

ONKYO® SERVICE MANUAL

AM/FM STEREO TUNER MODEL T-05

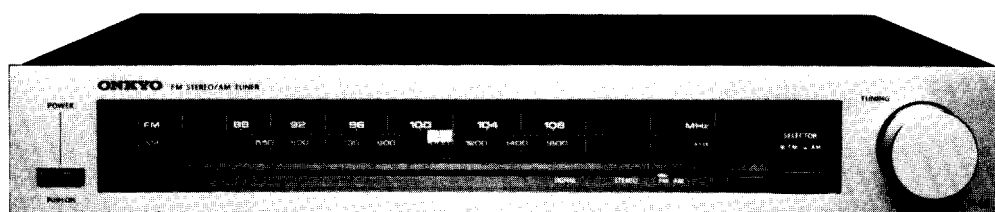


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ONKYO®
AUDIO COMPONENTS

SPECIFICATIONS

D/W model

FM Section

Tuning Range: 88 – 108 MHz
 Usable Sensitivity: Mono: 11.2 dBf, 2 μ V
 Stereo: 17.2 dBf, 4 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: 80 dB

Signal-to-Noise Ratio: Mono: 70 dB
 Stereo: 63 dB

Alternate Channel
 Att.: 55 dB IHF ($\pm$ 400 kHz)

AM Suppression
 Ratio: 50 dB

Harmonic Distortion: Mono: 0.15%
 Stereo: 0.4%

Stereo Separation: 40 dB at 1 kHz
 30 dB at 100 – 10,000 Hz

Muting Level: 17.2 dBf, 4 μ V

Frequency Response: 40 – 15,000 Hz $\pm$ 1.5 dB

AM Section

Tuning Range: 530 – 1,620 kHz
 Usable Sensitivity: 25 μ V

Image Rejection
 Ratio: 40 dB

IF Rejection Ratio: 30 dB

Signal-to-Noise Ratio: 40 dB

Harmonic Distortion: 0.8%

General

Power Supply Rating: AC 120 V, 60 Hz (D model)
 AC 120/220 V, 50/60 Hz (W model)

Output Voltage: FM: 500 mV
 AM: 150 mV

Antennas: FM: 300 ohms balanced and 75 ohms unbalanced
 AM: built-in loop antenna and external terminal

Semiconductors: 1 FET, 3 ICs, 4 transistors, 5 diodes, 7 LEDs

Dimensions: 418(W) x 72(H) x 286(D) mm
 16-1/2" x 2-7/8" x 11-1/4"

Weight: 2.9 kg (6.4 lbs.)

Due to further product improvements, specifications are subject to change without notice.

G/Q model

FM Section

Tuning Range: 87.5 – 108 MHz
 Usable Sensitivity: Mono: 2 μ V, 11.2 dBf IHF
 1.8 μ V (S/N 26 dB, 40 kHz, Devi.) DIN

Stereo: 4 μ V, 17.2 dBf IHF
 50 μ V (S/N 46 dB, 40 kHz Devi.) DIN

50 dB Quieting
 Sensitivity: Mono: 4.5 μ V, 18.3 dBf
 Stereo: 50 μ V, 39.2 dBf

Capture Ratio: 1.5 dB

Image Rejection
 Ratio: 35 dB

IF Rejection Ratio: 80 dB

Signal-to-Noise Ratio: Mono: 70 dB
 Stereo: 63 dB
 Selectivity: 50 dB (DIN)
 ($\pm$ 300 kHz, 40 kHz Devi.)

AM Suppression
 Ratio: 50 dB

Harmonic Distortion: Mono: 0.15%
 Stereo: 0.4%

Stereo Separation: 40 dB at 1 kHz
 30 dB at 100 – 10,000 Hz

Frequency Response: 40 – 15,000 Hz $\pm$ 1.5 dB

AM Section

Tuning Range: 525 – 1,620 kHz
 Usable Sensitivity: 25 μ V

Image Rejection
 Ratio: 40 dB

IF Rejection Ratio: 30 dB

Signal-to-Noise Ratio: 40 dB

Harmonic Distortion: 0.8%

General

Output voltage: FM: 600 mV
 AM: 150 mV

Antennas: FM: 300 ohms balanced and 75 ohms unbalanced.
 AM: built-in loop antenna and external terminal

Semiconductors: 1 FET, 3 ICs, 5 transistors, 5 diodes, 7 LEDs.

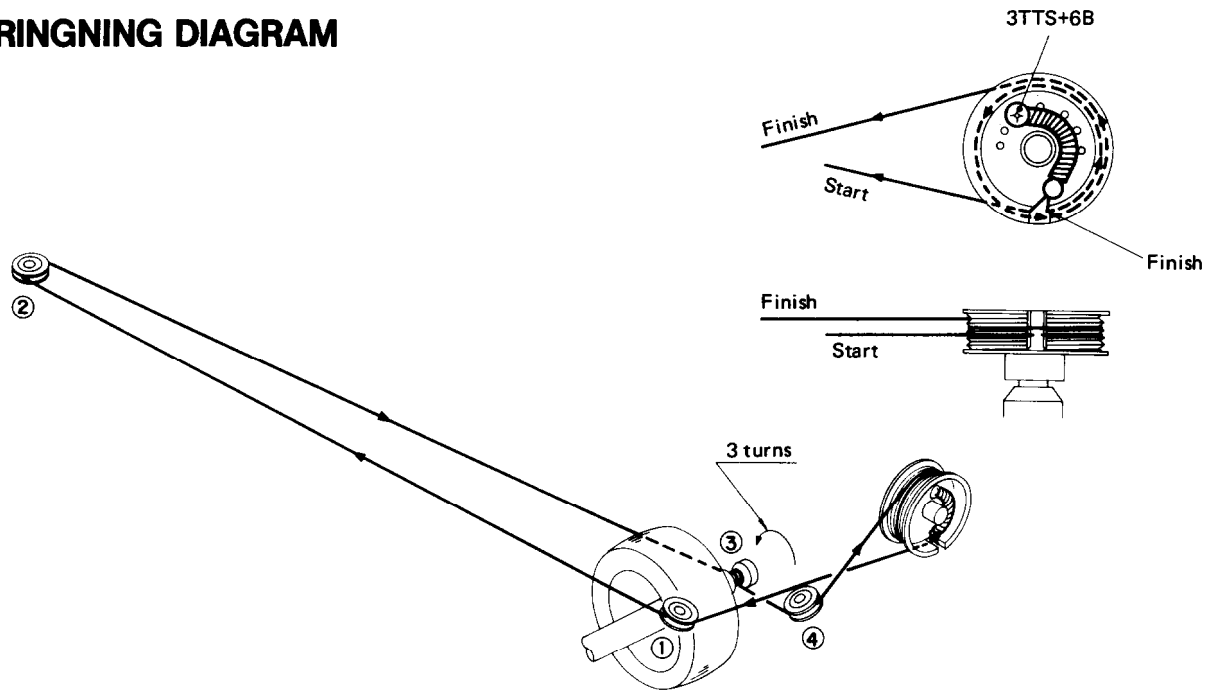
Dimensions: 418(W) x 72(H) x 286(D) mm
 16-1/2" x 2-7/8" x 11-1/4"

Weight: 2.9 kg (6.4 lbs.)

Power supply: European models:
 AC 220 V, 50 Hz
 British & Australian models:
 AC 240 V, 50 Hz

Due to further product improvements, specifications are subject to change without notice.

STRINGING DIAGRAM



1. Close the variable capacitor complete and tie the dial cord to the spring of the drum.
2. Thread the dial cord in the direction of arrow from (1) to (3) and wind the dial cord three turns around the tuning shaft counter clockwise.
3. Thread the dial cord to (4).
4. Wind the dial cord 1-1/2 turns around the dial drum.

SERVICE GUIDE

1. DE-EMPHASIS SWITCH (ONLY W MODEL)

The 50 μ sec/75 μ sec selector switch employed in the W (120/220V) model is located on the bottom board. When shipped from the factory, this switch is set to the 50 μ sec position. For use in 75 μ sec regions, switch over to the 75 μ sec position.

2. VOLTAGE SELECTOR (REAR PANEL)

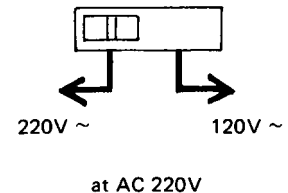
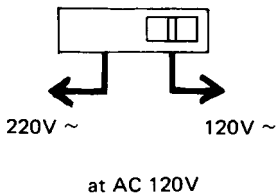
Some models are equipped with a voltage selector to conform with local power supplies.

Be sure to set this switch to match the voltage of the power supply in your area before turning the power switch on.

When changing the voltage setting, remove the lock plate covering the switch, then set the voltage to the correct value.

Voltage is changed by sliding the groove in the switch with a screwdriver to the right or left. Confirm that the switch has been moved all the way to the right or left 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.



3. DISASSEMBLY

Top Cover

Remove the four screws holding the top cover and side bracket.

Remove a screw holding the top cover and back panel.

Front Panel

Remove the top cover.

Remove the Tuning knob.

Remove the three screws holding the front panel and front bracket from the bottom side.

Remove the front panel from the nail on the front bracket.

Bottom Board

Remove the four screws holding the bottom board and chassis.

ALIGNMENT PROCEDURES

INSTRUMENTS REQUIRED

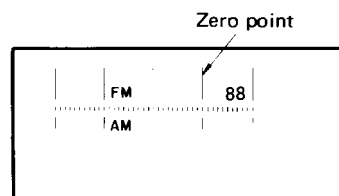
1. AM sweep generator
2. AM/FM signal generator
3. AC VTVM
4. Oscilloscope
5. Monitor scope
6. Distortion analyzer
7. Frequency counter

GENERAL ALIGNMENT CONDITIONS

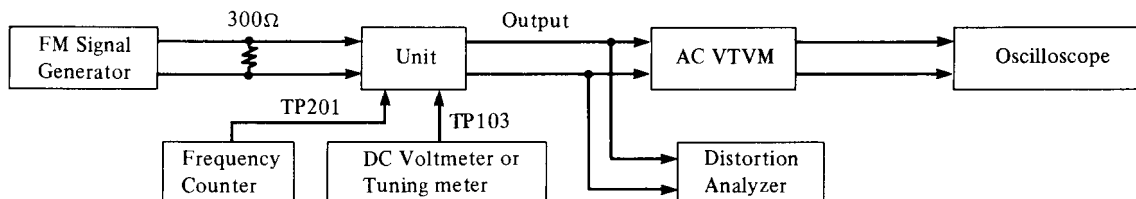
1. Signal input should be kept as low as possible.
2. Standard modulation is 400Hz 30%, (AM), 1kHz 75kHz devi. (FM MONO), pilot 6.75kHz devi. sub and main 68.25kHz devi. (FM STEREO)

(1) Attachment of dial pointer

1. Close the variable capacitor completely.
2. Set the radio dial pointer to zero point on dial scale and secure the stringing and pointer with the bond.



(2) FM ALIGNMENT

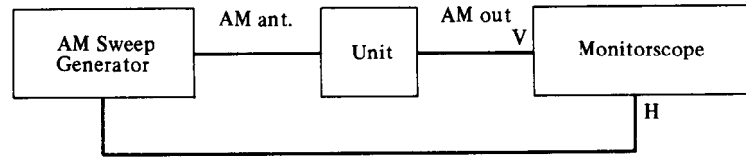


	Step	FM Signal Generator	Dial to set	Adjust	Output Indicator	Adjust for	Remarks
IF	1	No signal	Quiet Point	L101	DC Voltmeter	0V	Repeat Steps 1 and 2 as necessary
	2	98MHz 65dBf (60dB) 1kHz 75kHz devi.	98MHz	L102	Distortion Analyzer	Minimum	
Frequency range	3	87.5MHz 65dBf (60dB) 1kHz 75kHz devi.	Lower end	L004	AC VTVM or Oscilloscope	Maximum	Repeat Steps 3 and 4 as necessary
	4	108MHz 65dBf (60dB) 1kHz 75kHz devi.	108MHz	TC001		Maximum	
RF	5	90MHz 1kHz 75kHz devi.	90MHz	L001 L002	AC VTVM or Oscilloscope	Maximum	Repeat Steps 5 and 6 as necessary Signal input should be kept as low as possible. muting ... off
	6	106MHz 1kHz 75kHz devi.	106MHz	TC002 TC004		Maximum	
MPX	7	98MHz 65dBf (60dB) no mod.	98MHz	R215	Frequency counter	76kHz	

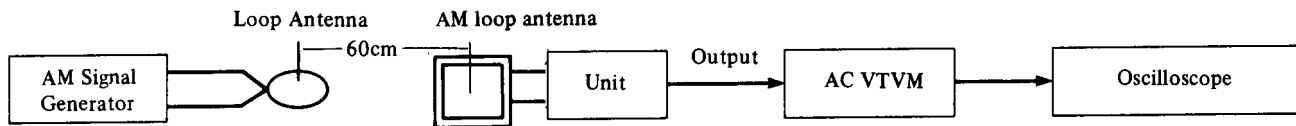
Note: When adjust the steps 5 and 6, connect the short clip between the TP102 and ground.

(3) AM IF ALIGNMENT

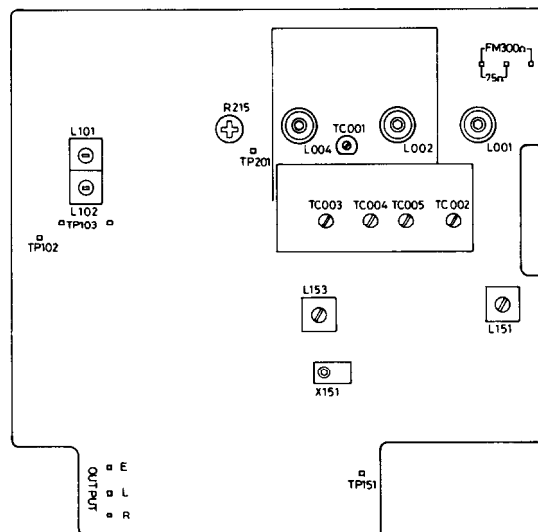
1. Set selector switch to AM.
2. Set radio dial to quiet point.



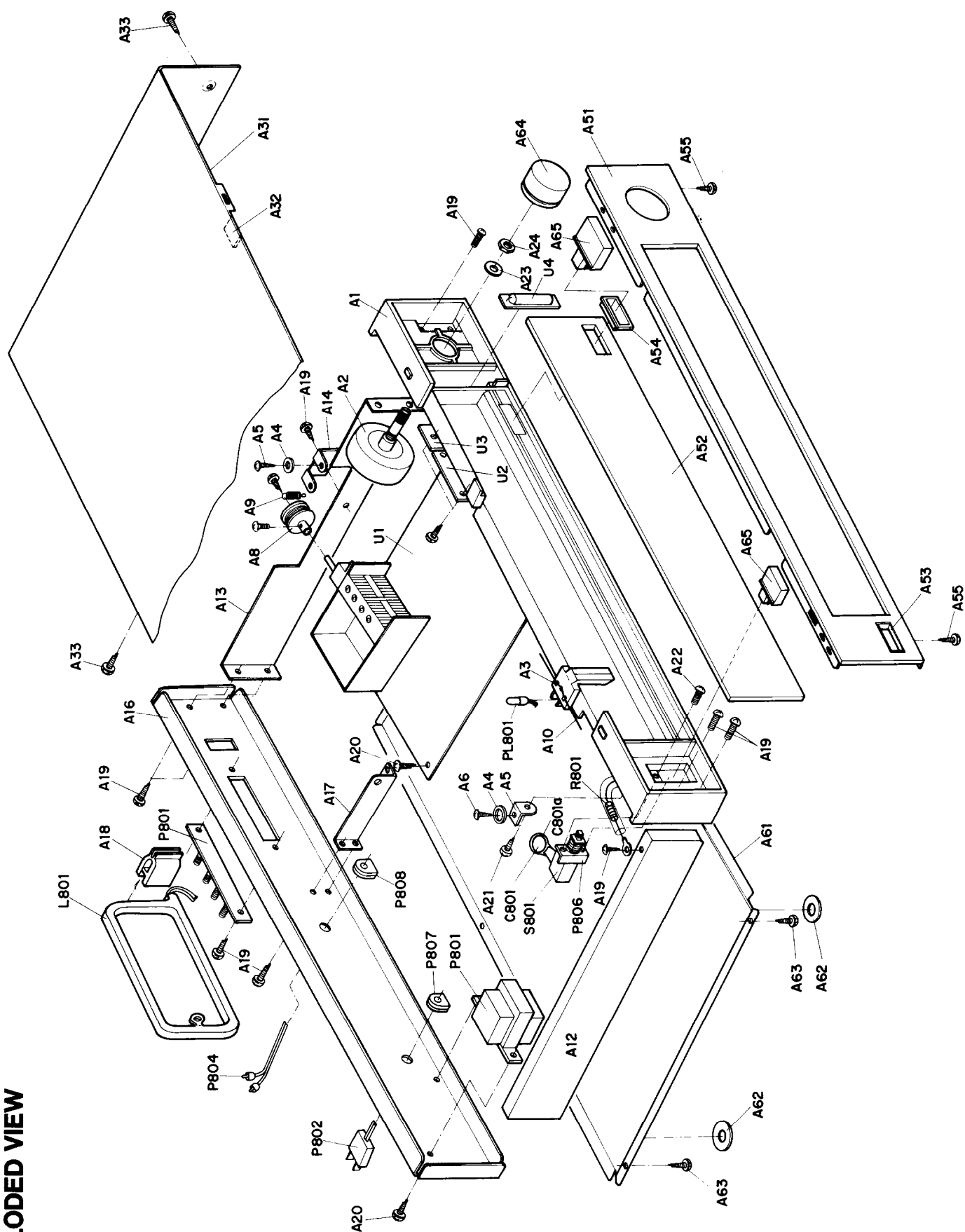
Set signal	Adjust	Monitor scope	Remarks
455 kHz	X151	Maximum Symmetrical Response	Usually not necessary to adjust

(4) AM RF ALIGNMENT

Step	Set Signal	Set Radio Dial	Adjust	VTVM reading	Remarks
1	515kHz 400Hz 30%	Lower end (515kHz)	L153	Maximum	Repeat steps 1 and 2 as necessary
2	1680kHz 400Hz 30%	Upper end (1680kHz)	TC003	Maximum	
3	600kHz 400Hz 30%	600kHz	L151	Maximum	Repeat steps 3 and 4 as necessary
4	1400kHz 400Hz 30%	1400kHz	TC005	Maximum	



EXPLODED VIEW



PRINTED CIRCUIT BOARD — PARTS LIST

CIRCUIT NO. PARTS NO. DESCRIPTION

ICs
 Q103 222595 LA1231N
 Q151 222497 LA1240
 Q201 222453 HA1196
 Q501 222541 LB1426

Transistors
 Q001 2211815 2SK19TM (GR)
 Q002, Q003 2211723 2SC1923 (O)
 Q101 2210823 2SC1675 (L-1)
 Q901 2201034 or 2SD325 (D) or 2201035 2SD325 (E)

Diodes
 D101, D151 223105 or 1S1555 or 223133 DS442X
 D152 4000001 KB269
 D901 223862 WL01
 D902 223910 or WZ120 or 224111 GZA12-L

L.E.Ds
 D501–D504 225048 SLP-252B-04
 D505 225086 SEL1123R
 D506, D507 225087 SEL1323G

Lamp
 PL101 210064B 250mA, 6.3V

Coils & transformers
 L001 233106 or NFA-3009 or 233088-1 NFA-3001
 L002 233178 NFRF-3015
 L003 233232 NCH-1049
 L004 233090 NFO-3003
 L101 233148 NFIF-6010P
 L102 233149 NFIF-6010S
 L103 233105 or NCH-1005 or 233024 NCH-1501
 L151 232086 NMA-3035
 L153 232073 NMO-2008
 L155 232041 NIT-0509

Ceramic filters
 X001 3010057 or SFE-10, 7MA5Z or
 X102 3010003 SFE10.7MA
 X151 3010053 SFL-455B

CIRCUIT NO. PARTS NO. DESCRIPTION

Capacitors
 VC001 3050004 NVC2-327SA, Variable
 TC001 3060003 NTC-10P-02, Trimmer
 C015, C114 352741009 10 μ F, 16V, Elect.
 C105 352780339 3.3 μ F, 50V, Elect.
 C107, C112 352784799 0.47 μ F, 50V, Elect.
 C108 352780109 1 μ F, 50V, Elect.
 C153 370133614 360pF $\pm$ 5%, 100V, APS
 C159 352741009 10 μ F, 16V, Elect.
 C164 352784799 0.47 μ F, 50V, Elect.
 C165 352744709 47 μ F, 16V, Elect.
 C167 352780339 3.3 μ F, 50V, Elect.
 C168 352750479 4.7 μ F, 25V, Elect.
 C171 352741009 10 μ F, 16V, Elect.
 C201 352780229 2.2 μ F, 50V, Elect.
 C207, C208 352784799 0.47 μ F, 50V, Elect.
 C211, C212 352741009 10 μ F, 16V, Elect.
 C213 352741019 100 μ F, 16V, Elect.
 C214 370133614 360pF $\pm$ 5%, 100V, APS
 C216 352780339 3.3 μ F, 50V, Elect.
 C217 352780229 2.2 μ F, 50V, Elect.
 C218 352780109 1 μ F, 50V, Elect.
 C501 352741009 10 μ F, 16V, Elect.
 C902 352754719 470 μ F, 25V, Elect.
 C903 352742219 220 μ F, 16V, Elect.
 C904 352751019 100 μ F, 25V, Elect.

Resistors
 R215 5225015 N10HR10KBD, Semi-fixed
 R501 441625604 56 Ω , 1W, Metal oxide film

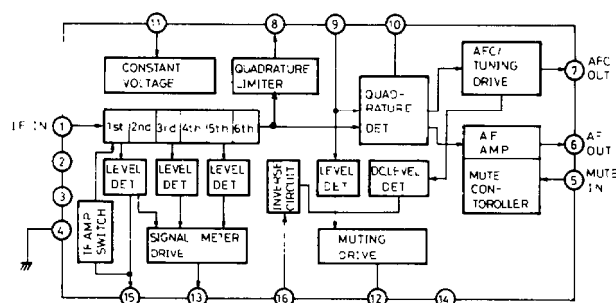
Switches
 S1 25035260 NPS-142-L224, AM/FM selector
 S3 25065160 NSS-2273, DC-emphasis selector (Only W model)

Bracket
 27140502 Switch

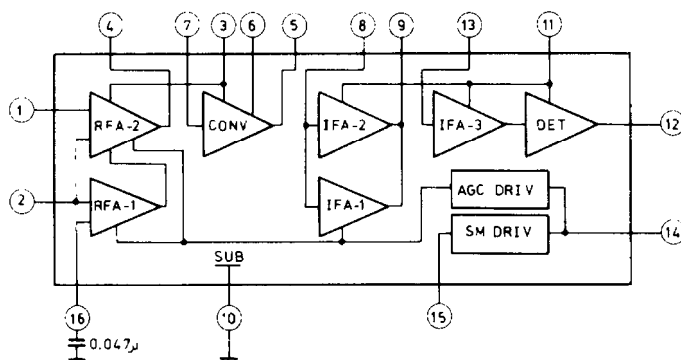
Shielded plate
 27150102 Front end

Screws
 82113006 3P+6FN, Pan head screw
 831130088 3STW+8BQ, Tapping screw

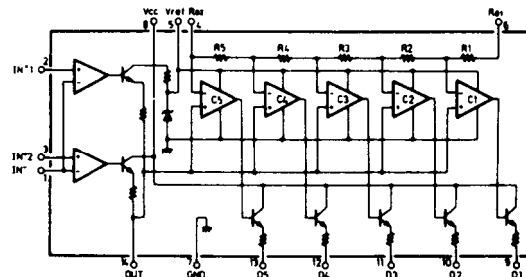
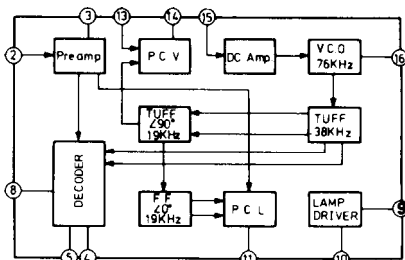
LA 1231N (FM IF system)



LA-1240 (AM radio system)



LB1426 (Signal indicator drive)

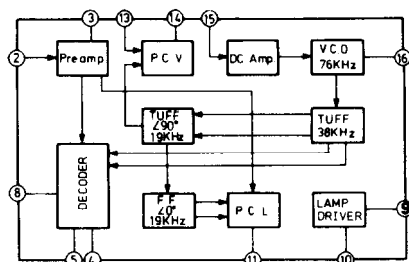


PRINTED CIRCUIT BOARD — PARTS LIST

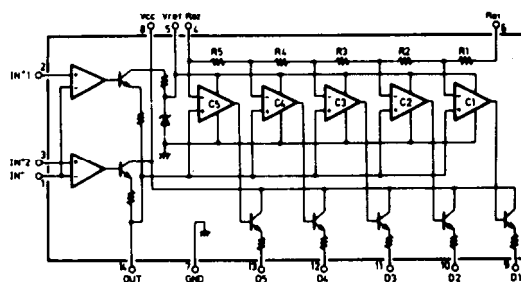
G/Q model

CIRCUIT NO.	PARTS NO.	DESCRIPTION	CIRCUIT NO.	PARTS NO.	DESCRIPTION
ICs			Capacitors		
Q103	222595	LA1231N	VC001	3050004	NVC2-327SA, Variable
Q151	222497	LA1240	TC001	3060003	NTC-10P-02, Trimmer
Q201	222453	HA1196	C015, C114	352741009	10 μ F, 16V, Elect.
Q501	222541	LB1426	C105	352780339	3.3 μ F, 50V, Elect.
Transistors			C107, C112	352784799	0.47 μ F, 50V, Elect.
Q001	2211713	3SK73 (GR)	C108	352780109	1 μ F, 50V, Elect.
Q002, Q003	2211723	2SC1923 (O)	C153	370133614	360pF $\pm$ 5%, 100V, APS
Q101, Q102	2210823	2SC1675 (L-1)	C159	352741009	10 μ F, 16V, Elect.
Q901	2201034 or 2201035	2SD325 (D) or 2SD325 (E)	C164	352784799	0.47 μ F, 50V, Elect.
Diodes			C165	352744709	47 μ F, 16V, Elect.
D101, D151	223105 or 223133	1S1555 or DS442X	C167	352780339	3.3 μ F, 50V, Elect.
D152	4000001	KB269	C168	352750479	4.7 μ F, 25V, Elect.
D901	223862	WL01	C171	352741009	10 μ F, 16V, Elect.
D902	223910 or 224111	WZ120 or GZA12-L	C201	352780229	2.2 μ F, 50V, Elect.
L.E.D.s			C207, C208	352784799	0.47 μ F, 50V, Elect.
D501–D504	225048	SLP-252B-04	C211, C212	352741009	10 μ F, 16V, Elect.
D505	225086	SEL1123R	C213	352741019	100 μ F, 16V, Elect.
D506, D507	225087	SEL1323G	C214	370133614	360pF $\pm$ 5%, 100V, APS
Lamp			C216	352780339	3.3 μ F, 50V, Elect.
PL101	210064B	250mA, 6.3V	C217	352780229	2.2 μ F, 50V, Elect.
Coils & transformers			C218	352780109	1 μ F, 50V, Elect.
L001	233106 or 233088-1	NFA-3009 or NFA-3001	C501	352741009	10 μ F, 16V, Elect.
L002	233178	NFRF-3015	C902	352754719	470 μ F, 25V, Elect.
L003	233232	NCH-1049	C903	352742219	220 μ F, 16V, Elect.
L004	233090	NFO-3003	C904	352751019	100 μ F, 25V, Elect.
L101	233148	NFIF-6010P	Resistors		
L102	233149	NFIF-6010S	R215	5225015	N10HR10KBD, Semi-fixed
L103	233105 or 233024	NCH-1005 or NCH-1501	R501	441625604	56 Ω , 1W, Metal oxide film
L151	232086	NMA-3035	Switches		
L153	232073	NMO-2008	S1	25035260	NPS-142-L224, AM/FM selector
L155	232041	NIT-0509	Bracket		
L201	233236	NMC-6027	27140502	Switch	
Ceramic filters			Shielded plate		
X001, X101	3010057 or	SFE-10.7MASZ or	27150102	Front end	
X102	3010003	SFE10.7MA	Screws		
X151	3010053	SFL-455B	82113006	3P+6FN, Pan head screw	
			831130088	3STW+8BQ, Tapping screw	

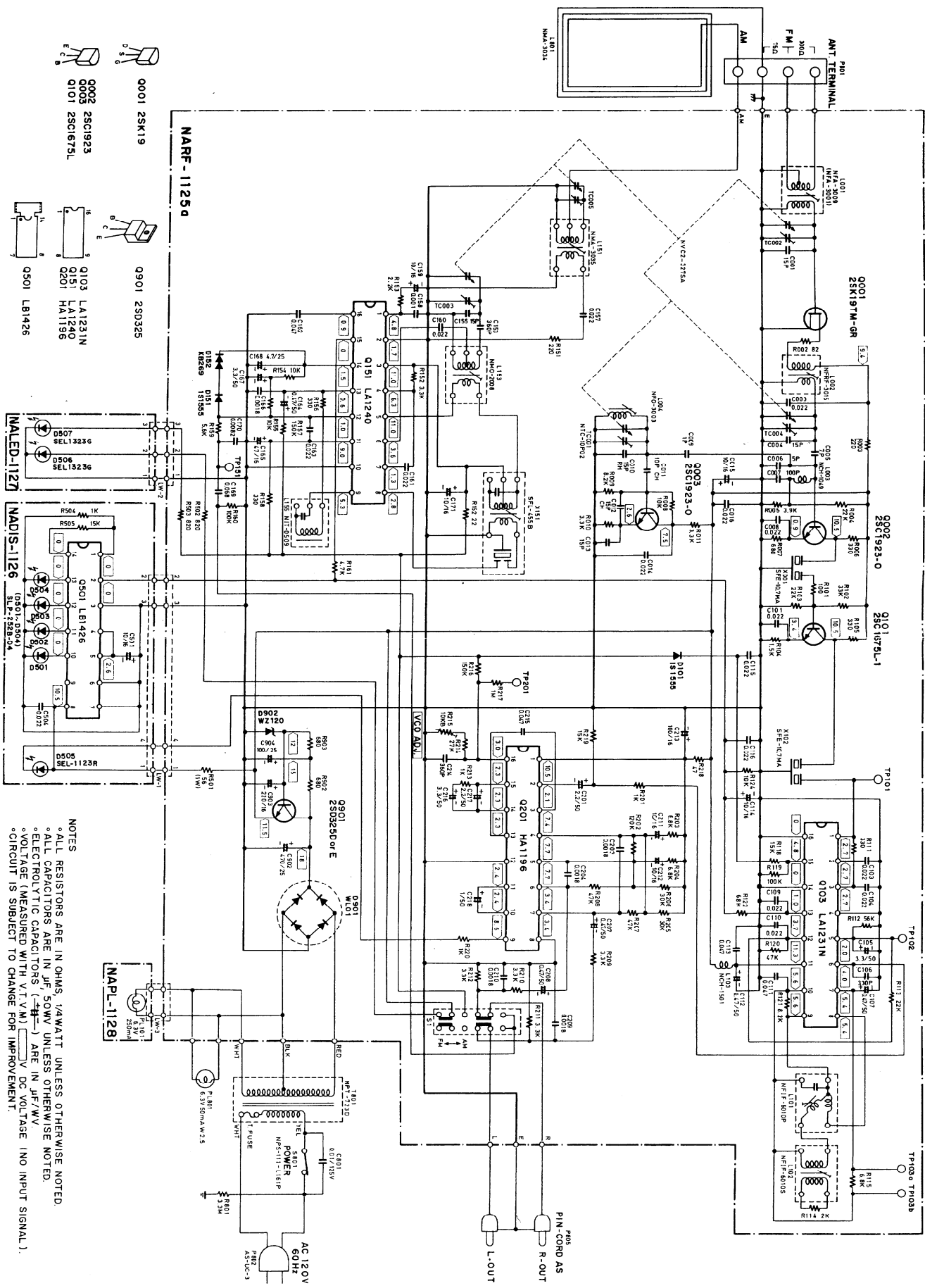
HA 1196 (MPX decoder)



LB1426 (Signal indicator drive)



SCHEMATIC DIAGRAM D model



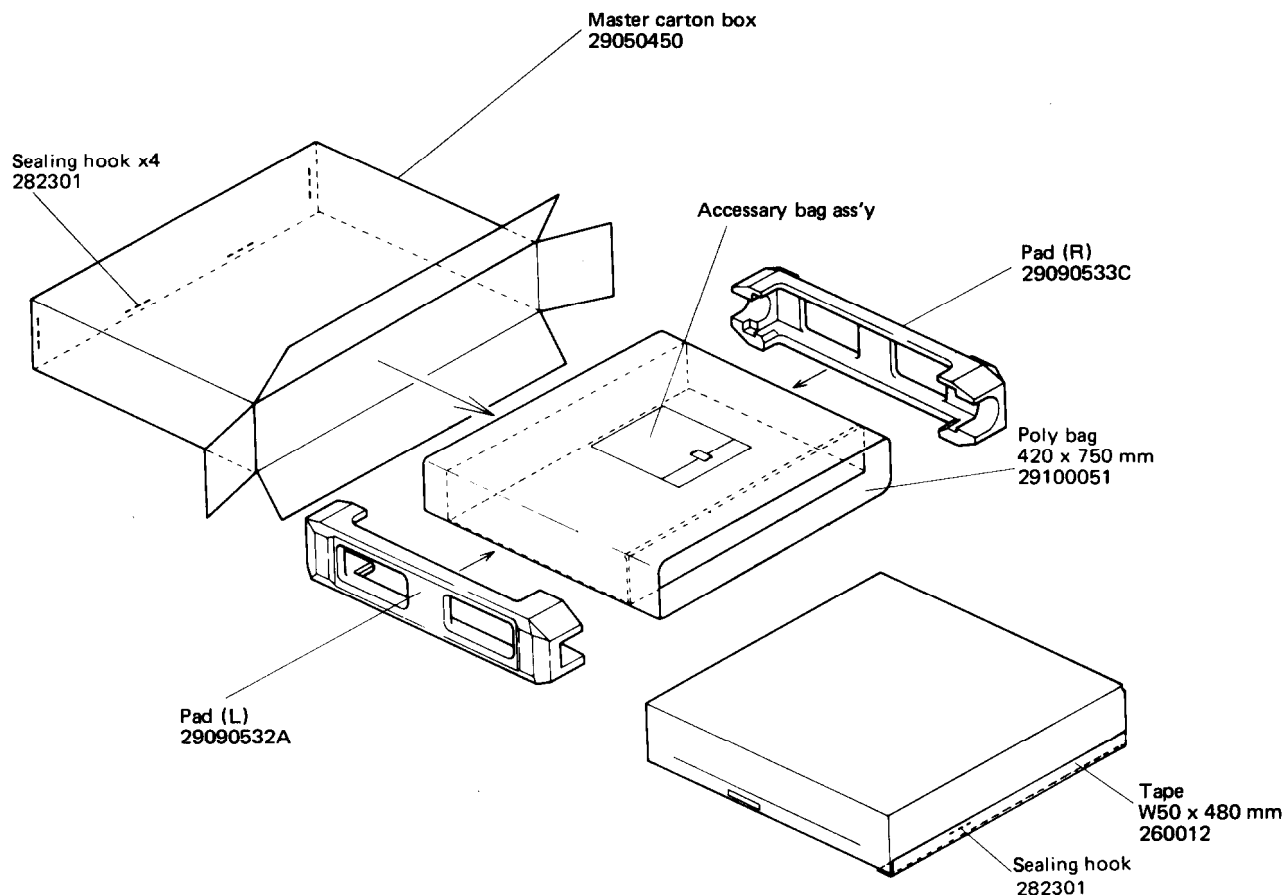
PARTS LIST

SYMBOL NO.	PARTS NO.	DESCRIPTIONS	SYMBOL NO.	PARTS NO.	DESCRIPTIONS
A1	27110134A	Front bracket	P801b	25045088	F connector (G)
A2	27205026	Drive shaft	P802	253099A	AS-UC-3, Power supply cable (D)
A3	28165057A	Pointer	P802	253083	AS-CEE, Power supply cable (G/W)
	28140345	Cushion			
A4	27185002A	DP-16, Dial pulley	P802	253077	Power supply cable (Q)
A5	27140501	Bracket, dial pulley	P804	2010039	PN-B, Output cable
A6	801147A	Tapping screw	P805	27140502	Bracket, power switch
A8	27200023	Dial drum	P806	223004	Terminal (D)
A9	27180044	Spring for A8	P807	270025	SR-3P-4, Strainrelief (D)
A10	273903	Stringing	P807	270280	SR-4K-4, Strainrelief (G/W)
A12	27115045E	Side bracket, left side	P807	27300349	SR-6W-1, Strainrelief (Q)
A13	27115088	Side bracket, right side	P808	270025	SR-3P-4, Strainrelief
A14	27140403	Bracket, dial pulley	PL801	210119	PL6.3V50mA2.5, Lamp, power
A16	27120304	Back panel (D)	R801	431523355	3.3M Ω , 1/2W, Solid resistor (D)
A16	27120305	Back panel (G)	S801	25035220	NPS-111-L184P, Power switch (D)
A16	27120306	Back panel (W)			
A16	27120325	Back panel (Q)	S801	25035192	NPS-122-L156P, Power switch (G)
A17	27140444	Bracket, pc board			
A18	27190105	Antenna holder	S801	25035220	NPS-111-L-184P, Power switch (W)
A19	834130068	3TTS+6B, Tap screw	S801	25035268	NPS-121-L233P, Power switch (Q)
A20	831130088	3TTW+8B, Tap screw (D)			
	834140108	4TTS+10B, Tap screw (G/W/Q)	T801	230506	NPT-723D, Power transformer (D)
A21	834130088	3TTS+8B, Tap screw	T801	230507	NPT-723G, Power transformer (G)
A22	82113006	3P+6FN, Pan head screw			
A23	87619014	W9x14F, Washer	T801	230508	NPT-723DG, Power transformer (W)
A24	8631901	N-9F, Nut	T801	230514	NPT-723Q, Power transformer (Q)
A26	834130088	3TTS+8B, Tap screw			
A31	28184104	Top cover	U1	13389525A	NARF-1125a, AM/FM tuner pc board ass'y (D)
A32	28140020	4x10x40, Cushion	U1	13392525B	NARF-1125b, AM/FM tuner pc board ass'y (G/Q)
A33	834430068	3TTS+6B (BC), Tap screw	U1	13390525C	NARF-1125c, AM/FM tuner pc board ass'y (W)
A51	13389121	Front panel ass'y	U2	13662526	NADIS-1126, Signal indicator pc board ass'y
A52	13389901	Dial plate ass'y	U3	13662527	NALED-1127, AM/FM indicator pc board ass'y
A53	27267109	Guide, power	U4	13662528	NAPL-1128, Dial illumination pc board ass'y
A54	27267110	Guide, selector			
A55	831130080	3TTW+8P, Tap screw	S4	25065123	NSS-1258P, Voltage selector switch (W)
A61	27170093	Bottom board (D/G/Q)			
A61	27170105	Bottom board (W)			
A62	27175011C	Leg			
A63	831130088	3TTW+8B, Tap screw			
A64	28320542	Tuning knob			
A65	28320541	Knob, selector			
A66	831130080	3TTW+8P, Tap screw			
C801	3500060	0.01 μ F, 125V, CS capacitor (D)			
C801	3500058	PME265MB510, IS capacitor (G/W)			
C801, C802	3500058	PME265MB510, IS capacitor (Q)			
C801a	27300080	Cover, capacitor (D)			
L801	232085	NMA-3034, AM loop antenna			
P801	25060035	NTM-4PRMC06, Antenna terminal			

Note:

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

PACKING PROCEDURES



Accessory bag ass'y					
Model	U.S.A.	120V	West Germany	220V	120/220V
Instruction manual	29340510	29340510	29340511	29340511	29340511
FM antenna	292064A	292064A	292064A	292064A	292064A
Warranty card	29365006	—	29365005-3	—	—
Service station list	29358002	—	—	—	—
Conversion plug	—	—	—	—	25055040

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