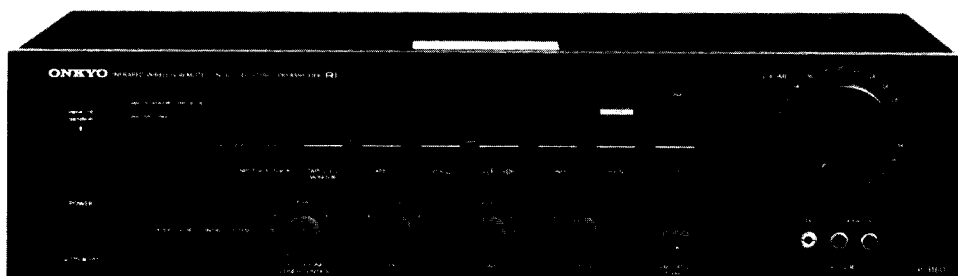


ONKYO® SERVICE MANUAL

Stereo Preamplifier MODEL P-3160/P-3160P



UD	120V AC, 60Hz
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SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK Δ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

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ONKYO®
AUDIO COMPONENTS

SPECIFICATIONS

Rated Output and Impedance: 1V/3.3 Kohms MAX 5V
Total Harmonic Distortion: 0.009%
IM Distortion: 0.09%
Frequency Response: 15 – 30,000 Hz ± 1 dB
Sensitivity and Impedance: Phono: 2.5mV/50 kohms
Tuner, CD, Tape Play
VCR, VDP Sound: 150mV/50 kohms
Tape Rec: 150mV/2.2 kohms
(phono)
Phono Overload: 120mV RMS at 1 kHz, 0.09% THD
Bass Control: ± 10 dB at 100Hz
Treble Control: ± 10 dB at 10,000 Hz
Selective Tone Control: +15 dB at 50Hz
+6 dB at 10,000Hz
Signal to Noise Ratio: Phono: 83dB (IHF-A, 5mV input, 1 V output)
Tape Play: 95dB (IHF-A, 1 V output)
Audio Muting: -20dB

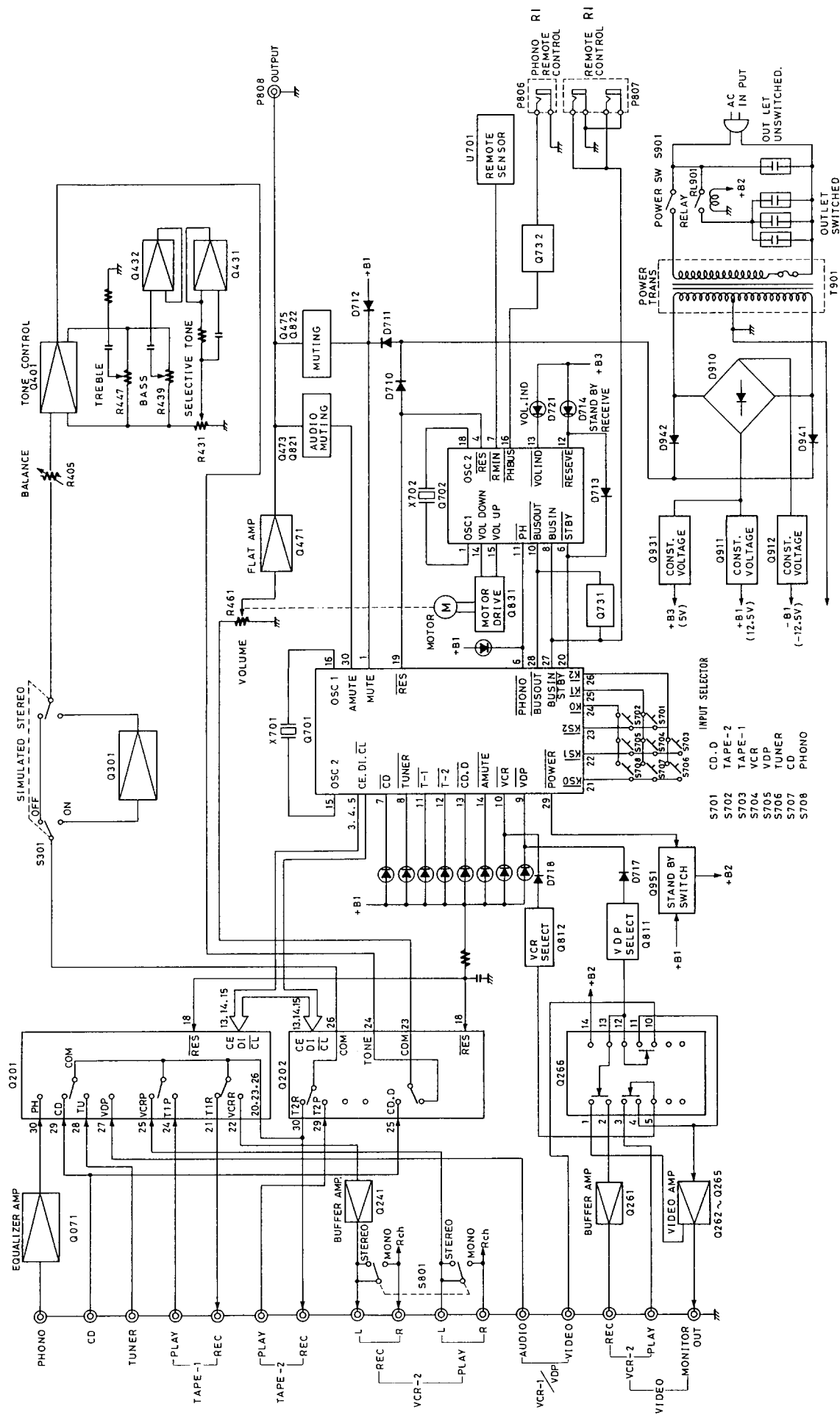
General
Power Supply: AC120V, 60Hz
Dimensions (W x H x D): 435 x 110 x 267mm
17-1/8" x 4-5/16" x 10-1/2"
Weight: 3.7kg, 8 lbs.

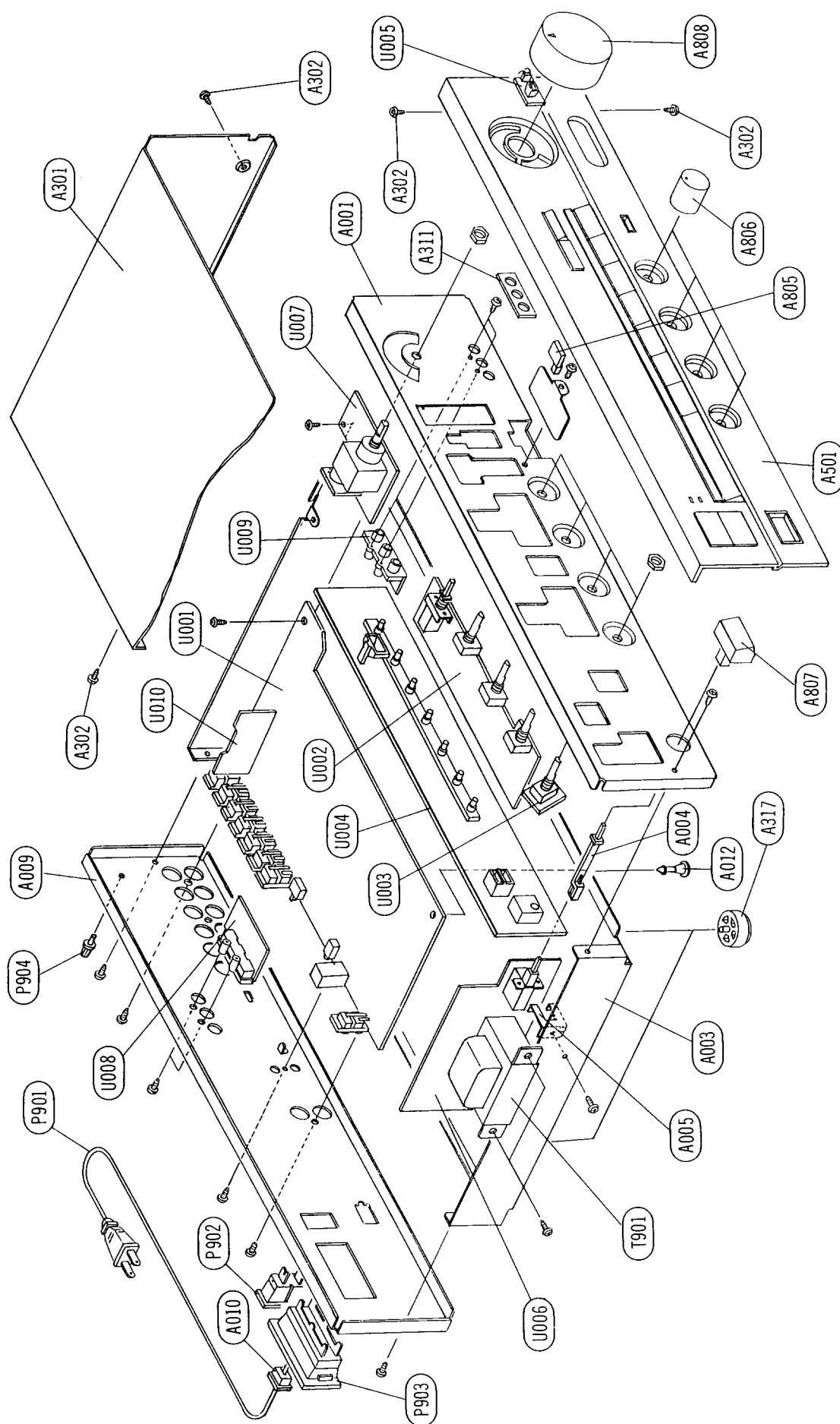
REMOTE CONTROL TRANSMITTER (RC-118S)

Transmitter: Infrared
Signal range: Approx. 5 meters, 16ft
Power supply: Two "AA" batteries (1.5V x 2)
Dimensions (W x H x D): 64 x 18 x 176mm
2-1/2" x 11/16" x 6-15/16"
Weight: 130 grams. 4.6 oz.
(including batteries)

Specifications and features are subject to change without notice.

BLOCK DIAGRAM





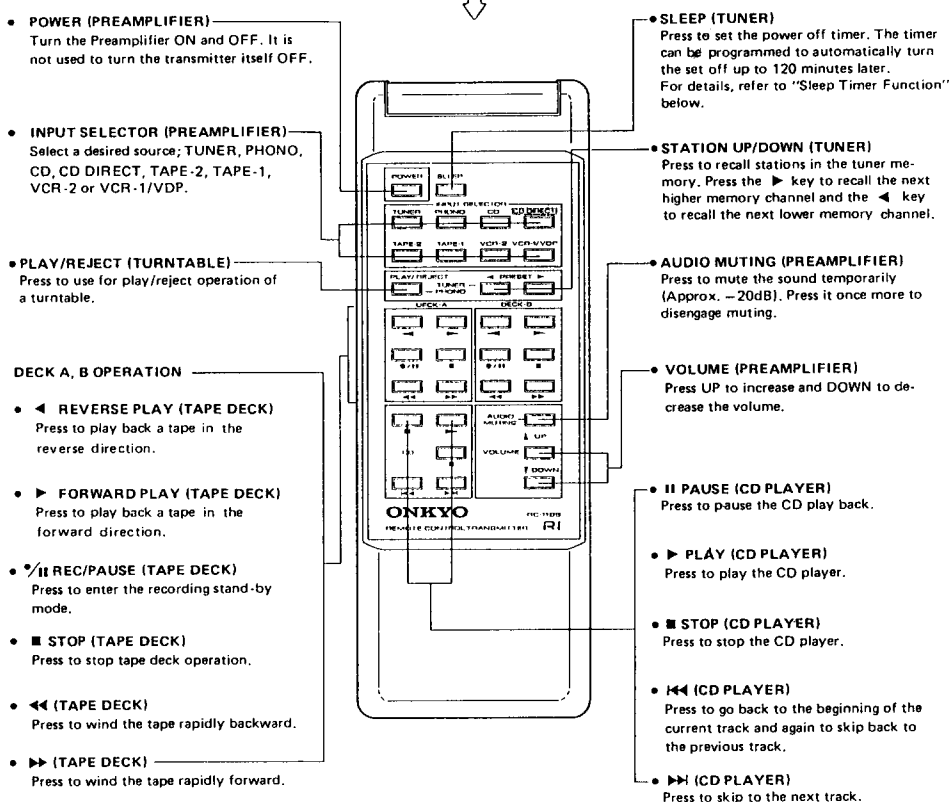
CHASSIS-EXPLODED VIEW-PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
A001	27110395A	FRONT BRACKET	U005	1A080556-1	NADIS-3256-1, VOLUME INDICATOR CIRCUIT PC BOARD ASS'Y
A003	27100114-1	CHASSIS	U006	1A080557-1	NAPS-3257-1, POWER TRANSFORMER PC BOARD ASS'Y
A004	27260170A	SHAFT (SW)	U007	1A080558-1	NAETC-3258-1, MOTOR DRIVE CIRCUIT PC BOARD ASS'Y
A005	27141243	BRACKET (POW)	U008	1A080559-1	NAETC-3259-1, VIDEO CIRCUIT PC BOARD ASS'Y
A009	27120924-1A	BACK PANEL	U009	1A080560-1	NAETC-3260-1, VCR TERMINAL PC BOARD ASS'Y
A010	27300750	BUSHING	U010	1A073554-2	NAAF-3054-2, EQUALIZER CIRCUIT PC BOARD ASS'Y
A012	27190266	HOLDER			
A301	28184383	TOP COVER			
A302	834430088	3TTS-8B(BC), TAP-TIGHT SCREW			
A501	1A080121	FRONT PANEL ASS'Y			
A311	27262415	PLATE (T)			
A317	27175142	BOTTOM LEG			
A805	28323239A	KNOB (PUSH)			
A806	28323240	KNOB (TONE)			
A807	28323241	KNOB (POW)			
A808	28323242A	KNOB ASS'Y (VOL)			
△ T901	2300286	NPT-989D, POWER TRANSFORMER			
△ P901	253123 or 253136 or 253140 or 253146	AS-UC-6 #18, POWER SUPPLY CABLE			
△ P902	25050290	NSCT-2P118T, AC OUTLET			
△ P903	25050336	NSCT-6P163, AC OUTLET			
P904	25060044	GROUND TERMINAL			
U001	1A080552-1	NAAF-3252-1, MAIN PC BOARD ASS'Y			
U002	1A080553-1	NAAF-3253-1, TONE CONTROL CIRCUIT PC BOARD ASS'Y			
U003	1A080554-1	NAETC-3254-1, SELECTIVE TONE CONTROL PC BOARD ASS'Y			
U004	1A080555-1	NASW-3255-1, CONTROL CIRCUIT PC BOARD ASS'Y			

NOTE: THE COMPONENTS IDENTIFIED BY MARK **△** ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PARTS NUMBER SPECIFIED.

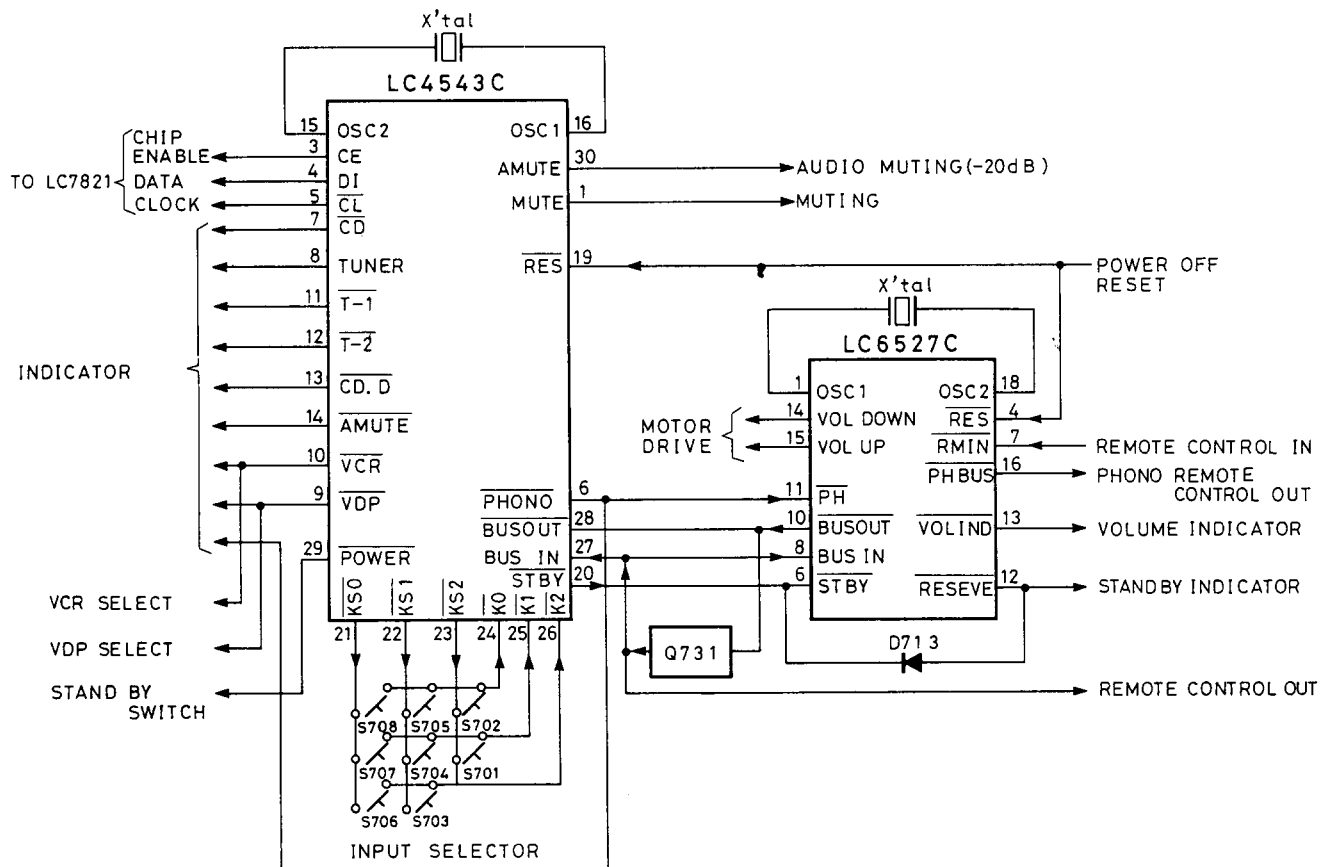
REMOTE CONTROL TRANSMITTER (RC-118S)

Remote Control Signal Transmission Window

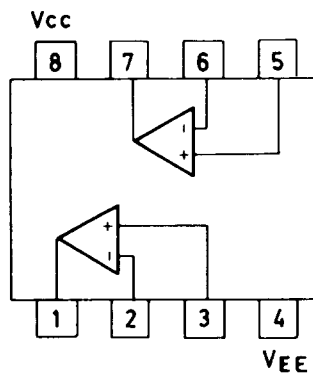


IC BLOCK DIAGRAM

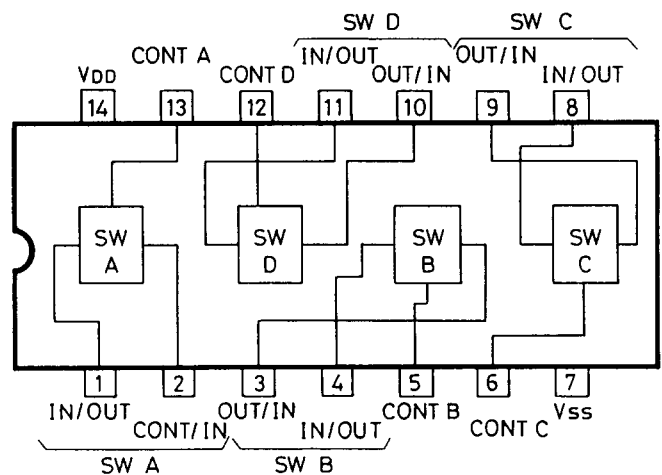
LC6543C, LC6527C (Micro Computer)



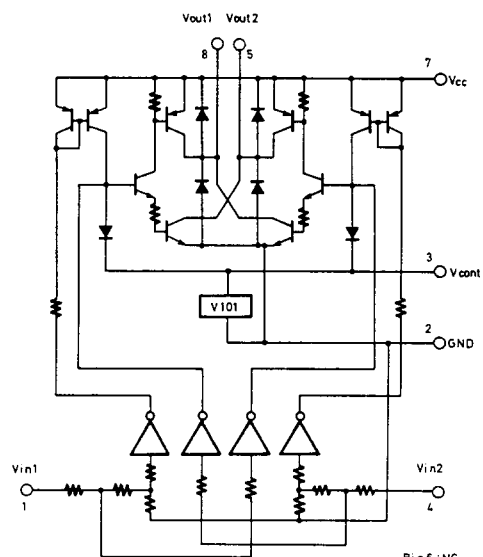
NJM 4558DX (OP Amp) MPC 4570C



4066B



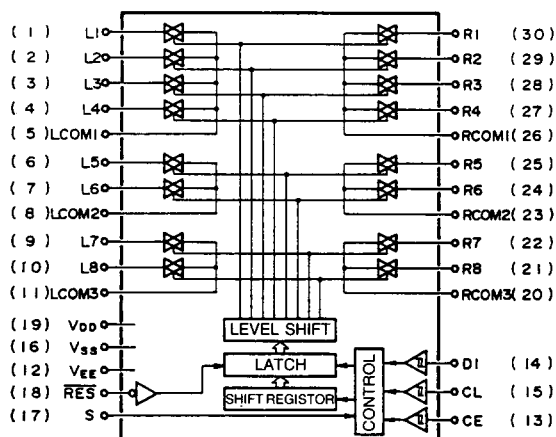
LB1630 (Motor Drive)



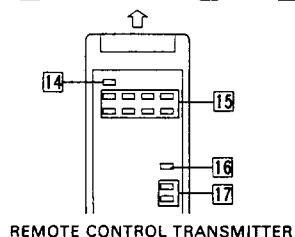
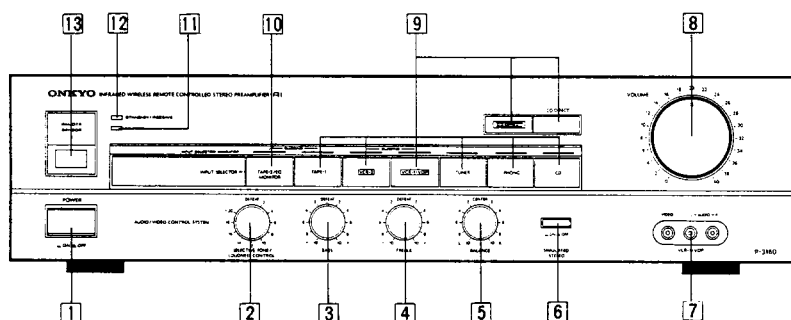
TRUTH TABLE

IN 1	IN 2	OUT 1	OUT 2	MOTOR
H	L	H	L	Normal
L	H	L	H	Reverse
H	H	OFF	OFF	Wait
L	L	OFF	OFF	Wait

LC 7821 (Analog Switch)



FRONT PANEL FACILITIES



1. Power Switch (POWER)
2. Selective Tone Control / Loudness Control Knob (SELECTIVE TONE/LOUDNESS CONTROL)
3. Bass Control Knob (BASS)
4. Treble Control Knob (TREBLE)
5. Balance Control Knob (BALANCE)
6. Simulated Stereo Switch (SIMULATED STEREO)
7. Video Cassette Recorder or Video Disc Player Input Jack (VCR-1/VDP)
8. Volume Control Knob and Indicator (VOLUME)
9. Input Selector Buttons and Indicators (INPUT SELECTOR)
Audio Selectors CD DIRECT, CD, PHONO, TUNER, TAPE-1
Video Selectors (Control audio and video signals) VCR-1/VDP, VCR-2
10. Tape Monitor Button and Indicator (TAPE-2/EQ MONITOR)
11. Muting Indicator
12. Stand-By/Receive Indicator
13. Remote Control Sensor
14. Power Key (POWER)
15. Tape Monitor Key and Input Selector Keys (INPUT SELECTOR)
16. Audio Muting Key (AUDIO MUTING)
17. Volume UP-DOWN Keys (VOLUME)

PRECAUTIONS

1. Insulation resistance measurement

Connect the insulating-resistance tester between the plug of power supply cable and the terminal GND on the back panel. Specifications; More than 10M Ω at 500V.

2. Remote Control Transmitter Batteries

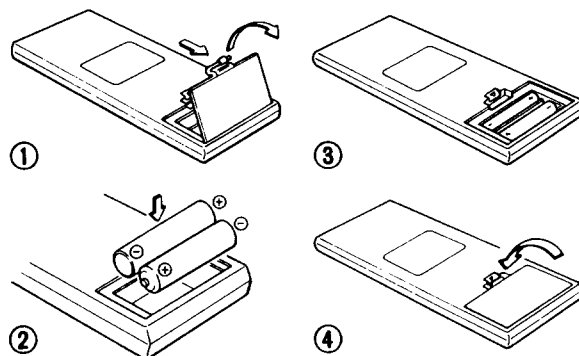
The remote control transmitter is powered by two batteries. Before using this unit for the first time, insert the two batteries (included) as shown in the diagram. The remote control transmitter has no on/off switch for its own. Average battery life is one year. This period may be shorter depending on the frequency of use and environment (temperature and humidity) in which the remote control transmitter is used. If the remote control transmitter does not operate even though front panel controls function normally, the batteries should be replaced. Use only batteries listed in the following chart.

Type	Voltage	Size
Manganese	1.5V	AA, R6, UM-3

Note

1. The battery life is influenced by the way it is used, temperature, humidity and many other factors. On the average, they should last for one year.
2. Do not leave an expired battery in the case as it may leak or damage the battery case.
3. When inserting the batteries, be sure the (+) and (–) ends are properly aligned.
4. Do not use nickel-cadmium (rechargeable) batteries.
5. Do not use one specified (manganese) battery and one alkaline battery at the same time.
6. Replace both batteries at once, do not use one old and one new battery together.

Transmitter Battery replacement (RC-118S)



PRINTED CIRCUIT BOARD PARTS LIST

MAIN PC BOARD (NAAF-3252-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
Q201,(Q202) Q241 Q471	ICs			Radiator	
	22240079	LC7821		27160211	RAD-68
	222502	NJM4558DX		Bracket	
	22240050	MPC4570C		27141059	
Q473~Q476	Transistors				
	2212285 or	2SC2878A or			
	2212286	2SC2878B			
Q811,Q812	2211455 or	2SA1015GR or			
Q821,Q822	2210803	2SA733P			
Q911,Q931	2201754 or	2SD1913R or			
	2201755	2SD1913Y			
Q912	2201764 or	2SB1274R or			
	2201765	2SB1274Y			
Q951	2211504	2SA950Y			
D251,D712	Diodes				
	223150 or	US1040 or			
	223124 or	1S2473 or			
	223145	1S2076TD			
D710,D711	223163	ISS133			
D910	223862 or	W101 or			
	223890	W01RL			
D911,D912	224151302 or	05AZ13Y or			
	220451302 or	MTZ13B or			
	224651302	HZ13EB2			
D931	224150562 or	05AZ5.6Y or			
	224450562 or	MTZ5.6B or			
	224650562	HZ5.6EB2			
D941,D942	223896F or	1N4003F or			
	223880F	GP101N4003			
D943	224151202 or	05AZ12Y or			
	224451202 or	MTZ12B or			
	224651202	HZ12EB2			
C241~C244 C251,C471 C472,C477 C478	Capacitors				
	354780229	2.2 μ F, 50V, Elect.			
C252,C253 C479,C480 C473,C474 C811,C812 C821	354780339	3.3 μ F, 50V, Elect.			
C911	354721019	100 μ F, 6.3V, Elect.			
C912	354780109	1 μ F, 50V, Elect.			
C913,C914 C931,C932 C915,C916 C919,C920 C934 C941	354763329	3300 μ F, 35V, Elect.			
	354761029	1000 μ F, 35V, Elect.			
	354762219	220 μ F, 35V, Elect.			
	354741019	100 μ F, 16V, Elect.			
	354744719	470 μ F, 16V, Elect.			
	354722219	220 μ F, 6.3V, Elect.			
	354741009	10 μ F, 16V, Elect.			
R911 R912 R931 R941	Resistors				
	441622204F	22 Ω , 1W, Metal oxide film			
	441521514F	150 Ω , 1/2W, Metal oxide film			
	441625604F	56 Ω , 1W, Metal oxide film			
	442525614F	560 Ω , 1/2W, Metal oxide film			
S801	Switch				
	25065286	NSS-22112 Slide			
P801~P803 P808	Terminals				
	25045213	NPJ-6PDBL92			
	25045182	NPJ-2PDBL72			
P806 P807	Jacks				
	25045114	HSJ1011-01-530			
	25045172	HSJ1003-01-020			

TONE CONTROLE PC BORAD (NAAF-3253-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
Q301 Q401,Q431 Q432	ICs	
	222502	NJM4558DX
	22240050	MPC4570C
C301,C304 C401,C402 C405,C406 C435,C436 C302 C303 C431,C432 C437,C438 C441,C442 C449,C450 C443,C444 C447,C448	Capacitors	
	354780229	2.2 μ F, 50V, Elect.
	371121124	1100 pF, 50V, Mylar
	371121234	0.012 μ F, 50V, Mylar
	371128224	8200 pF, 50V, Mylar
	371125134	0.051 μ F, 50V, Mylar
	354780339	3.3 μ F, 50V, Elect.
	371122234	0.022 μ F, 50V, Mylar
R405 R439(R440) R447(R448)	Resistors	
	5104225	N11RGLC250KWT22Z, Variable
	5104230	N14RLC100KWT22Z, Variable
S301	Switches	
	25035372	NPS-122-L336

SELECTIVE TONE PC BOARD (NAETC-3254-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
R431(R432)	Resistors	
	5104231	N14RH50KRD22Z

CONTROLE PC BOARD (NASW-3255-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
U701	Photo receiving unit	
	24130001	GP1U501S
Q701 Q702	ICs	
	22240151	LC6543C-3630
	22240150	LC6527C-3608
Q731 Q732	Transistors	
	2211455 or	2SA1015GR or
	2210803	2SA733P
	2211255 or	2SC1815GR or
	2210746	2SC945AP

MOTOR DRIVE PC BOARD (NAETC-3258-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
D701~D703 D706~D708	Diodes	
	225137CG or	SEL2413CG, LED or
	225137DG or	SEL2413DG, LED or
D704,D705 D709,D714 D713	225137DY	SEL2413DY, LED
	225141	SEL2213C, LED
	223150 or	US1040 or
D717,D718 D731 D732	223124 or	1S2473 or
	223145	1S2076TD
	223163	1SS133
X701 X702	224150562 or	05AZ5.6Y or
	224450562 or	MTZ5.6B or
	224650562	HZ5.6EB2
C701 C705 C709	Transducer	
	3010099	CSA4.00MG
	3010119	CSB-1000D
S701~S708	Capacitors	
	354721019	100 μ F, 6.3V, Elect.
	354780229	2.2 μ F, 50V, Elect.
P701	354741009	10 μ F, 16V, Elect.
	Switch	
	25035548	NPS-111-5510
P701	Socket	
	2000635	NSAS-4P591
	Holders	
	27190610	(LED-8)
	27190611	(LED-2)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q831	222963	LB1630, IC
C831	354741009	10 μ F, 16V, Elect. capacitor
R461(R462)	5104232	N16RGM50KA20F, Variable resistor
	27141059	Plate

VIDEO CIRCUIT PC BOARD (NAETC-3259-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
Q266	IC	
	222840661	4066B
	Transistors	
Q261~Q264	2211255 or	2SC1815GR or
	2210746	2SC945AP
	2211454	2SA1015Y
C261,C264 C262,C263 C265,C266	Capacitor	
	354724719	470 μ F, 6.3V, Elect.
	354741009	10 μ F, 16V, Elect.
P805	Terminal	
	25045205	NPJ-3PDYE085

VCR INPUT TERMINAL PC BOARD (NAETC-3260-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
P804	25045206	NPJ-3PDYE086, Terminal

VOLUME LED PC BOARD (NADIS-3256-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
D721	225141	SEL2213C, LED
	27190545	Holder (LED)

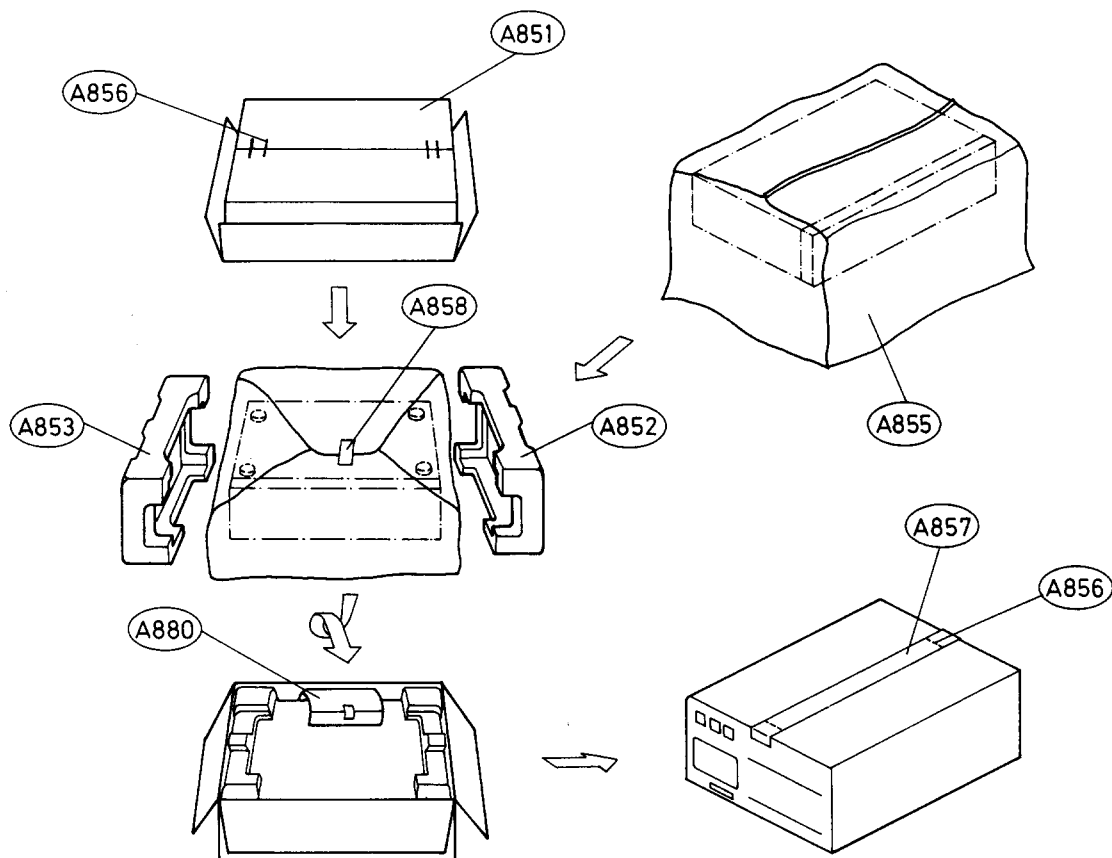
POWER TRANSFORMER PC BOARD (NAPS-3257-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
D901	Diodes	
	223163	1SS133
T901	Transformer	
	2300286	NPT-989D
C901,C902	Capacitors	
	3500065A	0.01 μ F, AC400V/125V IS
S901	Switch	
	25035550	NPS-111-L512P
RL901	Relay	
	25065269	NRL-1P5A-DC12-36
RL901	Insulating plat	
	28175137	

- ALL RESISTORS ARE IN OHMS
1/4WATT UNLESS OTHERWISE
NOTED.
- ALL CAPACITORS ARE IN
 μ F/50WV UNLESS OTHERWISE
NOTED.
- ELECTROLYTIC CAPACITORS
(—E—) ARE IN μ F/WV.
- THE COMPONENTS IDENTIFIED
BY MARK Δ ARE CRITICAL
FOR SAFETY.
- REPLACE ONLY WITH PART
NUMBER SPECIFIED.
- VOLTAGE MEASURED WITH
V.T.V.M. $\times \square$ V IS DC.
- VOLTAGE NO INPUT SIGNAL,
TUNER POSITION SIGNAL.
- ALL DIODES ARE 152473 OR
152076 OR U51040 OR 15S133
UNLESS OTHERWISE NOTED.
- CIRCUIT IS SUBJECT TO
CHANGE FOR IMPROVEMENT.



PACKING PROCEDURES



REF. NO.	PART NO.	DESCRIPTION
A851	29051646	MASTER CARTON BOX (D) [S]
	29051645	MASTER CARTON BOX (D) [P]
A852	29090987	PAD, L
A853	29090988	PAD, R
A855	29100063	750 × 580mm, POLY-VINYL BAG
A856	282301	SEALING HOOK
A857	260012	DAMPLON TAPE
A858	261504	PAPER TAPE

A880	ACCESSORY BAG ASS'Y	
	29341221	INSTRUCTION MANUAL
	29365019	WARRANTY CARD [N]
	29358002E	SERVICE STATION LIST [N]
	24140021	REMOTE CONTROL UNIT, RC-118S [S]
	3010054	TOW BATTERIES, UM-3 [S]
	29341222	INSTRUCTION MANUAL, REMOTE [S]
	29100097	350 × 250mm, POLY-VINYL BAG FOR ACCESSORY [S]
	29100006A	350 × 250mm, POLY-VINYL BAG FOR ACCESSORY [P]
	2010169	3.5mm MINI PLUG

NOTE

[N]:Only U.S.A. MODELS
[S]:Only P-3160 MODELS
[P]:Only P-3160P MODELS

ONKYO CORPORATION

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