

ONKYO® SERVICE MANUAL

QUARTZ SYNTHESIZED FM STEREO / AM TUNER MODEL PT-33

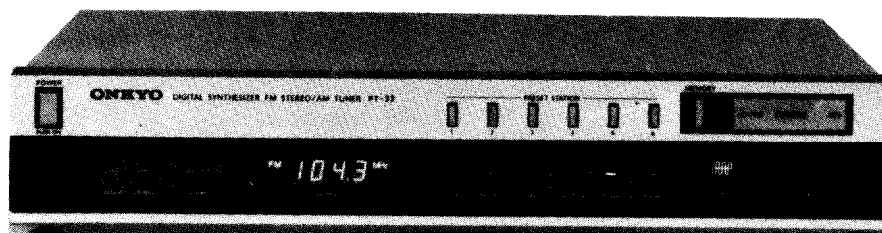


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SPECIFICATIONS

D model

FM

Tuning Range :	87.9 – 107.9 MHz (200 kHz steps)
Usable Sensitivity :	Mono : 11.2 dBf, 2.0 μ V, IHF Stereo : 17.2 dBf, 4.0 μ V
50 dB Quieting	
Sensitivity :	Mono : 18.3 dBf, 4.5 μ V Stereo : 39.2 dBf, 50 μ V
Capture Ratio :	1.5 dB
Image Rejection Ratio :	35 dB
IF Rejection Ratio :	90 dB
Signal-to-Noise Ratio :	Mono : 70 dB Stereo : 63 dB
Alternate Channel Att. :	50 dB IHF ($\pm$ 400kHz)
AM Suppression Ratio :	50 dB
Total Harmonic	
Distortion :	Mono : 0.15% Stereo : 0.3%
Frequency Response :	40–15,000Hz $\pm$ 1.5dB
Stereo Separation :	40 dB at 1kHz 30 dB at 100–10,000 Hz
Output Voltage :	500 mV
Muting Level :	11.2 dBf, 2.0 μ V

AM

Tuning Range	530 – 1620 kHz (10 kHz steps)
Usable Sensitivity :	25 μ V
Image Rejection Ratio :	45 dB
IF Rejection Ratio :	30 dB
Signal-to-Noise Ratio :	40 dB
Total Harmonic	
Distortion :	0.8%
Output Voltage :	150 mV

GENERAL

Power Supply :	AC 120 volts, 60 Hz
Antennas :	FM : 300 ohms balanced AM : built-in loop antenna and external terminal
Semiconductors :	5 FETs, 25 transistors, 12 ICs, 40 diodes, 14 LEDs
Dimensions (W x H x D) :	330 x 66 x 247 mm (13" x 2-5/8" x 9-3/4")
Weight :	2.4kg, 5.3 lbs.

Specifications and features are subject to change without notice.

Other models

FM

Tuning Range :	87.5 – 108.0 MHz (50 kHz steps)
Usable Sensitivity :	Mono : 11.2 dBf, 2.0 μ V, IHF 1.6 μ V (S/N 26 dB, 40 kHz Dev.) DIN Stereo : 17.2 dBf, 4.0 μ V, IHF 50 μ V (S/N 46 dB, 40 kHz Dev.) DIN
50 dB Quieting	
Sensitivity :	Mono : 18.3 dBf, 4.5 μ V Stereo : 39.2 dBf, 50 μ V
Capture Ratio :	1.5 dB
Image Rejection Ratio :	35 dB
IF Rejection Ratio :	90 dB
Signal-to-Noise Ratio :	Mono : 70 dB Stereo : 63 dB
Selectivity :	55 dB DIN ($\pm$ 300kHz, 40kHz Dev.)
AM Suppression Ratio :	50 dB
Total Harmonic	
Distortion :	Mono : 0.15% Stereo : 0.3%
Frequency Response :	40–15,000 Hz $\pm$ 1.5 dB
Stereo Separation :	40 dB at 1 kHz 30 dB at 100–10,000 Hz
Output Voltage :	500 mV
Muting Level :	11.2 dBf, 2.0 μ V

AM

Tuning Range :	522 – 1611 kHz (9 kHz steps) or 530 – 1620 kHz (10 kHz steps)
Usable Sensitivity :	25 μ V
Image Rejection Ratio :	45 dB
IF Rejection Ratio :	30 dB
Signal-to-Noise Ratio :	40 dB
Total Harmonic	
Distortion :	0.8%
Output Voltage :	150 mV

GENERAL

Antennas :	FM : 300 ohms balanced and/or 75 ohms unbalanced AM : built-in loop antenna and external terminal
Semiconductors :	5 FETs, 25 Transistors, 12 ICs, 40 diodes, 14 LEDs
Dimensions :	330 x 66 x 247 mm (13" x 2-5/8" x 9-3/4")
Weight :	2.4kg 5.3 lbs.
Power supply :	European models : AC 220V, 50 Hz British & Australian models : AC 240V, 50 Hz Worldwide models : AC 120V, 60 Hz/220V, 50 Hz

Specifications and features are subject to change without notice

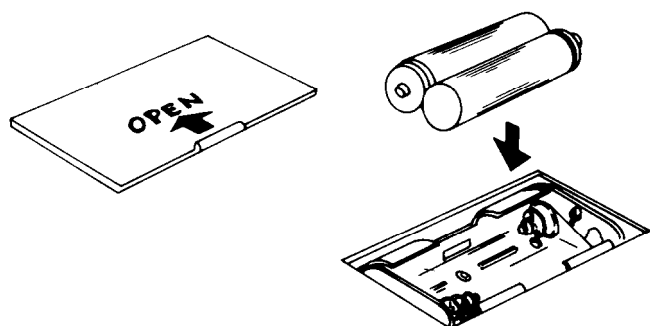
PRECAUTIONS

1. Handling precautions of CMOS IC

1. 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.
2. 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.
3. Nylon clothing should not be worn while handling MOS circuits.
4. When lead straightening or hand soldering is necessary, provide ground straps for the apparatus used.
5. Double check test equipment set up for proper polarity of voltage before conducting parametric or functional testing.
6. All unused device inputs should be connected to V_{DD} or V_{SS} .

2. Memory Preservation Batteries

Because stations stored in the memory by the FM/MW preset keys would normally be lost when power turned off or the plug removed from the wall socket, this unit requires two memory preservation batteries to preserve the contents of the memory even when power is turned off. Be sure to insert the correct type of batteries into the battery holder in the back panel of the unit before turning on power for the first time. Use only batteries listed in the chart.



Type	Voltage (V)	IEC	United States									United Kingdom		West Germany	France	Denmark	Italy	Australia
			ANSI	NEDA	Eveready	Mallory	Ray-O-Vac	Bright Star	Burgess	RCA	Sears	Eveready (BEREC)	Mallory	VARTA (Pertrix)	S.A.F.T. (Leclanché)	Hellesens	Supper Pila	Eveready
Manganese	1.5	R6	AA	15P	815	M15P	710	59P	920	VS734	8950	SP12 SP12 HP7		251 244 280	R6S R6B T3S	VI-18 VI-28 VI-38 VI-75	63	915 1015
				15F	915	M15F	7AA	59	910	VS034A								
				15	1015	M150F	15	0199	930	VS334								
				15D	1215	M1504	5AA											

3. Voltage Selector (back panel)

120/220V models are equipped with a voltage selector to conform with local power supplies. Be sure to set this switch to match the voltage of the power supply in your area before turning the power switch on. Voltage is changed by sliding the groove in the switch with a screwdriver or similar instrument to the top or bottom position. Confirm that the switch has been moved all the way up or down before turning the power switch on. If there is no voltage selector switch on the unit you have purchased, it can only be used in areas where the power supply voltage is the same as that of the unit.

4. AM Tuning Step Frequency Switch (back panel)

120/220V models are equipped with a switch to change the AM Tuning step frequency from 9 kHz. These units are set to 9 kHz at the factory ; change to 10 kHz if this gives better results in your locality.



PARTS LIST

SYMBOL NO.	PARTS NO.	DESCRIPTION	SYMBOL NO.	PARTS NO.	DESCRIPTION
A1	27115124	Side bracket, left	C901	3500065A	0.01 μ F, 400V, Capacitor IS
A2	27115103	Side bracket, right	C901a	2730080	Cover, capacitor
A3	27300514	Insulator plate	C902	3500065A	0.01 μ F, 400V, Capacitor IS (Q)
A4	27120421	Back panel (D)	C902a	27300080	Cover, capacitor (Q)
	27120422	Back panel (G)	C903	335622230	0.022 μ F, 50V, Capacitor, ceramic (G)
	27120423	Back panel (W)	P901	25060047	NTM-4PRMN16, Antenna terminal
	27120424	Back panel (Q)	P901a	25045088	75 Ω antenna connector (G)
A5	27140616A	Bracket, battery	P902	2010039	Output cable
A7	28130138	Dial plate (D)	P903	223004-1	Terminal, solid resistor R911 (D)
	28130157	Dial plate (G/W/Q)	P904	253099A	AS-UC-3, Power supply cable (D)
A9	27300360	Case, battery		253083	AS-CEE, Power supply cable (G)
A10	27300359	Lid		253077-1	Power supply cable (Q)
A11	28140203	Cushion	P905	25108010	LG-2C, Terminal (D)
A12	270025	SR-3P-4, Strainrelief	R911	431523355	3.3M Ω , 1/2W, Solid resistor
A13	270025	SR-3P-4, Strainrelief (D)	S901	25035197	NPS-111-L161P, Power switch (D)
	270280	SR-4K-4, Strainrelief (G/W)		25035355	NPS-121-L319P, Power switch (G/Q/W)
	27300349	SR-6W-1, Strainrelief (Q)	S902	25065126	NSS-2259, Antenna gain switch (G)
A16	834130068	3TTS+6B, Tapping screw			NSS-2259, AM band selector switch (W)
A17	831130088	3TTW+8B, Tapping screw	S903	25065126	NSS-1258P, Voltage selector switch (W)
A18	833130080	3TTP+8P, Tapping screw	S904	25065123	NPT-769D, Power transformer (D)
A19	834230108	3TTS+10B(Ni), Tapping screw			NPT-769G, Power transformer (G)
A20	834130108	3TTS+10B, Tapping screw	T901	230641	NPT-769DG, Power transformer (W)
A21	834140108	4TTS+10B, Tapping screw (G/Q/W)		230642	NPT-769Q, Power transformer (Q)
	831130088	3TTW+8B, Tapping screw (D)		230644	NMA-3034, AM loop antenna
A24	82113006	3P+6FN, Pan head screw	T902	232085	Holder, antenna
A25	834130088	3TTS+8B, Tapping screw	T902a	27190105	NBLN-1, Balun transformer
A26	863130	N-3F-N, Nut (D)	T903	233026A	NARF-1271a, FM/AM tuner pc board ass'y (D)
A351	28184137	Top cover	U1	13198571A	NARF-1271b, FM/AM tuner pc board ass'y (G/Q)
A352	834430068	3TTS+6B(BC), Tapping screw			NARF-1271c, FM/AM tuner pc board ass'y (W)
A501	13198121	Front panel ass'y	U2	13801572	NADIS-1272, Display pc board ass'y (D)
A502	28191115-1	Clear plate, left			NADIS-1272a, Display pc board ass'y (G/W/Q)
A503	28191114-1	Clear plate, right	U3	13532552	NAFI-1152, Birdie filter pc board ass'y (G)
A504	27267168	Guide, power			
A505	27267169	Guide, tuning			
A507	833130080	3TTP+8P, Tapping screw			
A601	27170120	Bottom board			
A602	27175011C	Leg			
A607	831130088	3TTW+8B, Tapping screw			
A608	831130080	3TTW+8P, Tapping screw			
A801	28320721	Knob, power			
A802	28320722	Knob, tuning			
A803	28320723	Knob, push			
A804	28320726-1	Knob, FM			
A805	28320725-1	Knob, AM			
A806	28320724	Knob, memory			

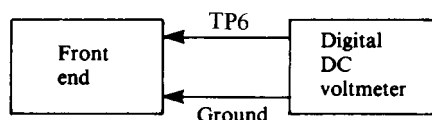
Note : D : Only 120V model
 G : Only 220V model
 W : Only 120/220V model
 Q : Only 240V model

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

1. Front end adjustment

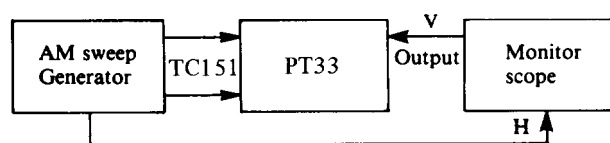


Step	Set to dial	Adjust	Output indicator	Adjust for
	120V model			
1	600 kHz	L152	Digital DC voltmeter	1.7V
2	1400 kHz	TC152		6.4V
3	Repeat steps 1 and 2 as necessary			
	Other models			
1	603 kHz	L152	Digital DC voltmeter	1.7V
2	1404 kHz	TC152		6.4V
3	Repeat steps 1 and 2 as necessary			

Remark : Usually not necessary to adjust.

2. AM IF adjustment

1. Set the dial to quiet point.



Set signal	Adjust	Adjust for
450 kHz	X151	The output of monitor scope becomes maximum symmetrical response

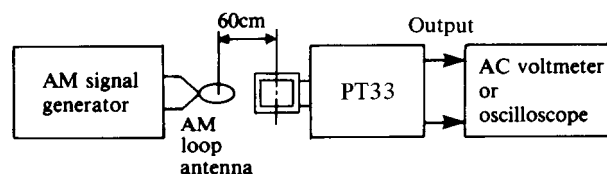
Remark : Usually not necessary to adjust.

GENERAL ALIGNMENT CONDITION

Standard modulation is 1 kHz 100% (FM MONO), pilot 9% sub and main 91% (FM STEREO).

Standard Modulation is 400 Hz. 30% (AM).

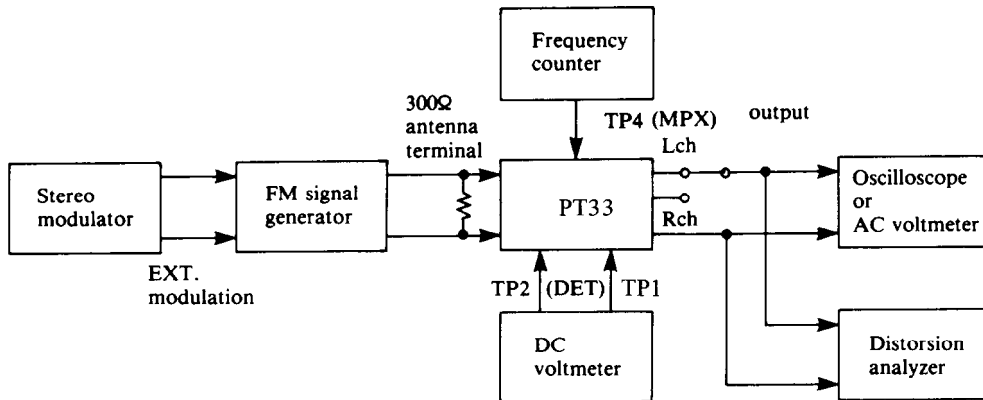
3. AM RF adjustment



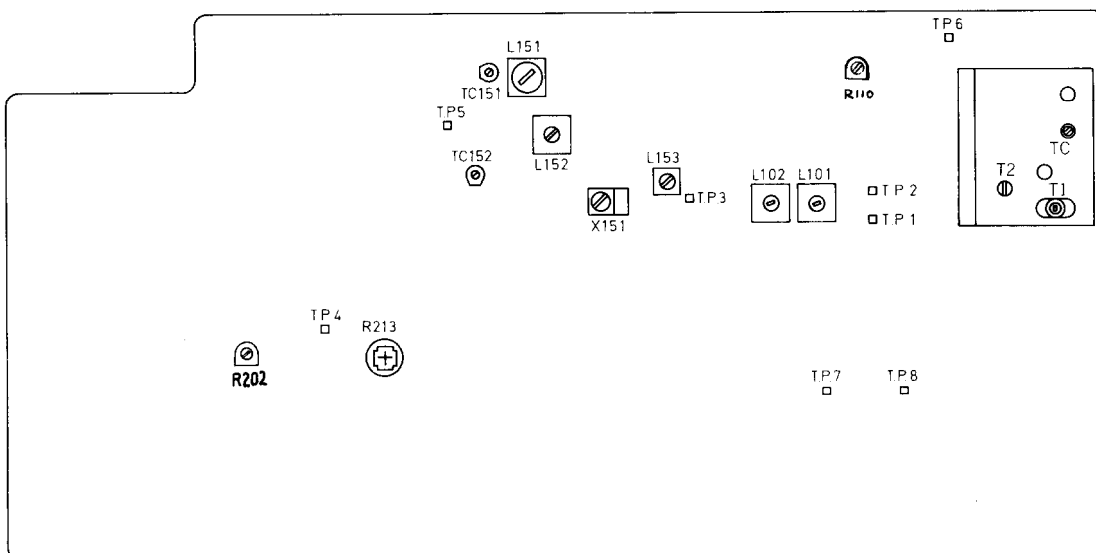
	AM Signal generator	Dial to set	Adjust	Adjust for
1	603kHz 400Hz, 30% mod.	603kHz	L151	Maximum
2	1404kHz 400Hz, 30% mod.	1404kHz	TC151	Maximum
3.	Repeat steps 1 and 2 as necessary			

NOTE : () : 220 V model

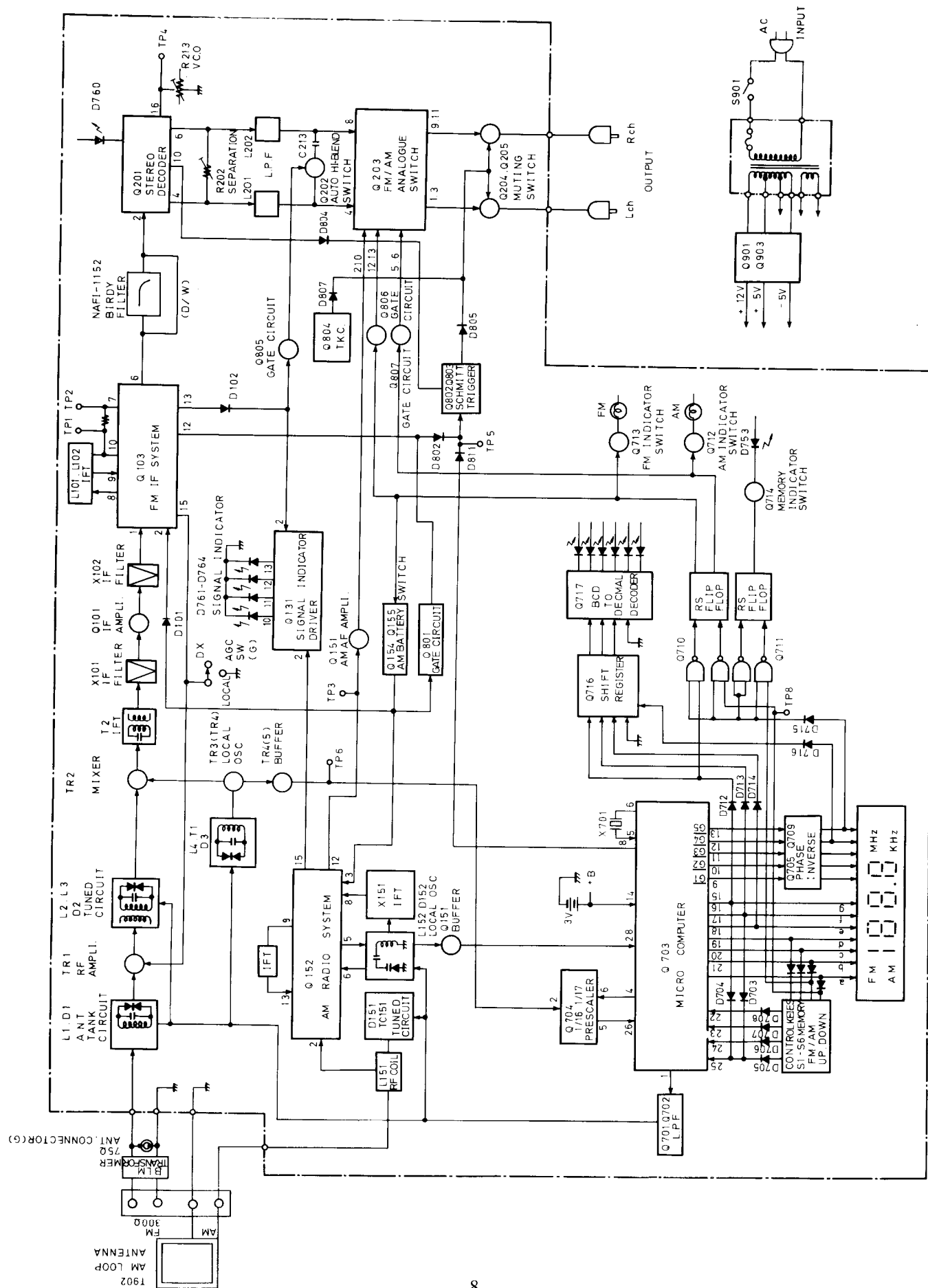
4. FM adjustment



Item	FM signal generator	Stereo modulator	Dial to set	Adjust	Output indicator	Adjust for	Remarks
IF	1	_____	No input signal	L101	DC voltmeter	0V	Repeat steps 1 and 2 as necessary
	2	_____	98.1MHz	L102 T2 (IF)	Distorsion analyzer	Minimum	
V.C.O	98.1MHz 65dBf	_____	98.1MHz	R213	Frequency counter	76kHz	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, 13 dBf 1kHz, 75kHz devi.	_____	98.1MHz	R110	Oscilloscope	Signal	
	98.1MHz, 12 dBf 1kHz, 75kHz devi.	_____				No signal	

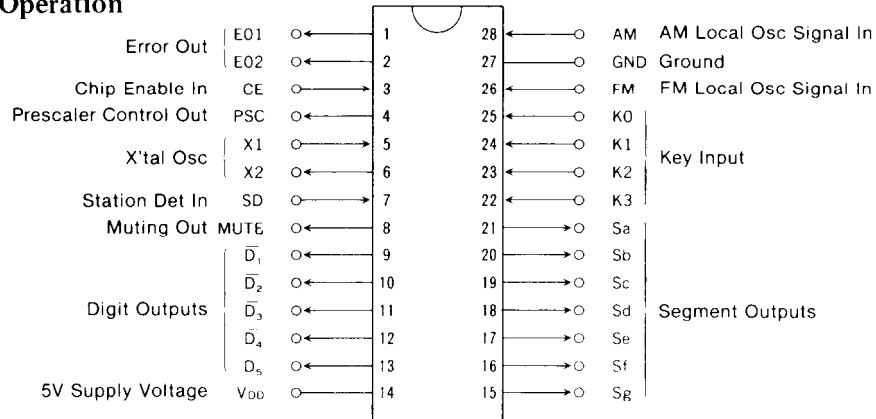


BLOCK DIAGRAM



BLOCK DIAGRAM OF IC

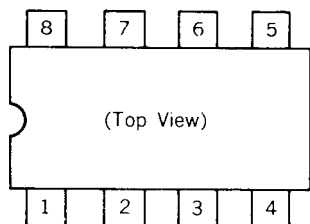
• Micro Computer Operation



Pin. No.	Symbol	Terminal	Description
1 2	E01 E02	Error Outputs	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 two low pass filters. The output from both terminals is the same, E01 is used and E02 is not used.
3	CE	Chip Enable Input	Device selection signal input terminal. HIGH level...normal operation; LOW level...memory preservation.
4	PSC	Prescaler Control Output	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 4.5MHz crystal oscillator.
7	SD	Station Detector Input	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	Muting Output	Output terminal which mutes the shock noise occurring when the PLL is released; active HIGH.
9—13	D1—D5	Digit Outputs	Display digit output signal terminals; active LOW.
14	VDD	Supply Voltage	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	K0—K3	Key Return Signal Inputs	Terminals for input of the key return signals from the external key matrix.
26	FM	FM Local Oscillator Signal Inputs	FM signals received are divided by 1/16 or 1/17 by prescaler μ PB553AC for input to this terminal.
27	GND	Ground	
28	AM	AM Local Oscillator Signal Input	Terminal for input of AM broadcast signal.

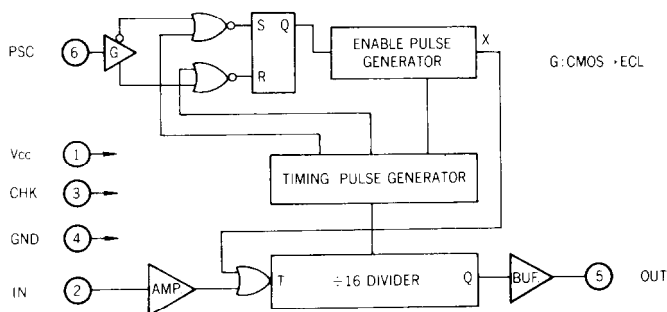
• μ PB533AC (Prescaler)

Pin Connection

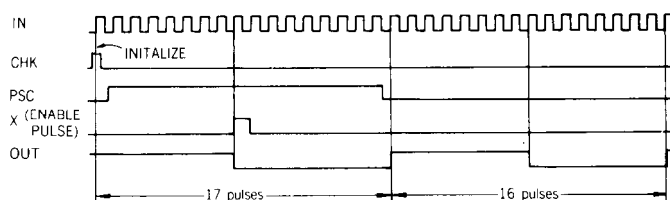


1. Pin 1 (Vcc) +5 volts Supply
2. Pin 2 (IN) FM local oscillator signal input
3. Pin 3 (CHK) Check terminal
4. Pin 4 (GND) Ground terminal
5. Pin 5 (OUT) Prescaler terminal
6. Pin 6 (PSC) Prescaler control terminal
7. Pin 7,8 Not connected

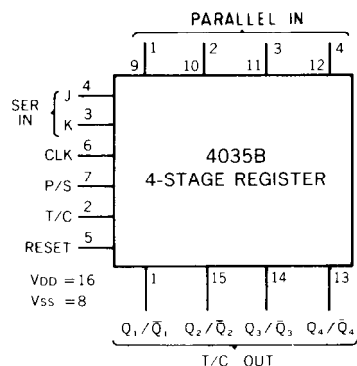
Block Diagram



Timing Chart



• 4035B (4-Stage Parallel-in/Parallel-out shift register)

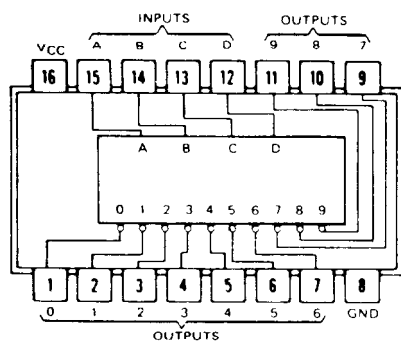


Pin Connection Diagram

	I _{n-1} (INPUTS)			I _n (OUTPUTS)	
CL	J	K	R	Q _{n-1}	Q _n
	0	x	0	0	0
	1	x	0	0	1
	x	0	0	1	0
	1	0	0	Q _{n-1}	Q _{n-1} TOGGLE MODE
	x	1	0	1	1
	x	x	0	Q _{n-1}	Q _{n-1}
x	x	x	1	x	0

First Stage Truth Table

• 74LS42 (BCD to DECIMAL Decoder)

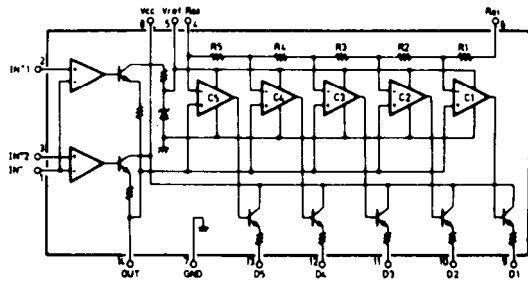
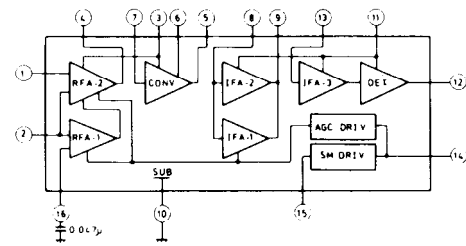
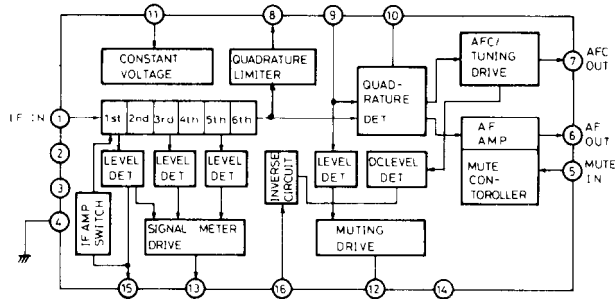


Pin Connection Diagram

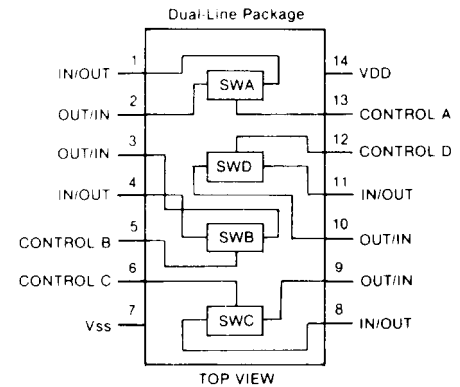
NO	INPUTS				OUTPUTS									
	D	C	B	A	0	1	2	3	4	5	6	7	8	9
0	L	L	L	L	L	H	H	H	H	H	H	H	H	H
1	L	L	L	H	H	L	H	H	H	H	H	H	H	H
2	L	L	H	L	H	H	L	H	H	H	H	H	H	H
3	L	L	H	H	H	H	L	H	H	H	H	H	H	H
4	L	H	L	L	H	H	H	L	H	H	H	H	H	H
5	L	H	L	H	H	H	H	H	L	H	H	H	H	H
6	L	H	H	L	H	H	H	H	H	L	H	H	H	H
7	L	H	H	H	H	H	H	H	H	H	L	H	H	H
8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

Function Table

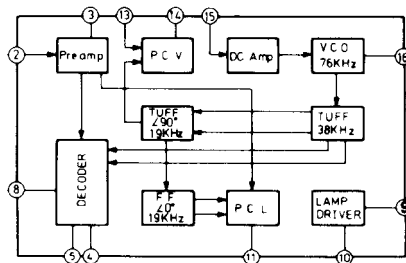
LB1426 (Signal meter driver)

 μ PC1243C (AM radio system) μ PC1167C2 (FM IF system)

4066B (Quad bilateral switch)



HA1196 (MPX decoder)



PRINTED CIRCUIT BOARD-PARTS LIST

FM/AM TUNER PC BOARD (NARF-1271/a/b/c)

CIRCUIT NO.	PARTS NO.	DESCRIPTION
TU001	Front end	
	240055	FE316U (D/W)
	240056	FE316G (G/Q)
	ICs	
Q102	222608	μ PC1167C2, FM IF system
Q131	222541	LB1426, Signal meter driver
Q152	222629	μ PC1243C, AM radio system
Q201	222453	HA-1196, Stereo decoder
Q203	222575 or 222840661	TC4066BP or 4066B, Analogue switch
Q703	222618	μ PD1703C-016, Micro computer
Q704	222619	μ PB553AC, Prescaler
Q710, Q711	222513 or 222840111	TC4011BP or 4011B, NAND gate
Q715	222840351	4035B, Shift register
Q716	222740421	74LS42, BCD to decimal decoder
Q901	222780122	78M12, Voltage regulator

CIRCUIT NO.	PARTS NO.	DESCRIPTION
	Transistors	
Q101	2211723	2SC1923 (O)
Q151	2211293	2SK68(M)
Q153-Q155	2211254, 2211255 or 2210746	2SC1815 (Y), 2SC1815 (GR) or 2SC945A (P)
Q202	2211293	2SK68 (M)
Q204, Q205	2211254, 2211255 or 2210746	2SC1815 (Y), 2SC1815 (GR) or 2SC945A (P)
Q701, Q702	2211255	2SC1815 (GR)
Q705-Q709	2211454	2SA1015 (Y)
Q712, Q713	2211454	2SA1015 (Y)
Q714	2211254	2SC1815 (Y)
Q801, Q802	2211254, 2211255 or 2210746	2SC1815 (Y), 2SC1815 (GR) or 2SC945A (P)
Q803, Q805	2211255 or 2210746	2SC1815 (GR) or 2SC945A (P)
Q806, Q807	2210746	2SC945A (P)
Q804, Q903	2211255	2SC1815 (GR)

CIRCUIT NO.	PARTS NO.	DESCRIPTION
Diodes		
D101, D102	223105,	1S1555,
D201, D702	223133 or	DS442X or
D705–D708	223145	1S2076TD
D711–D716		(D)
D718		
D801–D807		
D101, D102	223105,	1S1555,
D201, D718	223133 or	DS442X or
D702–D708	223145	1S2076TD
D711–D716		(G/Q)
D801–D807		
D101, D102	223105	1S1555,
D201, D702	223133 or	DS442X or
D704–D708	223145	1S2076TD
D711–D718		(W)
D801–D807		
D151, D152	223140	KV1236
D153	4000068	VD1222
D701	223132	1K60
D709, D710	223105 or	1S1555 or
	223133	DS442X
D808, D809	2241291 or	RD3, 3EB1 or
	224084	WZ–032
D901	223862	WL01
D902, D904	2239472 or	RD5, 6EB2 or
	224082	WZ–056
D903	2239552	RD8, 2EB2
D905	2239433	RD4, 7EB3
D906	223105 or	1S1555 or
	223133	DS442X
Transformers		
L101	233148	NFIF–6010P
L102	233149	NFIF–6010S
L153	232095	NMIF–6025
Coils		
L151	232089	NMA–3037
L152	232084	NMO–2018
L201, L202	233275	NMC–5035
Ceramic filters		
X101, X102	3010071	SFE–10.7MA5 (Red), (D)
	3010043	SFE–10.7MM (Red), (G/W/Q)
X151	3010058	BCFLZ450A
Crystal		
X701	3010052	XTL–4.5M
Capacitors		
TC151, TC152	3060010	NTC–20P09, Trimmer
C108	352741009	10 μ F, 16V, Elect.
C109	352784799	0.47 μ F, 50V, Elect.
C115	352742209	22 μ F, 16V, Elect.
C131, C132	352741009	10 μ F, 16V, Elect.
C155	370135114	510pF $\pm$ 5%, 100V, APS
C162	352741019	100 μ F, 16V, Elect.
C166	352750479	4.7 μ F, 25V, Elect.
C167	352780339	3.3 μ F, 50V, Elect.
C169	352742209	22 μ F, 16V, Elect.
C173	352784799	0.47 μ F, 50V, Elect.
C201	352750479	4.7 μ F, 25V, Elect. (D/W/Q)
C204	352742219	220 μ F, 16V, Elect.
C205, C206	352741009	10 μ F, 16V, Elect.
C209	370133614	360pF $\pm$ 5%, 100V, APS
C210	352780109	1 μ F, 50V, Elect.
C211	352780339	3.3 μ F, 50V, Elect.
C212	352784799	0.47 μ F, 50V, Elect.
C214, C215	352780109	1 μ F, 50V, Elect.
C216	352741009	10 μ F, 16V, Elect.
C217	352722219	220 μ F, 6.3V, Elect.

CIRCUIT NO.	PARTS NO.	DESCRIPTION
C702	395140227	2.2 μ F, 16V, Tantalum
C705	352721029	1,000 μ F, 6.3V, Elect.
C709	352721019	100 μ F, 6.3V, Elect.
C713	352722219	220 μ F, 6.3V, Elect.
C714	352751019	100 μ F, 25V, Elect.
C801	352741009	10 μ F, 16V, Elect.
C802, C803	352780339	3.3 μ F, 50V, Elect.
C804	352744719	470 μ F, 16V, Elect.
C903	352752219	220 μ F, 25V, Elect.
C904	352751029	1,000 μ F, 25V, Elect.
C908	352734709	47 μ F, 10V, Elect.
C911	352741009	10 μ F, 16V, Elect.
C912	352780109	10 μ F, 50V, Elect.
C913	352751019	100 μ F, 25V, Elect.
C916	352741009	10 μ F, 16V, Elect.
C917	352721029	1,000 μ F, 6.3V, Elect.
Resistors		
R110	5215047	N08HR100KBC, Semi-fixed
R135	431522205	22 Ω , 1/2W, Solid
R202	5215049	N08HR500KBC, Semi-fixed
R213	5225015	N08HR10KBD, semi-fixed
R902	441625604	56 Ω , 1W, Metal oxide film
R903	431521215	120 Ω , 1/2W, Solid
R905	441723314	330 Ω , 2W, Metal oxide film
Radiator		
	27160011A	

DISPLAY PC BOARD (NADIS–1272/a)

CIRCUIT NO.	PARTS NO.	DESCRIPTION
Fluorescent indicator tube		
	212009	6–BT–17A2
Lamps		
PL751, PL752	210139	PL14V60mA2.5
Diodes		
D751, D752	223105,	1S1555,
	223133 or	DS442X or
	223145	1S2076TD
L.E.Ds		
D753	225086	SEL1123R
D754–D759	225082	SLP–155B–01
D760	225086	SEL1123R
D761–D764	225048	SLP–252B–04
Switches		
S751–S761	25035156	NPS–111–S120
Bracket		
	27110159	Front
Cushion		
	28140398	4x7x18mm

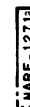
BIRDIE FILTER PC BOARD (NAFI–1152)

CIRCUIT NO.	PARTS NO.	DESCRIPTION
	233236	NMC–6027, coil
	352741009	10 μ F, 16V, Elect. capacitor
	28140184	cushion

NOTE

D : Only 120V model
G : Only 220V model
W : Only 120/220V model
Q : Only 240V model

120V model

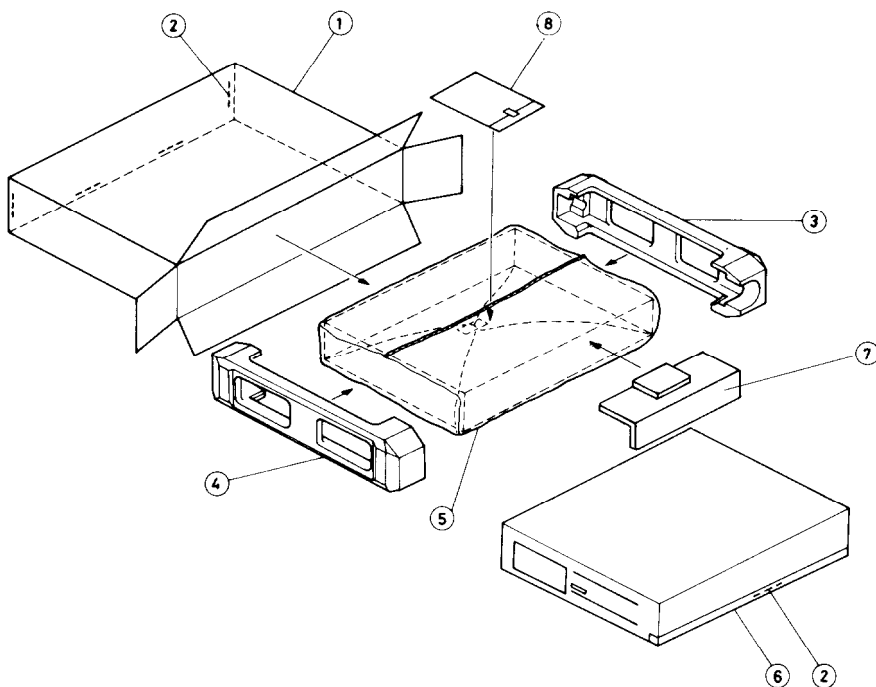


- * ALL RESISTORS ARE IN OHMS 1/4WATT UNLESS OTHERWISE NOTED.
- * ALL CAPASITORS ARE IN μ F, 50WV UNLESS OTHERWISE NOTED.
- * ELECTROLYTIC CAPACITORS (—H—) ARE IN μ F/WV.
- * VOLTAGE (MEASURED WITH V.T.V.M.) (NO INPUT SIGNAL)
- * CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.



ONKYO CORPORATION

PACKING VIEW



PARTS LIST

[illegible]