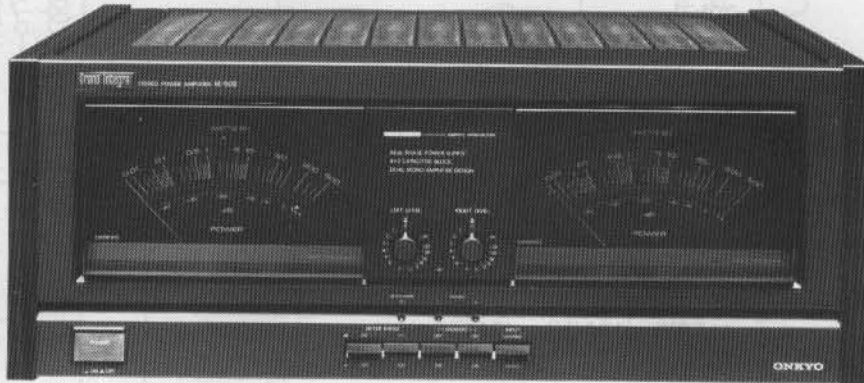


# ONKYO SERVICE MANUAL

## Stereo Power Amplifier

### MODEL M-508



UD	120V AC, 60Hz
UG	220V AC, 50Hz
UQ	240V AC, 50Hz
UW	120V or 220V AC, 50/60Hz

#### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  $\Delta$  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

Music Power Output:	2 × 450 watts at 4 ohms, 1 kHz (DIN)	2 × 260 watts at 8 ohms, 1 kHz (DIN)
Continuous Power Output:	2 × 315 watts at 4 ohms, 1 kHz (DIN)	2 × 215 watts at 8 ohms, 1 kHz (DIN)
	200 watts per channel, min. RMS, at 8 ohms, both channels driven, from 20 Hz to 20 kHz, with no more than 0.003% THD	
Total harmonic distortion:	0.003% at rated power 0.003% at 1 watt output	
Intermodulation distortion:	0.003% at rated power	
Frequency response:	+0, -1.5 dB at 1 Hz to 100kHz	
Input sensitivity:	1.0V	
Input impedance:	20kohms	
Damping factor:	140 (8 ohms, 1 kHz)	
S/N ratio:	120 dB (IHFA, Shorted)	
Outputs:	SPEAKERS 1 & 2, AC OUTLET (120V models only)	
Inputs:	INPUT (VARIABLE, DIRECT)	
Power Supply:	European models:	AC 220V, 50Hz
	Canadian models:	AC 120V, 60Hz
	British and Australian models:	AC 240V, 50Hz
	Worldwide models:	AC 120V, 60Hz
	(Switchable):	AC 220V, 50Hz
Dimensions:	465(W) × 185(H) × 426(D) mm 18 5/16" × 7 9/32" × 16 25/32"	
Weight:	25 kg, (55.1 lbs.)	

Specifications and features are subject to change without notice.

## PRECAUTIONS

### 1. Replacing the fuses

For continued protection against risk fire, replace only with same type and same rating fuse.

CIRCUIT NO.	PART NO.	DESCRIPTION
F801, F802	252052	7A (ST-6), Primary fuse (120V, 120V/220V model)
F803, F804	252077	4A-SE-EAK, Primary fuse (220V, 120V/220V, 240V model)
F702	252044	2A (ST-6), Secondary fuse (120V, 120V/220V model)
F702	252074	2A-SE-EAK, Secondary fuse (220V, 240V model)

### 2. Replacing the lamp

This unit uses the lamp listed below.

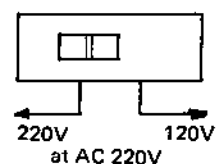
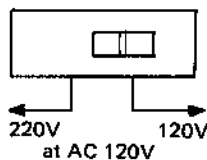
CIRCUIT NO.	PARTS NO.	DESCRIPTION
PL881, PL882	210191	PL14V 150mA (Green)
PL883, PL884		
PL885, PL886	210192	PL14V 150mA (Orange)
PL887, PL888		

### 3. Insulation resistance measurement (Only U.S.A. model) -

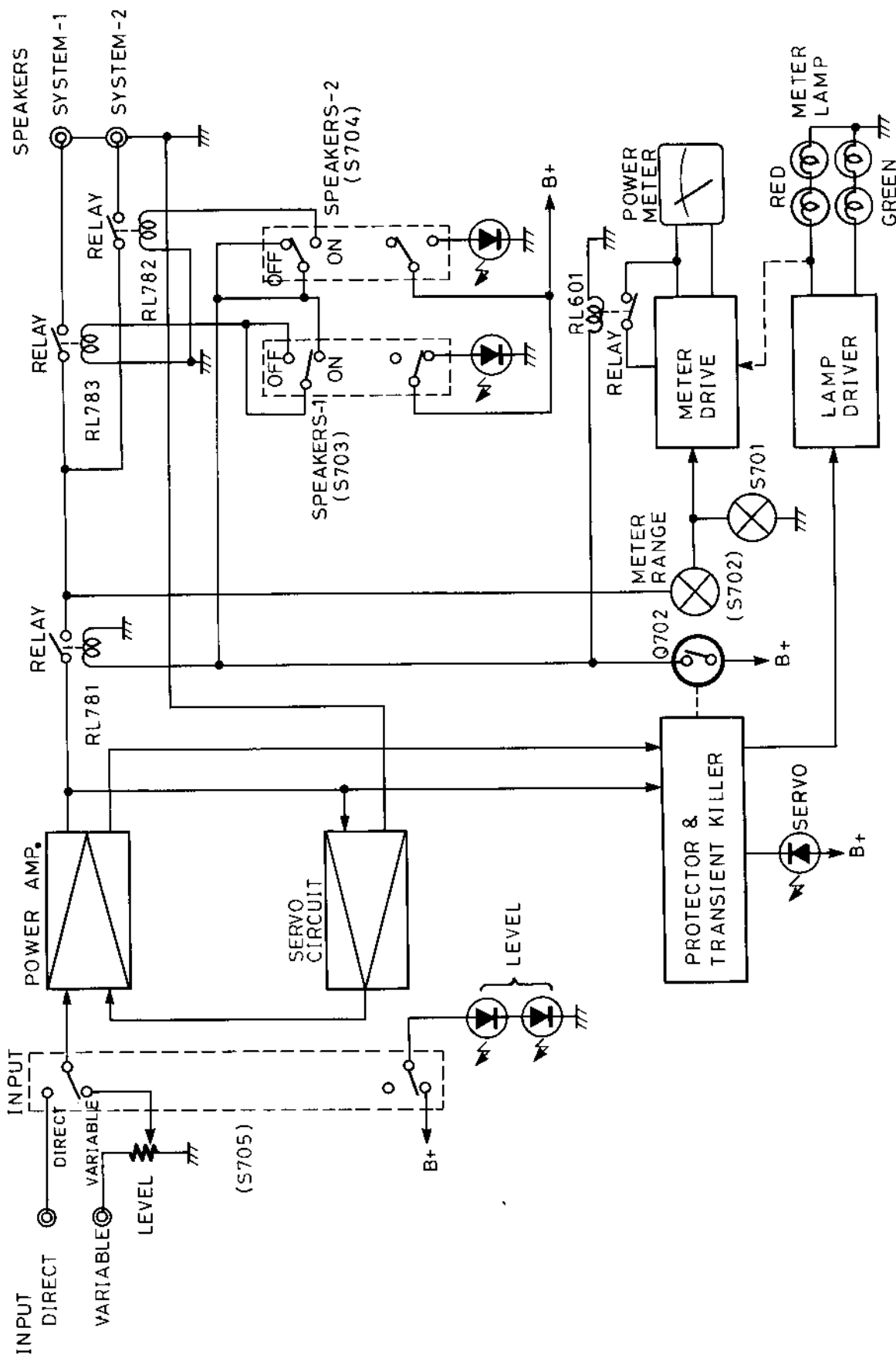
Connect the insulating-resistance tester between the plug of power supply cable and the terminal GND on the back panel. Specifications; More than 10 MΩ at 500V.

### 4. Voltage selector (rear panel)

Worldwide 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 up or down position. Confirm that the switch has been moved all the way to the 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.



**BLOCK DIAGRAM**



## ADJUSTMENT PROCEDURES

### 1. Preparation

- (1) Leave the machine in a normal condition parallel to the work bench, maintaining a clearance of 15mm from the bottom for air circulation.
- (2) Set the level to minimum with no load and no signal.
- (3) When making the adjustment, there must be no breeze blowing from the outside.

### 2. Zero adjustment of meter

- (1) Turn power OFF.
- (2) Make the adjustment with the zero adjustment knob to set the meter needle to zero.

Caution: Do not make the adjustment immediately after turning off the power.

### 3. Adjustment of idling current

- (1) Turn ON the power switch, and leave the unit as is for about 5 minutes.
- (2) Adjust the semi-fixed resistor R423 (R424) so that the voltage between the terminals  $V_{CT}$  and  $I_{ID}$  of the printed circuit board NAPA-2625 is 15mV.

### 4. Meter circuit offset adjustment

- (1) Adjust the semi-fixed resistor R645 (R646) of the printed circuit board NAMA-2615 so that the meter needle is at zero.

### 5. Meter circuit level adjustment

- (1) Input the 1kHz signal from the low frequency oscillator so that the amplifier output is 12.65V (22.0db).
- (2) Adjust the semi-fixed resistor R613 (R614) of the printed circuit board NAMA-2615 so that the meter needle is at 0db.

Caution: The adjustment must be made while inputting the signal to a each single channel of the L and R channels.

### 6. Operating check of protection circuit

- (1) When the power switch is turned ON,
  - 1) Even though there is a signal input, the meter should have no deflection.
    - The meter lighting lamps PL885, PL886, PL887, and PL888 (red) light.
    - SERVO OPERATION LED does not light.
  - 2) After about 5 minutes, relay RL781 of the NAOP-2619 printed circuit board and relay RL601 of NAMA-2615 go ON.
    - SERVO OPERATION LED lights.
    - The meter lighting lamps change to PL881, PL882, PL883, and PL884 (green).
    - When SPEAKER SWITCH 1 and 2 are turned ON, relay RL782 and RL783 go ON.
    - The meter needle deflects in response to the signal.
- (2) When the power is turned OFF,
  - Immediately all relays go OFF.

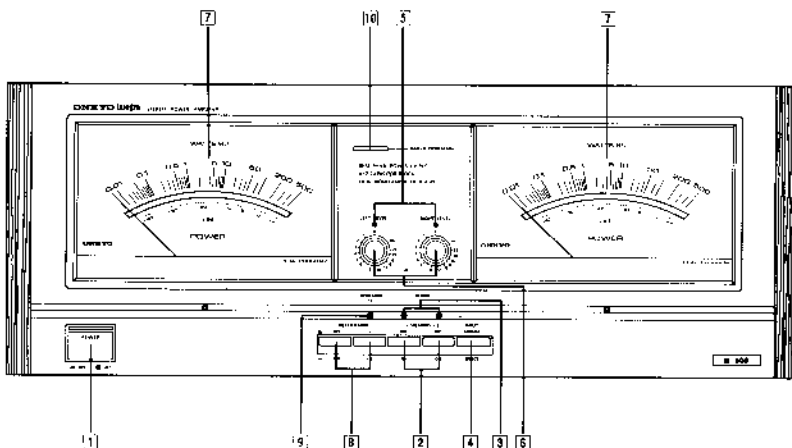
### 7. Check of direct current detection circuit of protection circuit

- (1) With no load, when 1V DC is input, the speaker relay operates, the SERVO OPERATION LED goes out, and the meter lighting lamps change to red.
- (2) Make the same check with -1V DC.

Caution: During this test, there should be absolutely no load connected and the load terminals must not be shorted.

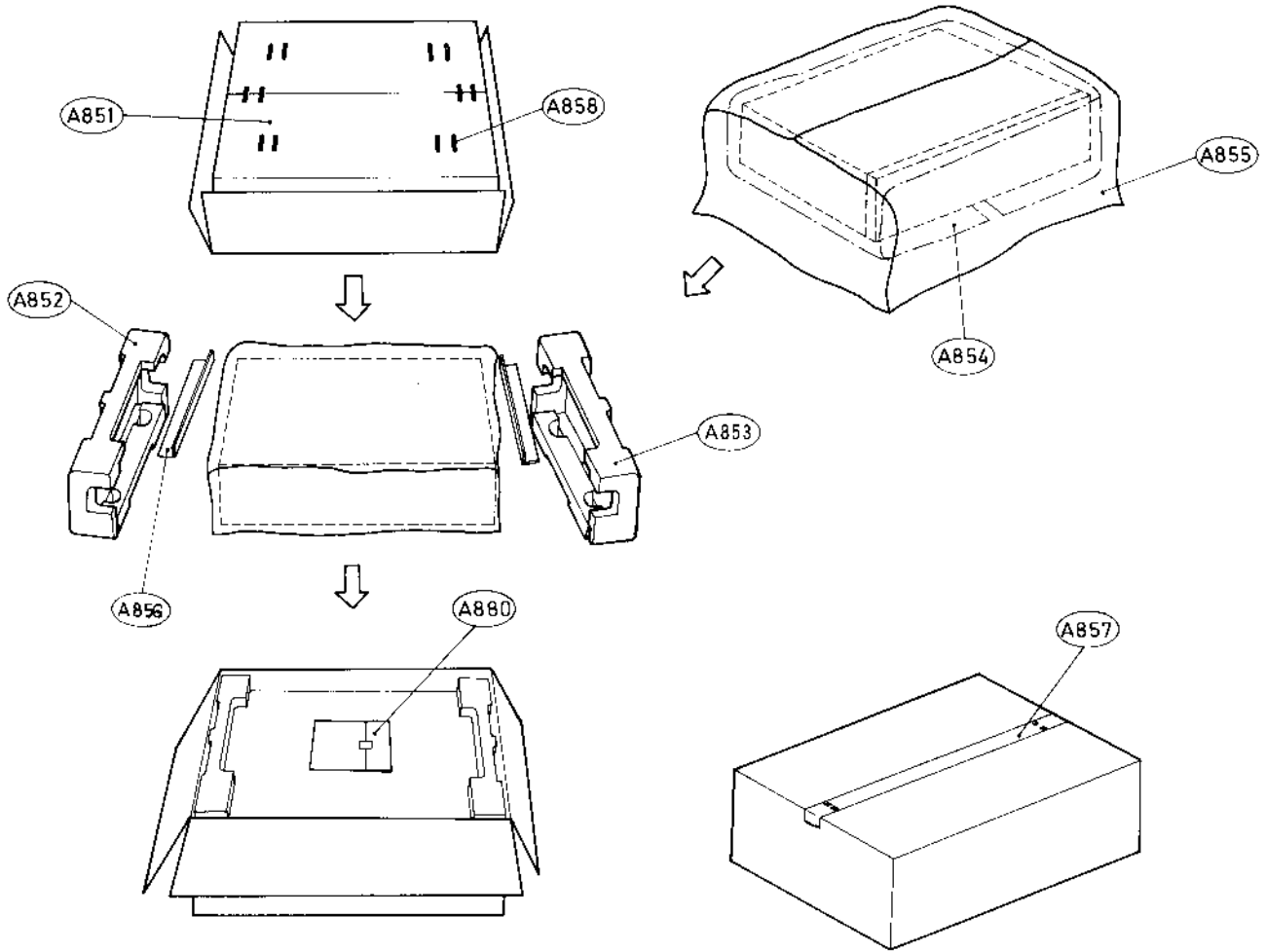
Note: When the protection circuit operates due to an abnormality in the circuit, after several seconds, the protection circuit holds. Also, even after the cause of the abnormality is eliminated, the circuit is held as is. To cancel, turn the power OFF for several minutes.

## FRONT PANEL FACILITIES



1. Power Switch (POWER)
2. Speaker Selector Switches (SPEAKERS)
3. Speaker Selector Indicators (SPEAKERS)
4. Input Selector Switch (INPUT)
5. Input Selector Indicators
6. Level Controls (LEFT/RIGHT LEVEL)
7. Peak Power Meters
8. Meter Range Selector Switches (METER RANGE)
9. Meter Range Indicator (METER RANGE)
10. Servo Operation Indicator (SERVO OPERATION)

# PACKING PROCEDURES

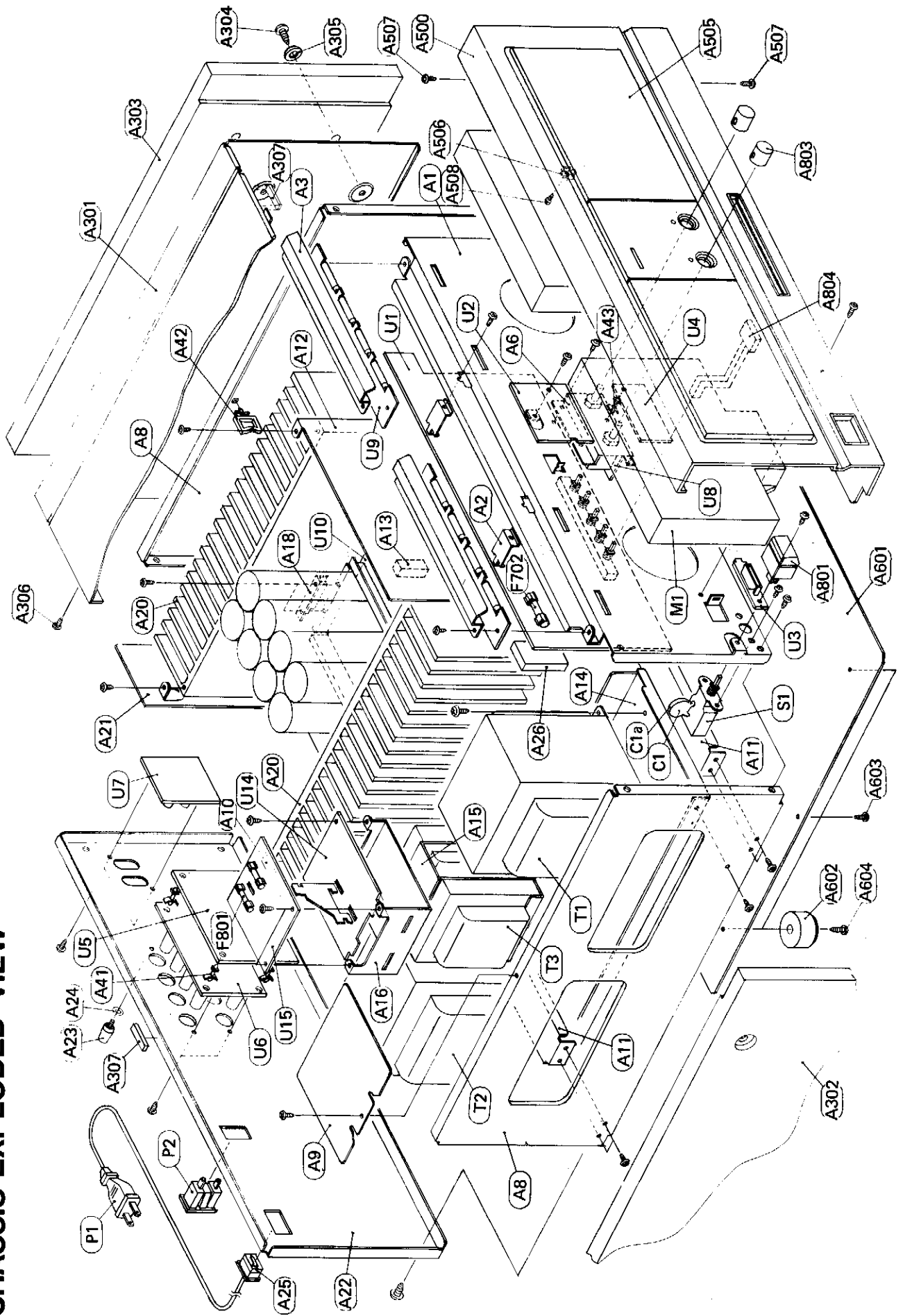


REF NO.	PARTS NO.	DESCRIPTION	
A851	29051307	Master carton box	
A852	29091081	Pad ass'y, left	
	29091087	Pad ass'y, left	[X]
A853	29091084	Pad ass'y, right	
A854	29095319	500 x 1000mm, Protection sheet	
A855	29100038A	720 x 950mm, Poly-vinyl bag	
A856	29095447	Sheet (P)	
A857	260012	Damplon tape	
A858	282301	Sealing hook	
A880	Accessory bag ass'y		
	29341001	Instruction manual	[D][N]
	29341002	Instruction manual	[G][W][Q]
	29341009	Instruction manual	[X]
	29365006-7	Warranty card	[N]
	29365012A	Warranty card	[X]
	29368002C	Service station list	[N]
	29358002C	Service station list	[X]
	2010097	Connection cable	
	29100006A	250 x 350mm, Poly-vinyl bag for accessory	
	25055018	CV-K-1, Conversion plug	[W]
	25055251	CV-CP, Conversion plug	[W]
	28330072	Cap (AC Outlet)	[X]

## NOTE

- [D]: Only 120V models
- [G]: Only 220V models
- [W]: Only 120V/220V models
- [N]: Only U.S.A. models
- [X]: Only Military market models
- [Q]: Only British and Australian models

# CHASSIS-EXPLODED VIEW



## CHASSIS-EXPLODED VIEW-PARTS LIST

REF NO.	PARTS NO.	DESCRIPTION	REF NO.	PARTS NO.	DESCRIPTION
A1	27110285A	Front bracket	U1	17818515-1	NAMA-2615-1, Meter and protector circuit pc board ass'y
A2	27141064	Bracket (FPC)			
A3	27141065A	Bracket (LAMP)	U2	17814515 1A	NAMA-2615 1A, Meter and protector circuit pc board ass'y [G] [Q]
A6	27141066	Bracket (VOL)			
A8	27115204A	Side bracket	U3	17818516-1	NADIS-2616 1, Volume/Servo LED pc board ass'y
A9	28175129	Insulating plate			
A10	29360626-1	Label	U4	17818517 1	NADIS 2617-1, Power LED pc board ass'y
A11	27130427	Bracket			
A12	27150212B	Shield plate	U5	17818518-1	NADIS-2618-1, Speaker LED pc board ass'y
A14	27130428A	Bracket (PT)			
A15	27130429	Bracket (PHT)	U6	17818519-1	NAOP-2619-1, Relay circuit pc board ass'y
A16	27141067	Bracket (PC)			
A18	27141068	Bracket (HE)	U7	17818520-1	NAST-2620 1, Speaker terminal pc board ass'y
A20	27160186	Radiator			
A21	27150215A	Shield plate	U8	17814520-1A	NAST 2620 1A, Speaker terminal pc board ass'y [G] [W] [X] [Q]
A22	27120851	Back panel			
		[G]	U9	17818521-1	NAPJ-2621-1, Input terminal pc board ass'y
		[W]			
		[X]			
		[Q]			
A23	25060041	3 x 14mm, Ground terminal			
A24	87644010	W4 x 10F(BC), Washer	U10	17818522-1	NAVR-2622-1, Level volume pc board ass'y
A25	27300750	#2271, Bushing (Power supply cable)			
		[W]	U11	17818523-1	NAPL-2623-1, Meter lamp pc board ass'y
		[X]			
		[Q]	U12	17818525 1	NAPA-2625-1, Power amplifier pc board ass'y
		[W]			
		[X]	U13	17818526 1	NACC-2626 1, Transistor pc board ass'y
		[Q]			
A26	28140676	1r x 50 x 30mm, Cushion	U14	17818527 1	NADA-2627-1, Transistor pc board ass'y
A30	28330072	Cap (AC outlet)			
A40	27190009	Holder	U15	17818528-1	NADA-2628 1, Transistor pc board ass'y
A41	27190480	Holder			
A42	27300243	WS-2WS, Wire holder	U16	17818529-1	NARC-2629-1, Power supply circuit pc board ass'y
A43	27190458	WLS-06-0, Holder			
A301	28184319B	Top cover	U17	17818530 1	NAFU 2630-1, Fuse pc board ass'y
A302	28185257	Side board (L)			
A303	28185259	Side board (R)	U18	17814530 1A	NAFU-2630 1A, Fuse pc board ass'y [G] [Q]
A304	836440303	4STV x 30FN(BC), Screw			
A305	870086	4 x 12BS(BC), Special washer	U19	17810530-1B	NAFU-2630-1B, Fuse pc board ass'y [W] [X]
A306	838440089	4TTB + 8C(BC), Tapping screw			
A307	28140020	4 x 10 x 40mm, Cushion			
A500	17818121	Front panel ass'y			
		[N] [X]			
A505	28191351B	Clear plate			
A506	27190451	Holder, (Grass)			
A508	833430080	3TTP+8P(BC), Tapping screw			
A601	27170226-1A	Bottom board			
A602	280889B	Bottom leg			
A603	831430088	3TTW +8B(BC), Tapping screw			
A604	831430168	3TTW + 16B(BC), Tapping screw			

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

## NOTE

- [D]: Only 120V models  
 [G]: Only 220V models  
 [W]: Only 120V/220V models  
 [N]: Only U.S.A. models  
 [X]: Only Military market models  
 [Q]: Only British and Australian models





**CIRCUIT NO. PARTS NO. DESCRIPTION**

Holders  
27190319A Holder (LED)

**RELAY CIRCUIT PC BOARD (NAOP-2619-1)**

CIRCUIT NO.	PARTS NO.	DESCRIPTION
D781~D783	Diodes 223145	1S2076TD
L781~L784	Coils 231015	S-0.8C
C783~C786	Capacitors 379121245	0.12μF, 50V, Film (DEW)
R781~R784 R785,R786	Resistors 441620514 441720514	5.1 Ω, 1W, Metal oxide film 5.1 Ω, 2W, Metal oxide film
RL781 ~RL783	Relaies 25065036	NRL-4P3A-DC12-01
JC407,JC408 JC603	Sockets 25050273 25050268	NSCT-9P101 NSCT-4P96

**SPEAKER TERMINAL PC BOARD (NAST-2620-1, NAST-2620-1A)**

CIRCUIT NO.	PARTS NO.	DESCRIPTION
P791,P792 P791,P792	Terminals 25060100 25060101	NTM-4PDMN40 NTM-4PDMN41 [G][W][X][Q]

**INPUT TERMINAL PC BOARD (NAPJ-2621-1)**

CIRCUIT NO.	PARTS NO.	DESCRIPTION
P101	Terminal 25045196	NPJ-4PDBL77

**LEVEL VOLUME PC BOARD (NAVR-2622-1)**

CIRCUIT NO.	PARTS NO.	DESCRIPTION
R151,R152	Resistors 5104183A	N27DGL30KB30
P151 P152	Sockets 2000551 2000552	NSAS-6P507 NSAS-6P508

**METER LAMP PC BOARD (NAPL-2623-1)**

CIRCUIT NO.	PARTS NO.	DESCRIPTION
PL881 ~PL884 PL885 ~PL888	Lamps 210191 210192	PL14V150mA (Green) PL14V150mA (Orange)

**POWER AMPLIFIER PC BOARD (NAPA-2625-1)**

CIRCUIT NO.	PARTS NO.	DESCRIPTION
Q401~Q404	Transistors 2211732 or 2211733	2SC1845(F) or 2SC1845(E)
Q405,Q406	2211792 or 2211793	2SA992(F) or 2SA992(E)
Q407,Q408	2211414	2SC1627(Y)
Q411~Q414	2211782 or 2211783	2SA991(F) or 2SA991(E)
Q415~Q418	2211902 or 2211903	2SC1844(F) or 2SC1844(E)
Q421~Q424	2211359 or 2211358	2SA949-Y(ONK) or 2SA949-O(ONK)
Q425,Q426	2211639 or 2211638	2SC2229-Y(ONK) or 2SC2229-O(ONK)
Q427,Q428	2211792 or 2211793	2SA992(F) or 2SA992(E)
Q429,Q430	2212560	2SC3333
Q431,Q432	2211255	2SC1815(GR)
Q433,Q434	2211455	2SA1015(GR)
Q435,Q436	2211639 or 2211638	2SC2229-Y(ONK) or 2SC2229-O(ONK)
Q437,Q438	2211359 or 2211358	2SA949-Y(ONK) or 2SA949-O(ONK)
Q441	2200394	2SC1625(Y)
Q442	2200404	2SA815(Y)

CIRCUIT NO.	PARTS NO.	DESCRIPTION
D401~D408	Diodes 223155	1SS138
D409~D412	225218	LTZ-MR15, LED
D413~D416	223162	1SS82
D417~D420	225218	LTZ-MR15, LED
D421,D422	223155	1SS138
D423,D424	223168	DA210S
D431,D432	223155	1SS138
D433,D434	223145	1S2076TD
D435~D438	223863	GP 30DL
D439~D442	223162	1SS82
D451,D452	2243293	MTZ22-C
D453	2243251	MTZ15-A
D454,D455	223155	1SS138

CIRCUIT NO.	PARTS NO.	DESCRIPTION
L401,L402	Coils 231098	NCH-4145

CIRCUIT NO.	PARTS NO.	DESCRIPTION
C405~C408	Capacitors 354723319	330 μF, 6.3V, Elect.
C413~C416	391241007	10μF, 16V, Elect. (MUSE)
C417,C418	379121025	0.001 μF, 50V, Film (DEW)
C423,C424	391241007	10μF, 16V, Elect. (MUSE)
C425~C428	379131035	0.01μF, 100V, Film (DEW)
C435,C436	379131045	0.1 μF, 100V, Film (DEW)
C437,C438	379122245	0.22μF, 50V, Film (DEW)
C443~C446	379124735	0.047 μF, 50V, Film (DEW)
C451,C452	354752209	22μF, 25V, Elect.
C453,C454	354751019	100 μF, 25V, Elect.
C455~C462	3504197	10000 μF, 90V, Elect.
C463~C466	354780339	3.3 μF, 50V, Elect.

CIRCUIT NO.	PARTS NO.	DESCRIPTION
R401~R404	Resistors 442525614	560 Ω, 1/2W, Metal oxide film
R405,R406	442523314	330 Ω, 1/2W, Metal oxide film
R411,R412	442521614	160 Ω, 1/2W, Metal oxide film
R413,R414	441625634	56 kΩ, 1W, Metal oxide film
R415,R416	442521534	15 kΩ, 1/2W, Metal oxide film
R423,R424	5225076	N10HR22KBDM, Semi-fixed
R425~R428	442520514	5.1 Ω, 1/2W, Metal oxide film
R429~R432	441724324	4.3kΩ, 2W, Metal oxide film

CIRCUIT NO.	PARTS NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
R433~R436	442521214	120 $\Omega$ , 1/2W, Metal oxide film	R805,R806	442527504	75 $\Omega$ , 1/2W, Metal oxide film
R445~R448	442523914	390 $\Omega$ , 1/2W, Metal oxide film	<b>FUSE PC BOARD (NAFU-2630-1,NAFU-2630-1A,NAFU-2630-1B)</b>		
R449,R450	442521204	12 $\Omega$ , 1/2W, Metal oxide film	<b>CIRCUIT NO.</b>	<b>PARTS NO.</b>	<b>DESCRIPTION</b>
R457~R460	442525104	51 $\Omega$ , 1/2W, Metal oxide film		Fuse holders	
R463,R464	442520514	5.1 $\Omega$ , 1/2W, Metal oxide film	F801a,F802a	250113	S-N5051
R465,R466	441720754	7.5 $\Omega$ , 2W, Metal oxide film	F803a,F804a	25050065	YSH403T [G][W][X][Q]
R467~R478	442520224	2.2 $\Omega$ , 1/2W, Metal oxide film		Terminals	
R479~R490	442521014	100 $\Omega$ , 1/2W, Metal oxide film	P801,P802	25060092	NTM-1S33
R491~R504	4000080	0.47 $\Omega$ , 5W, Metal plate	<b>NOTE</b>		
R505~R516	4000063	0.47 $\Omega$ , 2W, Metal plate	G: Only 220V models		
R531,R532	441621024	1k $\Omega$ , 1W, Metal oxide film	W: Only 120V/220V models		
R535	441724324	4.3k $\Omega$ , 2W, Metal oxide film	X: Only Military market models		
			Q: British and Australian models		
	Sockets				
JC403,JC404	25050267	NSCT-3P95			
JC405,JC406,JC409	25050270	NSCT-6P98			
	Bracket				
	27130430	Bracket (KE)			
	Bus plate				
	27300826A	Bus (S)			
	27300827A	Bus (C)			

**TRANSISTOR PC BOARD (NACC-2626-1)**

CIRCUIT NO.	PARTS NO.	DESCRIPTION
Q403(Q444)	Transistor 2212864 or 2212863	2SC3419(Y) or 2SC3419(O)
C463(C464)	Capacitor 379122235	0.022 $\mu$ F, 50V, Film (DEW)

**TRANSISTOR PC BOARD (NADA-2627-1)**

CIRCUIT NO.	PARTS NO.	DESCRIPTION
Q445(Q446)	Transistor 2201684 or 2201683	2SC3298A(Y) or 2SC3298A(O)

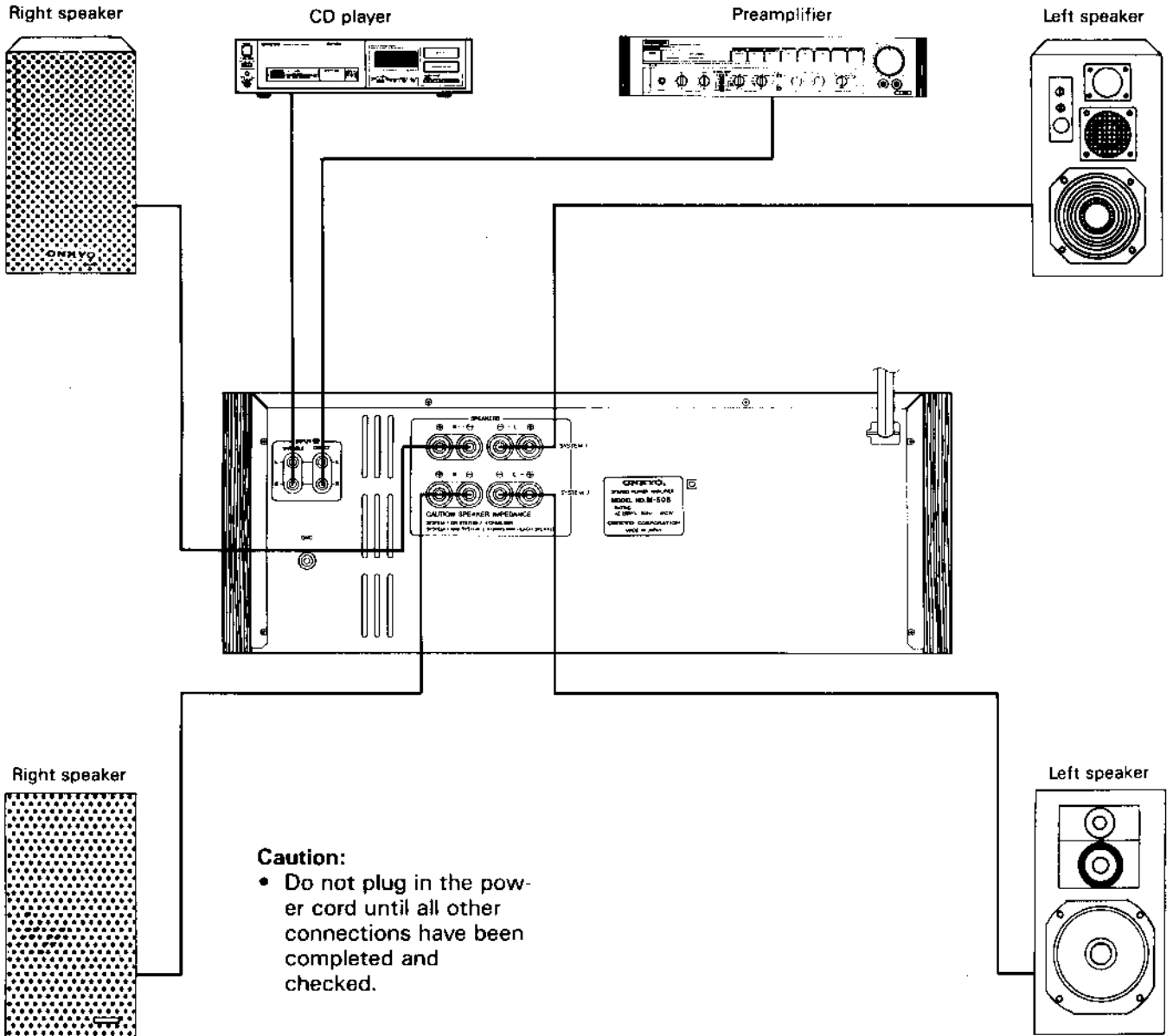
**TRANSISTOR PC BOARD (NADA-2628-1)**

CIRCUIT NO.	PARTS NO.	DESCRIPTION
Q447(Q448)	Transistor 2201674 or 2201673	2SA1306A(Y) or 2SA1306A(O)

**POWER SUPPLY CIRCUIT PC BOARD (NARC-2629-1)**

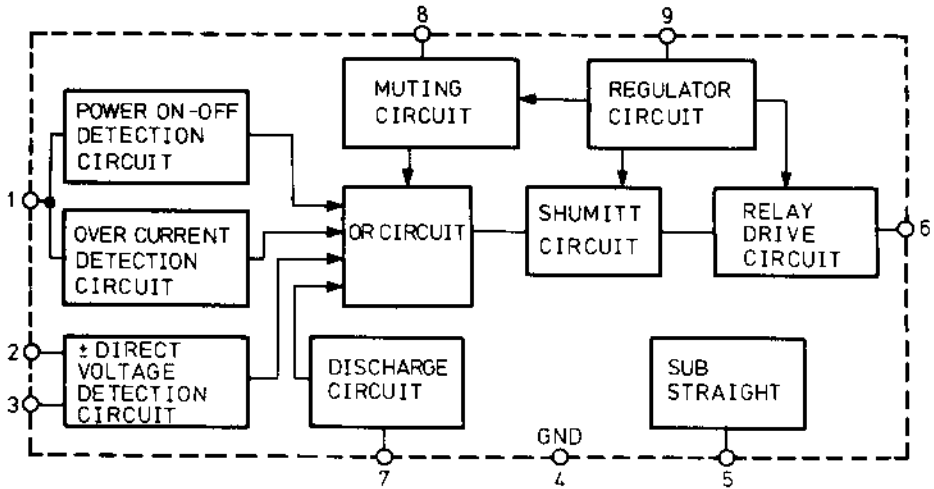
CIRCUIT NO.	PARTS NO.	DESCRIPTION
D801,D802	Diodes 22380008	RB604
C801~C804	Capacitors 375103345	0.33 $\mu$ F, 125V, Film (ME)
C805,C806	375104745	0.47 $\mu$ F, 125V, Film (ME)
R801~R804	Resistors 442522294	0.22 $\Omega$ , 1/2W, Metal oxide film

# SYSTEM CONNECTIONS

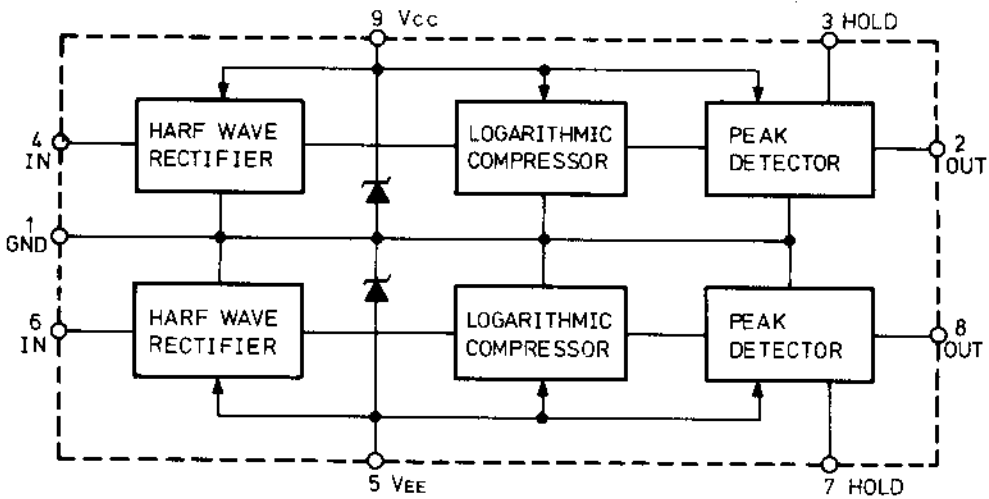


# IC BLOCK DIAGRAM

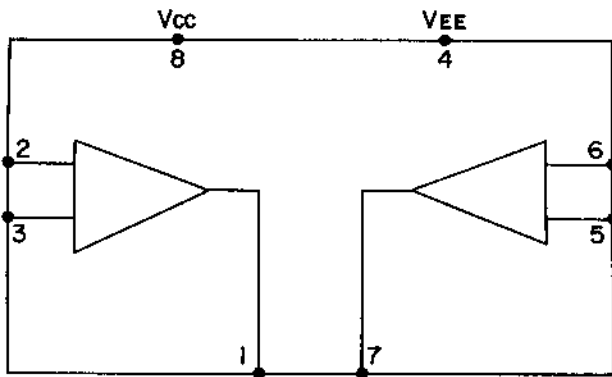
**TA7317p(protective Driver)**



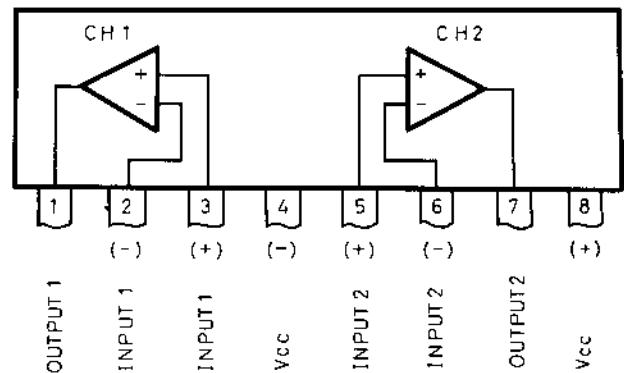
**TA7318p(Meter Driver)**



**NJM4558(OP Amp.)**

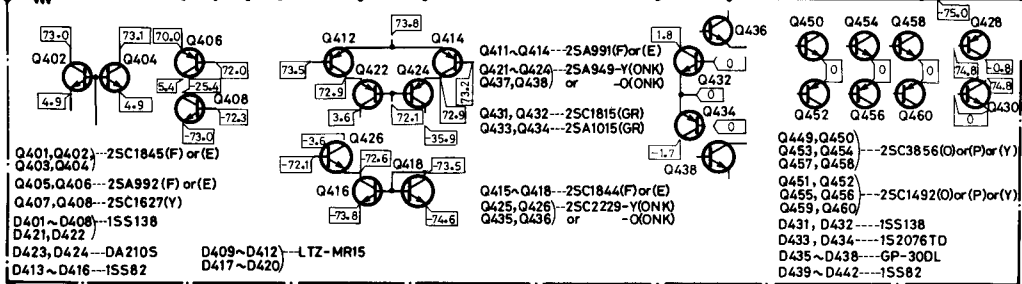
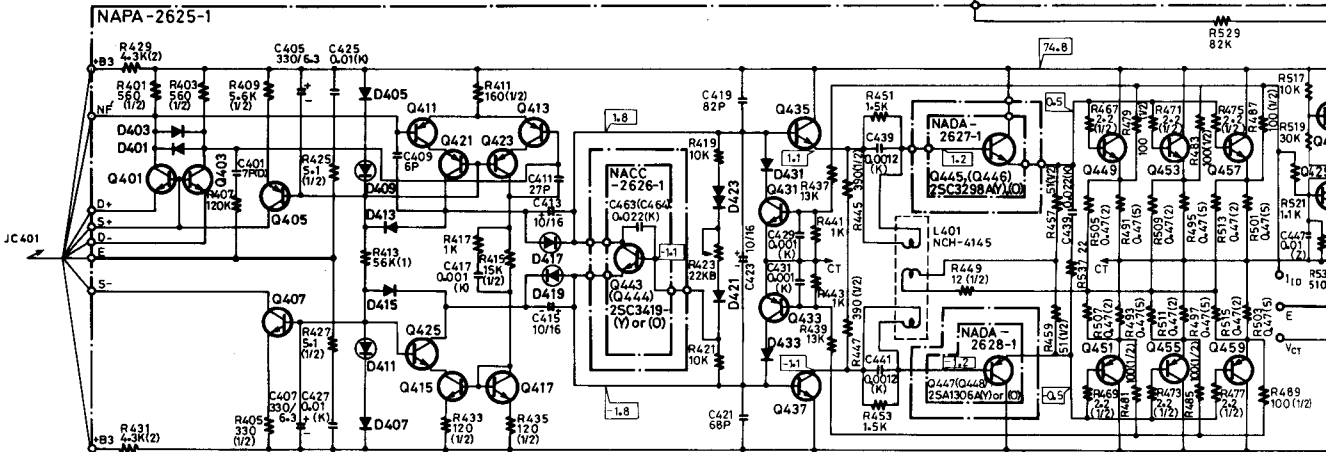
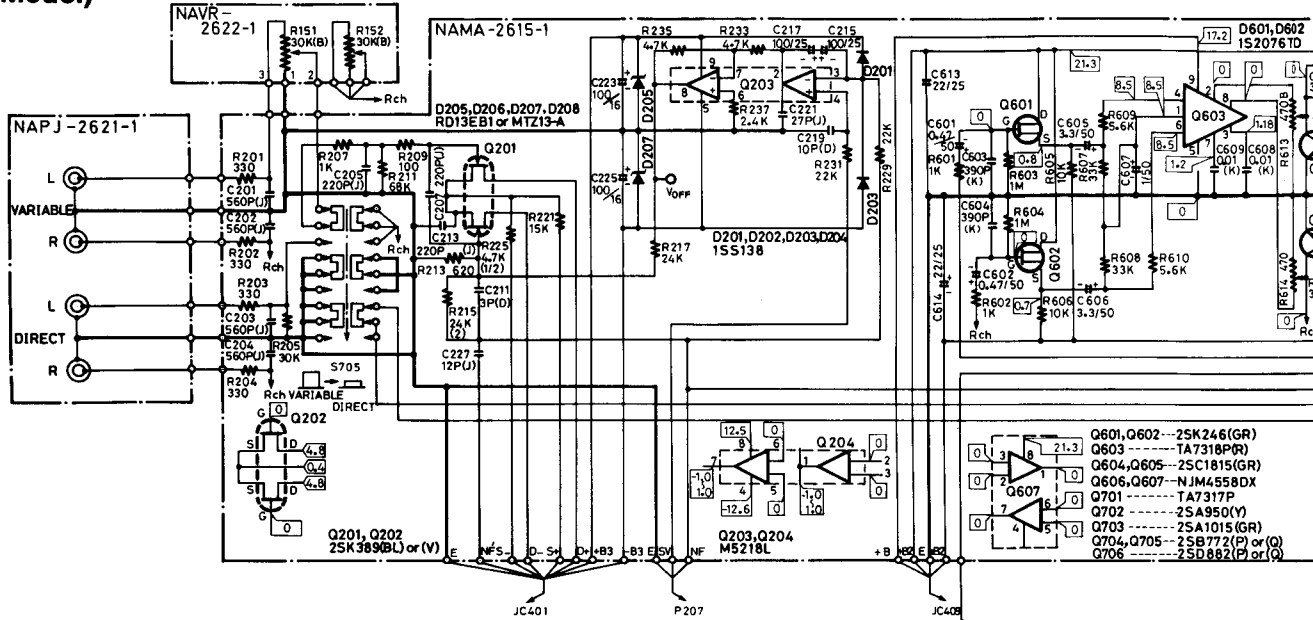


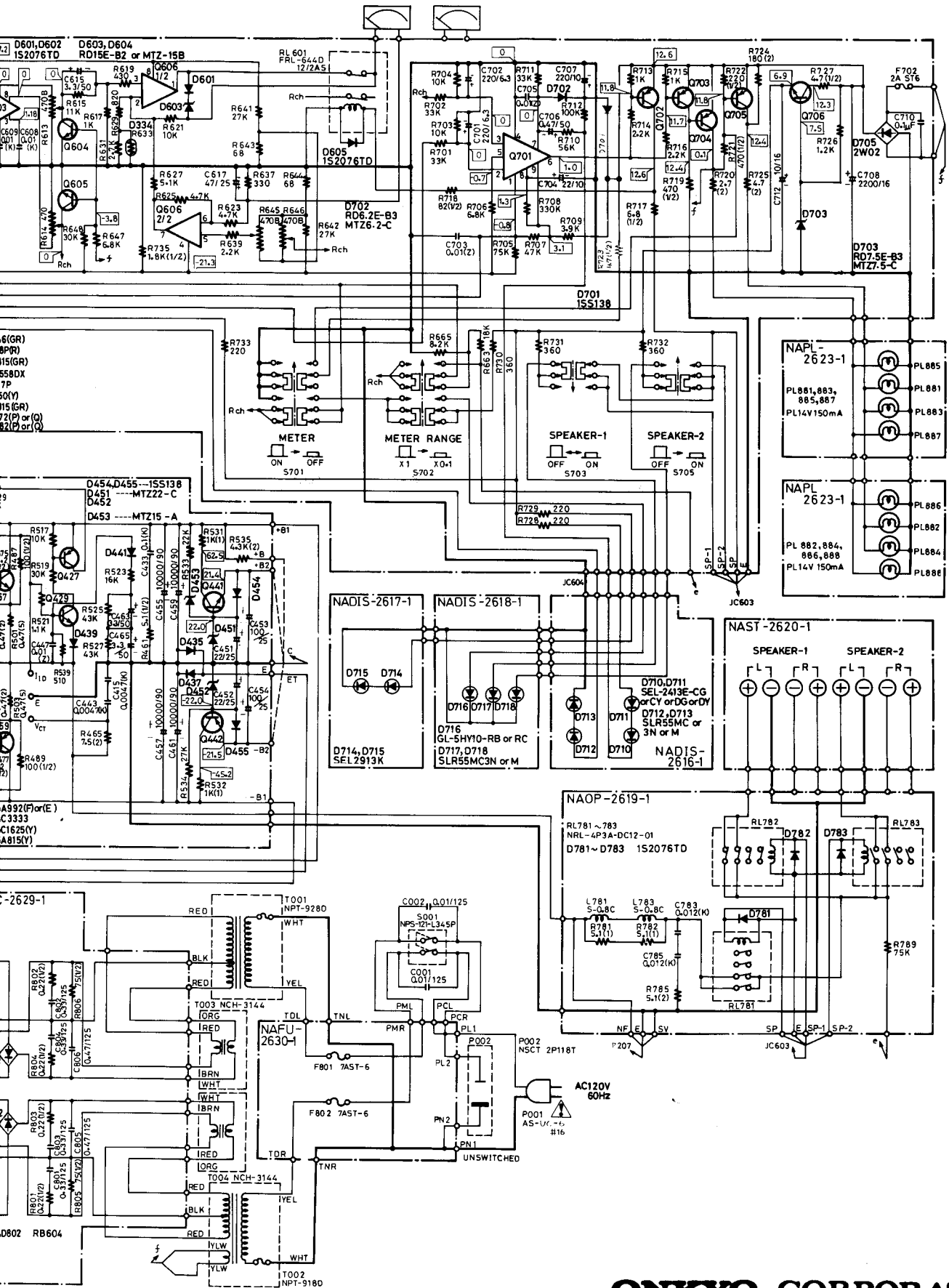
**M5218L(OP Amp.)**



# SCHEMATIC DIAGRAM

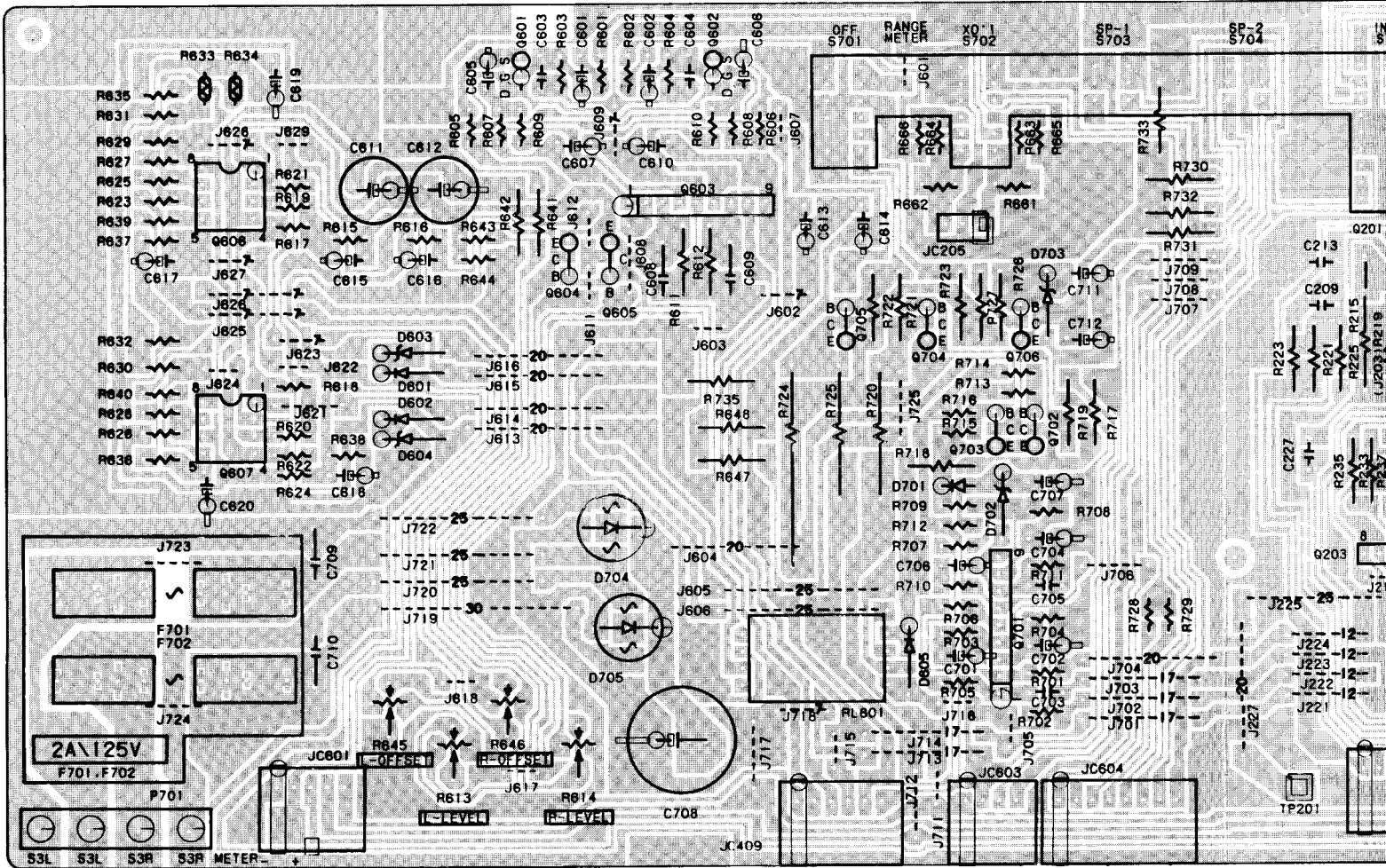
## (120V Model)



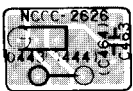


# PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

NAMA-2615



NACC-2626



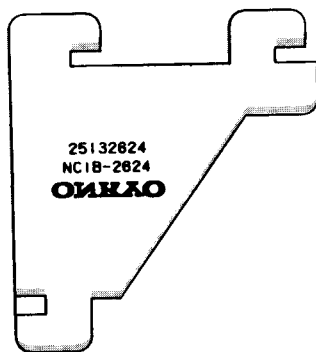
NADA-2627



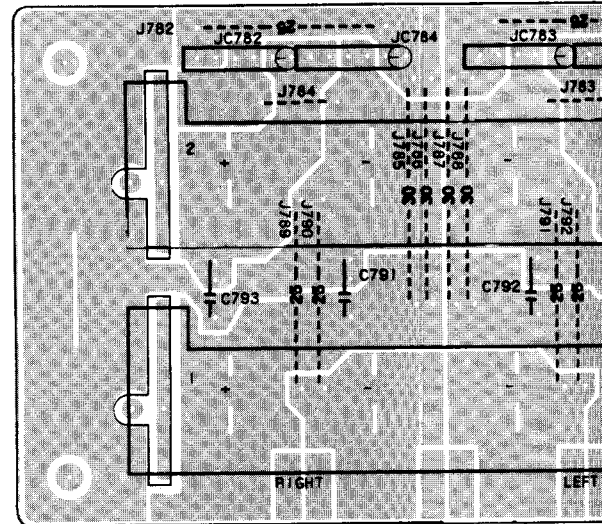
NADA-2628



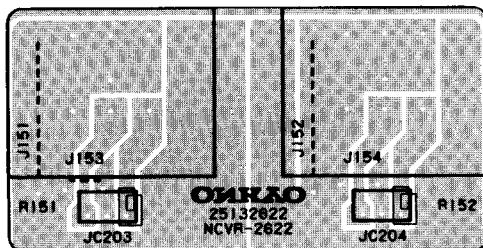
NCIB-2624



NAST-2620



NAVR-2622

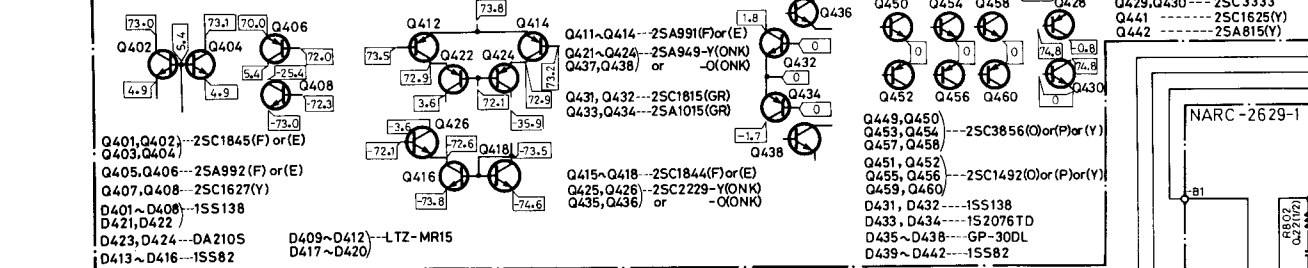
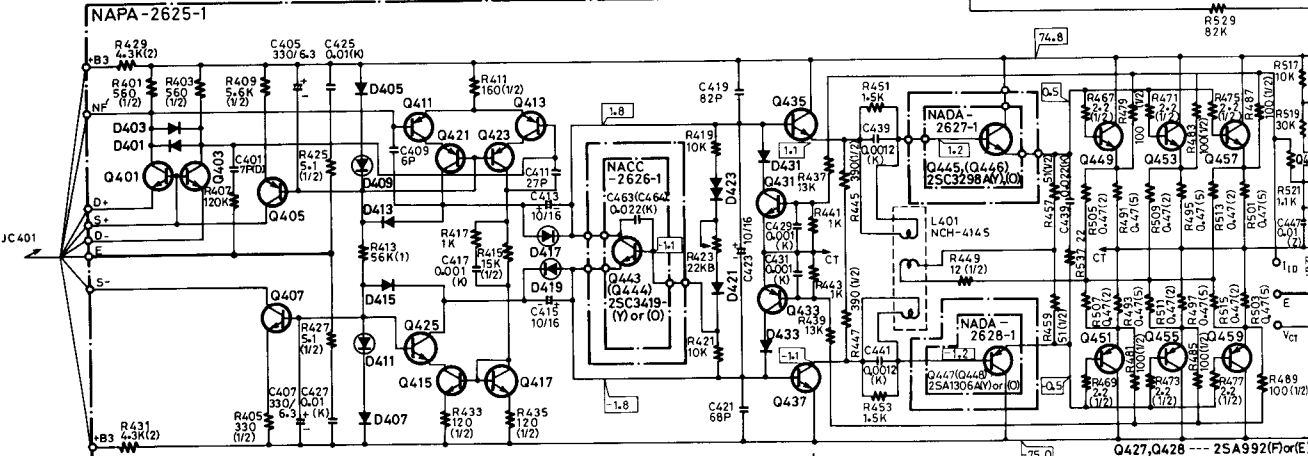
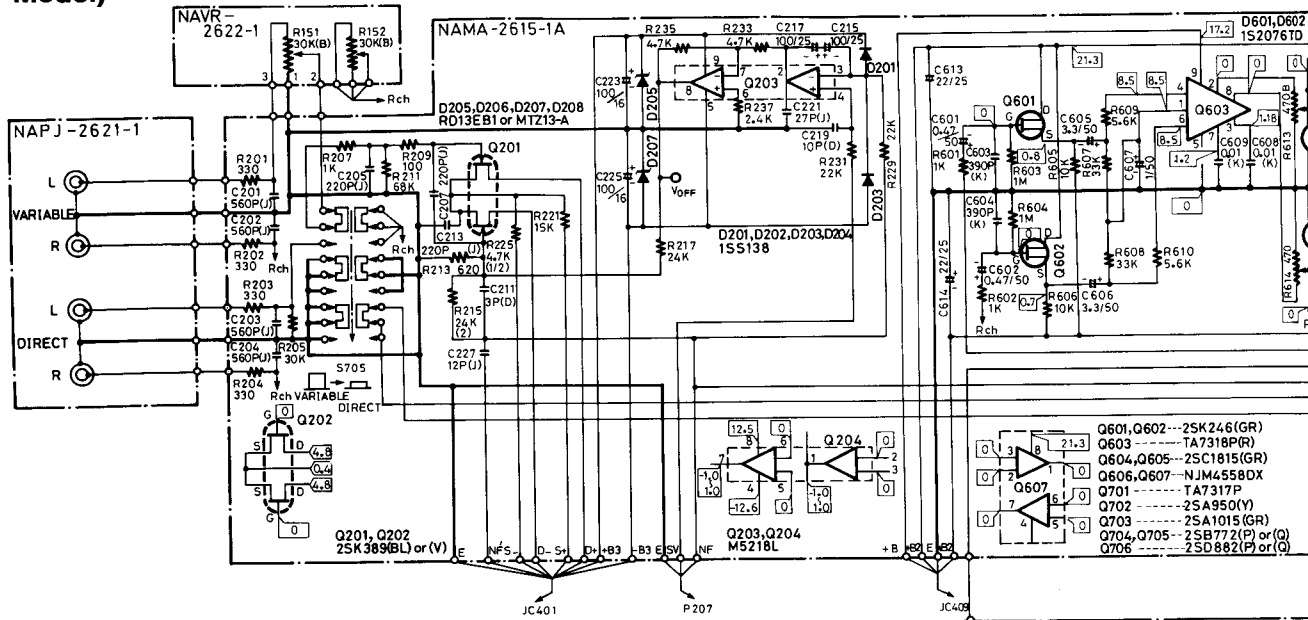






# SCHEMATIC DIAGRAM

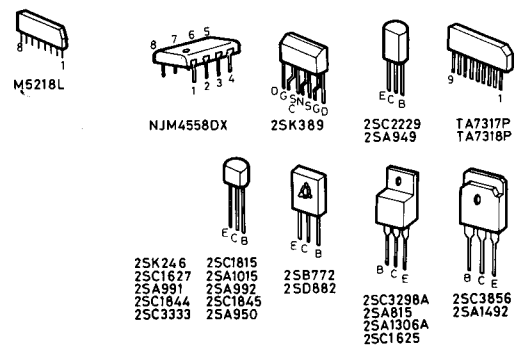
## (220V Model)

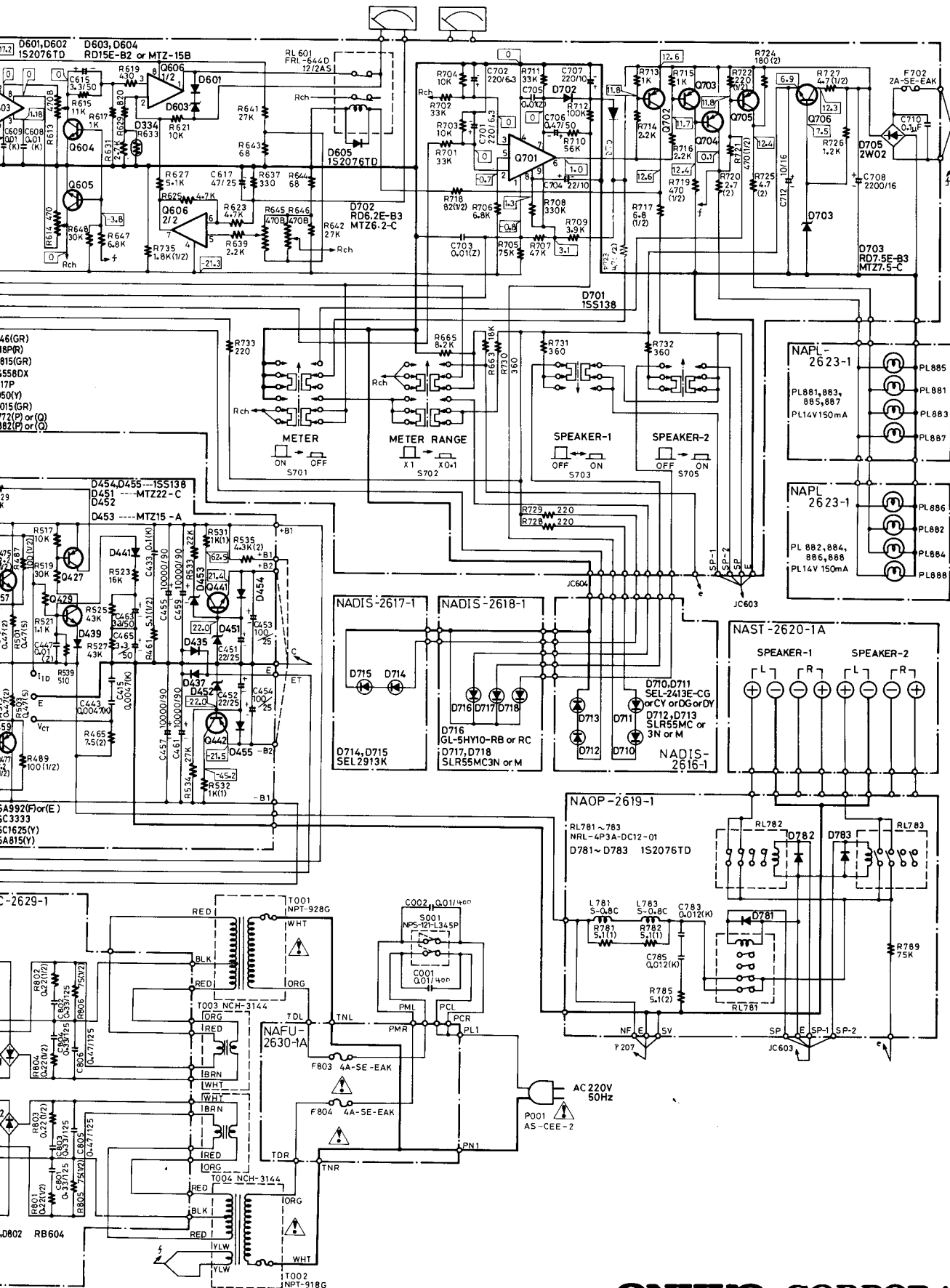


**NOTES**

- ALL RESISTORS ARE IN OHMS, 1/4 WATT UNLESS OTHERWISE NOTED.
- ALL CAPACITORS ARE IN  $\mu$ F, 50WV UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (#) ARE IN  $\mu$ F/WV.
- VOLTAGE (MEASURED WITH V T Y M) (NO INPUT SIGNAL).
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT
- THE COMPONENTS IDENTIFIED BY MARK  $\nabla$  ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.

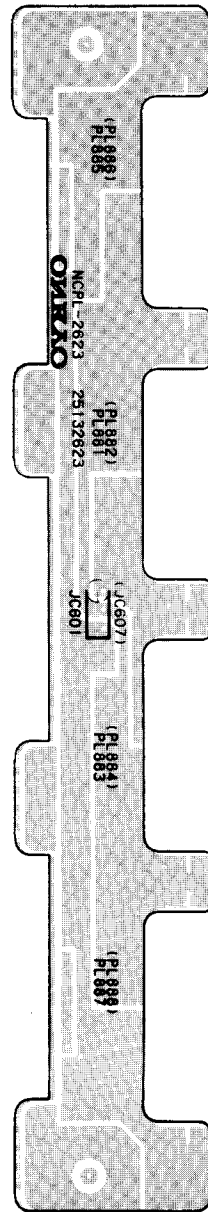
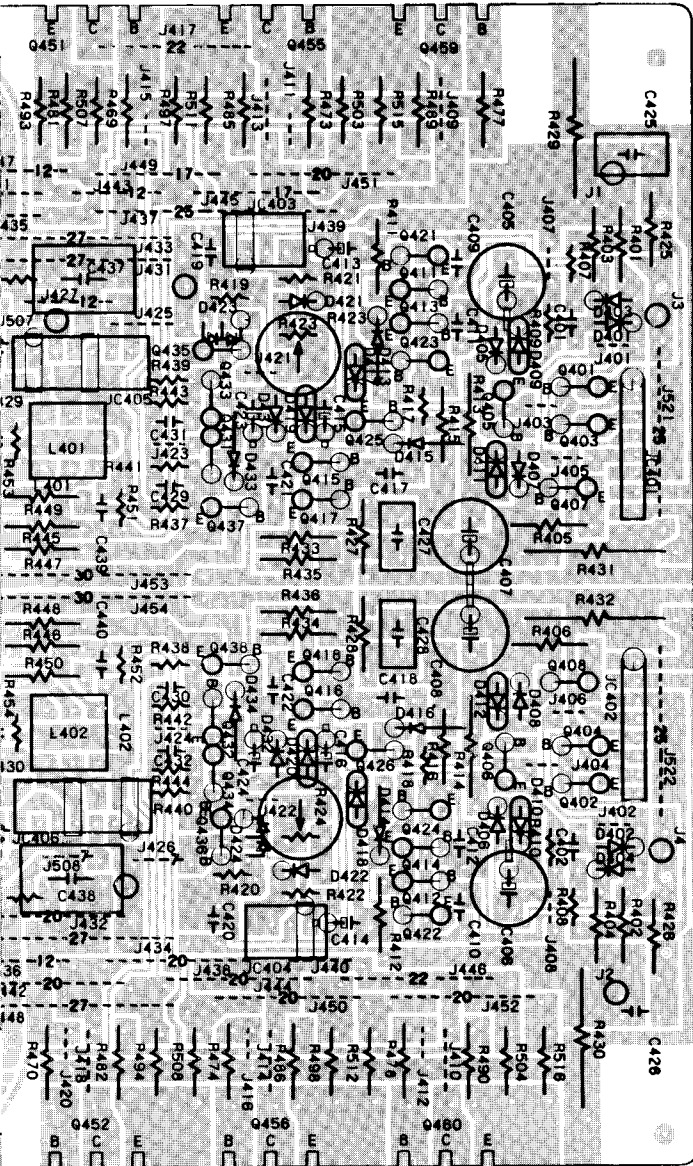
C	D	G	J	K	M	Z
$\pm 0.25\%$	$\pm 0.5\%$	$\pm 2\%$	$\pm 5\%$	$\pm 10\%$	$\pm 2.0$	$\pm 80/20$



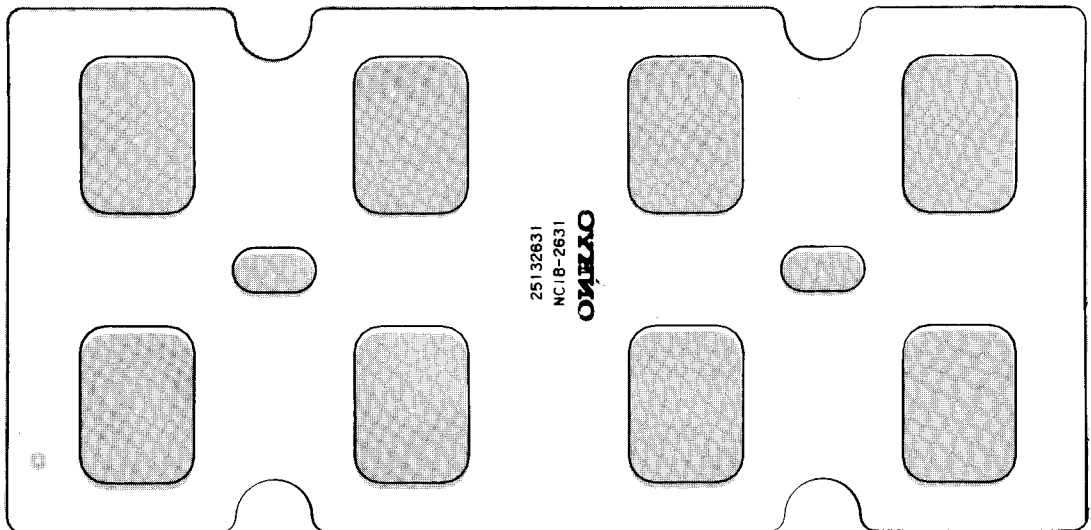




NAPL-2623

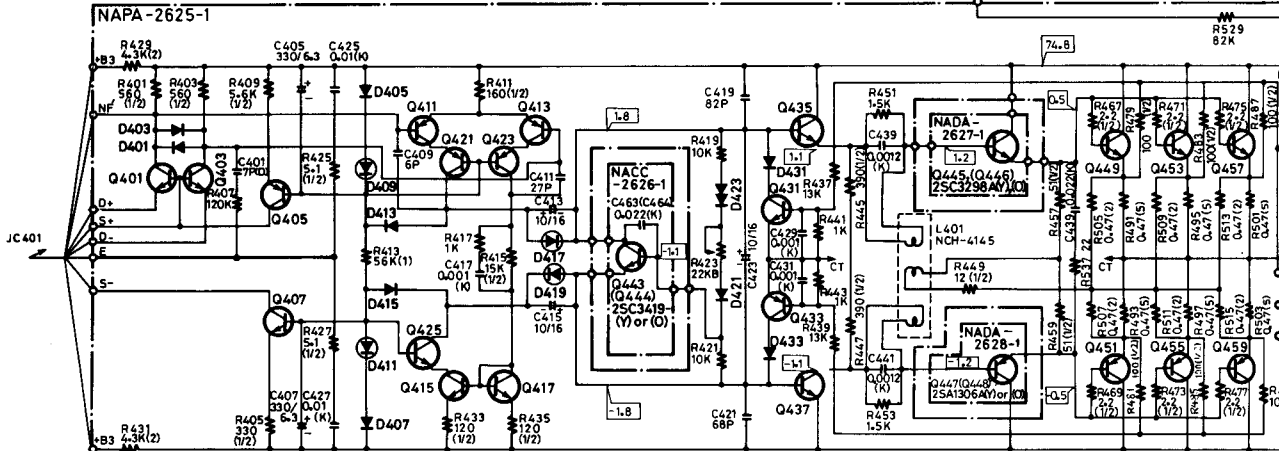
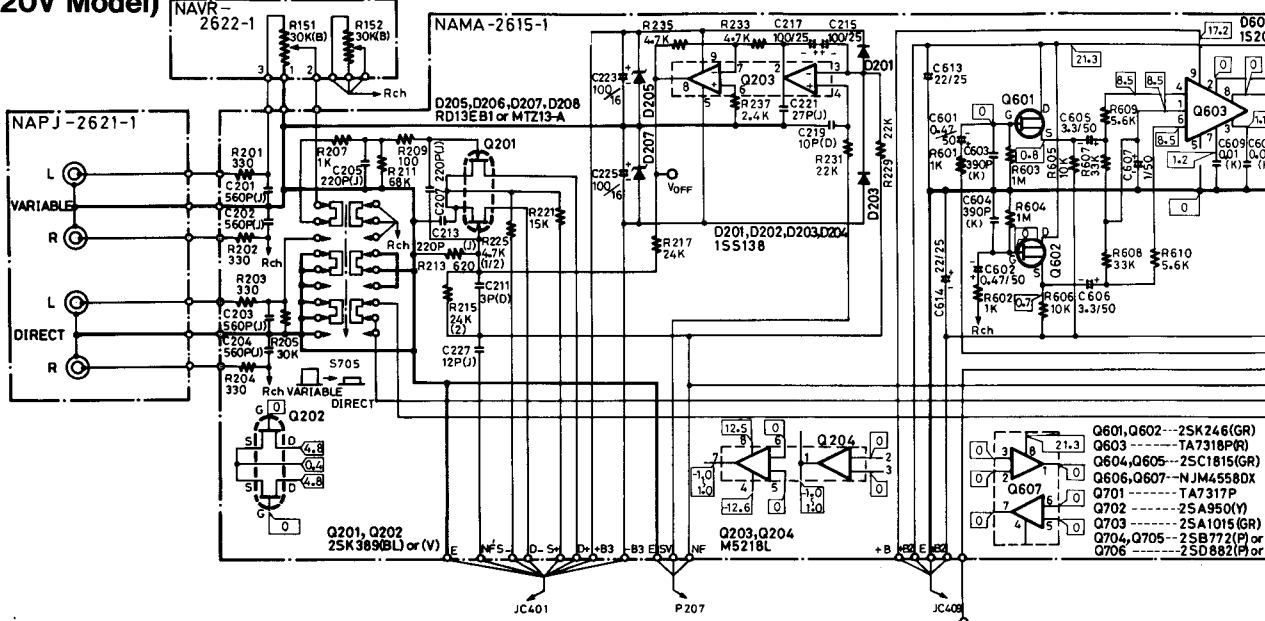


NCIB-2631



# SCHEMATIC DIAGRAM

## (120V/220V Model)



### NOTES

- ALL RESISTORS ARE IN OHMS, 1/4WATT UNLESS OTHERWISE NOTED.
- ALL CAPACITORS ARE IN  $\mu$ F, 50WV UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS ( $\pm$ ) ARE IN  $\mu$ F/WV.
- VOLTAGE (MEASURED WITH V TVM) (NO INPUT SIGNAL).
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT
- THE COMPONENTS IDENTIFIED BY MARK  $\Delta$  ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.

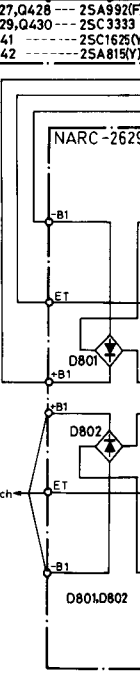
C	D	G	J	K	M	Z
$\pm 0.25\%$	$\pm 0.5\%$	$\pm 1\%$	$\pm 5\%$	$\pm 10\%$	$\pm 20\%$	$\pm 80\%$ $\pm 20\%$

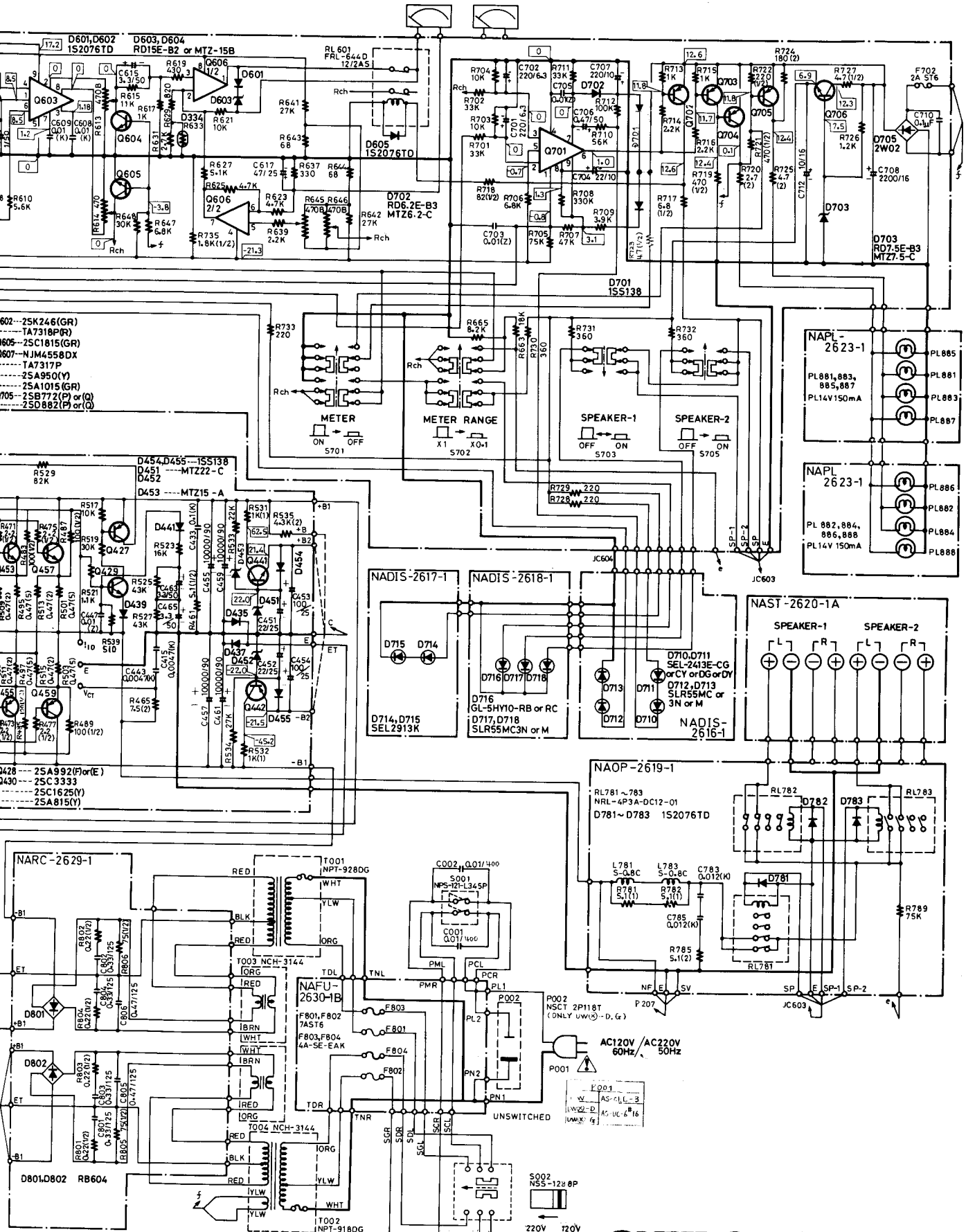


- 25K246
- 25C1627
- 25A992
- 25C1844
- 25C3333
- 25C1815
- 25A1015
- 25A992
- 25C1845
- 25A950

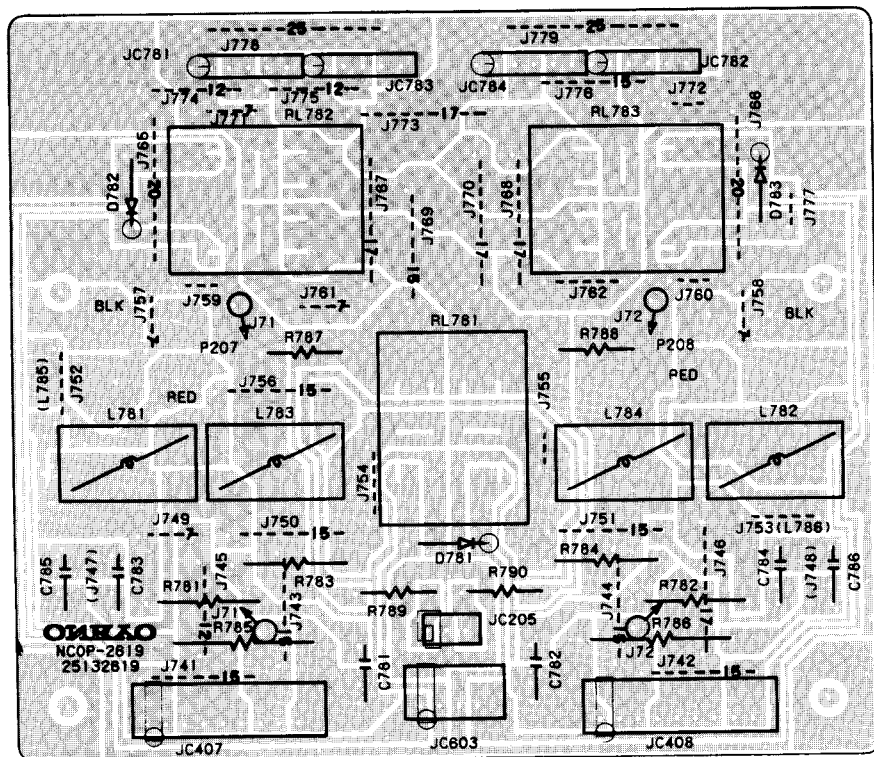
- 25C3298A
- 25A815
- 25A1306A
- 25C1625

- 25C3856
- 25A1492

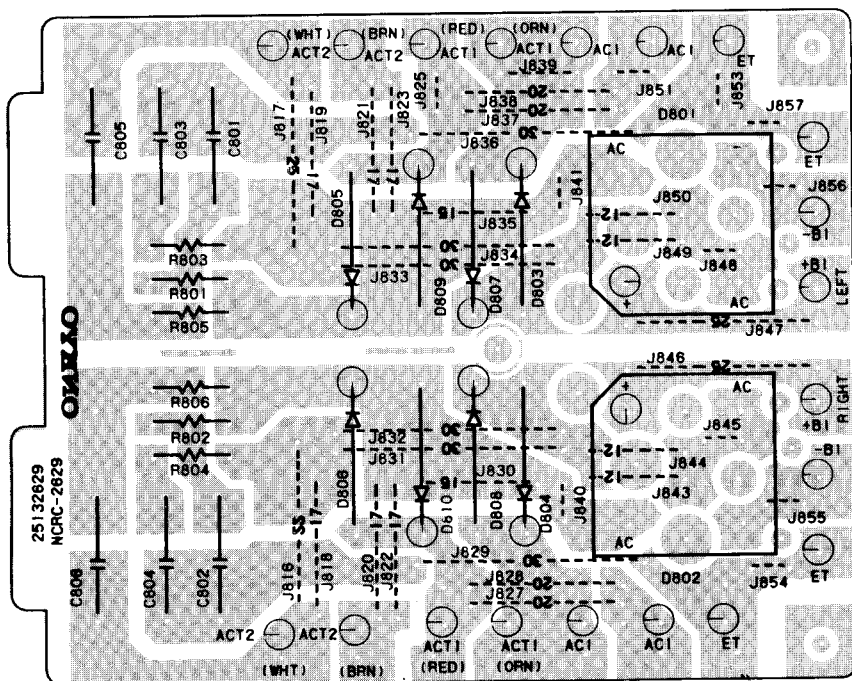




NAOP-2619



NARC-2629



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