Phono, tape play 1 & 2, antennas (FM & AM)
Antennas:	FM: 300 ohms balanced and 75 ohms unbalanced AM: built-in ferrite core antenna and external terminal
Semiconductors:	20 ICs, 3 FETs, 27 transistors, 70 diodes, 31 LEDs
Dimensions:	480(W) $\times$ 130(H) $\times$ 376(D) mm 19" $\times$ 5-1/8" $\times$ 14-13/16"
Weight:	11.4 kg, 25.1 lbs

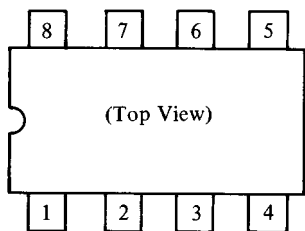
Specifications and features are subject to change without notice.

**BLOCK DIAGRAM FOR IC** $\mu$ PD1703C-016 (Micro computer)

Terminal No.	Symbol	Terminal	Description
1	EO <sub>1</sub>	Error Out	Charge pump output of the phase detector which constitutes the PLL. High level is output when the divided oscillation frequency is higher than the reference frequency. In the opposite case, LOW level is output. Floating occurs when the frequencies match. The output is applied to the variable capacitor in the front end through low pass filter Q267 and Q268. The output from both terminal is the same, but only EO1 is used.
2	EO <sub>2</sub>		
3	CE	Chip Enable	Device selection signal input terminal. HIGH level . . . normal operation; LOW level . . . memory preservation.
4	PSC	Prescaler Control	This terminal outputs a signal that switches the prescaler division ratio to 1/16 or 1/17 when the pulse swallow method is used for division (FM only).
5 6	X1 X2	X'tal	Connected to the 4.5 MHz crystal oscillator.
7	SD	Station Detector	Input terminal for detecting whether or not a broadcast signal is being received during auto-tuning. Stopped by the HIGH level. Not used.
8	MUTE	MUTE	Output terminal which mutes the shock noise occurring when the PLL is released; active HIGH.
9 ~ 13	$\bar{D}_1 \sim \bar{D}_5$	Digit Outputs	Display digit output signal terminals; active LOW.
14	VDD	VDD	Device power terminal; supplies 5V during normal operation and 3V from the external power source (two batteries) for memory preservation.
15 ~ 21	Sa ~ Sg	Segment Outputs	Display tube segment signal output, key return signal source and station display signal terminals; active HIGH. Since these terminals can handle 30V, they are connected directly to the segment terminals of the fluorescent display tubes.
22 ~ 25	K <sub>0</sub> ~ K <sub>3</sub>	Key Return Signal Inputs	Terminals for input of the key return signals from the external key matrix.
26	FM	FM Local Oscillator Signal Input	FM signals received are divided by 1/16 or 1/17 by prescaler $\mu$ PB553AC for input to this terminal.
27	GND	GND	Ground
28	AM	AM Local Oscillator Signal Input	Terminal for input of AM broadcast signal.

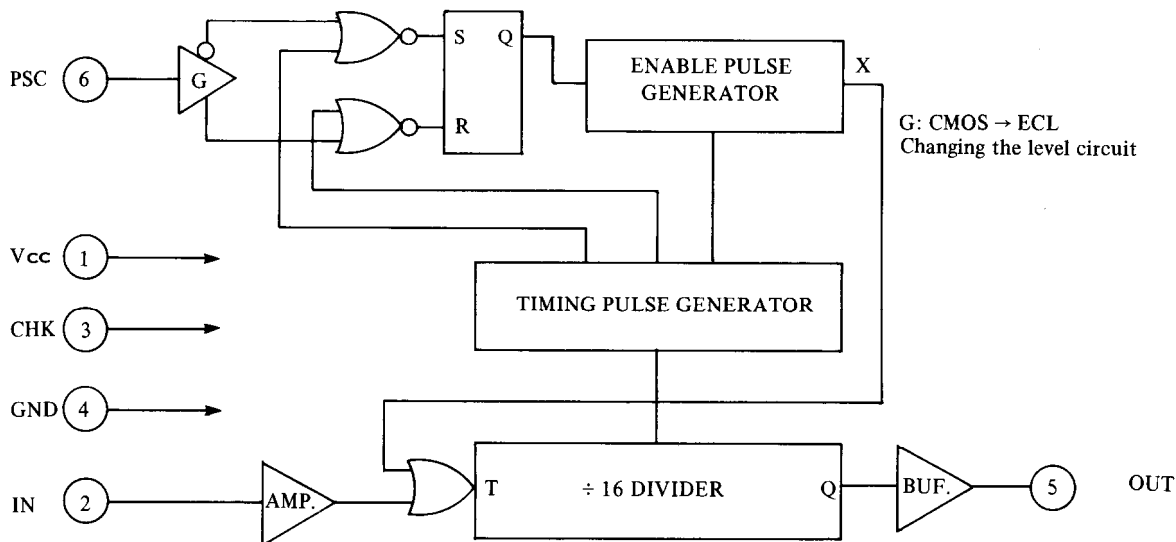
$\mu$ PB553AC (Prescaler)

Pin Connection

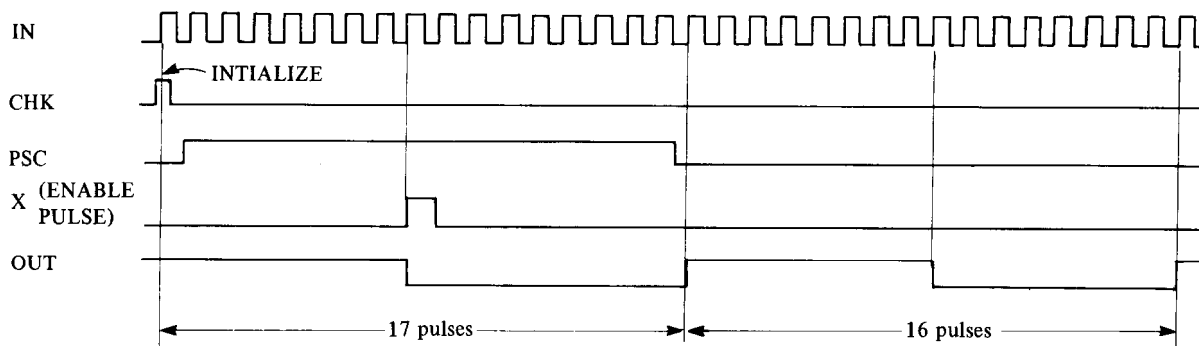


Pin No.	Symbol	Description
1	V <sub>CC</sub>	+5V supply
2	IN	Input terminal
3	CHK	Check terminal. To Ground
4	GND	Ground
5	OUT	Output
6	PSC	Prescaler Control
7	NC	Not connected
8	NC	Not connected

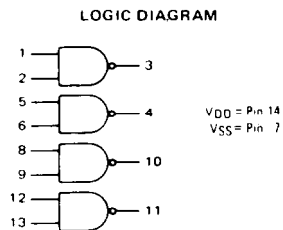
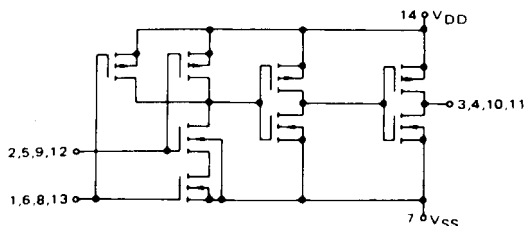
Block Diagram



Timing Chart

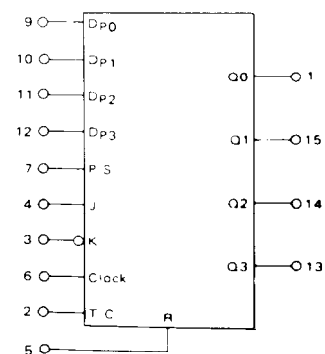


## 4011B (Quad 2-input "NAND" gate)

CIRCUIT SCHEMATICS  
(1/4 of Device Shown)

## 4035B (4-bit parallel-in/out shift register)

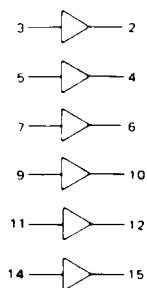
BLOCK DIAGRAM



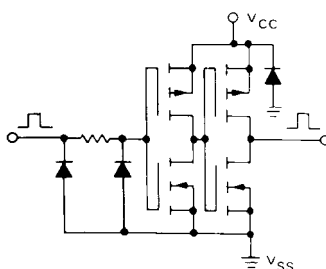
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

## 4050B (Hex buffers)

LOGIC DIAGRAMS



NC = Pin 13, 16  
 $V_{SS}$  = Pin 8  
 $V_{CC}$  = Pin 1

CIRCUIT SCHEMATIC  
(1/6 OF CIRCUIT SHOWN)

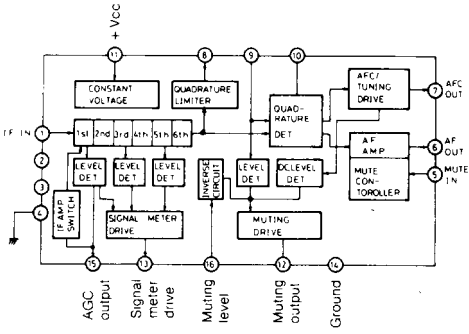
INPUTS				$t_p$ OUTPUT
C	J	K	R	Q0
	0	0	0	0
	0	1	0	$Q0(n-1)$
	1	0	0	$\overline{Q0}(n-1)$
	1	1	0	1
	x	x	0	$Q0(n-1)$
	x	x	1	0

x = Don't Care  
P/S = 0 = Serial Mode  
T/C = 1 = True Outputs

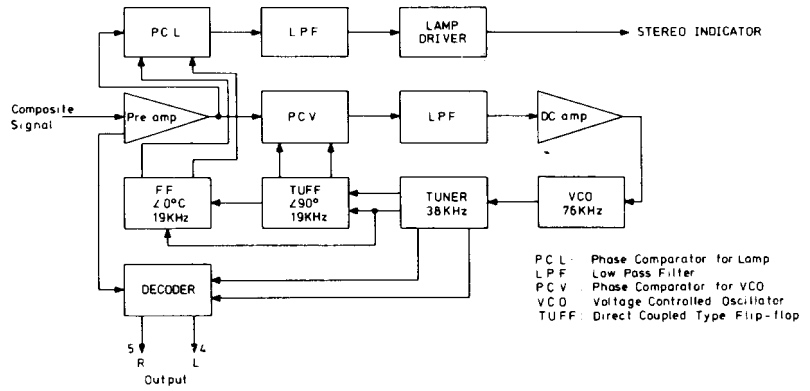
## PRECAUTION

- All MOS devices should be stored or transported in materials that are somewhat conductive. MOS devices must not be inserted into conventional plastic "snow" or plastic trays.
- All MOS devices should be placed on a grounded bench surface and operators should ground themselves prior to handling devices, since a worker can be statically charged with respect to the bench surface.
- Nylon clothing should not be worn while handling MOS circuits.
- When lead straightening or hand soldering is necessary, provide ground straps for the apparatus used.
- Double check test equipment setup for proper polarity of voltage before conducting parametric or functional testing.
- All unused device inputs should be connected to  $V_{DD}$  or  $V_{SS}$ .

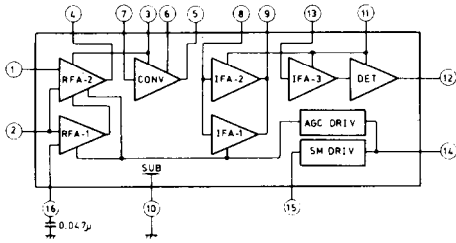
LA1231N (FM IF system)



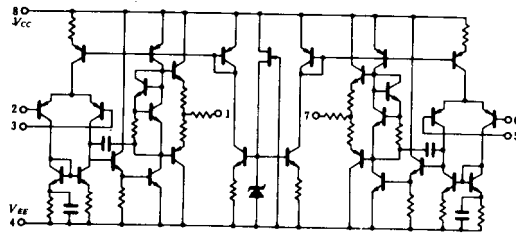
LA3350 (MPX Decoder)



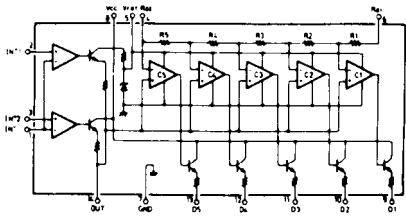
LA-1240 (AM radio system)



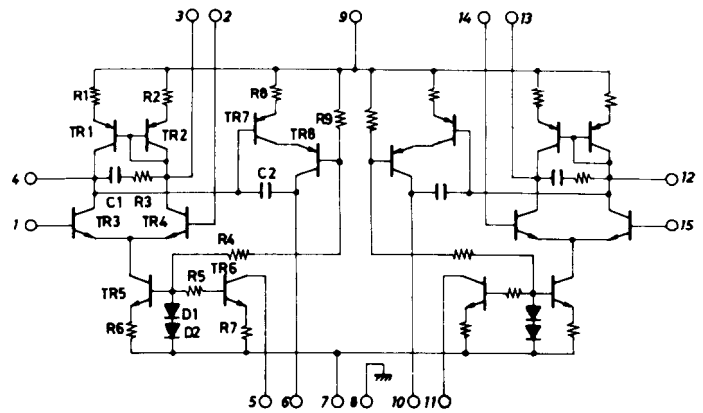
NJM4558/4559 (Operation amplifier)



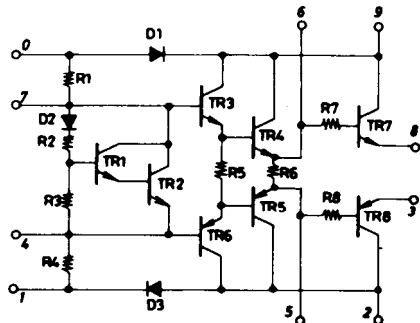
LB-1426 (Single indicator drive)



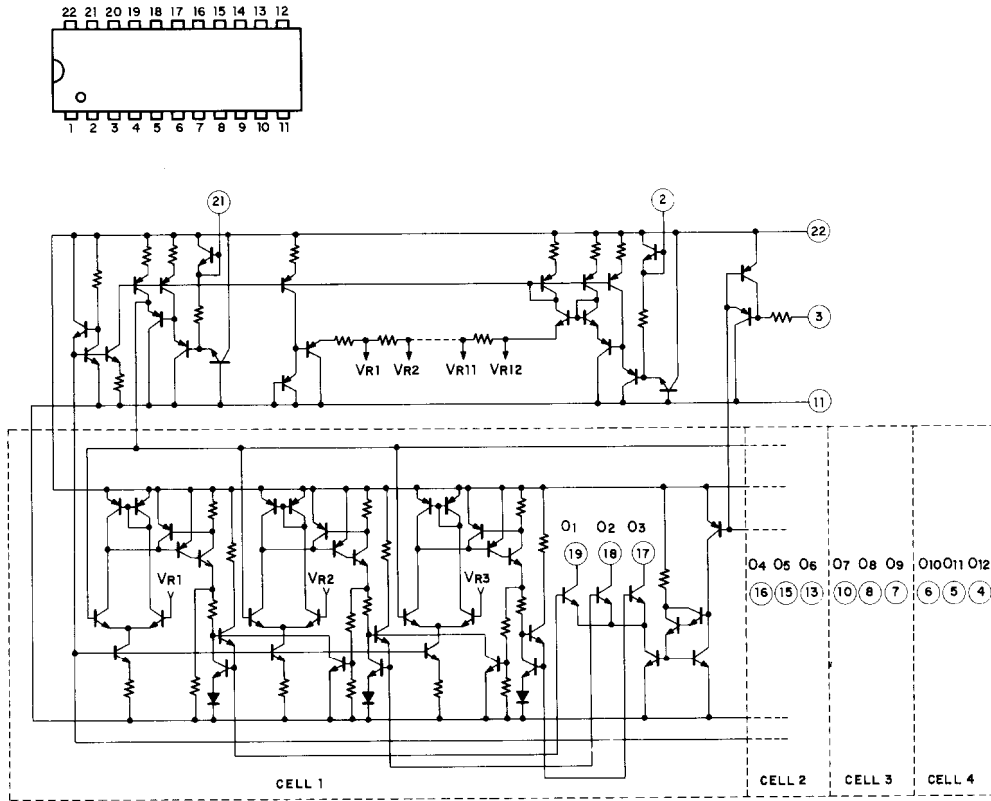
STK-3062 (Differential and driver amplifier)



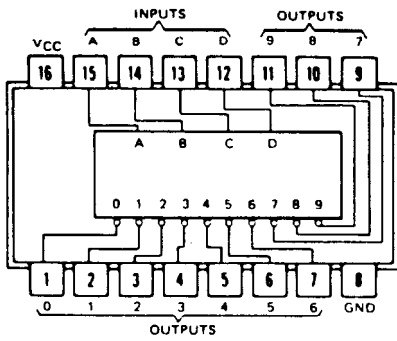
STK-0050II (Power amplifier)



IR2431 (Output Power Indicator Drive)



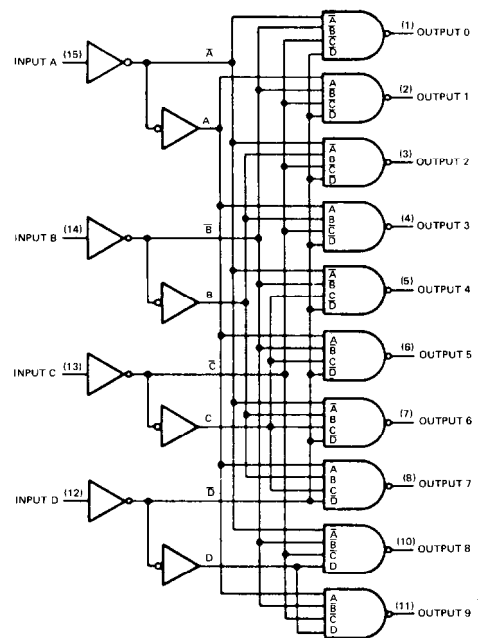
7442 (BCD-to-Decimal Decoder)



Pin Connection Diagram

NO.	INPUTS				OUTPUTS									
	D	C	B	A	0	1	2	3	4	5	6	7	8	9
0	L	L	L	L	L	H	H	H	H	H	H	H	H	H
1	L	L	L	H	H	L	H	H	H	H	H	H	H	H
2	L	L	H	L	H	H	L	H	H	H	H	H	H	H
3	L	L	H	H	H	H	H	L	H	H	H	H	H	H
4	L	H	L	L	H	H	H	H	L	H	H	H	H	H
5	L	H	L	H	H	H	H	H	H	L	H	H	H	H
6	L	H	H	L	H	H	H	H	H	H	L	H	H	H
7	L	H	H	H	H	H	H	H	H	H	L	H	H	H
8	H	L	L	L	H	H	H	H	H	H	H	L	H	H
9	H	L	L	H	H	H	H	H	H	H	H	H	L	H
INVALID	H	L	H	L	H	H	H	H	H	H	H	H	H	H
	H	L	H	H	H	H	H	H	H	H	H	H	H	H
	H	H	L	L	H	H	H	H	H	H	H	H	H	H
	H	H	L	H	H	H	H	H	H	H	H	H	H	H
	H	H	H	L	H	H	H	H	H	H	H	H	H	H

Function Table



Logic Diagram

## ALIGNMENT PROCEDURES

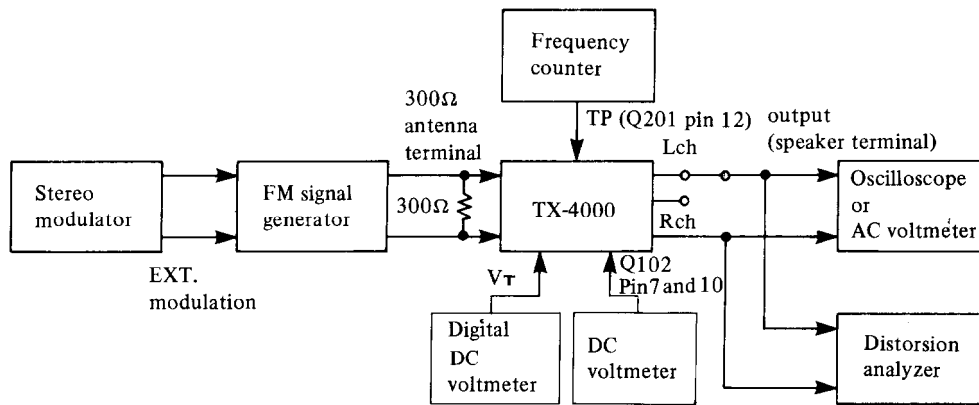
### INSTRUMENTS REQUIRED

1. Stereo Modulator
2. FM Signal Generator with Frequency Counter
3. Frequency Counter
4. Digital DC Voltmeter
5. DC Voltmeter
6. Distortion Analyzer
7. AC Voltmeter
8. Oscilloscope
9. AF oscillator

### GENERAL ALIGNMENT CONDITION

1. Standard modulation is 1 kHz 100% (FM MONO), pilot 9% sub and main 91%
2. Standard knob position  
 MODE ..... STEREO  
 MUTING ..... OFF

### 1. FM Adjustment

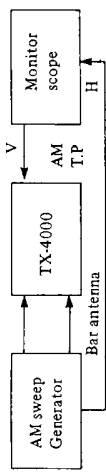


Item	FM signal generator	Stereo modulator	Dial to set	Adjust	Output indicator	Adjust for	Remarks
FM IF	1	_____	No input signal	T101 Bottom	DC voltmeter	0V	Repeat steps 1 and 2 as necessary
	2	98.1MHz, 65dBf, 1kHz, 75kHz devi.	98.1MHz	T101 Top	Distorsion analyzer	Minimum	
RF	1	_____	88.1MHz	T2	Digital DC voltmeter	3.03V	Repeat steps 1 and 2 as necessary
	2	107.9MHz, 65dBf 1kHz, 75kHz devi.	107.9MHz	TC3	Digital DC voltmeter	20.8V	
FM	3	98.1MHz, 65dBf 1kHz, 75kHz devi	98.1MHz	T11	Distorsion analyzer	Minimum	
V.C.O	98.1MHz 65dBf	_____	98.1MHz	R206	Frequency counter	19,000±19Hz	Turn off the modulation
Stereo separation	98.1MHz 65dBf Ext. modulation	Rch	98.1MHz	R202	AC voltmeter (Lch)	Minimum	Maximum and same separation
		Lch			AC voltmeter (Rch)	Minimum	
Muting level	98.1MHz, 20dBf 1kHz, 75kHz devi.	_____	98.1MHz	R140	Oscilloscope	Signal	Set the muting switch to on position
	98.1MHz, 20dBf 1kHz, 75kHz devi.	_____				No signal	



**2. AM IF adjustment**

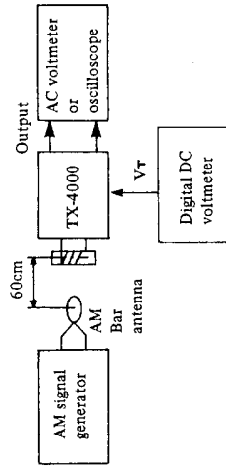
1. Set the dial to quiet point.



Set signal	Adjust	Adjust for
450 kHz	L152	 The output of monitor scope becomes maximum symmetrical response

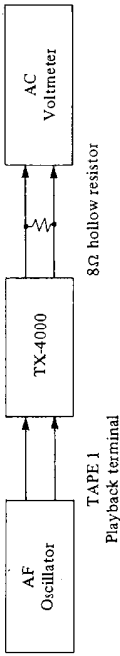
Remark: Usually not necessary to adjust.

**3. AM RF adjustment**

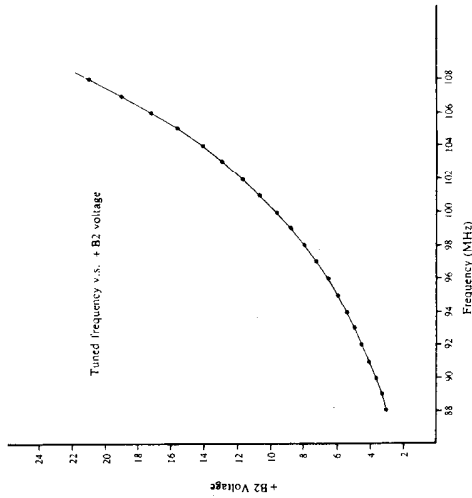


Step	AM signal generator	Set to dial	Adjust	Output indicator	Adjust for
1	600kHz 400Hz 30% mod.	600kHz	L151	Digital DC voltmeter	2.5V
2	1400kHz 400Hz 30% mod.	1,400kHz	TC152	Digital DC voltmeter	15.5V
3	Repeat steps 1 and 2 as necessary.				
4	600kHz 400Hz 30% mod.	600kHz	AM bar antenna	AC voltmeter	Maximum
5	1400kHz 400Hz 30% mod.	1,400kHz	TC151	AC voltmeter	Maximum
6	Repeat steps 4 and 5 as necessary.				

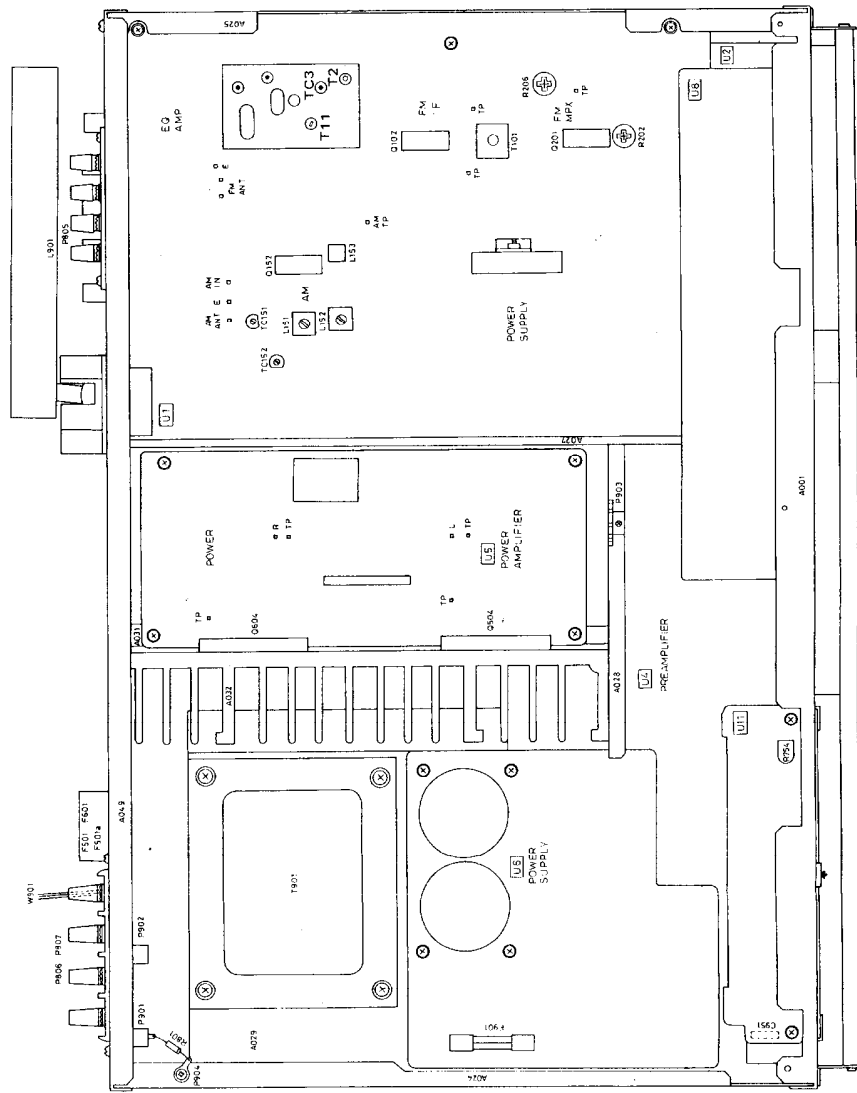
**4. Output indicator adjustment**



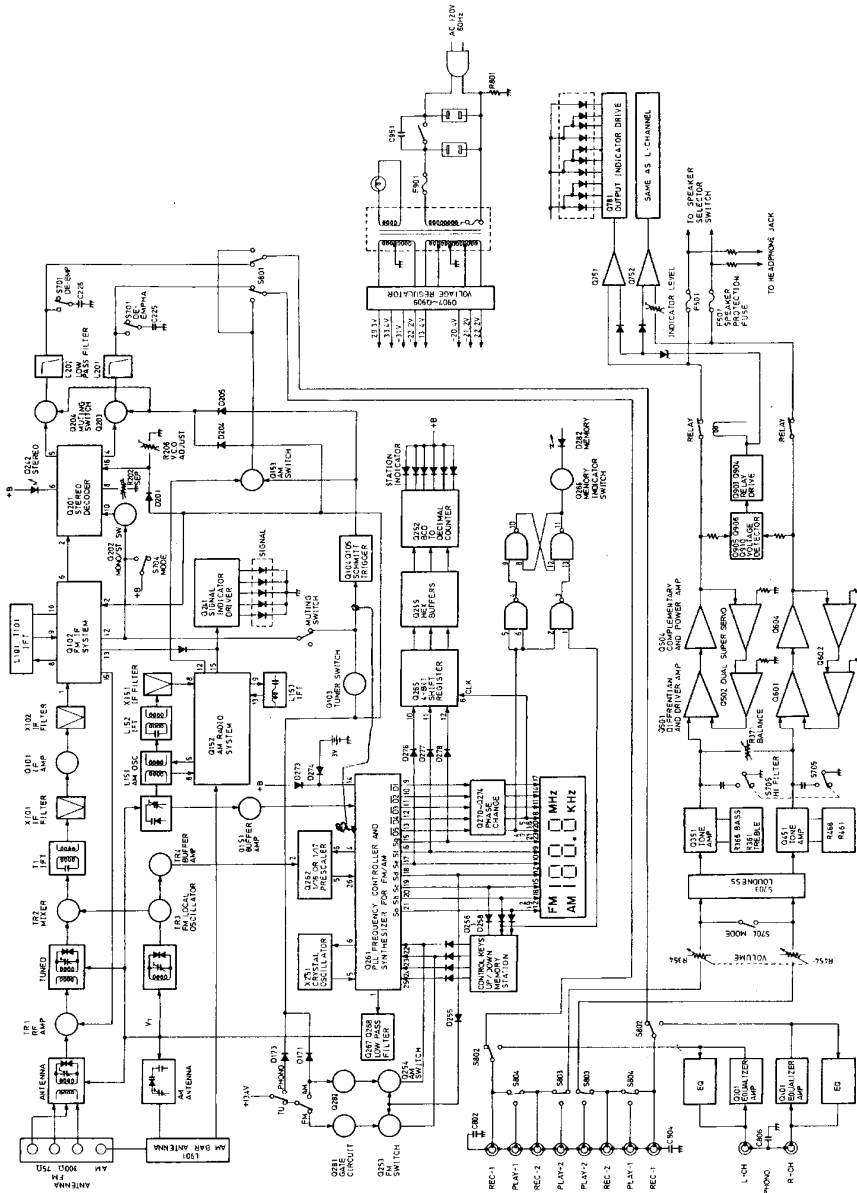
Set the TX-4000 to the "TAPE-1" position.  
Adjust the VOLUME or AF oscillator so that the AC voltmeter reads 16V.  
Adjust the R754 so that the first red L.E.D lights up.



**COMPONENT LOCATION**



**BLOCK DIAGRAM**

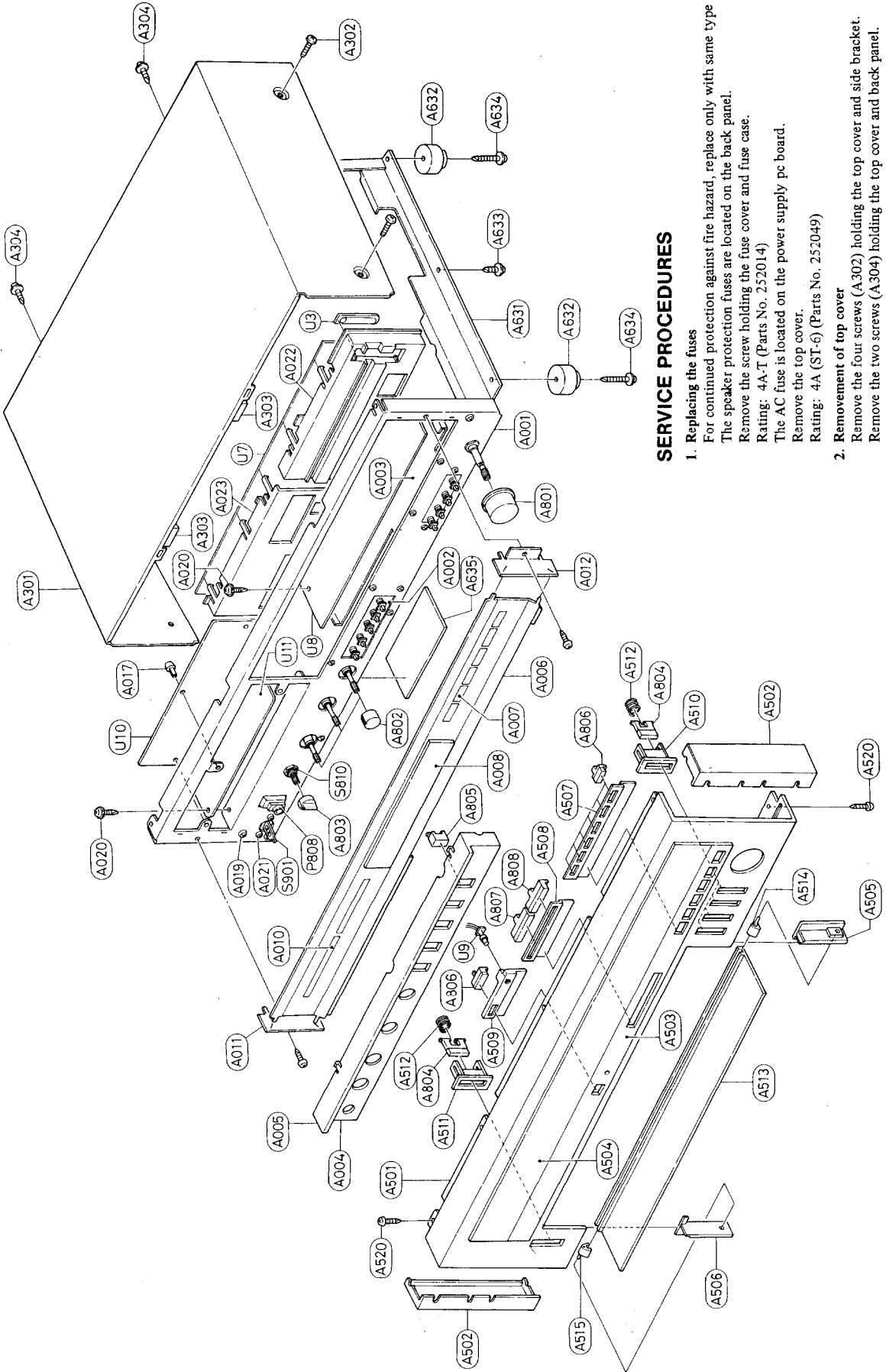


**FM/AM TUNER AND EQUALIZER AMPLIFIER PC BOARD (NARFE-1021)-PARTS LIST**

CIRCUIT NO.	PARTS NO.	DESCRIPTION	CIRCUIT NO.	PARTS NO.	DESCRIPTION
TU001	240044	FD166U12	D911	224042	05Z6.2L
Q102	222595	LA1231N, FM IF	D912	BZ260	BZ260
Q152	222479	LA1240, AM radio system	D913	224131	BZ210
Q201	222449	LA3350, MPX decoder	L101	233114	18μH, NCH-1009
Q301, Q401	222534	NJM-4559DX, Equalizer amplifier	L151	232084	NMO-2018
Q101	2211722	25C1923(O),	L201, L202	233021 or	NMC-8-5 or
2211723 or	223133	25C1923(R) or		233107	NMC-5002
2210823	D151, D152	25C1675(L-L)	T101	233083 or	NIT-3516 or
2211254 or	D153	25C1815(Y) or	L152	233101	NFF-6003
2210746	D154	25C945(AJP)	L153	232077	NMF-6009
2211255,		25C1815(GR),	X101, X102	3010006	SFE-10.7MA(RED)
2211256 or		25C1815(BL) or	X151	3010049	CFM2-450BL
2210746		25C945(AJP)			
2211293		25K68(M)			

CIRCUIT NO.	PARTS NO.	DESCRIPTION
C106	352750479	4.7μF, 25V, Elect.
C108	352741009	10μF, 16V, Elect.
C109	352784799	0.47μF, 50V, Elect.
C116, C117	352784799	0.47μF, 50V, Elect.
C118	352744709	47μF, 16V, Elect.
C121	352780339	3.3μF, 50V, Elect.
C122	352780339	3.3μF, 50V, Elect.
C123	352742209	22μF, 16V, Elect.
C124, C125	352784799	0.47μF, 50V, Elect.
TC151, TC152	3060010	NTC-20P09, Trimmer
C155	372525114	510pF±5%, 50V, ST
C159	352741009	10μF, 16V, Elect.
C165	352721019	100μF, 6.3V, Elect.
C168	352750479	4.7μF, 25V, Elect.
C169	352780339	3.3μF, 50V, Elect.
C172, C927	352744709	47μF, 16V, Elect.
C175	352741009	10μF, 16V, Elect.
C201	352744719	470μF, 16V, Elect.
C202	352780109	1μF, 50V, Elect.
C204, C206	352784799	0.47μF, 50V, Elect.
C205	352782299	0.22μF, 50V, Elect.
C207	372521524	1.500pF±5%, 50V, ST
C209	352780109	1μF, 50V, Elect.
C211, C212	352780229	0.22μF, 50V, Elect.
C301	352721019	2.2μF, 50V, Elect.
C304	352721019	100μF, 6.3V, Elect.
C309	352780229	2.2μF, 50V, Elect.
C311, C312	352780339	3.3μF, 50V, Elect.
C401	352780229	2.2μF, 50V, Elect.
C404	352721019	100μF, 6.3V, Elect.
C409	352780229	2.2μF, 50V, Elect.
C924	352721019	100μF, 6.3V, Elect.
C925	352734709	47μF, 10V, Elect.
C926	352741019	100μF, 16V, Elect.
C928	352761019	100μF, 35V, Elect.
C929	352751019	100μF, 25V, Elect.
R202	5225024	N10HR1KBD, Semi-fixed
R206	5225019	N10HR4.7KBD, Semi-fixed
R228	441524714KF	470Ω, 1/2W, Metal oxide film
R229	441524314KF	430Ω, 1/2W, Metal oxide film
S801-S804	25035240	NPS-222-242-L204, SELECTOR/MONITOR
P801	25045020	NP1-4PDBL11, Phono/Rec. 2
P802	25045041	NP1-6PDBL11, Tape 1/Play 2
Q907a, Q908a	27160011A	RAD-05
	82113008	3P+8FN, Fan head
	834130082	3STS+8BQ, Tapping
	831130082	3STW+8BQ, Tapping
	863130	N-3F-N
	79156	Lead wire

**EXPLODED VIEW**



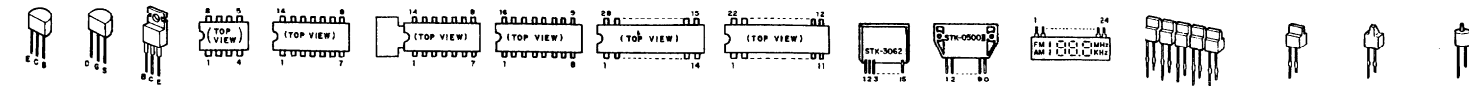
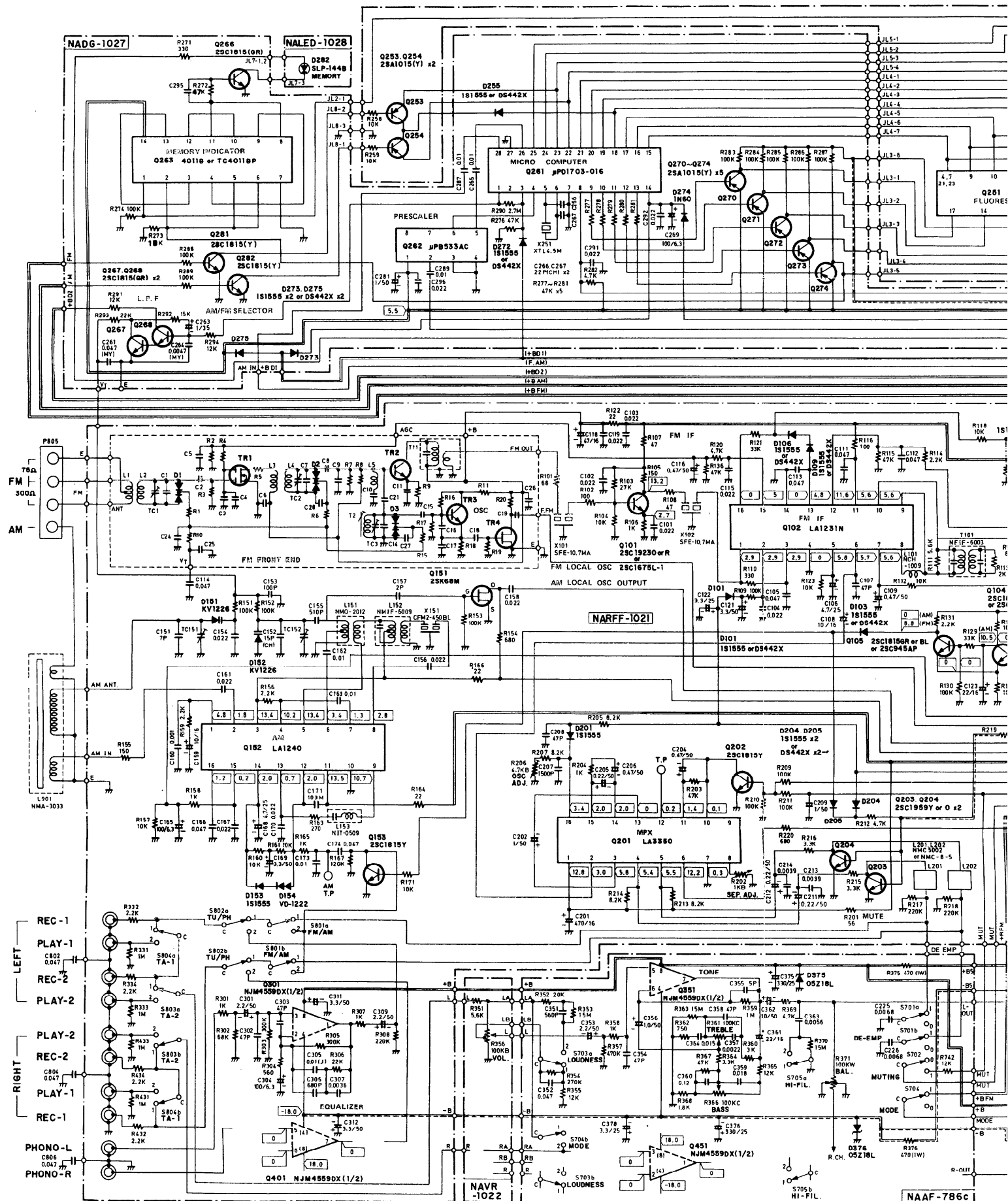
**SERVICE PROCEDURES**

1. **Replacing the fuses**  
 For continued protection against fire hazard, replace only with same type and same rating fuse. The speaker protection fuses are located on the back panel. Remove the screw holding the fuse cover and fuse case. Rating: 4A-T (Parts No. 252014)  
 The AC fuse is located on the power supply pc board. Remove the top cover.  
 Rating: 4A (ST-6) (Parts No. 252049)
2. **Removal of top cover**  
 Remove the four screws (A302) holding the top cover and side bracket.  
 Remove the two screws (A304) holding the top cover and back panel.
3. **Removal of front panel**  
 Remove the top cover.  
 Remove the five screws (A520) holding the front panel and front bracket.  
 Remove a screw (A633) holding the front panel and bottom board.
4. **Removal of bottom board**  
 Remove the four screws (A634) holding the leg and side bracket.  
 Remove the six screws (A633) holding the bottom board and chassis.

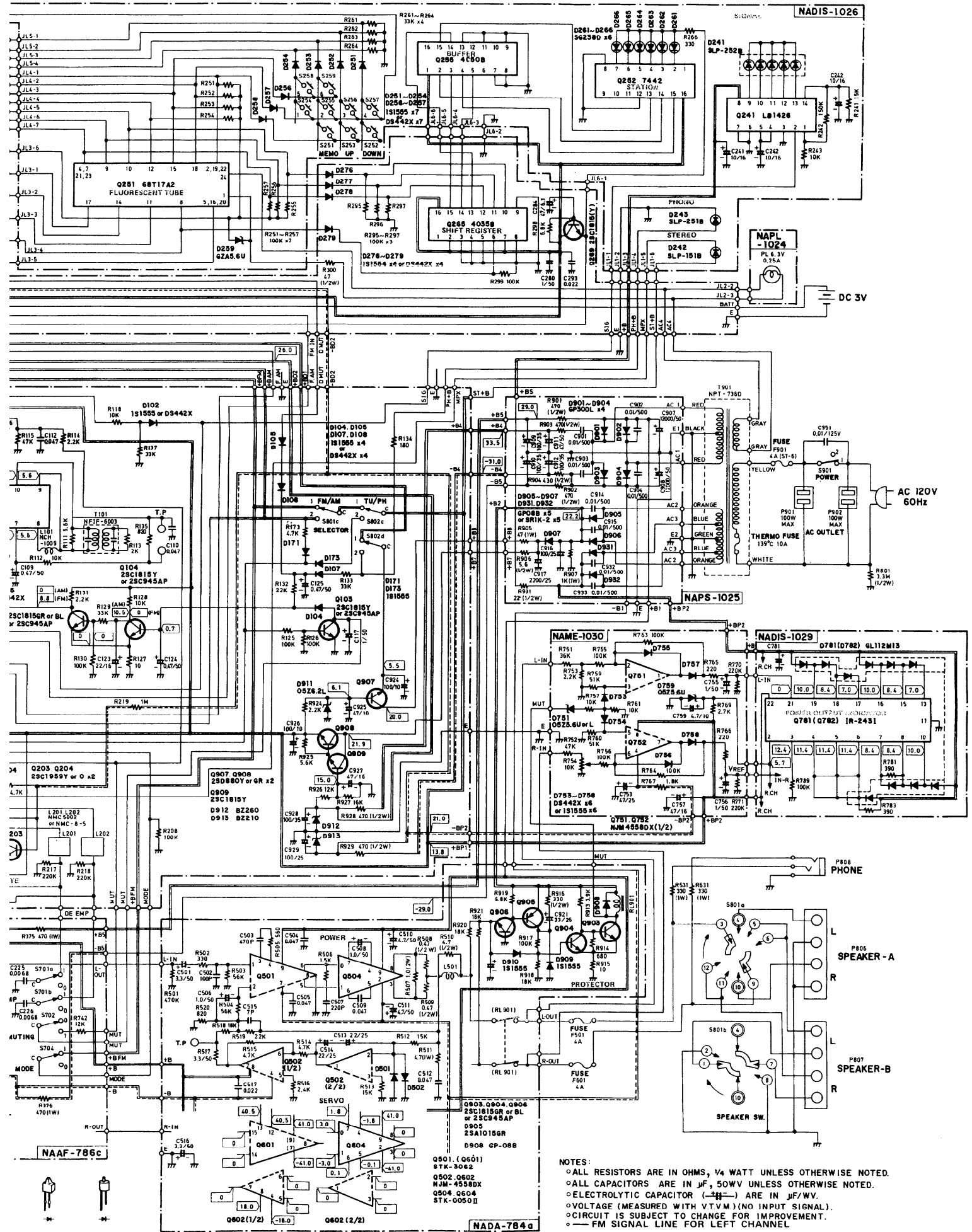
## PARTS LIST

SYMBOL NO.	PARTS NO.	DESCRIPTION	SYMBOL NO.	PARTS NO.	DESCRIPTION
A001	27110124	Bracket, front	A632	27175021	Leg
A002	27130235	Bracket, volume	A633	831130082	3STW+8BQ, Tapping screw
A003	27130236	Bracket, shielded	A634	831130162	3STW+16BQ, Tapping screw
A004, A005	13429901	Holder ass'y	A635	27300359	Lid
A006	28133038	Back plate	A801	28320495	Knob, volume
A007	28130101	Plate, selector	A802	28320494	Knob, tone
A008	28130099	Plate, L.E.D	A803	28320493	Knob, speaker
A010	28130100	Plate, power	A804	28320398	Knob, power
A011	27215048	Frame, left	A805	28320492	Knob, push
A012	27215047	Frame, right	A806	28320497	Knob, selector
A013	28140305	Cushion	A807	28320507	Knob, tuning
A014	28140261	8x15x30mm, Cushion	A808	28320508	Knob, tuning
A015	28140044	2x12x12mm, Cushion	C802,C804	335624730	0.047 $\mu$ F, 50V, Ceramic capacitor
A017	880004	Rivet	C806		
A018	29110029	3x90mm, Adhesive tape	C951	3500060	0.01 $\mu$ F, 125V, Capacitor, CS
A020	831130082	3STW+8BQ, Tapping screw	C951a	27300080	Cover, capacitor
A021	82113006	3P+6FN, Nut	F501, F601	252014	4A-T, Speaker protection fuse
A022	27190095	Holder, selector	F501a, F601a	2505004	Fuseholder
A023	27190094	Holder, L.E.D.	F901	252049	4A(ST-6), AC fuse
A025	27115058A	Bracket, right	L901	232083	NMA-3033, AM bar antenna
A026	27115059B	Bracket, left	P805	25060035	NTM-4PRMC06, Antenna terminal
A027	27115060A	Bracket, center	P806, P807	25060038	NTM-4PRMN09, Speaker terminal
A028	27130194B	Bracket	P808	25045067	HLJ-0279-01-070, Stereo headphone jack
A029	27130195	Bracket, transformer	P901, P902	25050046A	NSCT-2P-15, AC outlet
A031	27140189	Bracket, radiator	P903	250130	T-4461, Ground terminal
A032	27160062A	Radiator	P904	223004-1	B5-1, Terminal
A033	27140463	Bracket, battery	P905	260208	Binder
A034	27300360	Case, battery	Q504, Q604	222022	STK-0050II, Power amplifier IC
A038	834130062	3STS+6BQ, Tapping screw	R531, R631	441523314	330 $\Omega$ , 1/2W, Resistor
A039	831130082	3STW+8BQ, Tapping screw	R801	431523355	3.3M $\Omega$ , 1/2W, Solid resistor
A040	834140102	4STS+10BQ, Tapping screw	S810	25030181	NRS-144-15F, Speaker selector switch
A041	834130162	3STS+16BQ, Tapping screw	S901	25035047	NPS-111L-12P, Power switch
A044	86414010	FWN4x10FN, Nut	T901	230473	NPT-736D, Power transformer
A049	27120272	Back panel	U1	13429521	NARFE-1021, FM/AM tuner and equalizer amplifier pc board ass'y
A050	834230102	3STS+10BQ(NI), Tapping screw	U2	13429522	NAVR-1022, Volume control pc board ass'y
A051	834130062	3STS+6BQ, Tapping screw	U3	13429524	NAPL-1024, Dial plate illumination pc board ass'y
A052	834130102	3STS+10BQ, Tapping screw	U4	13429586C	NAAF-786C, Tone amplifier pc board ass'y
A053	834130082	3STS+8BQ, Tapping screw	U5	13429584A	NADA-784A, Power amplifier and protector circuit pc board ass'y
A054	801143	3P+6BQ(NI), Pan head screw	U6	13429525	NAPS-1025, Power supply pc board ass'y
A055	87313006	M-3B, Toothed washer	U7	13429526	NADIS-1026, Station, signal, and frequency indicator pc board ass'y
A301	28184072-1	Top cover	U8	13429527	NADG-1027, Digital circuit pc board ass'y
A302	838440089	4TTB+8C(BC), Tap screw	U9	13429528	NALED-1028, Output indicator pc board ass'y
A303	28140020	4x10x40mm, Cushion	U10	13429529	NADIS-1029, Output indicator pc board ass'y
A304	834130102	3STS+10BQ, Tapping screw	U11	13429530	NAME-1030, Output indicator driver pc board ass'y
A501-A510	13429121	Front panel ass'y	W901	253099A	AS-UC-3, Power supply cable
A502	28125076-1	End cap	W901a	270025	SR-3P-4, Strainrelief
A503	27210205	Panel, down			
A504	28191071	Clear plate			
A505	28185127A	Plate, right			
A506	28185128A	Plate, left			
A507	27267093	Guide, selector			
A508	27267090	Guide, tuning			
A509	27267091	Guide, memory			
A510	27267092	Guide, push			
A511	27267063A	Guide, power			
A512	27180049	Spring			
A513-A515	13429122	Front panel S ass'y			
A514	27300315A	Bearing, right			
A515	27300316A	Bearing, left			
A516	28140337	Cushion			
A519	260701	6x130mm, Adhesive tape			
A520	834130062	3STS+6BQ, Tapping screw			
A631	27170096	Bottom board			

# SCHEMATIC DIAGRAM

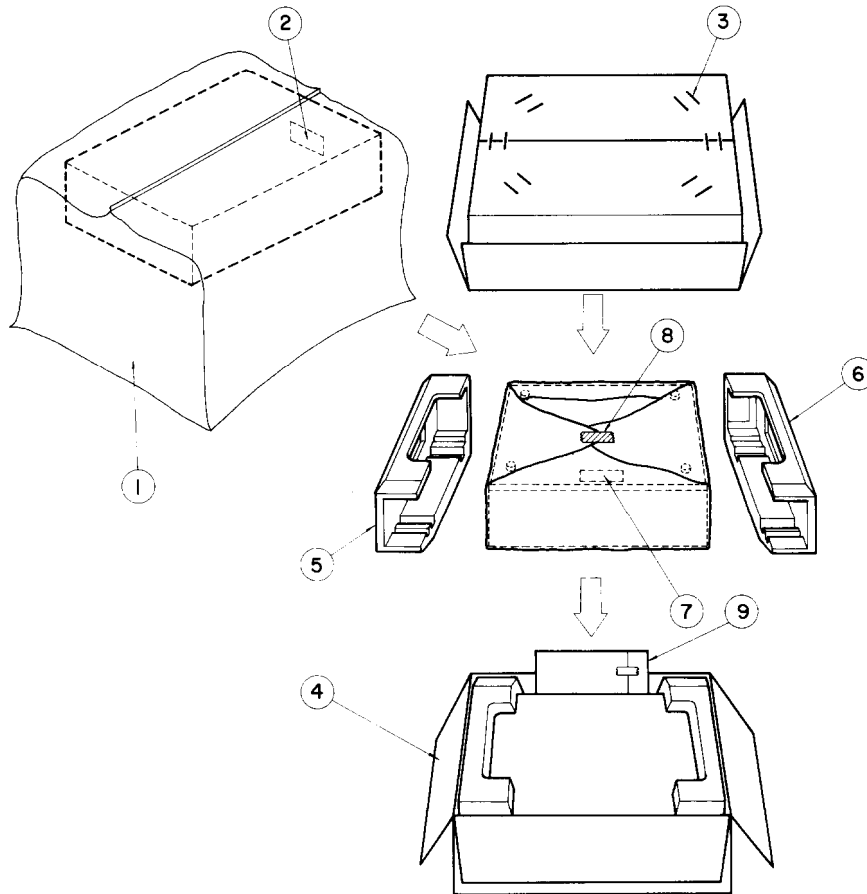


- 25C1815 25K68 25D880  $\mu$ PB553AC 4011B LB1426 LA1231N LA1240 LA3350 7442 4050B 4035B
- 25A1015 25C945 25C1923 25C1959
- 250880  $\mu$ PB553AC 4011B LB1426 LA1231N LA1240 LA3350 7442 4050B 4035B
- STK-3062 STK-0500II 6-BT-17A2 SLP-252B-05 SLP151B SLP251B SR538D SLP144B



NOTES:  
 ○ ALL RESISTORS ARE IN OHMS, 1/4 WATT UNLESS OTHERWISE NOTED.  
 ○ ALL CAPACITORS ARE IN  $\mu$ F, 50WV UNLESS OTHERWISE NOTED.  
 ○ ELECTROLYTIC CAPACITOR (—) ARE IN  $\mu$ F/WV.  
 ○ VOLTAGE (MEASURED WITH V.T.V.M.) (NO INPUT SIGNAL).  
 ○ CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.  
 ○ — FM SIGNAL LINE FOR LEFT CHANNEL

## PACKING PROCEDURES



### Parts list

REF. NO.	PARTS NO.	DESCRIPTION	REF. NO.	PARTS NO.	DESCRIPTION
1	29100034	850x650mm, Poly bag	8	29110032	Tape
2	29360378	Label	9		Accessory bag ass'y
3	282301	Sealing hook		29340476	Instruction manual
4	29050414	Master carton box		29365006	Warranty card
5	29090477	Pad (R)		292064A	FM antenna
6	29090478	Pad (L)		252014	4A-T, Fuse
7	29360363	Label		3010054	Battery
				29100006	250x350mm, Poly bag

### ONKYO CORPORATION

International Division : No. 24 Mori Bldg., 23-5, 3-chome Nishi-Shinbashi, Minato-ku, Tokyo Japan  
 Telex : 2423551 ONKYO J. Phone : 03-432-6981

### ONKYO U.S.A. CORPORATION

Eastern Office  
 42-07 20th Avenue, Long Island City, New York 11105, U.S.A. Phone : (212) 728-4639  
 Midwest Office  
 935 Sivert Drive, Wooddale, Illinois 60191, U.S.A. Phone : (312) 595-2970  
 C/O Damark Industries Inc.  
 20520 Nordhoff Chatsworth, Cal. 91311, U.S.A. Phone : (213) 998-6501

### ONKYO DEUTSCHLAND GMBH, ELECTRONICS

8034 München-Germering, Industriestrasse 18, West Germany. Telex : 521726

Telefon : (089) 845-5041