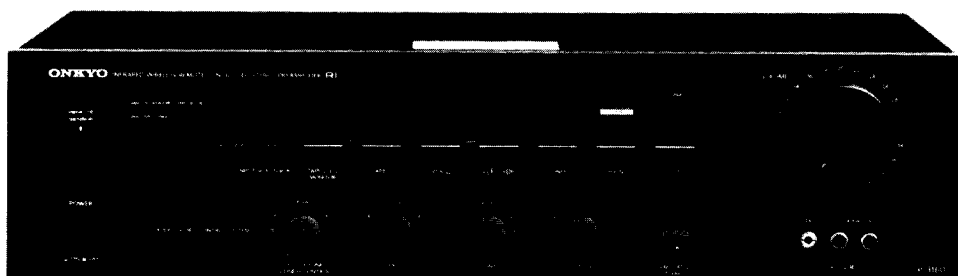


ONKYO® SERVICE MANUAL

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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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 \pm 1dB
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: \pm 10 dB at 100Hz
Treble Control: \pm 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

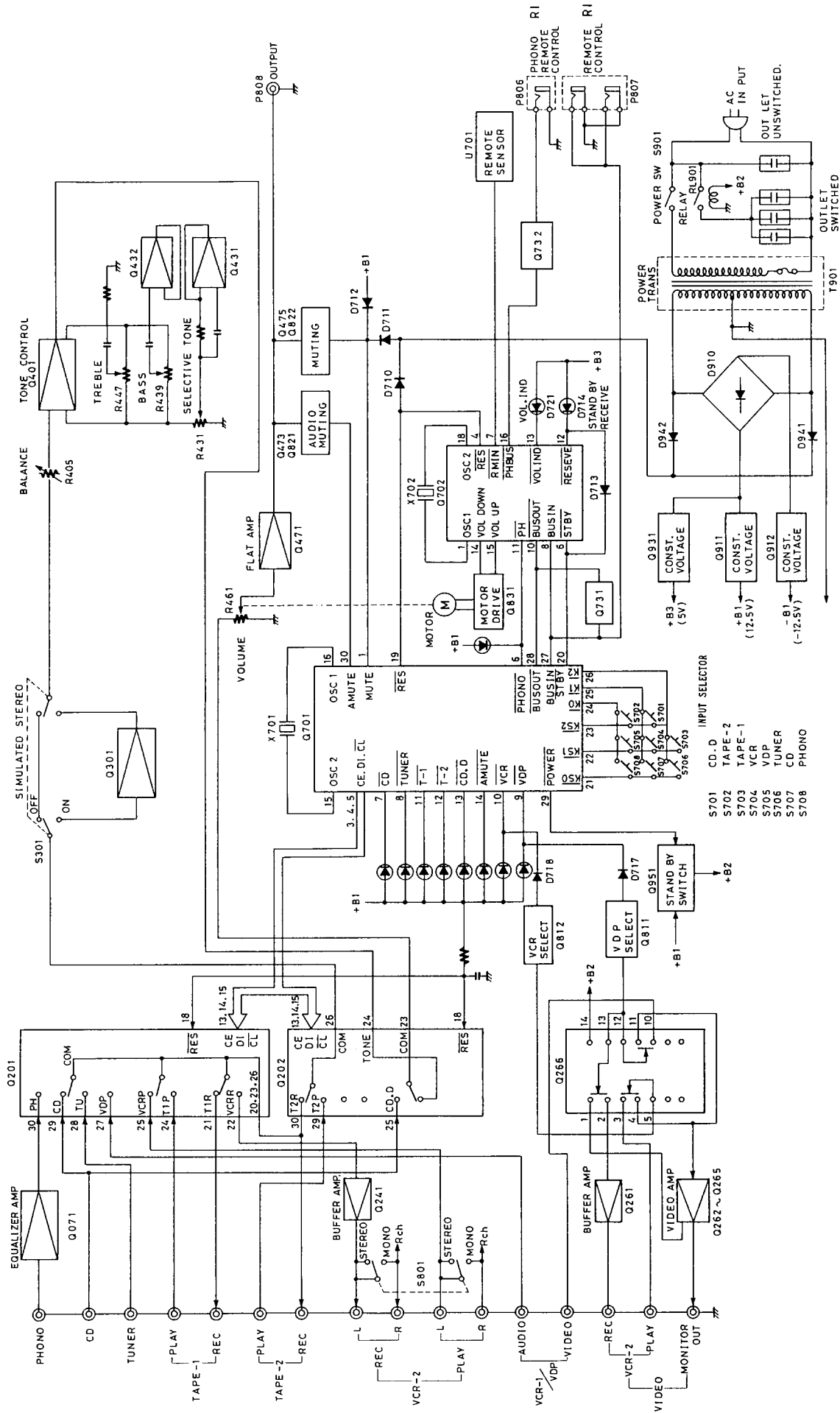
General
Power Supply: AC120V, 60Hz
Dimensions (W x H x D): 435 x 110 x 267mm
17-1/8" x 4-5/16" x 10-1/2"
Weight: 3.7kg, 8 lbs.

REMOTE CONTROL TRANSMITTER (RC-118S)

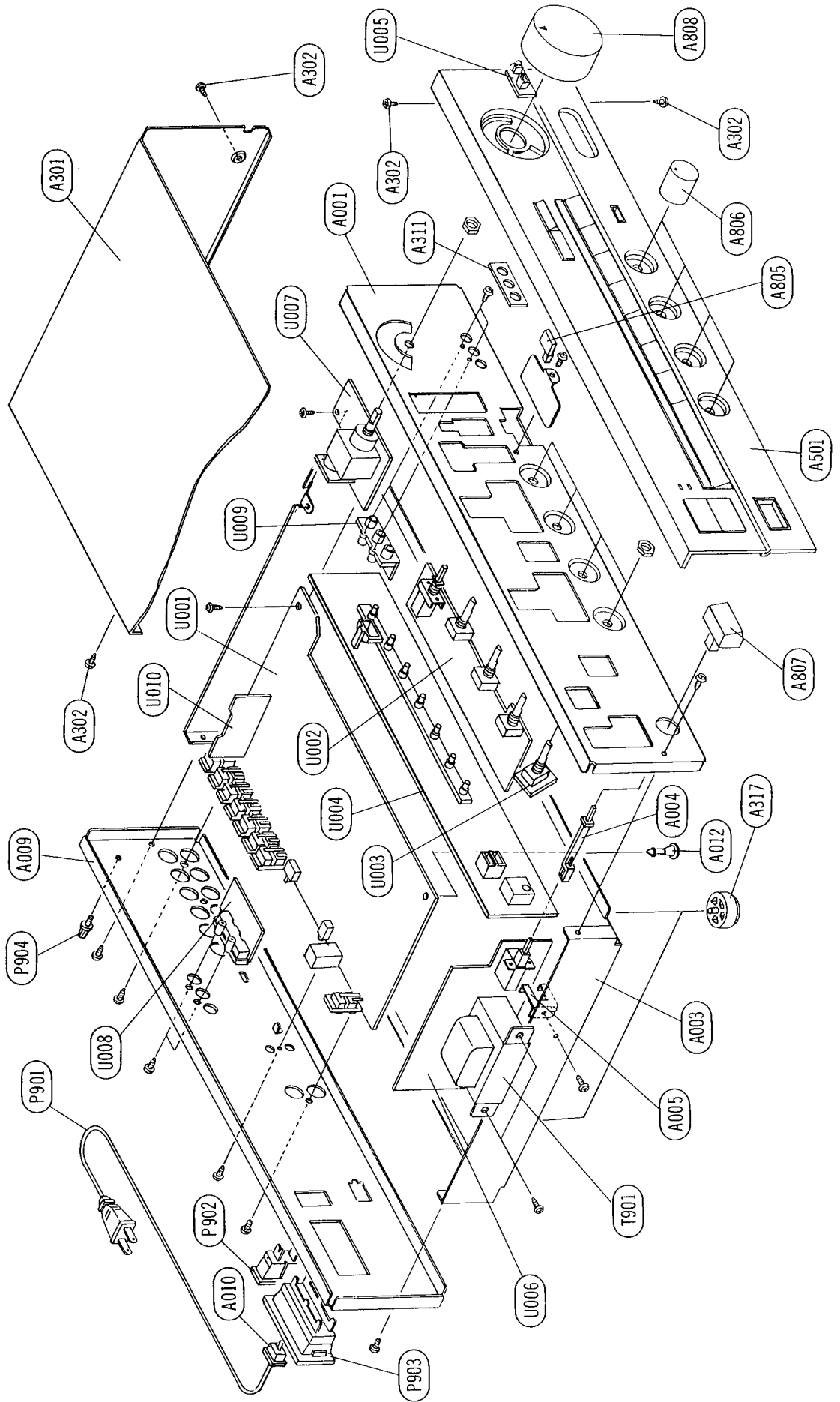
Transmitter: Infrared
Signal range: Approx. 5 meters, 16ft
Power supply: Two "AA" batteries (1.5V x 2)
Dimensions (W x H x D): 64 x 18 x 176mm
2-1/2" x 11/16" x 6-15/16"
Weight: 130 grams. 4.6 oz.
(including batteries)

Specifications and features are subject to change without notice.

BLOCK DIAGRAM



CHASSIS-EXPLODED VIEW



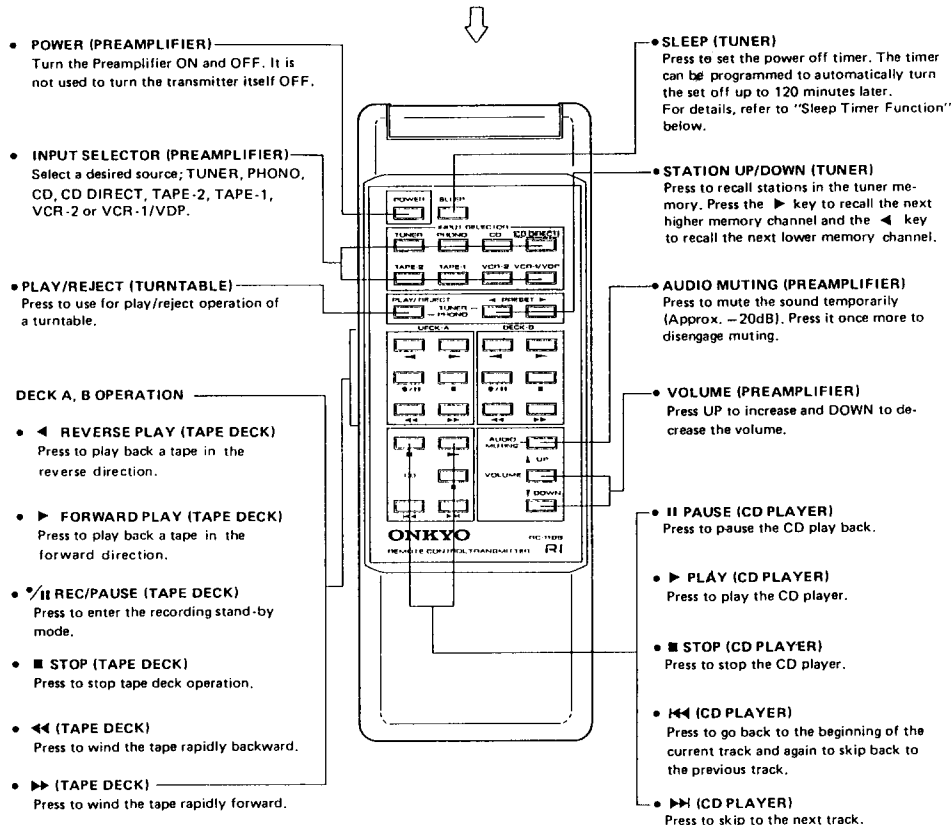
CHASSIS-EXPLODED VIEW-PARTS LIST

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.

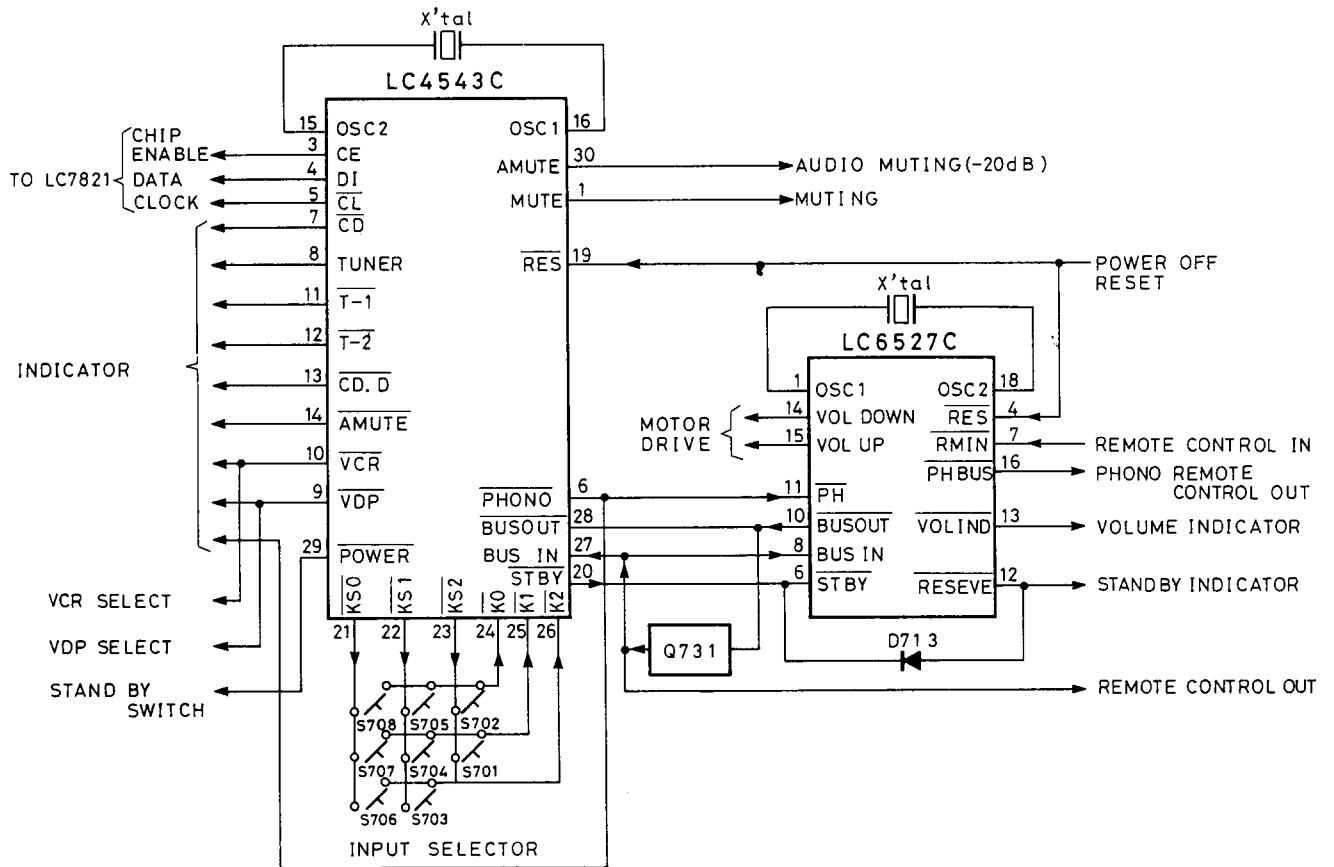
REMOTE CONTROL TRANSMITTER (RC-118S)

Remote Control Signal Transmission Window

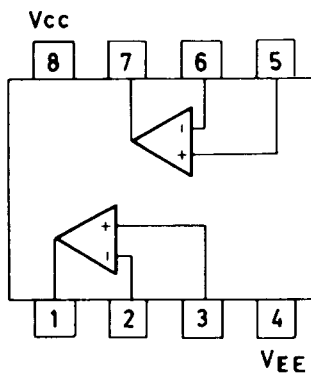


IC BLOCK DIAGRAM

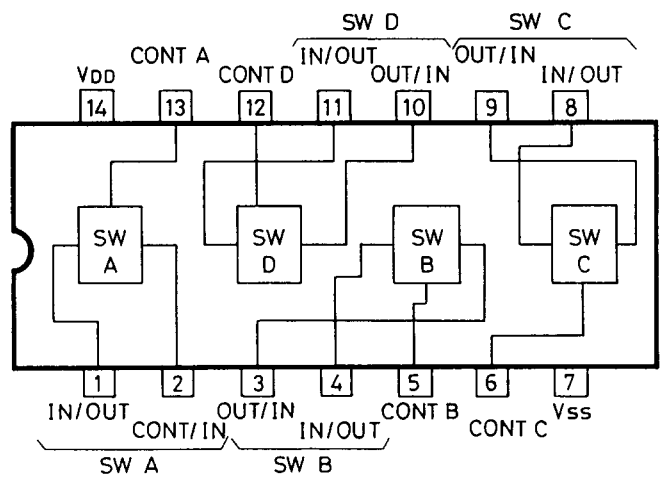
LC6543C, LC6527C (Micro Computer)



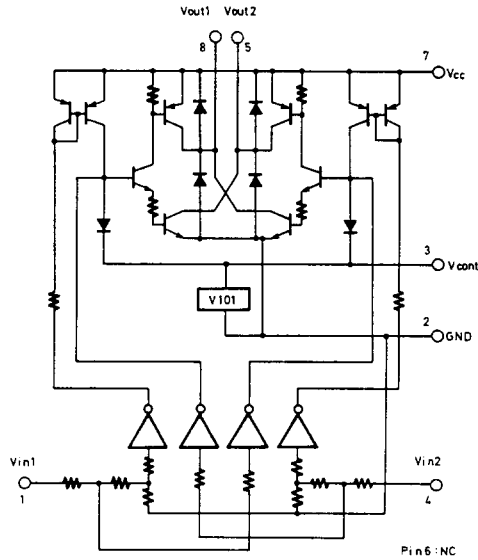
NJM 4558DX (OP Amp) MPC 4570C



4066B



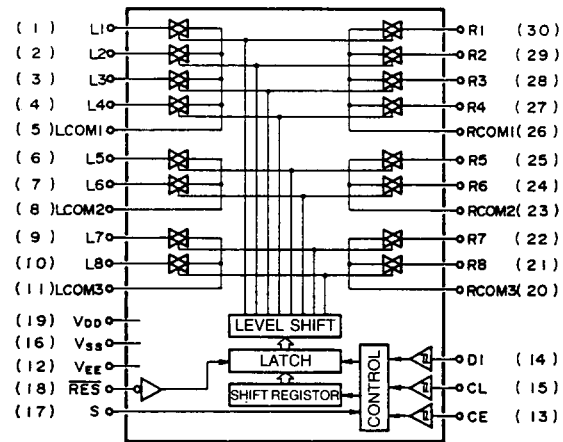
LB1630 (Motor Drive)



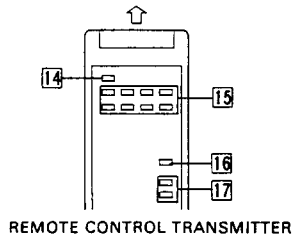
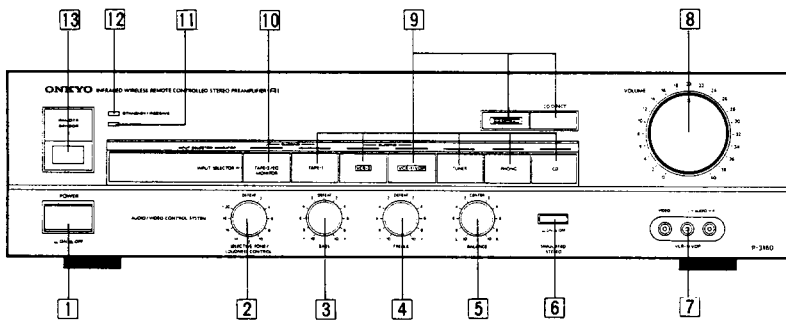
TRUTH TABLE

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 10MΩ at 500V.

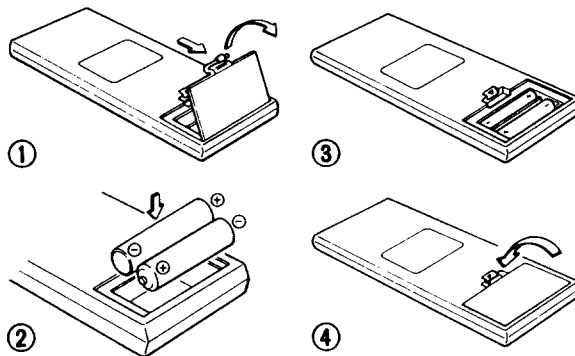
2. Remote Control Transmitter Batteries

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
	ICs	
Q201,(Q202)	22240079	LC7821
Q241	222502	NJM4558DX
Q471	22240050	MPC4570C
	Transistors	
Q473~Q476	2212285 or 2212286	2SC2878A or 2SC2878B
Q811,Q812	2211455 or	2SA1015GR or
Q821,Q822	2210803	2SA733P
Q911,Q931	2201754 or 2201755	2SD1913R or 2SD1913Y
Q912	2201764 or 2201765	2SB1274R or 2SB1274Y
Q951	2211504	2SA950Y
	Diodes	
D251,D712	223150 or 223124 or 223145	US1040 or 1S2473 or 1S2076TD
D710,D711	223163	ISS133
D910	223862 or 223890	W101 or W01RL
D911,D912	224151302 or 220451302 or 224651302	05AZ13Y or MTZ13B or HZ13EB2
D931	224150562 or 224450562 or 224650562	05AZ5.6Y or MTZ5.6B or HZ5.6EB2
D941,D942	223896F or 223880F	1N4003F or GP101N4003
D943	224151202 or 224451202 or 224651202	05AZ12Y or MTZ12B or HZ12EB2
	Capacitors	
C241~C244	354780229	2.2 μ F, 50V, Elect.
C251,C471		
C472,C477		
C478		
C252,C253	354780339	3.3 μ F, 50V, Elect.
C479,C480		
C473,C474	354721019	100 μ F, 6.3V, Elect.
C811,C812	354780109	1 μ F, 50V, Elect.
C821		
C911	354763329	3300 μ F, 35V, Elect.
C912	354761029	1000 μ F, 35V, Elect.
C913,C914	354762219	220 μ F, 35V, Elect.
C931,C932		
C915,C916	354741019	100 μ F, 16V, Elect.
C919,C920	354744719	470 μ F, 16V, Elect.
C934	354722219	220 μ F, 6.3V, Elect.
C941	354741009	10 μ F, 16V, Elect.
	Resistors	
R911	441622204F	22 Ω , 1W, Metal oxide film
R912	441521514F	150 Ω , 1/2W, Metal oxide film
R931	441625604F	56 Ω , 1W, Metal oxide film
R941	442525614F	560 Ω , 1/2W, Metal oxide film
	Switch	
S801	25065286	NSS-22112 Slide
	Terminals	
P801~P803	25045213	NPJ-6PDBL92
P808	25045182	NPJ-2PDBL72
	Jacks	
P806	25045114	HSJ1011-01-530
P807	25045172	HSJ1003-01-020

CIRCUIT NO.	PART NO.	DESCRIPTION
	Radiator	
	27160211	RAD-68
	Bracket	
	27141059	

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

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

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

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

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

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

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

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

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

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

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

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

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

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

CIRCUIT NO.	PART NO.	DESCRIPTION
IC		
Q266	222840661	4066B
Transistors		
Q261~Q264	2211255 or 2210746	2SC1815GR or 2SC945AP
Q265	2211454	2SA1015Y
Capacitor		
C261,C264 C262,C263 C265,C266	354724719 354741009	470 μ F, 6.3V, Elect. 10 μ F, 16V, Elect.
Terminal		
P805	25045205	NPJ-3PDYE085

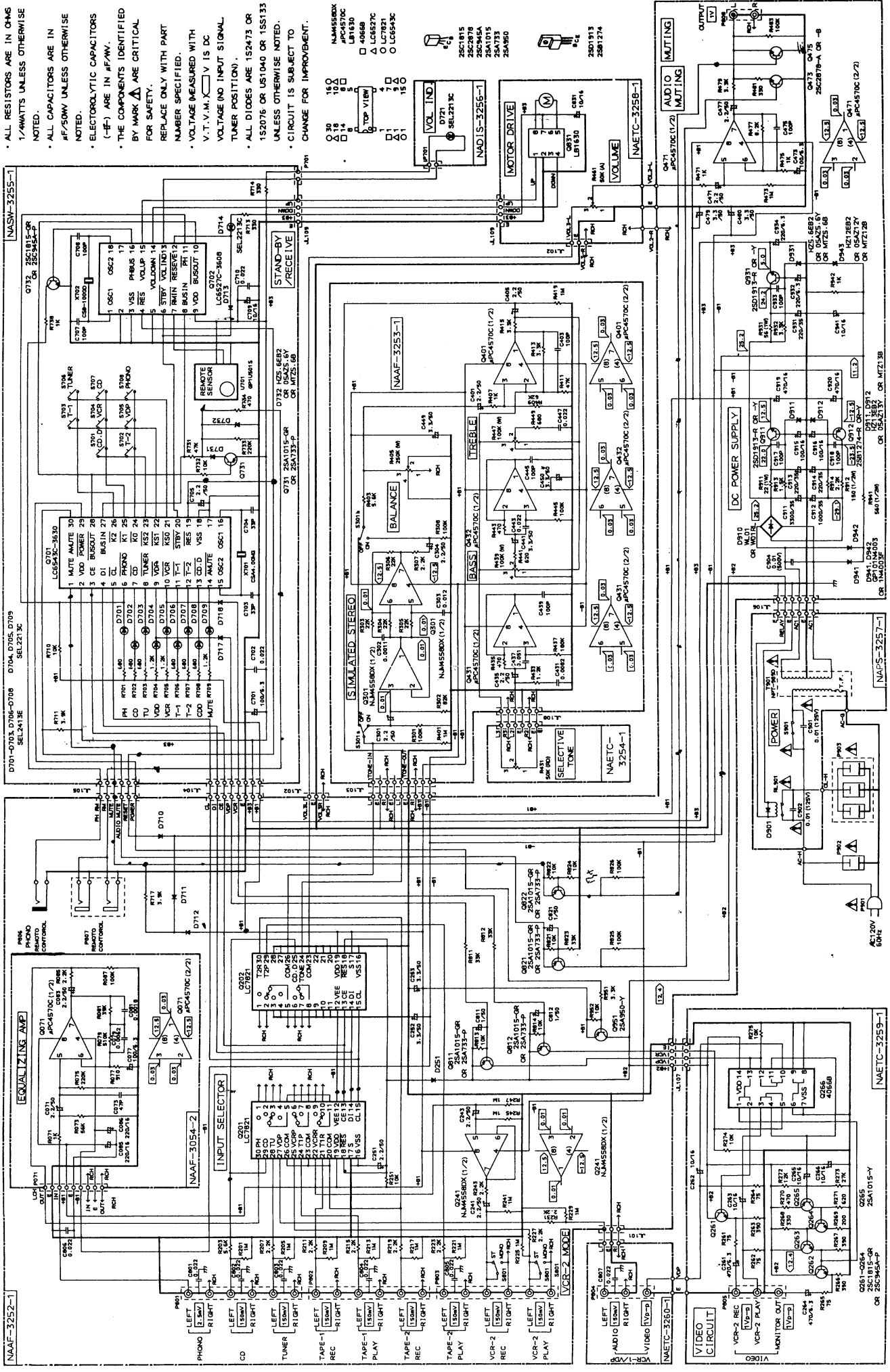
VCR INPUT TERMINAL PC BOARD (NAETC-3260-1)-PARTS LIST

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

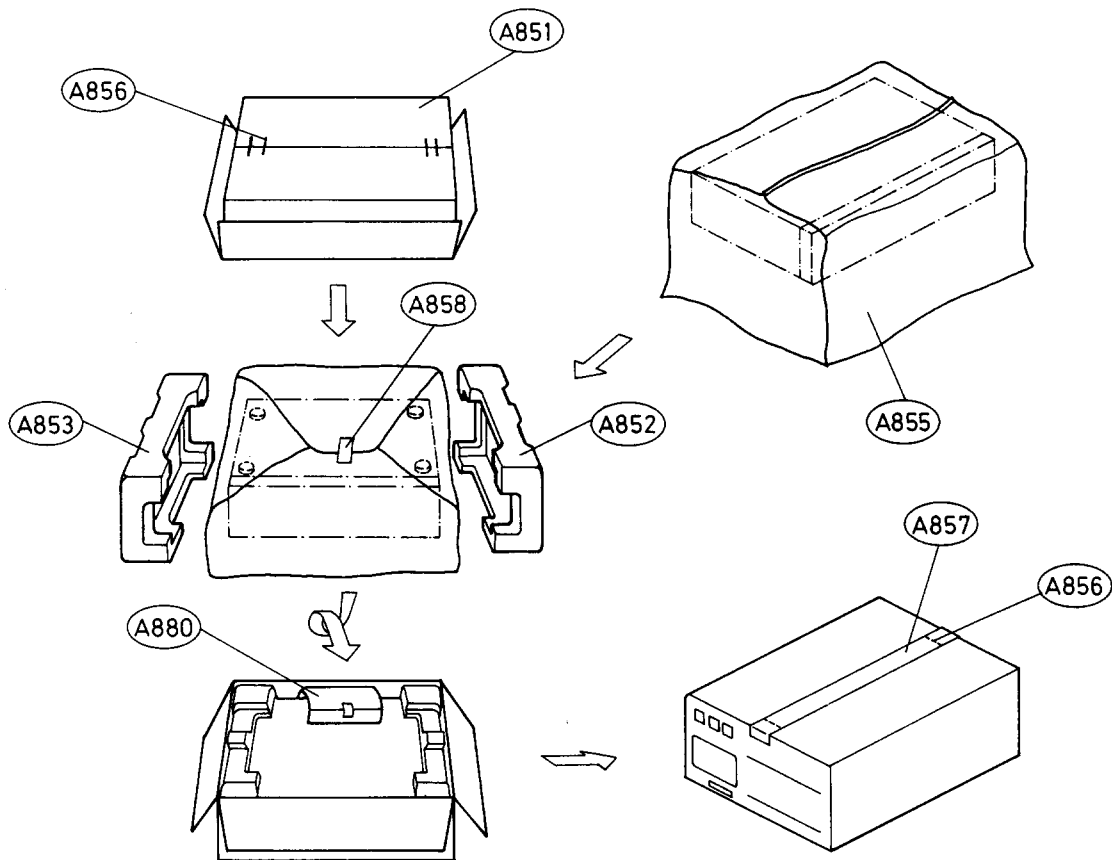
CHEMATIC DIAGRAM

NOTES

- ALL RESISTORS ARE IN OHMS UNLESS OTHERWISE NOTED.
- ALL CAPACITORS ARE IN $\mu\text{F}/50\text{M}$ UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS ARE IN $\mu\text{F}/\text{M}$.
- THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR SAFETY.
- REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE MEASURED WITH V.T.V.M. X \square IS DC VOLTAGE AND INPUT SIGNAL TUNER POSITION.
- ALL DIODES ARE 1S2473 OR 1S2076 OR U51040 OR 1S5133 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

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