

# ONKYO SERVICE MANUAL

## SOLID STATE STEREO RECEIVER

### TX-330



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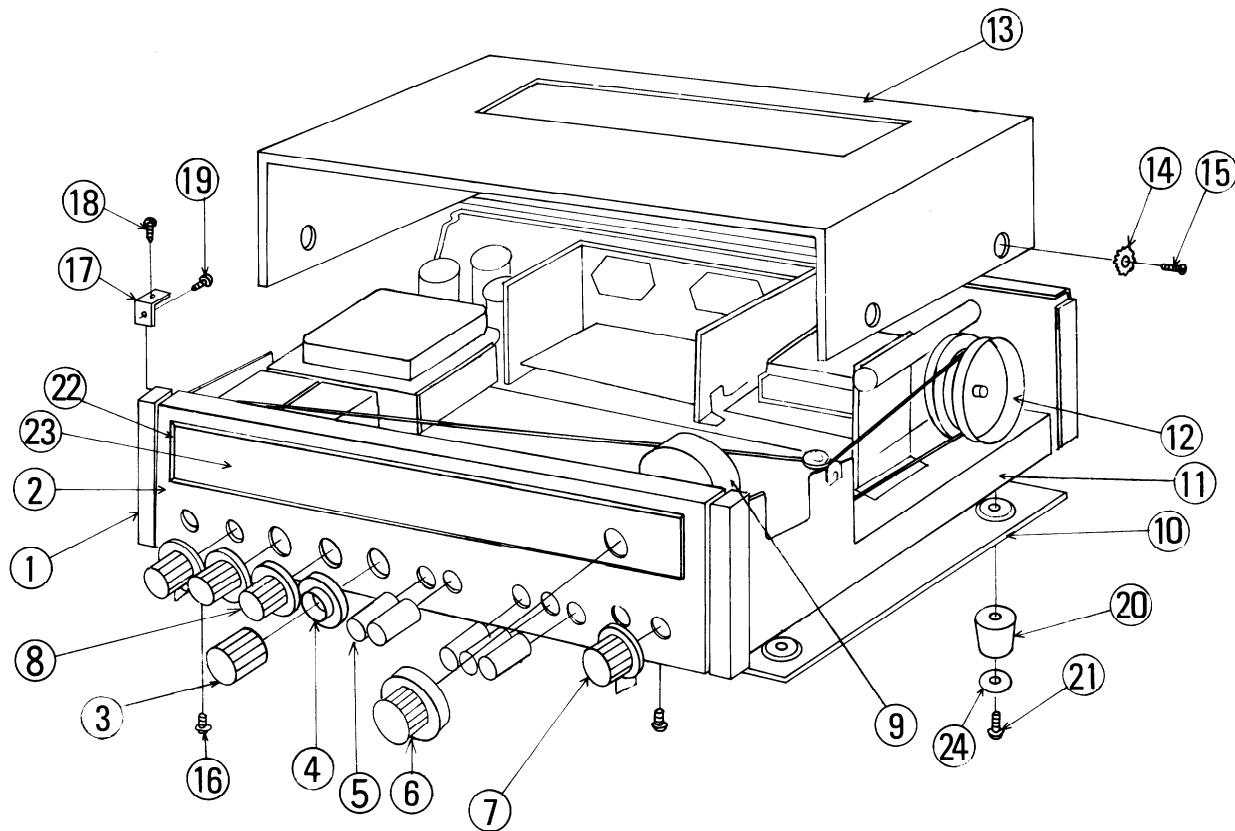
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**ONKYO®**  
**AUDIO COMPONENT**

# SPECIFICATIONS

<b>TUNER SECTION</b>		Frequency Response	20–30,000Hz ( $\pm 1$ dB)
Tuning Range	FM:88–108MHZ AM:530–1605kHz	Power Bandwidth	20–20,000Hz (–3dB THD 0.5% )
Sensitivity	FM:2.5 $\mu$ V (IHF) AM:40 $\mu$ V, 150 $\mu$ V/m	Sensitivity and Impedance	PHONO:2.5mV/50k $\Omega$ , AUX:200mV/50k $\Omega$ , MIC:4mV/50k $\Omega$ , TAPE PLAY–1/–2:200mV/ 50k $\Omega$ TAPE REC–1/–2:200mV/ 100k $\Omega$
Intermediate Frequency	FM:10.7MHz AM:455kHz	Phono Overload	100mV at 1kHz, 420mV at 10kHz 0.3%
Capture Ratio	FM:2dB	Bass Control	$\pm 8$ dB at 100Hz
Image Rejection Ratio	FM:50dB AM:35dB	Treble Control	$\pm 8$ dB at 10kHz
IF Rejection Ratio	FM:60dB AM:40dB	Signal to Noise Ratio	PHONO:65dB (IHF C NETWORK) AUX:75dB (IHF C NETWORK)
Signal to Noise Ratio	FM:65dB AM:40dB	Loudness Control	+7dB at 100Hz, +4dB at 10kHz
Alternate Channel att.	FM:60dB	Power Supply Rating	AC 120V 60Hz
AM Suppression Ratio	FM:50dB	Semiconductors	FET:1 Transistor:33 Diode:33 IC:3
Harmonic Distortion	FM MONO:0.4% AM:1% FM ST:0.8%	Dimensions	18 1/2" Wx 14 3/4" Dx 5 2/2" H 470Wx 375Dx 140Hmm
Frequency Response	FM:20–15,000Hz $\pm 2$ dB	Weight	10.5kg, 23.1lbs.
Stereo Separation	FM ST:35dB at 400Hz 30dB 100– 10,000Hz	Specifications and features are subject to change without notice for improvement.	
Stereo Lamp Level	FM ST:20 $\mu$ V		
Muting Level	FM:20 $\mu$ V		
Tuning Meter	FM: Signal strength & Center meters AM: Signal strength meter		
<b>AMPLIFIER SECTION</b>			
Power Output	80W (IHF 4 $\Omega$ )		
Dynamic	60W (IHF 8 $\Omega$ )		
Continuous	25W/25W(8 $\Omega$ Each channel driven) 21W+21W(8 $\Omega$ Both channel driven) 35W/35W(4 $\Omega$ Each channel driven) 30W+30W(4 $\Omega$ Both channel driven) 17W+17W(8 $\Omega$ in the range of 20–20,000Hz THD 1%)		
Total Harmonic Distortion	0.5% at Rated Power 1.0% at 10W		
Damping Factor	20 (8 $\Omega$ 1kHz 10W)		

# COMPONENT LOCATIONS



KEY NO.	DESCRIPTION	KEY NO.	DESCRIPTION
1	End Cap	13	Amp Box assembly
2	Front Panel	14	Toothed Lock Washer
3	Knob - Volume	15	Truss Screw
4	Knob - Balance	16	Tapping Screw
5	Knob - Push Switch	17	Joiner (B)
6	Knob - Tuning	18	Binder Screw
7	Knob - Selector	19	Tapping Screw
8	Knob - Treble	20	Rubber Cushion
9	Drive Shaft	21	Tapping Screw
10	Bottom Cover	22	Dial Flame
11	Chassis	23	Glass Plate
12	Drum	24	Washer

# ALIGNMENT PROCEDURE

## INSTRUMENT REQUIRED

1. AM and FM sweep generator
2. AM and FM signal generator
3. Vacuum tube voltmeter (V.T.V.M.) AC/DC
4. Oscilloscope
5. Distortion meter
6. Stereo Modulator

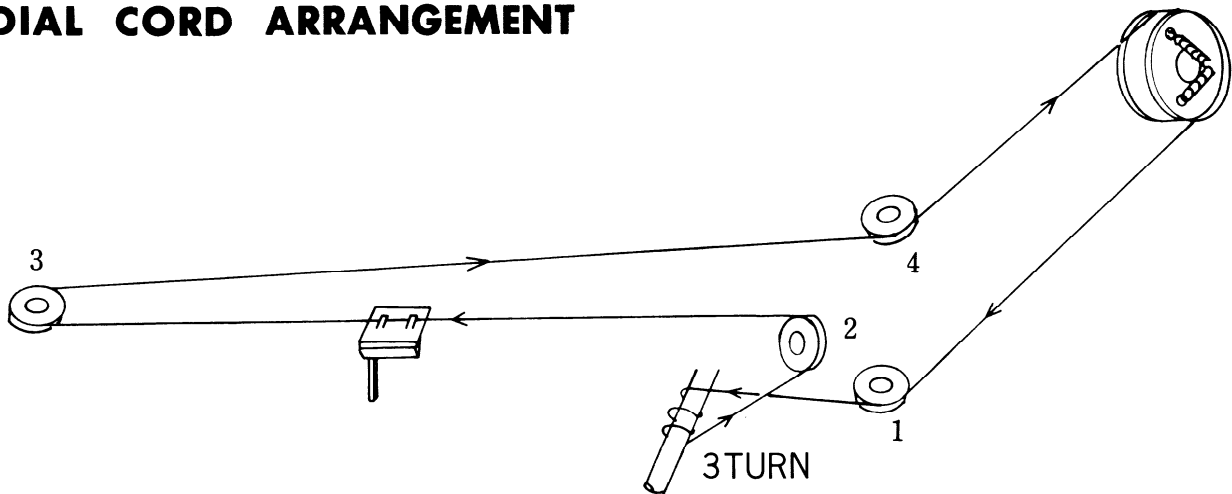
## GENERAL ALIGNMENT CONDITIONS

1. Signal input should be kept as low as possible.
2. Standard modulation is 400Hz 30% (AM)  
400Hz 100% (FM.MONO), pilot 10% Sub & Main 90% (FM.ST)
3. Standard output is 500mW (2.0V, 8Ω)

STEP	CONNECT SIGNAL SOURCE TO-	SET SIGNAL TO-	CONNECT OUTPUT INDICATOR TO-	SET RADIO DIAL TO-	ADJUST	ADJUST FOR	REMARKS	STEP
1	Set Selector Switch to "AM"							1
2	AM IF Sweep Generator to AM Ant.	455KHz	Oscilloscope to across "AM OUT" terminal (NAIM-224)	Quiet Point on Band	X104 CFZ-455C	Maximum Symmetrical response	Usually not necessary to adjust	2
3	AM Signal Generator to AM Ant. through a standard radiating loop	515KHz (modulated)	V. T. V. M. or oscilloscope to across "SPEAKER-A R" terminal	Lower end	L107 NMO-2503 (Red)	Maximum	Repeat step 3 and 4 as necessary to obtain Maximum sensitivity on stations	3
4		1680KHz (modulated)		Upper end	AM Trimmer (OSC. side)	Maximum		4
5	"	600KHz (modulated)	"	600KHz (Tuned to Signal)	L001 NMA-2513 (Coil Antenna)	Maximum	Repeat step 5 and 6 as necessary	5
6		1400KHz (modulated)		1400KHz (Tuned to Signal)	AM Trimmer (Ant. side)	Maximum		6
7	Set Radio Selector Switch to "FM" Set Muting Switch to "OFF"							7
8	FM Sweep Generator to "FM IN" terminal	±0.3MHz Sweep Centered at 10.7MHz	Oscilloscope to across terminal (NCIM-224)	Quiet Point on Band	L105 NIT-3503R Top Bottom	Maximum "S" curve Lineality	Not necessary to adjust for Symmetrical response or Zero Voltage	8
9	No Signal		Tuning Indicator may be used as the output indicator	Quiet Point Where FM Signals are not received	L105 NIT-3503R Top	The needle of Tuning Indicator comes to the center		9
10	FM Signal Generator to across FM Ant. terminal through a matching network	90MHz (100% Mod.)	V. T. V. M to across "SPEAKER-A, R" terminal	90MHz	LO on FM Tuner	Maximum	Repeat step 10 and 11 as necessary	10
11		104MHz (100% Mod.)		104MHz	TCO on FM Tuner	Maximum		11
12		90MHz (100% Mod.)		Tuned to Signal	LA LR (2 points) on FM Tuner	Maximum	Repeat step 12 and 13 as necessary	12
13		106MHz (100% Mod.)		"	TCA TCR (2 points) on FM Tuner	Maximum		13
14	FM Signal Generator to across FM Ant. terminal through a matching network	98MHz (100% Mod.)	Distortion meter to across "SPEAKER-A" terminal	Tuned to Signal	L105 NIT-3503R Bottom	Minimum Distortion	Less than 0.3%	14
15	Set Radio Selector Switch to FM AUTO Set Muting Switch to "ON"							15

STEP	CONNECT SIGNAL SOURCE TO-	SET SIGNAL	CONNECT OUTPUT INDICATOR TO-	SET RADIO DIAL TO-	ADJUST	ADJUST FOR	REMARKS	STEP
16	"	"	Oscilloscope to- across "SPEAKER" terminal	Tuned in and tuned out to Signal	Variable Resistor R713(100K $\Omega$ )	When tuned out, no noise. When tuned in, Signal.	Signals are not necessarily Squelching by turning R713 counter clockwise	16
17	Set Radio Selector Switch to "FM AUTO"			Set Muting Switch to "OFF"				17
18	"	98MHz (Pilot Sig. 19KHz 10%) 1mV input	V.T.V.M.to across "TP3" terminal (NAIM-224)	Tuned to Signal	I.201 NMC-4-10 Blue	Maximum	R223 10K $\Omega$ center	18
19	"	98MHz (Pilot Sig. 19KHz 10%) 400Hz L ch 90%	V.T.V.M.to across "SPEAKER-A" terminal (L ch)	"	L202 NMC5-9 Red	Maximum		19
20	"	98MHz (Pilot Sig. 19KHz 10%) Main & Sub Sig. 400 Hz L ch 90%	" (R ch)	"	Variable Resistor R223(10K $\Omega$ )	Minimum	Retouch slightly Repeat Step 20 and 21 as necessary	20
21	"	" R ch 90%	" (L ch)	"	"	"	"	21

## DIAL CORD ARRANGEMENT



# PARTS LIST

CIRCUIT NO.	DESCRIPTION	SPECIFICATIONS	Q'TY	STOCK NO.	REMARKS
	FM Front End	FR-118U11	1	240019	\$ 48.50
U1	FM Tuner Ass'y	NAFT-255	1	13871555	NEW
U2	IE & MPX Ass'y	NAIM-224e	1	13871524	NEW
U3	Tone & EQ Amp Ass'y	NAAF-256	1	13871556	NEW
U4	Power Amp Ass'y	NAPA-198d	1	13871598D	NEW
U5	Power Supply Ass'y	NAPS-257	1	13871557	NEW
PL801-802	Pilot Lamp	6.3V 0.05A AW-3	2	210015	
PL803-808	Pilot Lamp	6.3V 250mA	6	210012	
T901	Transformer-Power	NPT-548D	1	230065	NEW
L001	Coil-Antenna	NMA-2513	1	232030	
C901	Capacitor-Polyester (UL)	UL200VAC 0.01 $\mu$ F (M)	1	3504012	
C903, 904	Capacitor-Electrolytic	CE62W35V3300 $\mu$ F	2	3504017A	
C905	Capacitor-Electrolytic	CE62W50V470 $\mu$ FX2	1	3504037A	
C906	Capacitor-Electrolytic	CE02W35V100B	1	351761011A	
P809, 810	Resistor-Metal oxide Film	330 1W	2	441623315	
R905	Resistor-Metal oxide Film	47 2W	1	441724705	
R811	Resistor-Cement	8 10W	1	48120205	
S801 a~h	Switch-Rotary	NRSM-486-30Y-A	1	250106	
S802 a~d	Switch-Rotary	NRS-336-30Y-AP UL	1	250270	NEW
P901-902	Socket-AC	S-16408 UL	2	250129	
P801	Pin Jack	NTM-2WPBLE1	1	250170	
P802	Pin Jack	NTM-4WPBLE1	1	250169	
P803	Pin Jack	NTM-6WPBLE1	1	250171	
P804	Socket-DIN	S-18123	1	250008	
P805	Jack-Microphone	HJ-631s-H-2	1	250051	
P806	Jack-Stereo Head Phone	XG-7716	1	250078	
	Terminal-Speaker		2		
PL803a-808a	Socket-Pilot lamp	PLS-G1	6	213002	
F901a	Fuse Holder	S-N1301	3	250080	
F801a, 802a					
F901	Fuse	2A- T(ST-2) UL	1	252018	
F801-802	Fuse	2.5A-T	2	252025	
M101	Tuning Indicator	NIND-0500 S-29	1	243020-1	
M102	Tuning Indicator	NIND-0250 S-30	1	243021-1	
W901	AC Cord	AS-UC UL	1	253072	
A003	Holder Antenna		1	270716	
A007	Dram Tuning		1	270220-1	
A008	Dram Spring	SP-14A	2	273803	
A012	Dial Thread	0.3 $\phi$ Nylon	2 m	273902	
A033	Dial Plate		1	270801	NEW
A034	Back Plate		1	270211-1	
A047	Drive Shaft		1	270218	
	Dial Pointer Ass'y		1		
A601	Rear Panel		1	281038	NEW
A351	Amp Box Ass'y		1	280495-1	
	Front Panel Ass'y		1		NEW
A502	End Cap		2	280319	
A512	Glass Plate		1	280259-1	
A508	Dial Flame		1	280322-1	
A519	Knob Guide		1	280418	
A520	Knob Guide		1	280710	
A801	Knob Tuning		1	283051	
A802	Knob Speaker		2	283056	
A803	Knob Volume		2	283050	
A804	Knob Bass S		1	283053	
A805	Knob Bass L		1	283054-3	
A806	Knob Push		5	283123	
A851	Master Carton Box		1	290499	NEW
A852	Side Pad		2	290502	
A853	Amp Cover (polyethylene)		1	290008	
A871	Instruction Booklet		1	293263	NEW
A873	Caution Label		1	293041	

# PARTS LIST

CIRCUIT NO.	DESCRIPTION	SPECIFICATIONS	Q'TY	STOCK NO.	REMARKS
A874.	Caution Label-A	G-2	1	282969	NEW
A877	Circuit Diagram		1	293264	
A901	Silicon Cloth		1	292017-2	
A902	Bag (polyethylene)	230 X 320	2	290078	
A904	Short-Pin	PO-107	2	250153	

## NAIM-224e

Q101-102 } Q104-108 } Q201-203 } Q209-210 } Q703-705 }	Transistor	2SC380(O)	7	2210123	
Q205-208 } Q701-702 }	Transistor	2SC733(GR)	8	2210085	
Q204	Transistor	2SC733(BL)	6	2210086	
Q103	IC	2SC734(Y)	1	2210064	
	Germanium Diode	TA-7061AP	1	222402	
D105-106 } D120-121 }	Silicon Diode	In60(N) FM	19	2231031	
L101-102	Coil-Choke	1S1555	4	223105	
L103	Coil-Choke	NCCH-1504	2	233040	
L105	Coil-Choke	NCCH-1501	1	233024	
L106	Transformer-IFT	NIT-3503R	1	233022	
L107	Transformer-IFT	NIT-5501D	1	232012	
L201	Coil-OSC	NMO-2503	1	232013	
L202	Coil-MPX	NMC-4-10	1	233017	
L203-204	Coil-MPX	NMC-5-9	1	233019	
L205	Coil-MPX	NMC-8-5	2	233021	
L701	Coil-MPX	NMC-4-11A	1	233041	
L703	Coil-MPX	NMC-4-11	1	233018	
R223	Coil-MPX	NMC-9-1	1	233031	
R713	Resistor-Semi Fixed	R-HK10KB3L	1	5225002	
X101-103	Resistor-Semi Fixed	R-HK100KB3L	1	5225003	
X104	Ceramic Filter	SFE-10.7MA	3	3010003	
Z101-103	Ceramic Filter	CFZ-455C	1	3010004	
	C.R Composite	B44TS-1	3	3020001	

## NAAF-256

Q301-304 } Q401-404 }	Transistor	2SC1000(GR)	8	2210285	
Q902	Transistor	2SD234(Y)	1	2200020	
R325, 344 } 425, 444 }	Resistor-Variable	N24RJL100KMN 250KBT30, 20H	1	5104005	
R342, 442 } 343, 443 }	Resistor-Variable	N24RGP 100KB30-1	2	5172021	
S803-805 } S808-809 }	Switch-Push	NPS-122LA3	5	250184-1	

## NAPA-198d

Q501, 601	IC	STK-025	2	222001	
D909, 901	Silicon D	10D2	2	223805	
D911	Zener Diode	WZ-240	1	223916	
D912	Zener Diode	WZ-120	1	223910	
R912	Resistor Metal Oxide Film	RS2WBK360	1	441723615	
R913	Resistor Metal Oxide Film	RS1WBK240	1	441622415	
R914	Resistor Metal Oxide Film	RS3WBK620	1	441826215	
S901	Klixon	9700L-21-11	1	252011	

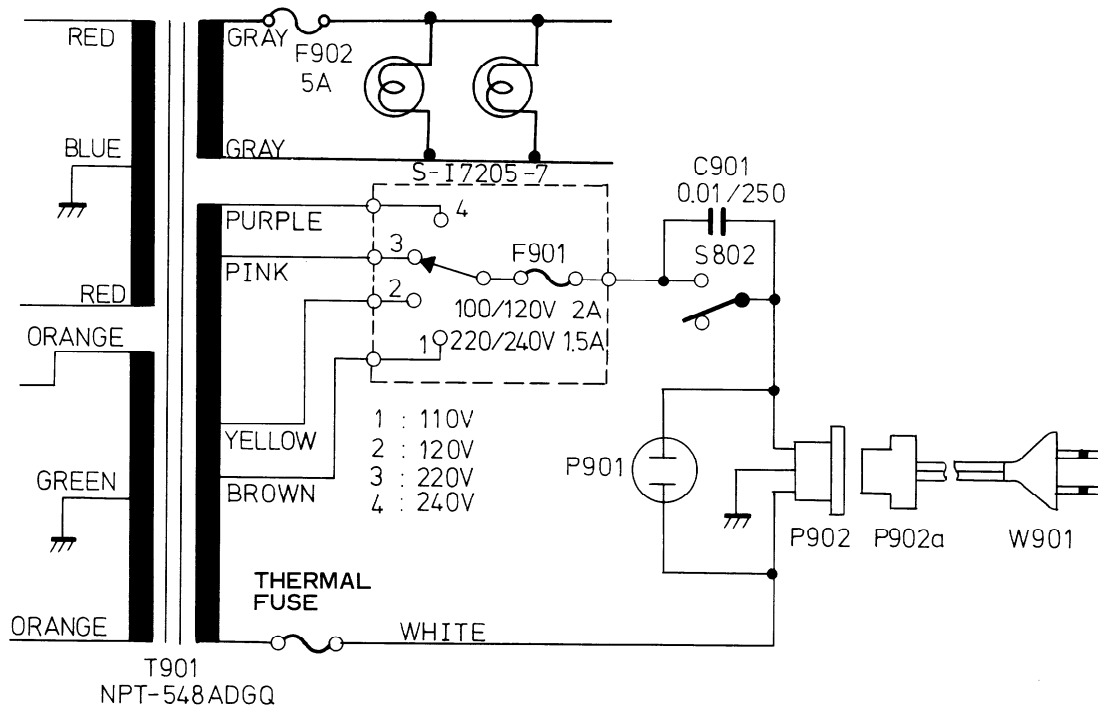
## NAPS-257

D901-904	Silicon Diode	SR3AM-2B	4	223816	
F902	Fuse	5A-T	1	252020	
F902a	Holder-Fuse	SN5051	2	250113	

# PARTS LIST Universal Type

CIRCUIT NO.	DESCRIPTION	SPECIFICATIONS	Q'TY	STOCK NO.	REMARKS
U2	IM Assembly	NAIM-224f	1		NEW
T901	Transformer-Power	NPT-548ADGQ	1	230071	NEW
C901	IS Capacitor	PME271M510CEE	1	3500038	
F901	Fuse	2.5A-T	1	252025	
	Fuse	2A (ST-2)	1	252018	110/120V
	Fuse	1.5A (SS-2)	2	252031	220/240V
P902	VS Socket	SI-7205-7	1	250186	
	PS Socket	STF41A1CEE	1	250226	
P902a	PS Plug	SFO40A3CEE	1	250227	
W901	AC Cord	AS-CEE	1	253083	
	Instruction Booklet		1	293286	NEW
	CV Plug K	CV-K	1	292063	
	Voltage tag		1	293268	

## POWER TRANSFORMER THERMAL FUSE Universal Type



A special thermal fuse is used in the power transformer (NPT-548ADGQ) of TX-330 universal type to prevent dangerous overheating, thereby eliminating the major causes of electric fires due to faulty circuits. A short circuit would cause thermal fuse to open when circuit temperature exceeds approximately 280°F immediately cutting off main supply voltage.

Under such conditions the power transformer must be replaced after correcting the circuit defect. the thermal fuse is not replaceable.





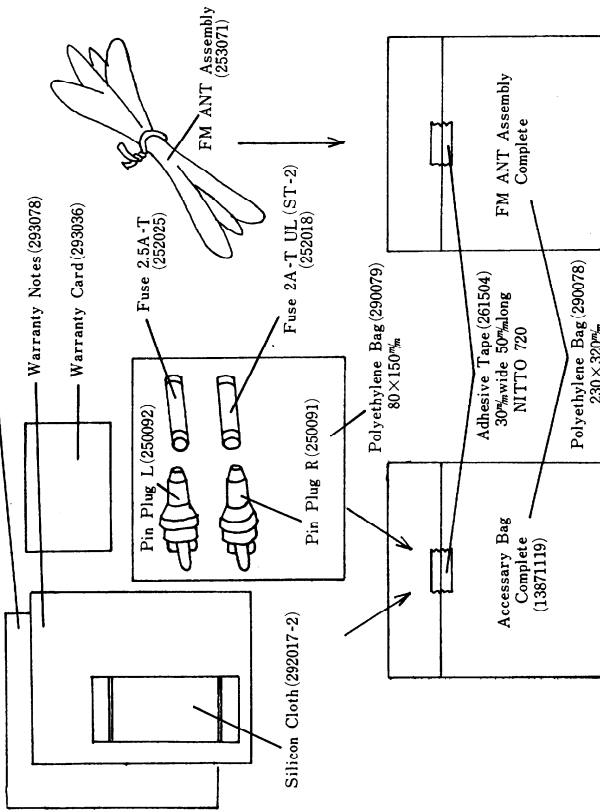


## PACKING PROCEDURE

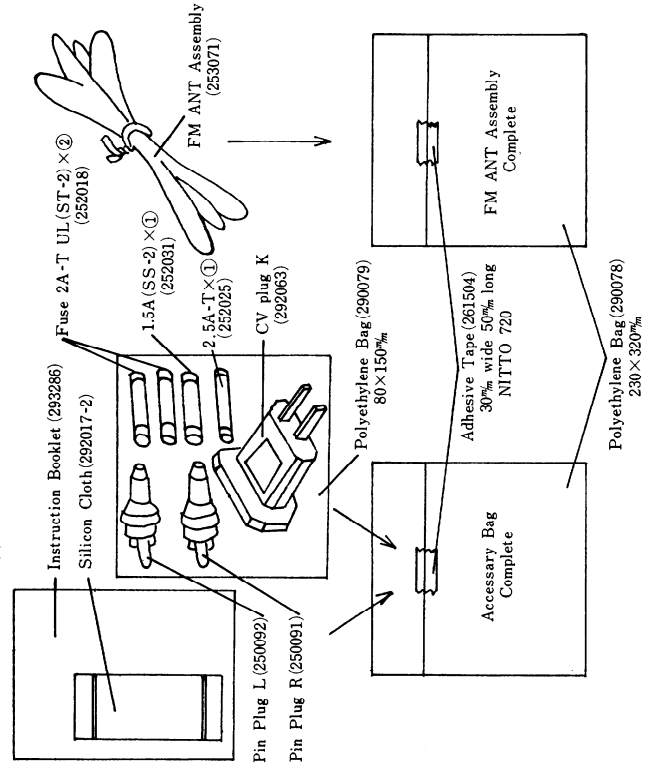
Complete instruction booklets and others.

Put the following things as illustrated in the polyethylene bag each.

### 1. TX330



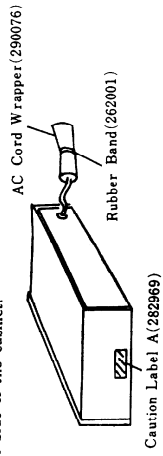
### 2. TX330 Universal Type



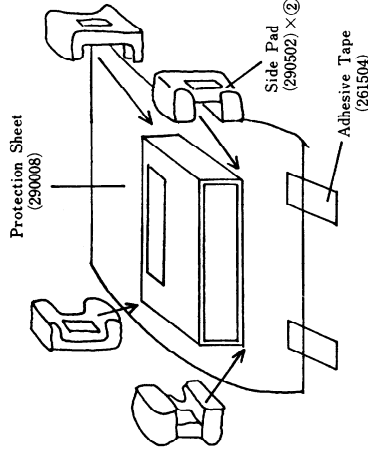
## PACKING PROCEDURE

1 Wrap the AC cord with the AC cord wrapper and pass the rubber band round the AC cord wrapper.

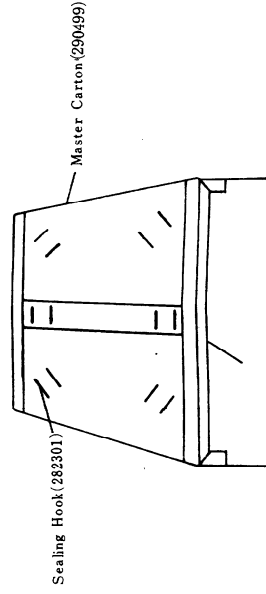
2 Stick the caution label on the right side of the cabinet.



3 Cover the set with a sheet of Protection Sheet (polyethylene) and fix the side pad.



4 Fix the flap of the bottom of the master carton with sealing hooks and stick the tape on the bottom.

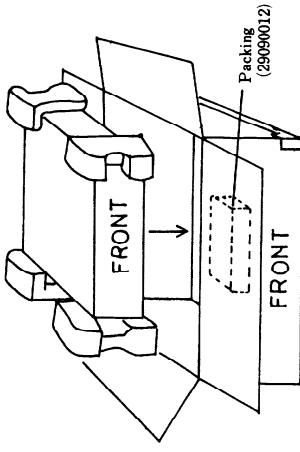


Adhesive Tape (260012)  
DAMPLON NITTO light brown 50% wide 3600mm long.

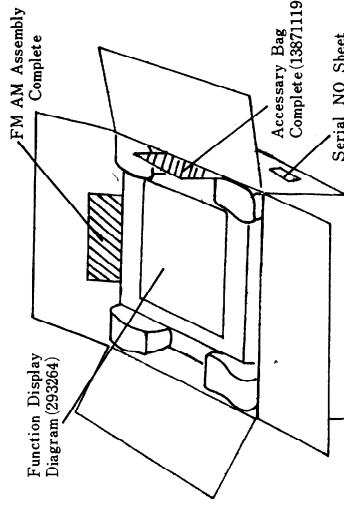
\* Specifications and features are subject to change without notice for improvement.

\* In case of TX-330 universal type, see page 16.

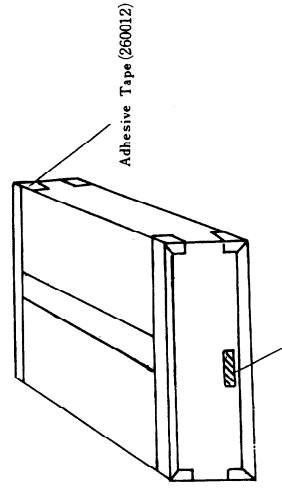
5 Put the set in the master carton and match the front mark of the carton and the front of the set.



6 Put the accessory bag (Complete), FM ANT Assembly (Complete) and a sheet of Function Display Diagram, before shutting the flap of the carton. Then stick two sheets of Serial NO Sheet on both sides.



7 Shut the flap of the carton and stick the tape.



Indicate power supply voltage and destination on both sides.

## LINE VOLTAGE AND FUSE

The model TX-330 is available for two models: one model operates only on 120V, and the other operates on each one of the four line voltages, 110V, 120V, 220V and 240V. If your TX-330 is the latter model, set the unit to proper line voltage by the following procedure described below.

### CHANGING LINE VOLTAGE SETTING AND FUSE

Turn the fuse cap located on the line voltage selector counter-clockwise.

Then remove the fuse plug from the unit. Put the fuse plug back so that the proper line voltage mark can be seen through the cut on the edge of the plug.

whenever the position of the selector is changed, check the rating of the fuse. A 1.5A fuse is for 220V or 240V operation and a 2.0A fuse is for 110V or 120V operation.

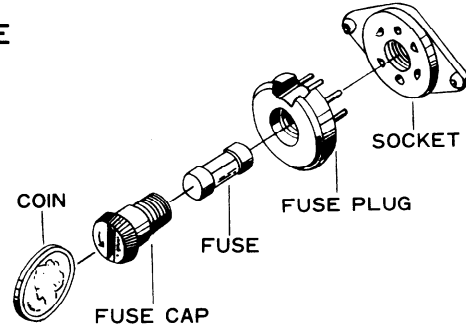


Fig. 1

### FUSE REPLACEMENT

When the fuse has blown, remove the fuse cap and replace the fuse with new one. See Fig. 1. The fuses are as follows.

B fuse	2.5A-T	SN 252025
AC fuse	1.5A-T(SS-2) (220/240V)	252031
	2A-T(ST-2) (110/120V)	252018
Pilot lamp fuse	5A-T	252020

### PACKING MATERIALS

The differences between TX-330 and TX-330 universal type are as follows.

	TX-330	TX-330 universal
Instruction Booklet	SN 293263-1	SN 293286
Warranty Notes	293078	no use
Warranty Card	293036	no use
Silicon Cloth	292017-2	292017-2
Pin Plug L	250092	250092
Pin Plug R	250091	250091
Fuse	2.5A-T 252025 × ① 2A-T UL(ST-2)252018 × ①	2A-T UL(ST-2) 252018 × ② 1.5A (SS-2) 252031 × ①
FM ANT Assembly Complete	Same	Same
Accessory Bag Complete	13871119	13868119
Function Display Diagram	293264	no use
Voltage tag	no use	293268
AC Cord Complete	no use	13876801
CV Plug K	no use	292063

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