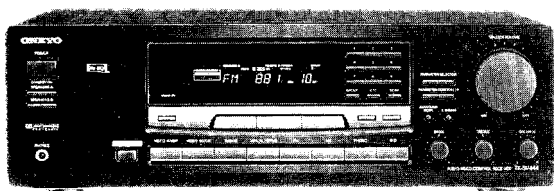


ONKYO® SERVICE MANUAL

QUARTZ SYNTHESIZED TUNER AMPLIFIER MODEL TX-SV444 / MODEL TX-SE500



BMD/BMDN	120V AC, 60Hz
BMP	230V AC, 50Hz
BMW	120V or 220V AC, 50/60Hz

BMP/GMP	230V AC, 50Hz
BMW/GMW	120V or 220V AC, 50/60Hz

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

AMPLIFIER SECTION

Power Output

Stereo mode

Front L/R channels: 70 watts per channel, min. RMS at 8 ohms, both channels driven from 20 Hz to 20 kHz with no more than 0.08% total harmonic distortion.

Continuous Power output: 2 × 80 watts at 8 ohms, 1 kHz (DIN)

Surround mode

Front L/R and Center channels: 60 watts per channel, min. RMS at 8 ohms, both channels driven from 20 Hz to 20 kHz with no more than 0.08% total harmonic distortion.

Rear channels (Rear only driven): 20 watts per channel, min. RMS at 8 ohms, both channels driven from 20 Hz to 20 kHz with no more than 0.3% total harmonic distortion.

Total Harmonic Distortion: 0.08% at rated power (Front)

IM Distortion: 0.08% at rated power (Front)

Damping Factor: 60 at 8 ohms (Front)

Sensitivity and Impedance

Phono: 2.5 mV/50 kohms

CD, Multi-CH, Tape Play: 150 mV/50 kohms

Tape Rec: 150 mV/2.2 kohms

Subwoofer Pre out: 2 V/2.2 kohms

Phono Overload: 120 mV RMS at 1 kHz, 0.5% T.H.D.

Frequency Response: 20 Hz to 30 kHz, ±1 dB

RIAA Deviation: 20 Hz to 20 kHz, ±0.8 dB

Tone Control

Bass: ±10 dB at 100 Hz

Treble: ±10 dB at 10 kHz

Signal-to-Noise Ratio

Phono: 80 dB (IHF A, 5 mV input)

CD/Tape: 100 dB (IHF A)

VIDEO SECTION

Signal sensitivity and impedance: 1 Vp-p, 75 ohms (VDP/VCR input, output)

TUNER SECTION

FM

Tuning Range: 87.5 — 108.0 MHz

Usable Sensitivity

Mono: 11.2 dBf, 1.0 μV (75 ohms)

Stereo: 18.2 dBf, 2.2 μV (75 ohms)

50 dB Quieting Sensitivity

Mono: 18.2 dBf, 2.2 μV (75 ohms)

Stereo: 39.2 dBf, 24 μV (75 ohms)

Capture Ratio:

1.5 dB

Image Rejection Ratio

U.S.A. & Canadian models: 40 dB

Other area models: 85 dB

IF Rejection Ratio: 90 dB

Signal-to-Noise Ratio

Mono: 73 dB

Stereo: 67 dB

Alternate Channel Attenuation: 55 dB

Selectivity: 50 dB (DIN)

AM Suppression Ratio: 50 dB

Total Harmonic Distortion

Mono: 0.15%

Stereo: 0.25%

Frequency Response: 30 Hz — 15 kHz, ±1.5 dB

Stereo Separation: 45 dB at 1 kHz

30 dB at 100 Hz — 10 kHz

AM

Tuning Range

U.S.A. & Canadian models: 530—1,710 kHz (10 kHz steps)

European & Australian models: 522—1,611 kHz (9 kHz steps)

Worldwide models: 531—1,602 kHz (9 kHz steps), 530—1,710 kHz (10 kHz steps)

Usable Sensitivity:

30 μV

Image Rejection Ratio:

40 dB

IF Rejection Ratio:

40 dB

Signal-to-Noise Ratio:

40 dB

Total Harmonic Distortion:

0.7%

GENERAL

Power Supply

U.S.A. & Canadian models: AC 120 V, 60 Hz

European & Australian models: AC 230 V, 50 Hz

Worldwide models: AC 220-230 V and 120 V switchable, 50/60 Hz

Power Consumption

U.S.A. & Canadian models: 3.5 A (420 W)

Other area models: 250 W

Dimensions (W × H × D): 435 × 150 × 322 mm

17-1/8" × 5-7/8" × 12-11/16"

Weight: 9.6 kg, 21.2 lbs.

REMOTE CONTROL

Transmitter:

Infrared

Signal range:

Approx. 5 meters, 16 ft.

Power supply:

Two "AA" batteries (1.5 V × 2)

Dimensions (W × H × D):

65 × 18 × 194 mm

2-9/16" × 11/16" × 7-5/8"


Weight:


110 grams, 3.9 oz. (including batteries)

Specifications and features are subject to change without notice.

SERVICE PROCEDURES

1. Replacing the fuses

 This symbol located near the fuse indicates that the fuse used is fast operating type. For continued protection against fire hazard, replace with same type fuse. For fuse rating refer to the marking adjacent to the symbol.

 Ce symbole indique que le fusible utilise est a rapide. Pour une protection permanente, n'utiliser que des fusibles de meme type. Ce dernier est indique la qu le present symbol est appose.

CIRCUIT NO.	PART NO.	DESCRIPTION
F901	252164Y	5A-UL/T-237,Primary <D/W>
F902	252076	3.15A-SE-EAK ,Primary <P/W>
F903	252075	2.5A-SE-EAK,Primary <P>
F921,F922	252163Y	4A-UL/T-237,Secondary<D>
	252077	4A-SE-EAK,Secondary<P/W>

NOTE : <D> : 120V model only
<P> : 230V model only
<W> : Worldwide model

2. To Initialize the unit

This device employs a microprocessor to perform various functions and operations. If interference generated by an external power supply, radio wave, or other electrical source results in accident which causes the specified operations and functions to operate abnormally.

To perform a result, please follow the procedure below.

1. Turn the power button "ON"
2. Press and hold down the Video 1 button, then press the SPEAKER A button.
3. After "clear" is displayed, the preset memory and each mode stored in the memory, such as surround, are initialized and will return to the factory settings.

3. Safety-check out

(Only U.S.A. model)

After correcting the original service problem, perform the following safety check before releasing the set to the customer. Connect the insulating-resistance tester between the plug of power supply cord and the screw on the back panel.

Specifications: 3.3 Mohm±10% at 500V.

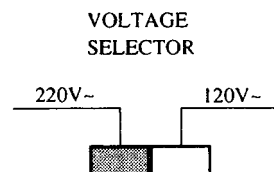
4. Change of voltage

Worldwide models are equipment with a voltage selector to conform with local power supplies. This switch is located on the back panel.

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

This switch is set to 220V at the factory. Voltage is changed by

sliding the groove in the switch with the 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.



5. Memory preservation

This unit does not require memory preservation batteries.

A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged.

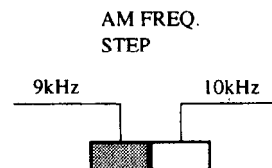
The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory, the power switch must be turned on and off a few times each month the keep the back-up system operative.

The period of the time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shorted when the unit is exposed to very high humidity or used in an area with an extremely humid climate.

6. Setting the tuning step frequency

Worldwide models are equipped with a step band selector switch. This switch is located on the back panel. This switch is set to 9 kHz at the factory, but may have to be reset to 10 kHz depending on the area where the unit is used.

AM band step
Europe: 9 kHz
U.S.A.: 10 kHz



7. Changing the band step

With the exception of the worldwide models, a tuning step selector switch is not provided. When you change the band step, change the parts as shown below.

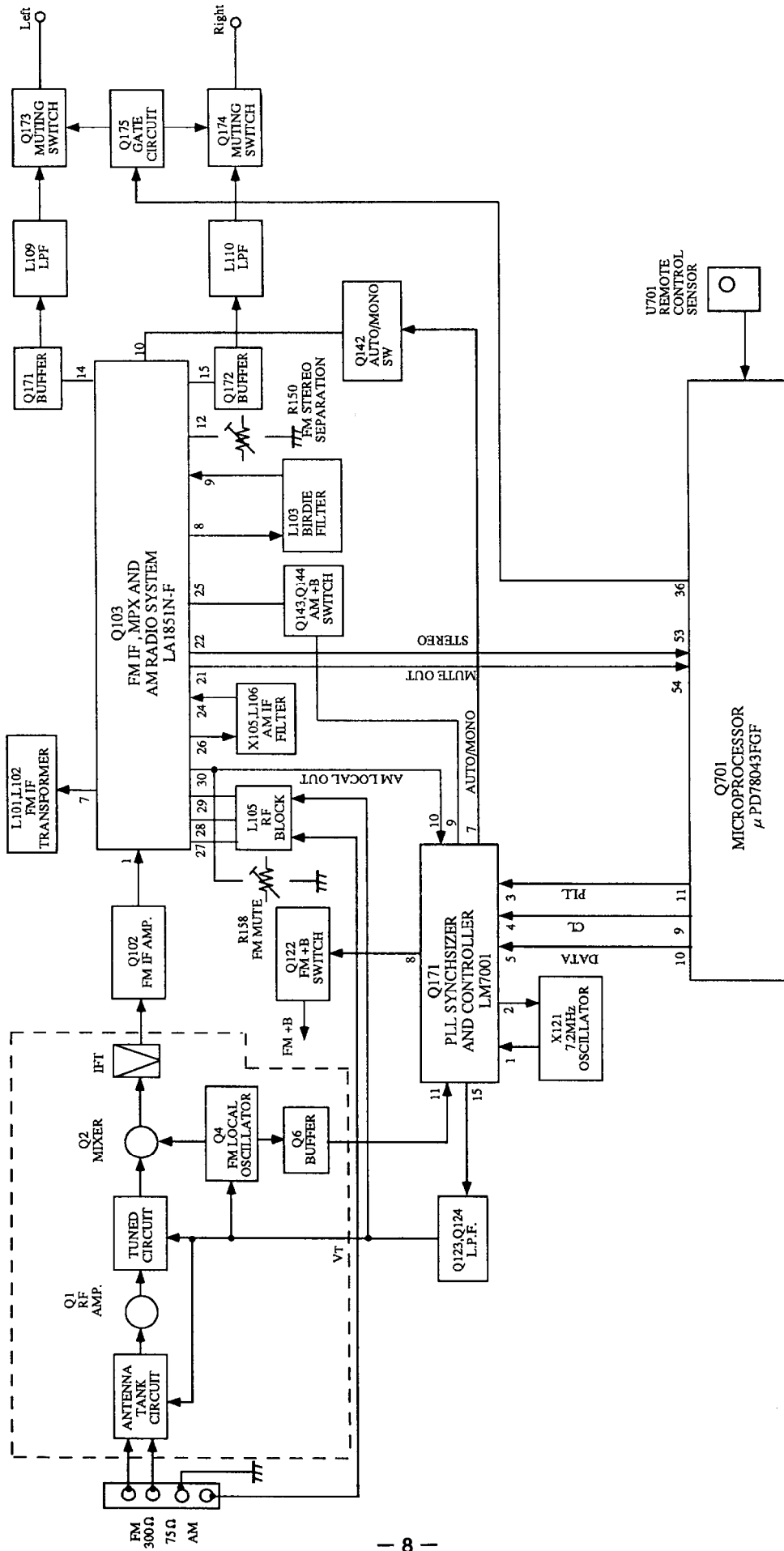
	To 10kHz	To 9kHz
R727	Open	Short
R724	3.3kohm	Remove

PARTS LIST

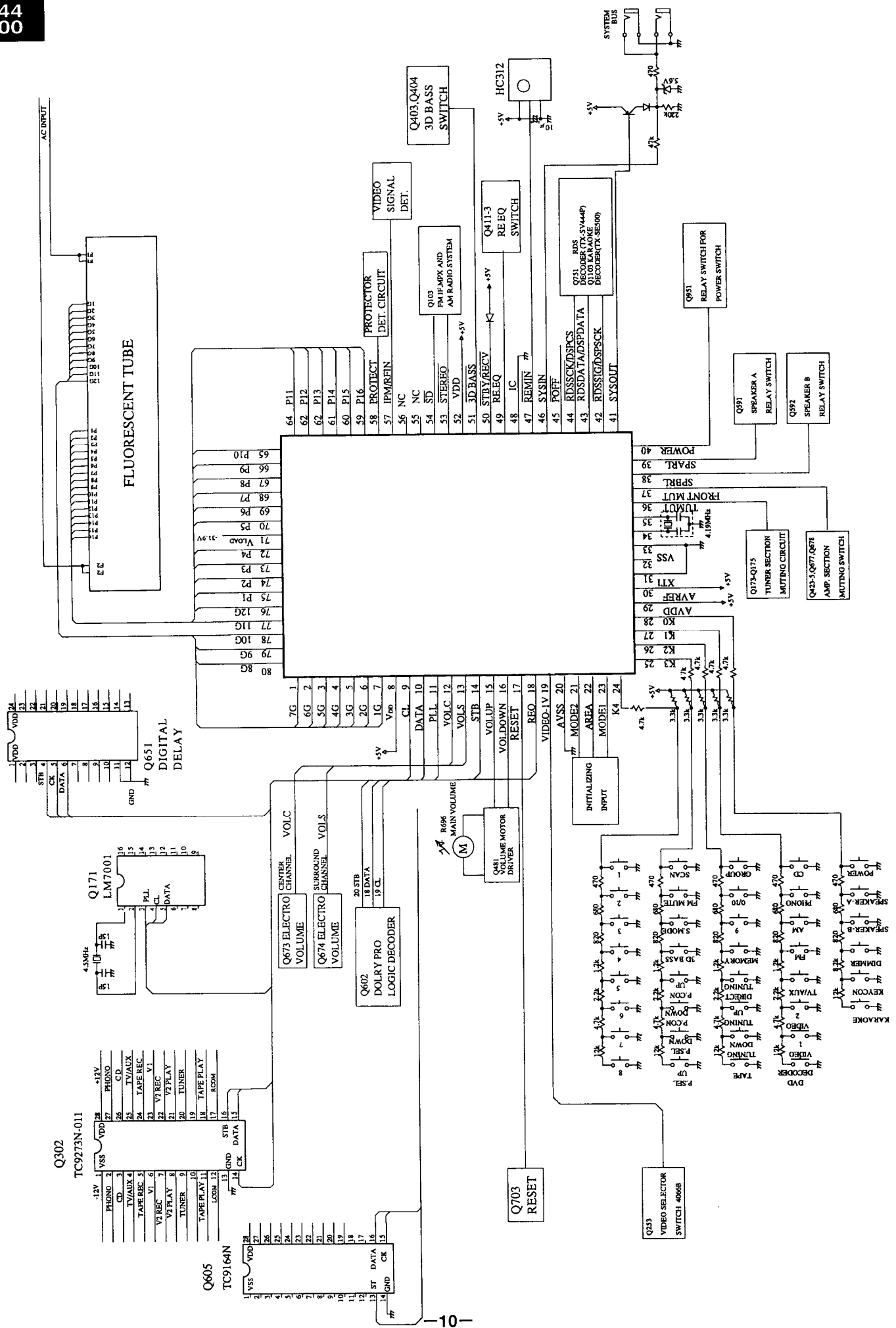
NOTE: <D>:120V model only
<P>:230V model only
<A>:Taiwanese model only
<A>:Australian model only
<T>:Asian model only
<K>:Korean model only

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
3	27160375Y	Heatsink	T901	2301228Y	NPT-1287D, Power transformer <D>
4	801433	3SM68W, SW+14B(BC), Special screw		2301229Y	NPT-1287P, Power transformer <P/A/T>
5	838130088	3TTB+8B, Self-tapping screw	U1	2301271Y	NPT-1301DG, Power transformer <K/W>
8	27141671	Retainer	U2	IA720584-1A Y	NAAR-5884-1A, Main circuit pc board ass'y <D>
11	27160376	Heatsink S		IA720584-1B Y	NAAR-5884-1B, Main circuit pc board ass'y <K/W/P/A/T>
18	27100320A Y	Chassis	U3	IA720585-1B Y	NAETC-5885-1B, Secondary circuit pc board ass'y <P/W/T/A/K>
19	27190503A	KGLS-8RF, Holder		IA720585-1A Y	NAETC-5885-1A, Secondary circuit pc board ass'y <D>
20	27190266	KGLS-12RF, Holder	U4	IA720586-1B Y	NAETC-5886-1B, Tone control circuit pc board ass'y <P/W/A/T/K>
24	28175225Y	Isolation plate		IA720586-1A Y	NAETC-5886-1A, Tone control circuit pc board ass'y <D>
26	27110952Y	Front bracket		IA720587-1A Y	NADIS-5887-1A, Display circuit pc board ass'y <D>
32	27190896	KGLS-10S, Holder		IA720587-1B Y	NADIS-5887-1B, Display circuit pc board ass'y <P>
36	830440089	4TTC+8C(BC), Self-tapping screw	U5	IA720587-1C Y	NADIS-5887-1C, Display circuit pc board ass'y <T>
38	27300750	#2271, Bushing cord		IA720587-1D Y	NADIS-5887-1D, Display circuit pc board ass'y <W>
42	27175319Y	Leg		IA720587-1E Y	NADIS-5887-1E, Display circuit pc board ass'y <K>
43	28141332Y	Cushion for leg		IA720587-1F Y	NADIS-5887-1F, Display circuit pc board ass'y <A>
45	831430088	3TTW+8B(BC), Self-tapping screw		IA720588-1A Y	NARF-5888-1A, Tuner circuit pc board ass'y <A>
51	28325456Y	Knob, Volume		IA720588-1B Y	NARF-5888-1B, Tuner circuit pc board ass'y <P>
53	28325454Y	Knob, Tone		IA720588-1C Y	NARF-5888-1C, Tuner circuit pc board ass'y <T>
55	28184663Y	Top cover		IA720588-1D Y	NARF-5888-1D, Tuner circuit pc board ass'y <W>
56	838430088	3TTB+8B(BC), Self-tapping screw	U6	IA720588-1E Y	NARF-5888-1E, Tuner circuit pc board ass'y <K>
71	27122260Y	Rear panel <D>		IA720588-1F Y	NARF-5888-1F, Tuner circuit pc board ass'y <A>
	27122261Y	Rear panel <P>		IA720589-1A Y	NAPS-5889-1A, Power supply circuit pc board ass'y <D>
	27122262Y	Rear panel <W>		IA720589-1B Y	NAPS-5889-1B, Power supply circuit pc board ass'y <P>
	27122263Y	Rear panel <A>		IA720589-1C Y	NAPS-5889-1C, Power supply circuit pc board ass'y <T>
	27122264Y	Rear panel <T>		IA720589-1D Y	NAPS-5889-1D, Power supply circuit pc board ass'y <W>
72	87643010	W3x10F(BC), Washer	U7	IA720589-1E Y	NAPS-5889-1E, Power supply circuit pc board ass'y <K>
73	838230088	3TTB+8B(NI), Nickel screw		IA720589-1F Y	NAPS-5889-1F, Power supply circuit pc board ass'y <A>
75	27211859Y	Front panel <D>		IA720590-1A Y	NAETC-5890-1A, Video terminal pc board ass'y <D>
				IA720590-1B Y	NAETC-5890-1B, Video terminal pc board ass'y <P>
				IA720590-1C Y	NAETC-5890-1C, Video terminal pc board ass'y <T>
				IA720590-1D Y	NAETC-5890-1D, Video terminal pc board ass'y <W>
				IA720590-1E Y	NAETC-5890-1E, Video terminal pc board ass'y <K>
				IA720590-1F Y	NAETC-5890-1F, Video terminal pc board ass'y <A>
76	28135244Y	Badge	U8	IA720591-1A Y	NAETC-5891-1A, Headphone terminal pc board ass'y <D>
77	27215273Y	Decorative frame		IA720591-1B Y	NAETC-5891-1B, Headphone terminal pc board ass'y <P>
78	28191752A Y	Clear plate		IA720591-1C Y	NAETC-5891-1C, Headphone terminal pc board ass'y <T>
81	28325451Y	Knob, power <P/A/K/T/W>		IA720591-1D Y	NAETC-5891-1D, Headphone terminal pc board ass'y <W>
82	27267955Y	Guide, power <P/A/K/T/W>		IA720591-1E Y	NAETC-5891-1E, Headphone terminal pc board ass'y <K>
D910	22380038	RBV602		IA720591-1F Y	NAETC-5891-1F, Headphone terminal pc board ass'y <A>
E801	260208	Binder	U9	IA720592-1A Y	NAETC-5892-1A, Video terminal pc board ass'y <D>
E802	2047352012Y	NCF7-352012, Flexible flat cable		IA720592-1B Y	NAETC-5892-1B, Video terminal pc board ass'y <P>
E808	223024	AC238, Isolation sheet		IA720592-1C Y	NAETC-5892-1C, Video terminal pc board ass'y <T>
				IA720592-1D Y	NAETC-5892-1D, Video terminal pc board ass'y <W>
				IA720592-1E Y	NAETC-5892-1E, Video terminal pc board ass'y <K>
				IA720592-1F Y	NAETC-5892-1F, Video terminal pc board ass'y <A>
F901	252164Y	5A-UL/T-237, Fuse <D/W>	U10	IA720593-1A Y	NAETC-5893-1A, Primary terminal pc board ass'y <D>
F902	252076	3.15A-SE-EAK, Fuse <P/A/T/K/W>		IA720593-1B Y	NAETC-5893-1B, Primary terminal pc board ass'y <P>
F903	252075	2.5A-SE-EAK, Fuse <P/T>		IA720593-1C Y	NAETC-5893-1C, Primary terminal pc board ass'y <T>
F991, F992	252077	4A-SE-EAK, Fuse <P/A/T/K/W>		IA720593-1D Y	NAETC-5893-1D, Primary terminal pc board ass'y <W>
	252163Y	4A-UL/T-237, Fuse <D>		IA720593-1E Y	NAETC-5893-1E, Primary terminal pc board ass'y <K>
P901	253192HIT	AS-UC-6#18, Power supply cord <D>		IA720593-1F Y	NAETC-5893-1F, Primary terminal pc board ass'y <A>
	253193HIT	AS-CEE, Power supply cord <P/T>		IA720594-1A Y	NAAF-5894-1A, Volume circuit pc board ass'y <D>
	253197HIT	AS-SAA, Power supply cord <A>		IA720594-1B Y	NAAF-5894-1B, Volume circuit pc board ass'y <P/T/A/K>
	253213WSE	AS-KS, Power supply cord <K>		IA720594-1C Y	NAAF-5894-1C, Volume circuit pc board ass'y <W>
	253233KAW	AS-CEE-2, Power supply cord <W>		IA720594-1D Y	NAAF-5894-1D, Volume circuit pc board ass'y <K>
P904, P905	25051570	NSCT-2P1056, AC outlet <K>	U11	IA720595-1A Y	NAAF-5895-1A, Rear amplifier pc board ass'y <D>
	25051570	NSCT-2P1357, AC outlet <A>		IA720595-1B Y	NAAF-5895-1B, Rear amplifier pc board ass'y <P/T/A/K>
Q523, Q524	2202843 or	2SC5242-O or		IA720595-1C Y	NAAF-5895-1C, Rear amplifier pc board ass'y <W>
Q1512	2202842	2SC5242-R, Transistor	U12	IA720595-1D Y	NAAF-5895-1D, Rear amplifier pc board ass'y <K>
Q525, Q526	2202833 or	2SA1962-O or		IA720595-1E Y	NAAF-5895-1E, Rear amplifier pc board ass'y <P/T/A/K>
Q1513	2202832	2SA1962-R, Transistor		IA720595-1F Y	NAAF-5895-1F, Rear amplifier pc board ass'y <A>
Q823, Q824	2202923 or	2SC5196-O or		25135984	NCEITC-5984, Holder for lead wire
	2202922	2SC5196-R, Transistor			
Q825, Q826	2202913 or	2SA1939-O or			
	2202912	2SA1939-R, Transistor			

BLOCK DIAGRAM TUNER SECTION 120V MODEL



MICROPROCESSOR CONNECTION DIAGRAM



MICROPROCESSOR TERMINAL DESCRIPTION

Pin No.	Function	Descriptions	Pin No.	Function	Descriptions
1~7	7G~1G	Grid output terminals	44	DSPCS	Chip select output terminal for KARAOKE IC.
8	VDD	Positive power supply terminal (+5V)	45	POFF	Power failure detection input terminal
9	CL	Clock output terminal.	46	SYSIN	system code input terminal
10	DATA	Data output terminal.	47	REMIN	Remote control signal input terminal
11	PLL	Chip enable output terminal for PLL IC	48	IC	Internal connection terminal
12	VOLC	Clock output terminal for electro volume of center channel.	49	RE-EQ	RE-EQ control output terminal
13	VOLS	Clock output terminal for electro volume of surround channels.	50	STBY/RECV	STANDBY/RECEIVED indication output terminal
14	STB	Strobe output terminal	51	3DB	3-D bass control output terminal
15	VOLUP	Volume control output terminal	52	VDD	Power supply terminal (+5V)
16	VOLDOWN	Volume control output terminal	53	STEREO	Stereo broadcast detection input terminal
17	RESET	System reset input terminal	54	SD	Broadcast detection input terminal
18	REQ	Request terminal for Digital delay and Dolby ICs	55,56	NC	Not used.
19	VIDEO-1V	Video signal selector terminal	57	IPM	Audio IPM operation input terminal
20	AVSS	Ground terminal for A/D converter	58	PROTECT	Detection input terminal for protection circuit
21	MODE2	Initializing input terminal	59	P16~P5	Segment output terminals
22	AREA	Initializing input terminal for region of frequency range	71	VLOAD	Pull-down resistor connection terminal for FIP controller and driver
23	MODE1	Initializing input terminal	72	P4~P1	Segment output terminals
24	K4~K0	Key input terminals	76~80	12G~8G	Grid output terminals
29	AVDD	Analog power supply terminal (+5V)			
30	AVREF	Reference voltage input terminal for A/D converter			
31	XT1	Crystal connection terminals for subsystem clock			
32	XT2	Not used.			
33	VSS	Ground terminal			
34	X1	Crystal connection terminals for main system clock			
35	X2	Connect the 4.19MHz ceramic oscillator.			
36	TUMUT	Muting output terminal for tuner section			
37	FRONTMUT	Muting output terminal for amplifier of front channels.			
38	SPBRL	Speaker relay B control output terminal			
39	SPARL	Speaker relay A control output terminal			
40	POWER	Power source control output terminal			
41	SYSOUT	System code output terminal			
42	RDSSIG	Detection input terminal for RDS broadcast			
43	RDSDATA	Data input terminal for RDS broadcast			
44	RDSSCK	Clock input terminal from RDS demodulator			
42	DSPSCK	Clock output terminal for KARAOKE IC.			
43	DSPDATA	Data output terminal for KARAOKE IC.			

Volume control output

	15	16
Stop	H	H
Up	H	L
Down	L	H

FM band

BAND1	BAND0	Region	Frequency Range	Channel space
0	0	Europe	87.50~108.00MHz	50kHz
0	1	Saudi	87.50~108.00MHz	50kHz
1	0	Japan	76.0~90.0MHz	100kHz
1	1	U.S.A	87.5~108MHz	100kHz

AM band

BAND1	BAND0	AM10K	Region	Frequency Range	Channel space
0	0	0	Europe	522~1611kHz	9 kHz
0	1	0	Saudi	531~1602kHz	9 kHz
1	0	0	Japan	522~1629kHz	9 kHz
1	1	0	U.S.A	522~1629kHz	9 kHz
1	1	1	U.S.A	530~1710kHz	10 kHz

ADJUSTMENT PROCEDURES

Preparation

- Input
FM mono: 1kHz, 75kHz devi., 60dB/μV
FM stereo: 1kHz, 67.5kHz devi., 60dB/μV
Pilot signal 19kHz 7.5kHz devi.
AM: 400Hz, 30% mod.
- Outputs
Connect the non-inductive type resistor of 8 ohms to the all speaker terminals unless otherwise noted.

1. FM ADJUSTMENT

Item	Step	Connection of instrument	FM SG output	Stereo modulator output	Tuning frequency	Output indicator	Adjustment point	Adjust for	Remarks
FM IF/RF	1	Fig.1	99.0MHz 1kHz 75kHz devi. 65dB(60dB)	—	99.0MHz	DC voltmeter	L101	0±20mV	FM MUTE/MODE switch-ON/AUTO Repeat the steps 1 and 3 until no further adjustment is necessary.
	2			—	—	AC voltmeter	IFT on the front end	Maximum	
	3			—	—	Distortion analyzer	L102	Minimum	
Stereo Distortion		Fig.2	99.0MHz Ext. mod.65dB(60dB)	Channel L or R 1kHz	99.0MHz	Distortion analyzer	IFT on the front end	Minimum	FM MUTE/MODE switch-ON/AUTO Don't turn more than ±180°
Stereo Separation		Fig.2	99.0MHz Ext. mod.65dB(60dB)	Channel L or R 1kHz	99.0MHz	Oscilloscope	R150	Maximum separation	
Muting Level		Fig.1	99.0MHz 19.2dB(14dB)	—	99.0MHz	Oscilloscope	R158	Signal output	
RDS		Fig.3	99.0MHz Ext. mod.60dB	RDS data or 57kHz 3% devi.	99.0MHz	Oscilloscope	R798	Maximum	European model only

2. AM ADJUSTMENT

120V model

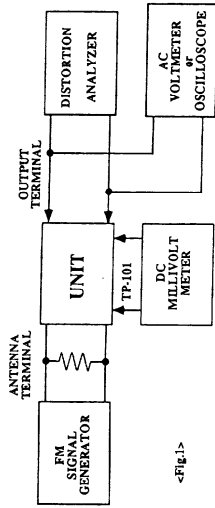
Step	AM SG output	Tuning Frequency	Output Indicator	Adjustment point	Adjust for
1		530kHz	Digital DC voltmeter	OSC coil on RF block L105	1.3±0.2V
2	600kHz 400Hz 30% mod. 60dB/m	600kHz	AC voltmeter	RF coil on RF block L105	Maximum
3	990kHz 400Hz 30% mod. 60dB/m	990kHz	AC voltmeter	L106	Maximum

Reference Specification
FM tuned voltage: 87.50MHz ~ 108.00MHz
More than 1.2V ~ Less than 10V
AM tuned voltage: 530kHz ~ 1710kHz
1.3±0.2 ~ Less than 9.0V

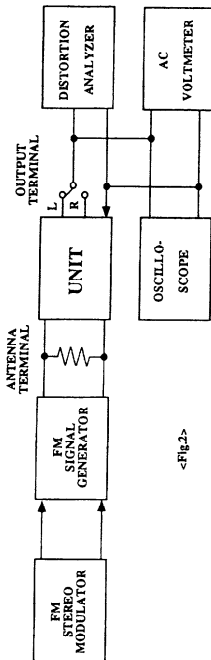
230V and Worldwide models

Step	AM SG output	Tuning Frequency	Output Indicator	Adjustment point	Adjust for
1		522kHz or 531kHz	Digital DC voltmeter	OSC coil on RF block L105	1.3±0.2V
2	603kHz 400Hz 30% mod. 60dB/m	603kHz	AC voltmeter	RF coil on RF block L105	Maximum
3	999kHz 400Hz 30% mod. 60dB/m	999kHz	AC voltmeter	L106	Maximum

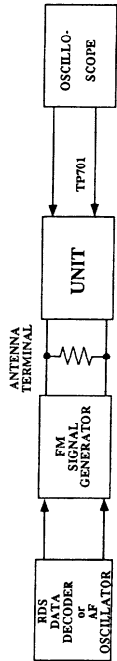
Reference Specification
FM tuned voltage: 87.50MHz ~ 108.00MHz
More than 1.2V ~ Less than 10V
AM tuned voltage: 522kHz ~ 1611kHz
1.3±0.2 ~ Less than 9.0V
(230V model)
AM tuned voltage: 531kHz ~ 1602kHz
1.3±0.2 ~ Less than 9.0V
(Worldwide model)



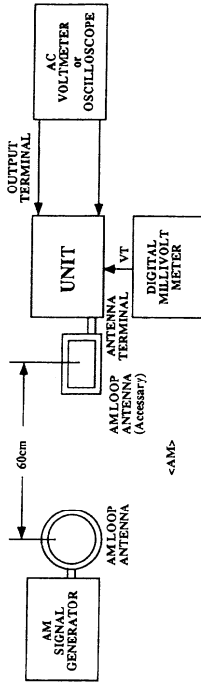
<Fig.1>



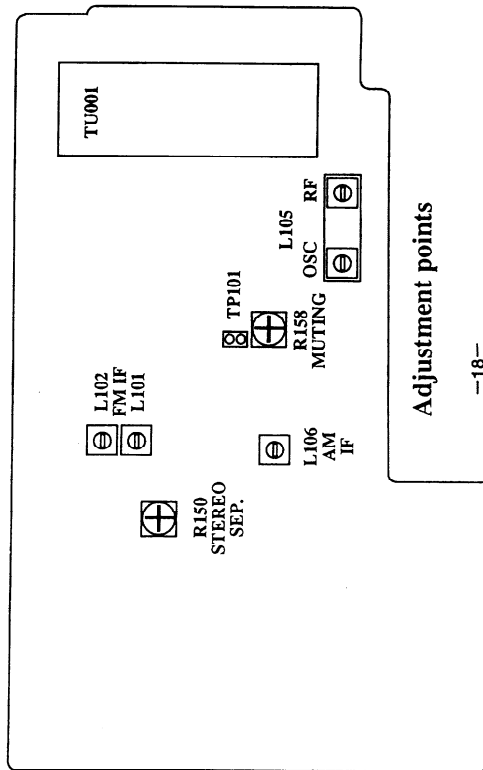
<Fig.2>



<Fig.3>



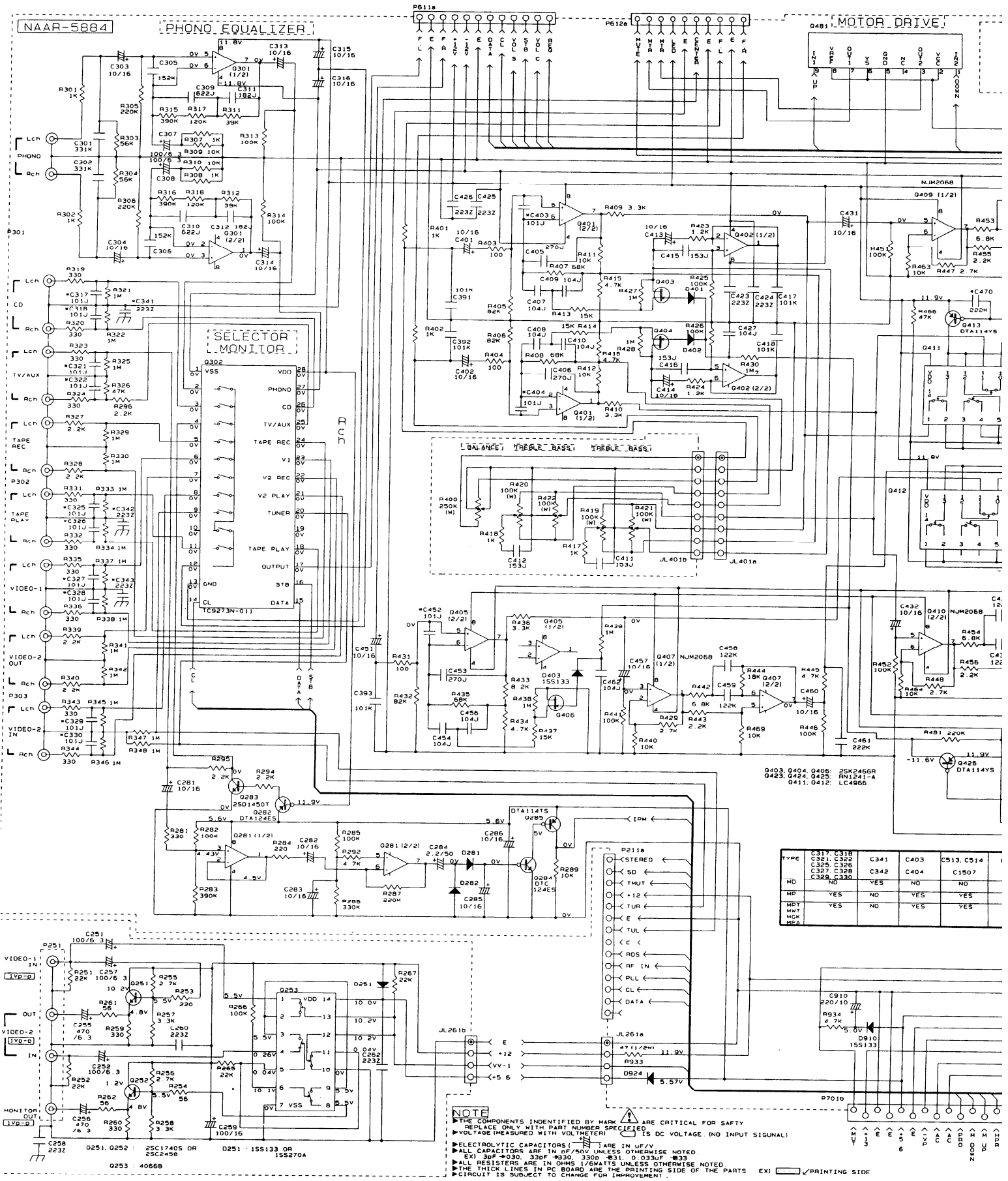
<Fig.4>

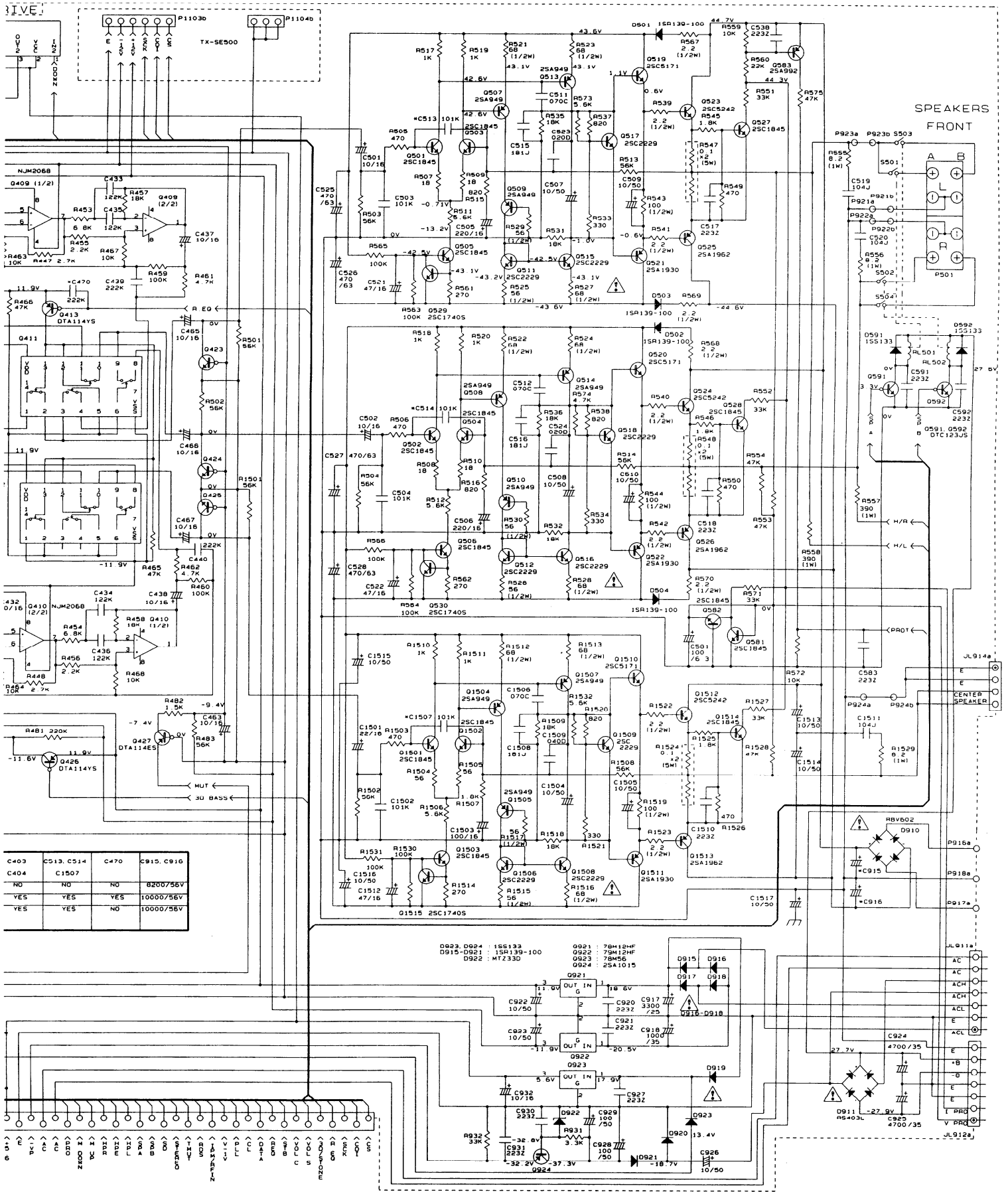


Adjustment points

SCHEMATIC DIAGRAM 1/3

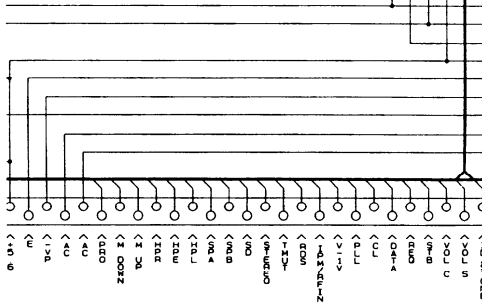
AFTER CHANGE





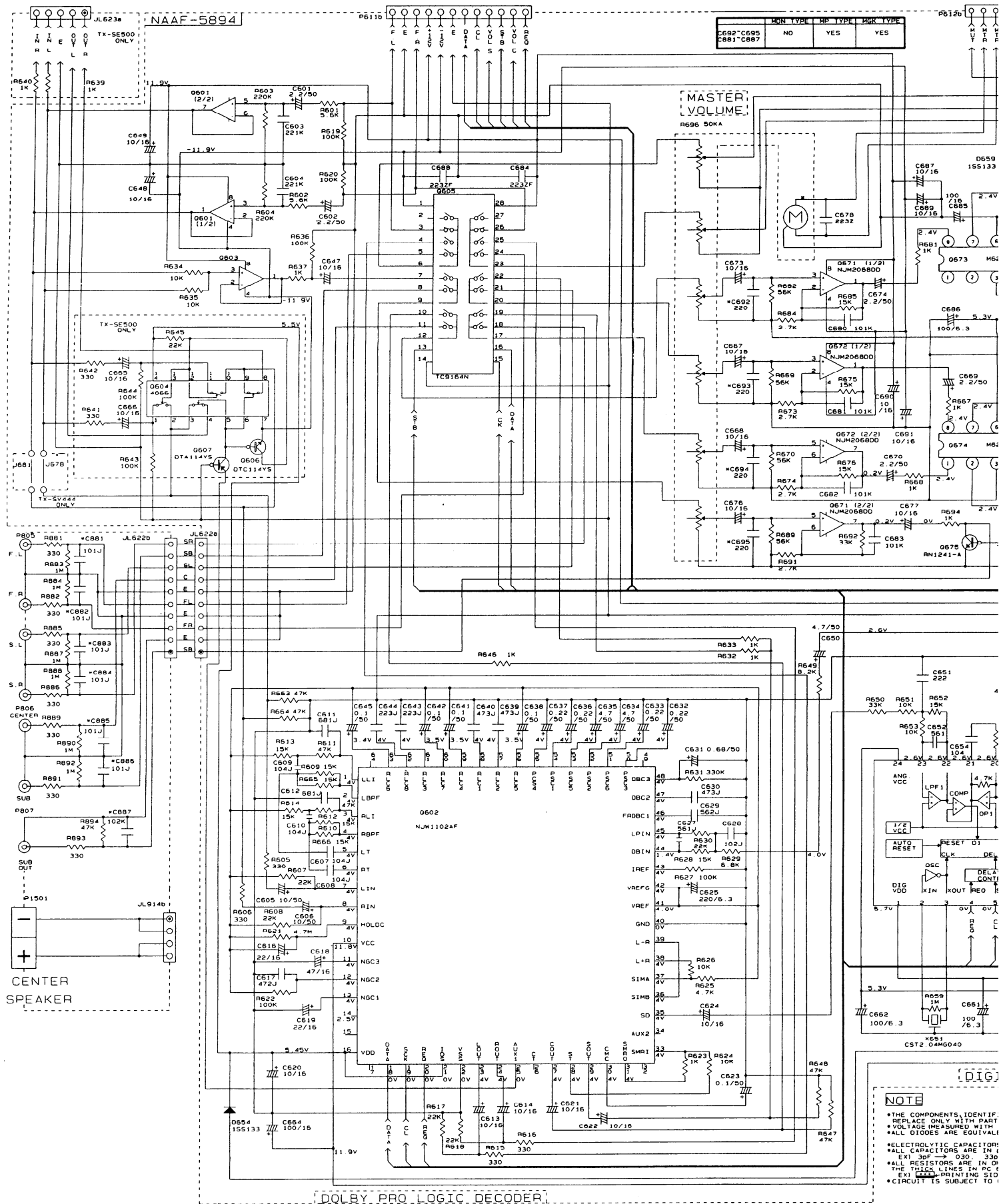
C403	C513, C514	C470	C915, C916
NO	C1507	NO	02007/56V
YES	YES	YES	10000/56V
YES	YES	NO	10000/56V

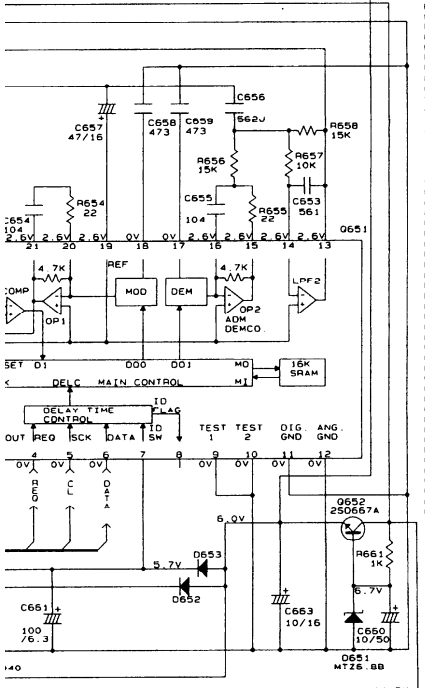
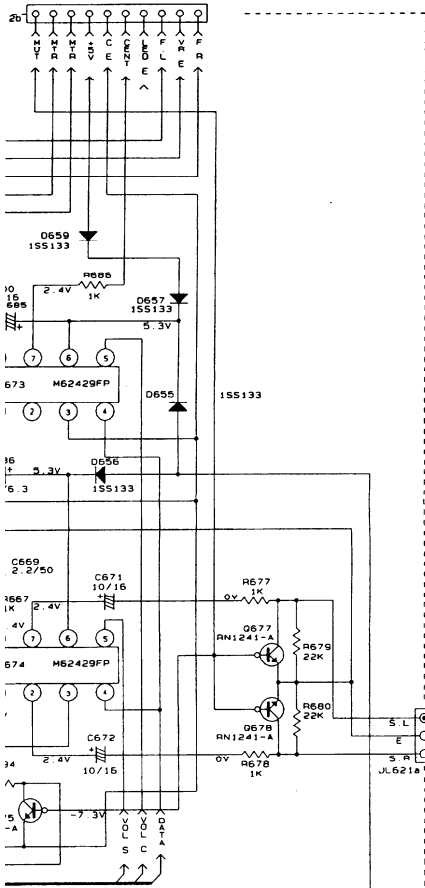
- 0923, 0924: 15S133
- 0915-0921: 1SR139-100
- 0922: MT2330
- 0921: 79M12HF
- 0922: 79M12HF
- 0923: 78M56
- 0924: 2SA1015
- 0921: 79M12HF
- 0922: 79M12HF
- 0923: 78M56
- 0924: 2SA1015



SCHEMATIC DIAGRAM 3/3

AFTER CHANGE

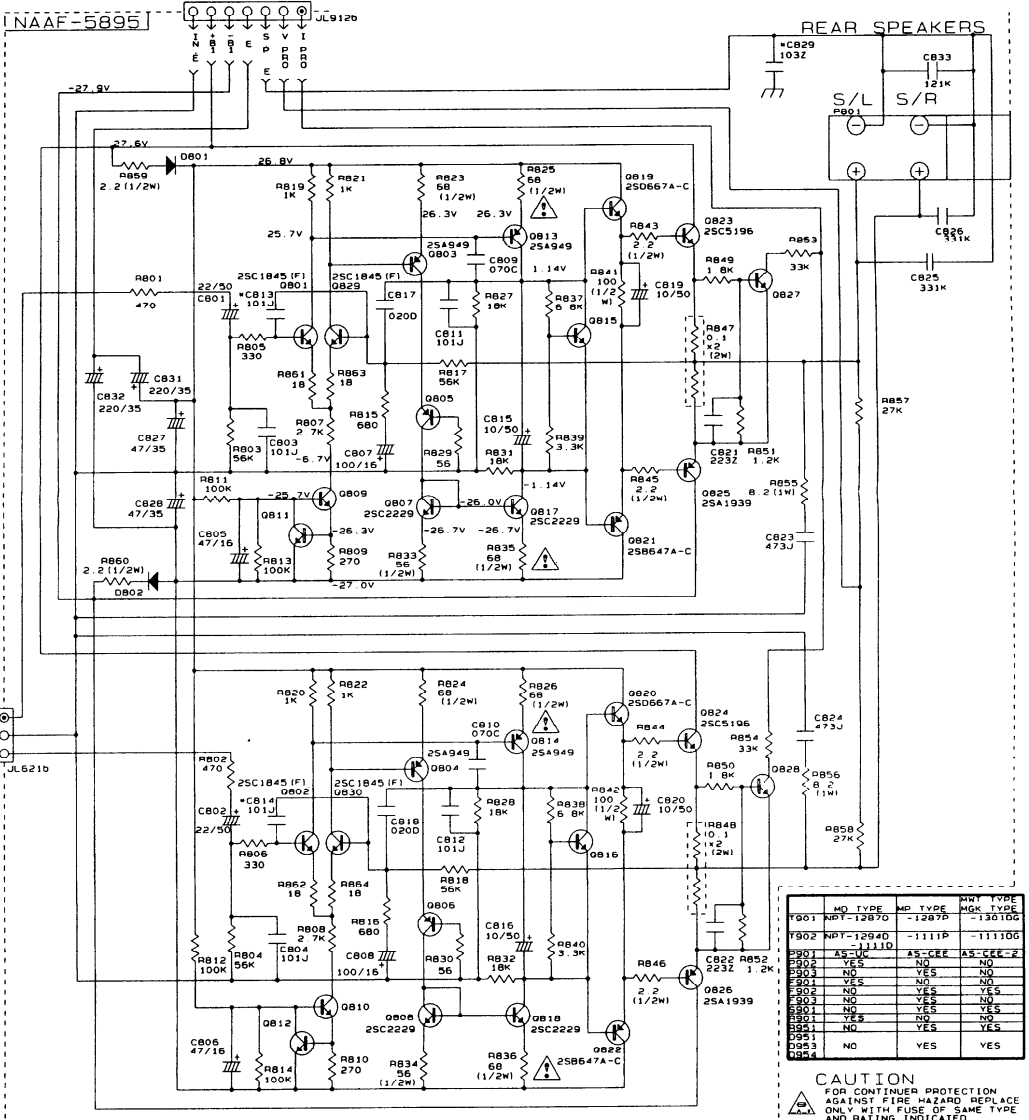




DIGITAL DELAY

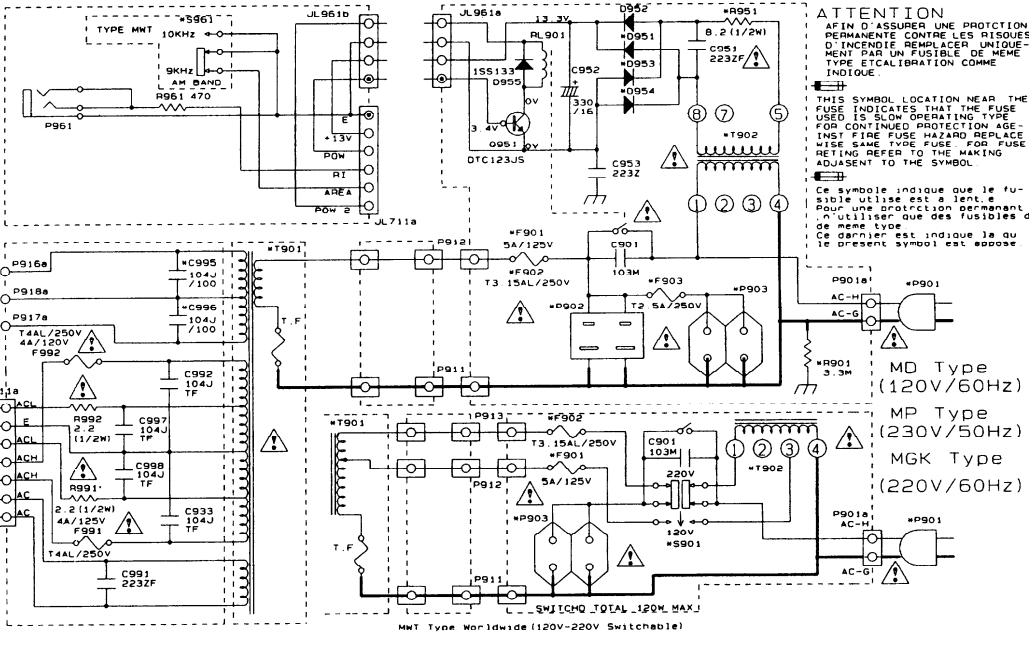
IS IDENTIFIED BY MARK ARE CRITICAL FOR SAFETY. WITH PART NUMBER SPECIFIED. (USE WITH VOLTMETER) IS DC VOLTAGE (NO INPUT SIGNAL) IS EQUIVALENT TO 155133 UNLESS OTHERWISE NOTED.

CAPACITORS ARE IN UF/V UNLESS OTHERWISE NOTED
 030 330F → 330 3300F → 331 0.033UF → 333
 3 ARE IN OHMS /5WATTS UNLESS OTHERWISE NOTED.
 YES IN PC BOARD ARE THE PRINTING SIDE OF THE PARTS.
 PRINTING SIDE
 SUBJECT TO CHANGE FOR IMPROVEMENT



NO	TYPE	MD TYPE	MD TYPE	MDK TYPE
F901	MDT-1287D	-1287D	-13010G	
F902	MDT-1294D	-1111P	-11110G	
P901	AS-C	111D	AS-C	CEE-2
F902	YES	NO	NO	NO
F903	NO	YES	NO	NO
F904	YES	NO	NO	NO
F905	NO	YES	NO	NO
F906	NO	YES	NO	NO
F907	NO	YES	YES	YES
F908	NO	NO	NO	NO
F909	NO	YES	YES	YES
F910	NO	NO	NO	NO
F911	NO	YES	YES	YES
F912	NO	NO	NO	NO
F913	NO	YES	YES	YES
F914	NO	NO	NO	NO
F915	NO	YES	YES	YES

CAUTION
 FOR CONTINUED PROTECTION AGAINST FIRE HAZARD REPLACE ONLY WITH FUSE OF SAME TYPE AND RATING INDICATED.



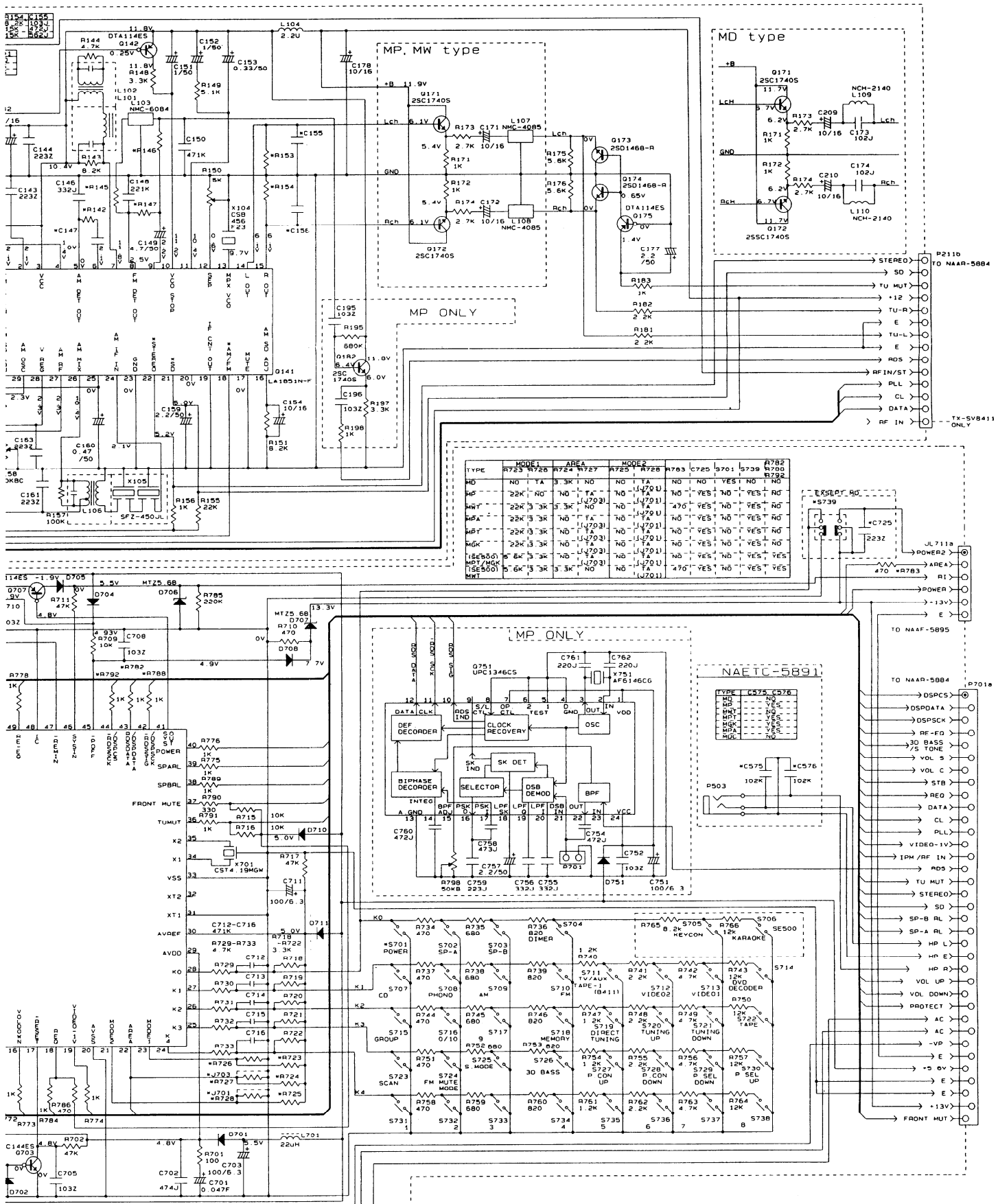
ATTENTION
 AFIN D'ASSURER UNE PROTECTION PERMANENTE CONTRE LES RISQUES D'INCENDIE REMPLACER UNIQUEMENT PAR UN FUSIBLE DE MEME TYPE ET CALIBRAGE COMME INDIQUE.

THIS SYMBOL LOCATION NEAR THE FUSE INDICATES THAT THE FUSE USED IS SLOW OPERATING TYPE FOR CONTINUED PROTECTION AGAINST FIRE FUSE HAZARD REPLACE WISE SAME TYPE FUSE FOR FUSE RATING REFER TO THE MAKING ADJUSTMENT TO THE SYMBOL.

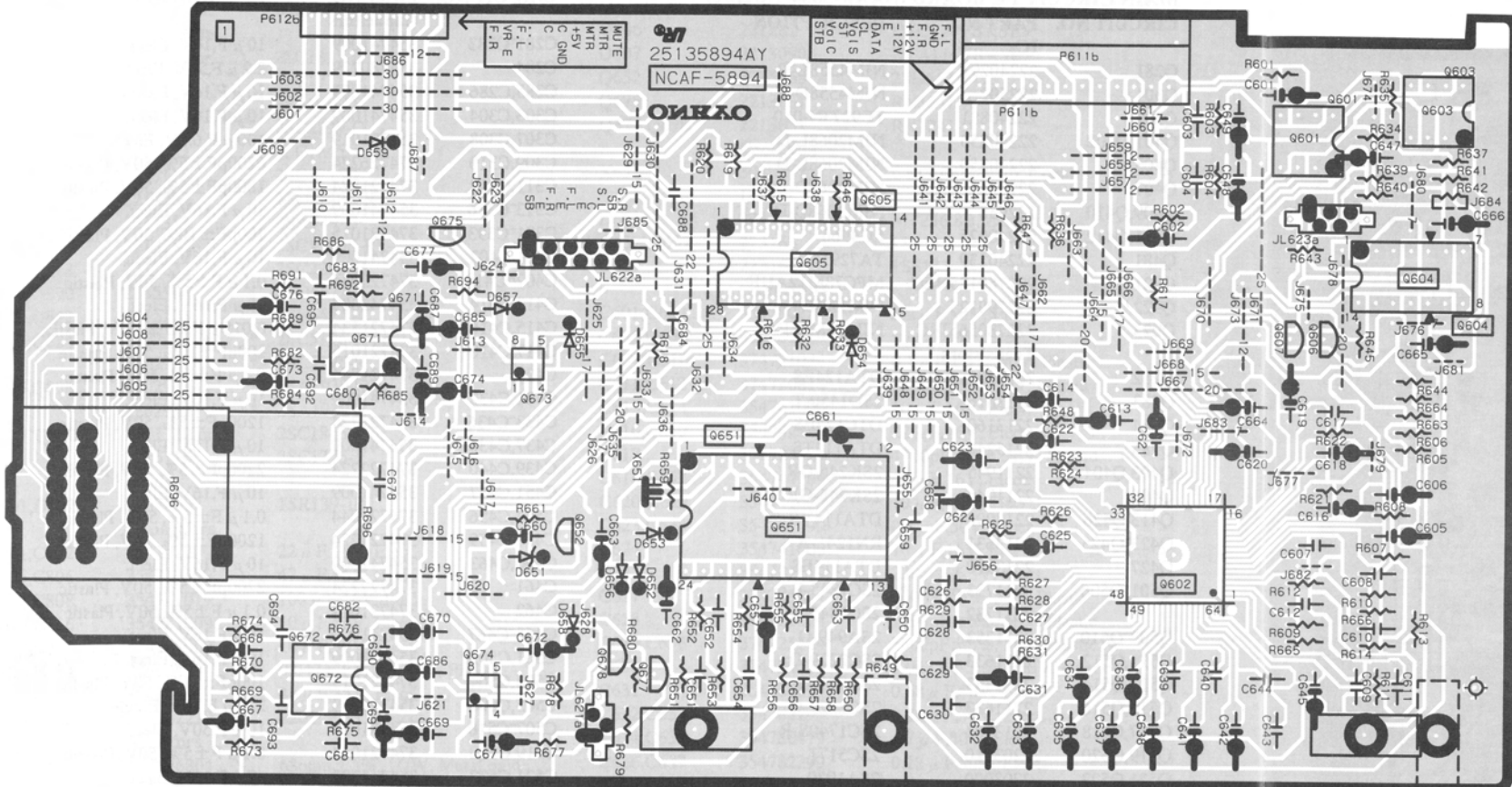
Ce symbole indique que le fusible utilise est à lent. Pour une protection permanente n'utiliser que des fusibles de même type. Ce dernier est indiqué là où le présent symbole est apposé.

MD Type (120V/60Hz)
 MP Type (230V/50Hz)
 MGK Type (220V/60Hz)

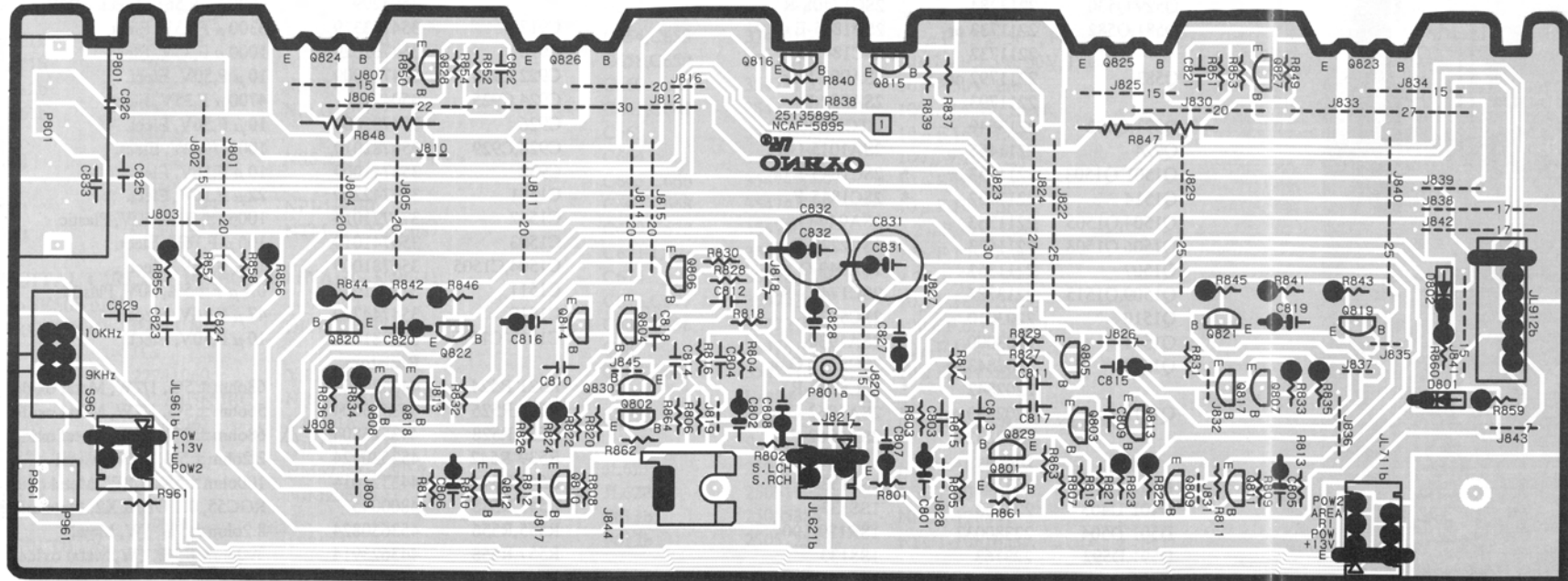
SWITCH TOTAL 120M MAX



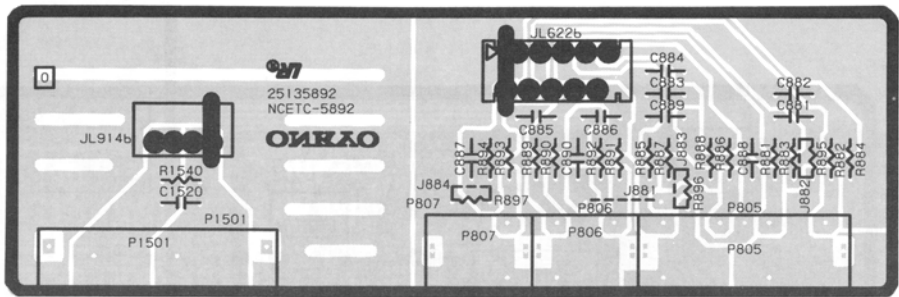
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



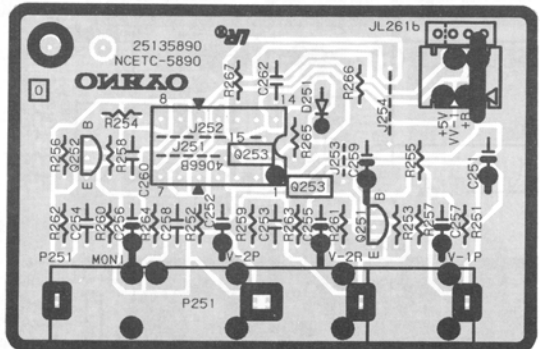
VOLUME CIRCUIT PC BOARD



REAR AMPLIFIER PC BOARD



VIDEO TERMINAL PC BOARD

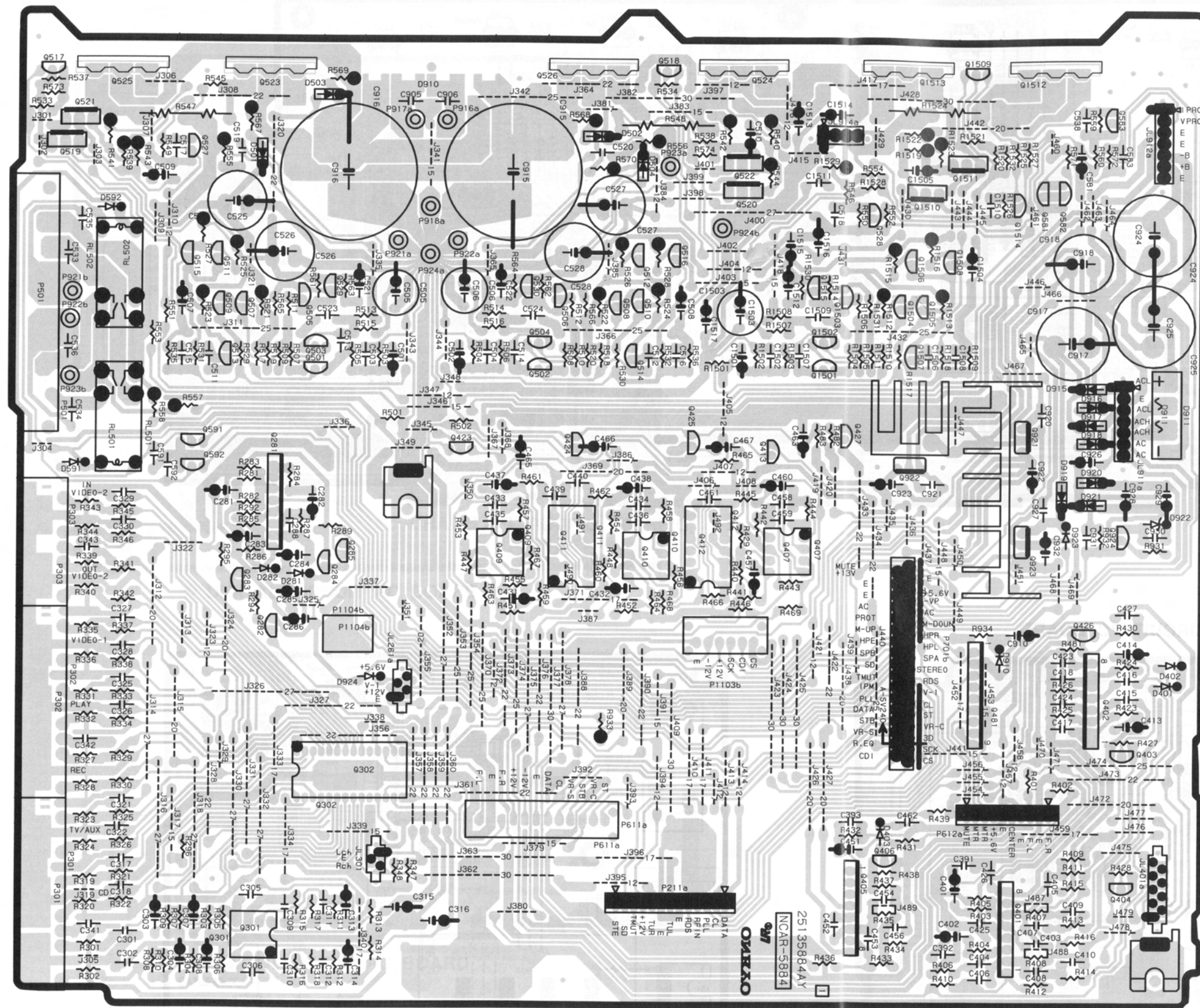


VIDEO TERMINAL PC BOARD

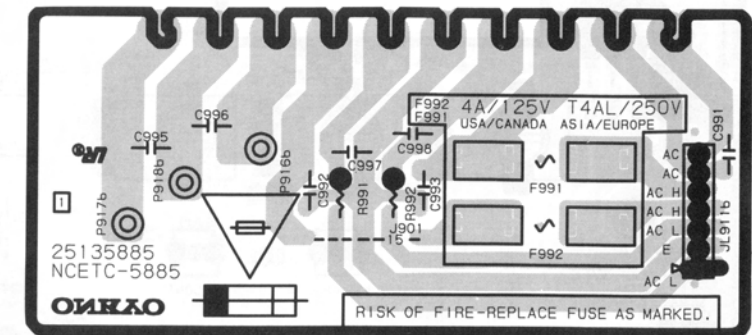


PRIMARY TERMINAL PC BOARD

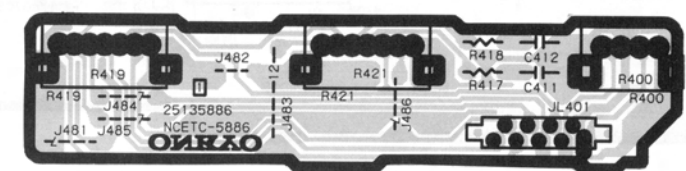
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



MAIN CIRCUIT PC BOARD

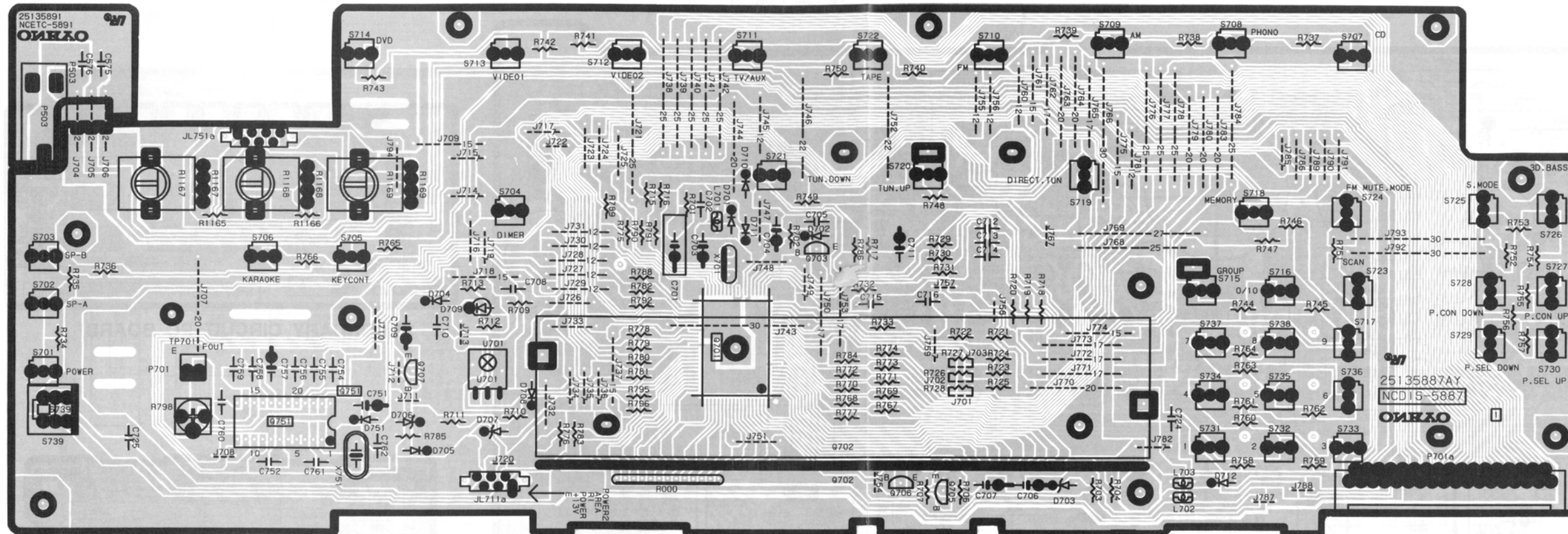


SECONDARY CIRCUIT PC BOARD

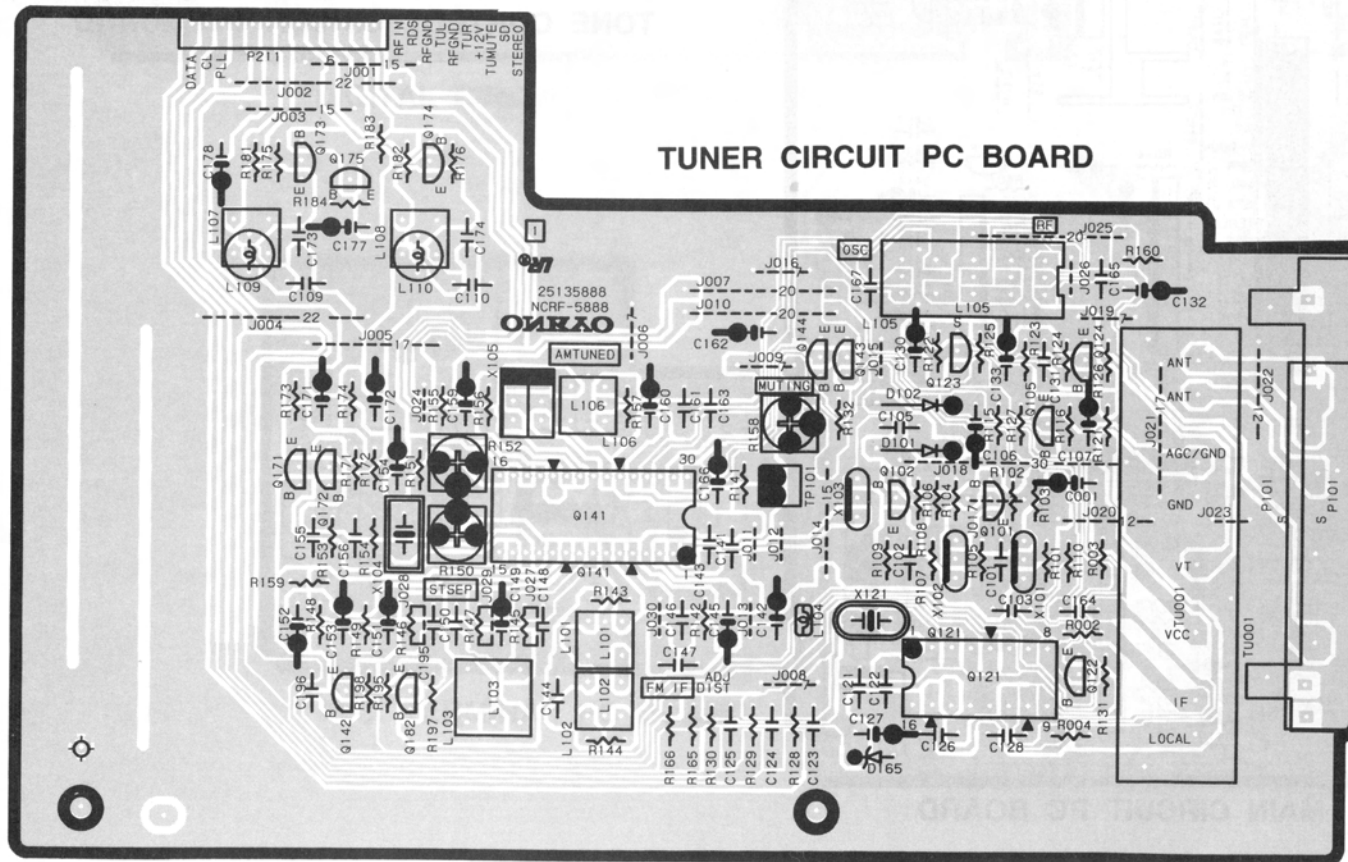


TONE CONTROL CIRCUIT PC BOARD

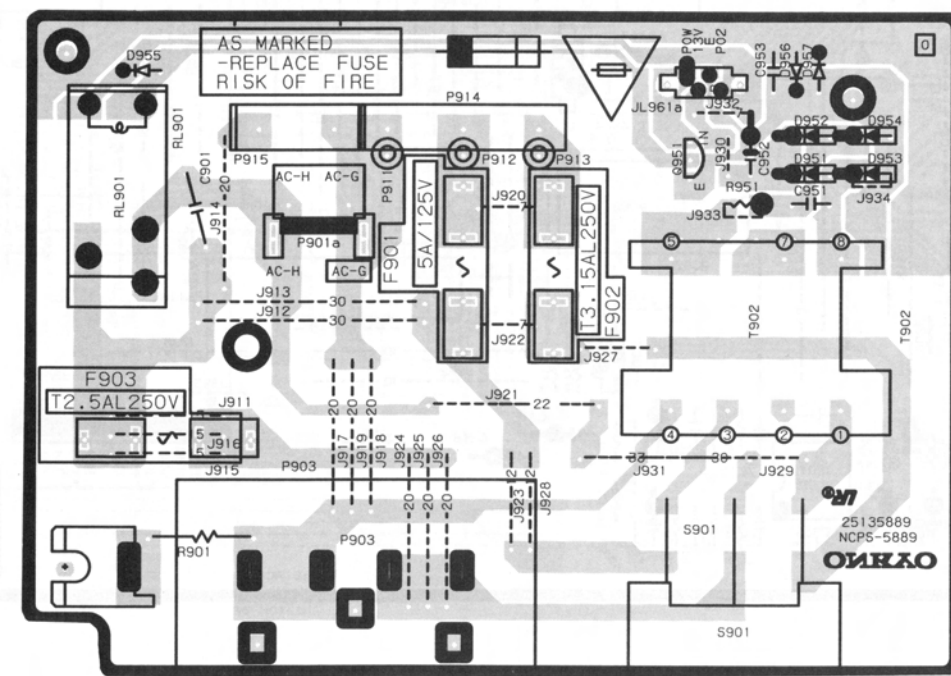
HEADPHONE TERMINAL PC BOARD



DISPLAY CIRCUIT PC BOARD



TUNER CIRCUIT PC BOARD



POWER SUPPLY CIRCUIT PC BOARD

PRINTED CIRCUIT BOARD-PARTS LIST

CAUTION: Replacement for transistor of mark *, if necessary, must be made from the same beta group (HFE) as the original type.

MAIN CIRCUIT PC BOARD (NAAR-5884-1A/1B/2)

CIRCUIT NO.	PART NO.	DESCRIPTION
		ICs
Q281	22240293	NJM4558L-D
Q301	222502	NJM4558D-X
Q302	22240881	TC9273N-010
Q401,Q402	22240250	NJM2068L-D
Q405	22240250	NJM2068L-D
Q407	222956	NJM2068D-D
Q409,Q410	222956	NJM2068D-D
Q411,Q412	22240025	LC4966
Q481	22240239	TA7291S
Q921	222780125NEC	MPC78M12AHF
Q922	222790125	79M12HF
Q923	222780565JRC	NJM78M56FA
		Transistors
Q282	2212600	DTA124ES
Q283	2213816	2SD1450-T
Q284	2213160	DTC124ES
Q285	2215240	DTA114TS
Q403,Q404	2211945	2SK246-GR
Q406	2211945	2SK246-GR
Q413,Q426	2213090	DTA114YS
Q423~Q425	2213631	RN1241-A
Q427	2213510	DTA114ES
Q501~Q506	2211733 or	* 2SC1845-E or
	2211732	* 2SC1845-F
Q507~Q510	2211353	2SA949-O
Q511,Q512	2211633	2SC2229-O
Q513,Q514	2211353	2SA949-O
Q515,Q516	2211633	2SC2229-O
Q517,Q518	2213284	2SC1740S-R
Q519,Q520	2203010	2SC5171
Q521,Q522	2203000	2SA1930
Q523,Q524	2202843 or	* 2SC5242-O or
	2202842	* 2SC5242-R
Q525,Q526	2202833 or	* 2SA1962-O or
	2202832	* 2SA1962-R
Q527,Q528	2211733 or	2SC1845-E or
	2211732	2SC1845-F
Q529,Q530	2213284	2SC1740S-R
Q581,Q582	2211733 or	2SC1845-E or
	2211732	2SC1845-F
Q583	2211792 or	2SA992-F or
	2211793	2SA992-E
Q591,Q592	2213640	DTC123JS
Q924	2211455	2SA1015-GR
Q1501~Q1503	2211733 or	* 2SC1845-E or
Q1514	2211732	* 2SC1845-F
Q1504,Q1505	2211353	2SA949-O
Q1506,Q1508	2211633	2SC2229-O
Q1507	2211353	2SA949-O
Q1509,Q1515	2213284	2SC1740S-R
Q1510	2203010	2SC5171
Q1511	2203000	2SA1930
Q1512	2202843 or	* 2SC5242-O or
	2202842	* 2SC5242-R
Q1513	2202833 or	* 2SA1962-O or
	2202832	* 2SA1962-R
		Diodes
D281,D282	223163	1SS133
D401~D403	223163	1SS133
D501~D504	22380032	1SR139-100
D591,D592	223163	1SS133
D910	223163	1SS133
D911	22380021	△ RS403L
D915~D921	22380032	△ 1SR139-100
D922	224473304	MTZJ33D
D923,D924	223163	1SS133

CIRCUIT NO.	PART NO.	DESCRIPTION
		Capacitors
C281~C283	354741009	10 μ F,16V, Elect.
C284	354780229	2.2 μ F,50V, Elect.
C285,C286	354741009	10 μ F,16V, Elect.
C303,C304	354741009	10 μ F,16V, Elect.
C307,C308	354721019	100 μ F,6.3V, Elect.
C309,C310	374726224	6200pF±5%, 50V, Plastic
C311,C312	374721824	1800pF±5%, 50V, Plastic
C313~C316	354741009	10 μ F,16V, Elect.
C391~C393	374721015	100pF±10%, 50V, Plastic
C401,C402	354741009	10 μ F,16V, Elect.
C407~C410	374721044	0.1 μ F±5%, 50V, Plastic
C413,C414	354741009	10 μ F,16V, Elect.
C415,C416	374721534	0.015 μ F±5%, 50V, Plastic
C417,C418	374721015	100pF±10%, 50V, Plastic
C427	374721044	0.1 μ F±5%, 50V, Plastic
C431,C432	354741009	10 μ F,16V, Elect.
C433~C436	374721224	1200pF±5%, 50V, Plastic
C437,C438	354741009	10 μ F,16V, Elect.
C439,C440	374722224	2200pF±5%, 50V, Plastic
C451,C457	354741009	10 μ F,16V, Elect.
C454,C456	374721044	0.1 μ F±5%, 50V, Plastic
C458,C459	374721224	1200pF±5%, 50V, Plastic
C460,C463	354741009	10 μ F,16V, Elect.
C461	374722224	2200pF±5%, 50V, Plastic
C462	374721044	0.1 μ F±5%, 50V, Plastic
C465~C467	354741009	10 μ F,16V, Elect.
C501,C502	354741009	10 μ F,16V, Elect.
C503,C504	374721015	100pF±10%, 50V, Plastic
C505,C506	354742219	220 μ F,16V, Elect.
C507~C510	354781009	10 μ F,50V, Elect.
C519,C520	374721044	0.1 μ F±5%, 50V, Plastic
C521,C522	354744709	47 μ F,16V, Elect.
C525~C528	354774719	470 μ F,6.3V, Elect.
C581	354721019	100 μ F,6.3V, Elect.
C910	354732219	220 μ F,10V, Elect.
C915,C916	3504280 or	8200 μ F,56V or
	3504298	8200 μ F,56V, Elect. <D>
C915,C916	3504285 or	10000 μ F,56V or
	3504299	10000 μ F,56V, Elect. <P/W/A/T/K>
C917	354753329	3300 μ F,25V, Elect.
C918	354761029	1000 μ F,35V, Elect.
C922,C923	354781009	10 μ F,50V, Elect.
C924,C925	3504213	4700 μ F,35V, Elect.
C926	354781009	10 μ F,50V, Elect.
C928,C929	354781019	100 μ F,50V, Elect.
C932	354741009	10 μ F,16V, Elect.
C1501	354742209	22 μ F,16V, Elect.
C1502	374721015	100pF±10%, 50V, Plastic
C1503	354741019	100 μ F,16V, Elect.
C1504,C1505	354781009	10 μ F,50V, Elect.
C1511	374721044	0.1 μ F±5%, 50V, Plastic
C1512	354744709	47 μ F,16V, Elect.
C1513~C1517	354781009	10 μ F,50V, Elect.
		Resistors
R521~R524	443526804	68ohm±5%, 1/2W, Metal oxide
R525,R526	443525604	56ohm±5%, 1/2W, Metal oxide
R527,R528	443526804	△ 68ohm±5%, 1/2W, Metal oxide
R539~R542	453530224	2.2ohm±5%, 1/2W, Metal
R543,R544	443521014	100ohm±5%, 1/2W, Metal oxide
R547,R548	4800045	RGC55, 0.1 OHM X2, Metal plate
R555,R556	453630824	8.2ohm±5%, 1W, Metal
R557,R558	443623914	390ohm±5%, 1W, Metal oxide
R567~R570	453530224	2.2ohm±5%, 1/2W, Metal
R933	443524704	47ohm±5%, 1/2W, Metal oxide
R1512,R1513	443526804	68ohm±5%, 1/2W, Metal oxide
R1515	443525604	56ohm±5%, 1/2W, Metal oxide
R1516	443526804	△ 68ohm±5%, 1/2W, Metal oxide

CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors	
R1519	443521014	100ohm ± 5%, 1/2W, Metal oxide
R1522,R1523	453530224	2.2ohm ± 5%, 1/2W, Metal
R1524	4800045	RGC55, 0.1 Ohm X2, Metal plate
R1529	453630824	8.2ohm ± 5%, 1W, Metal
	Relay	
RL501,RL502	25065517	NRL-2P5A-DC24-098
	Terminals	
P301,P302	25045458 or 25045300	NPJ-6PDBL279 or NPJ-6PDBL159
P303	25045460Y or 25045303Y	NPJ-4PDBL280 or NPJ-4PDBL162
P501	25060224Y or 25060158Y	NTM-8PDML146 or NTM-8PDML084
	Plugs	
P211a	25055709	NPLG-13P665
P612a	25055706Y	NPLG-10P662
	Sockets	
P611a	25051752Y	NSCT-12P1539
P701b	25050975Y or 25051842	NSCT-35P762 NSCT-35P1629
JL261a	25051088	NSCT-4P875
JL401a	25051093	NSCT-9P880
JL911a,JL912a	25051111	NSCT-7P898
JL914a	25051108	NSCT-4P895
P1103b	25051751Y	NSCT-6P1538 <SE>
P1104b	25051753Y	NSCT-3P1540 <SE>
	Radiators	
Q921a	27160209	RAD-67
Q922a	27160227	RAD-076
	Screws	
Q921b,Q922b	838430107	3TTB+10S(BC), Self-tapping

SECONDARY CIRCUIT PC BOARD (NAETC-5885-1A/1B/2)

CIRCUIT NO.	PART NO.	DESCRIPTION
F991a,F992a	25050065	△ YSH403T, Fuseholder
F991,F992	252077	△ 4A-SE-EAK, Fuse <P/A/T/K/W>
F991,F992	252163Y	△ 4A-UL/T-237, Fuse <D>
JL911b	25051111	NSCT-7P898, Socket
C992,C993	374721044	0.1 μ F ± 5%, 50V, Plastic capacitor
C995,C996	374731044	0.1 μ F ± 5%, 50V, Plastic capacitor
C997,C998	374721044	0.1 μ F ± 5%, 50V, Plastic capacitor
R991,R992	453530224	2.2ohm ± 5%, 1/2W, Metal resistor


TONE CONTROL CIRCUIT PC BOARD (NAETC-5886-1A/1B/2)

CIRCUIT NO.	PART NO.	DESCRIPTION
R400	5104288	N11RCL250KWT20Z, Variable resistor
R419,R421	5104356	N14RLC100KWT20Z, Variable resistor
JL401b	25051093	NSCT-9P880, Wire holder
C411,C412	374721534	0.015 μ F ± 5%, 50V, Plastic capacitor

DISPALY CIRCUIT PC BOARD (NADIS-5887-1A/1B/1C/1D/1E/1F/2A/2B/2C)





CIRCUIT NO.	PART NO.	DESCRIPTION
	Remote sensor	
U701	24130011	PIC-12043TE2, Remote sensor
	FL tube	
Q702	212156	12-BT-101GK
	ICs	
Q701	22241059	μ PD78043FGF-018
Q751	22240679	μ PC1346CS <P>
	Transistors	
Q703	221282	DTC144ES
Q705,Q706	2213284	2SC1740S-R
Q707	2213510	DTA114ES
	Diodes	
D701D702	223163	1SS133
D703	224471203	MTZJ12C, Zener













CIRCUIT NO.	PART NO.	DESCRIPTION
D704,D705	223163	1SS133
D706,D707	224470562	MTZJ5.6B, Zener
D708	223163	1SS133
D709	225290	SEL4110R, LED
D710~D712	223163	1SS133
D751	223163	1SS133 <P>
	Coils	
L701~L703	233454K220	NCH-1452, 220K, Choke
	Resonators	
X701	3010163	CST4.19MGW, Ceramic
X751	3010203	AF6146CG, Crystal <P>
	Capacitors	
C701	3000075	EECS5R5T473, Super
C702	375524744	0.47 μ F ± 5%, 50V, Plastic
C703	355721019	100 μ F, 6.3V, Elect.
C704	355780109	1 μ F, 50V, Elect.
C706,C707	355780109	1 μ F, 50V, Elect.
C709,C711	355721019	100 μ F, 6.3V, Elect.
C751	354721019	100 μ F, 6.3V, Elect. <P>
C754,C760	374724724	4700pF ± 5%, 50V, Plastic <P>
C755,C756	374723324	3300pF ± 5%, 50V, Plastic <P>
C757	354780229	2.2 μ F, 50V, Elect. <P>
C758	374724734	0.047 μ F ± 5%, 50V, Plastic <P>
C759	374722234	0.022 μ F ± 5%, 50V, Plastic <P>
	Resistors	
R798	5210265	N06HR50KBC, Trimming <P>
R1167~R1169	5104393Y	N11RL10KB17Z, Variable <SE>
	Switches	
S701	25035652	NPS-111-S604, Push <D>
S702~S704	25035652	NPS-111-S604, Push
S705,S706	25035652	NPS-111-S604, Push <SE>
S707~S738	25035652	NPS-111-S604, Push
S739	25035653	NPS-122-L605, Push <P/W/T/A/K>
	Sockets and Holder	
JL711a	25051090	NSCT-6P877 or
JL711a	25051879	NSCT-35P1666
P701	25055038	NPLG-2P29 <P>
P701a	25050941Y or 25051842Y	NSCT-35P728 or NSCT-35P1269
JL751a	25051091	NSCT-7P878 <SE>
	Holder	
Q702a	27190989	Holder FL
	TUNER CIRCUIT PC BOARD (NARF-5888-1A/1B/1C/1D/1E/1F/2A/2B/2C)	
CIRCUIT NO.	PART NO.	DESCRIPTION
	Front end	
TU001	240098	ENV172D1G1, Front end <D>
TU001	240102	FE417-G02, Front end <P/W/T/A/K>
	ICs	
Q121	22240090	LM7001
Q141	22240983	LA1851N-F
	Transistors	
Q101	2210746	2SC945A-P <P/W/T/A/K>
Q102	2211723	2SC1923-O
Q122,Q142	2213510 or 2214350	DTA114ES or RN2202
Q175	2212445	2SK365-GR
Q123	2212115 or 2213284	2SC2458-GR or 2SC1740S-R
Q124	221282	DTC144ES
Q171,Q172	2213640	DTC123JS
Q143	2212794	2SD1468-R
Q144	2212115 or 2213284	2SC2458-GR or 2SC1740S-R <P>
Q173,Q174	2212115 or 2213284	2SC2458-GR or 2SC1740S-R <P>
Q182	2213284	2SC1740S-R <P>
	Diode	
D165	224470512	MTZJ5.1B, Zener

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

CIRCUIT NO.	PART NO.	DESCRIPTION
Coils and transformers		
L101	233457	NFIF-4081, IF Transformer
L102	233458	NFIF-4082, IF Transformer
L103	233471	NMC-6084 <P/W/T/A/K>
L104	233454K220	NCH-1452, 220K, Choke coil
L105	232174	NMRF-5077, RF block
L106	232139	NMIF-4062, IF transformer
L107,L108	233484	NMC-4085 <P/W/T/A/K>
L109,L110	231092	NCH-2140, Choke coil <D>
Capacitors		
C001	354741019	100 μ F,16V, Elect.
C109,C110	374722724	2700pF \pm 5%, 50V, Plastic <P/W/T/A/K>
C127	354721019	100 μ F,6.3V, Elect.
C130	354780229	2.2 μ F,50V, Elect.
C131	374722234	0.022 μ F \pm 5%, 50V, Plastic
C132,C153	354783399	0.33 μ F,50V, Elect.
C133,C142	354741019	100 μ F,16V, Elect.
C145,C154	354741009	10 μ F,16V, Elect.
C146	374723324	3300pF \pm 5%, 50V, Plastic
C147	374721034	0.01 μ F \pm 5%, 50V, Plastic <P/W/T/A/K>
	374721534	0.015 μ F \pm 5%, 50V, Plastic <D>
C149	354780479	4.7 μ F,50V, Elect.
C151,C152	354780109	1 μ F,50V, Elect.
C155,C156	374721034	0.01 μ F \pm 5%, 50V, Plastic <D>
	374724724	4700pF \pm 5%, 50V, Plastic <P/T/A/K>
	374725624	5600pF \pm 5%, 50V, Plastic <W>
C159,C177	354780229	2.2 μ F,50V, Elect.
C160	354784799	0.47 μ F,50V, Elect.
C162,C166	354741009	10 μ F,16V, Elect.
C171,C172	354741009	10 μ F,16V, Elect.
C173,C174	374721024	1000pF \pm 5%, 50V, Plastic <D>
C178	354741009	10 μ F,16V, Elect.
Oscillators		
X104	3010268	CSB456F23, Ceramic
X121	3010141	XTL-7.2M, Crystal
Ceramic filters		
X101,X103	3010071	SFE10.7MA5(RED)
X102	3010130	SFE10.7MZ2A <P/W/T/A/K>
X105	3010123	SFZ-450JL
Resistors		
R150	5210261	N06HR5KBC, Trimming
R158	5210264	N06HR30KBC, Trimming
Terminals		
P101	25060117	NTM-2PDML051 or
	25060222	NTM-2PDML144 <P/W/T/A/K>
	25060195	NTM-4PDML117 or
	25060239	NTM-4PDML161 <D>
Plug		
TP101	25055038Y	NPLG-2P29
Socket		
P211b	25051238	NSCT-13P1028

**POWER SUPPLY CIRCUIT PC BOARD
(NAPS-5889-1A/1B/1C/1D/1E/1F/2A/2B/2C)**

CIRCUIT NO.	PART NO.	DESCRIPTION
Transistor		
Q951	2213640	DTC123JS
Diodes		
D951,D953	22380032	1SR139-100 <P/W/T/A/K>
D952	22380032	1SR139-100
D954	22380032	1SR139-100 <P/W/T/A/K>
D955	223163	1SS133
Power transformer		
T902	2300670AY or 	NPT-1111D or
	2301258Y 	NPT-1294D, Power transformer <D>
	2300671A 	NPT-1111P, Power transformer <P/T/A>
	2300672AY 	NPT-1111DG, Power transformer <W/K>

CIRCUIT NO.	PART NO.	DESCRIPTION
Capacitors		
C901	3500191	 DE7150F-103M, AC400V/125V, IS
C952	354743319	330 μ F,16V, Elect.
Fuseholders		
F901a	25050065	 YSH403T, Fuseholder <D/W>
F902a	25050065	 YSH403T, Fuseholder <P/T/A/K>
F903a	25050065	 YSH403T, Fuseholder <P/T>
Fuses		
F901	252164Y	 5A-UL/T-237, Fuse <D/W>
F902	252076	 3.15A-SE-EAK, Fuse <P/A/T/K/W>
F903	252075	 2.5A-SE-EAK, Fuse <P/T>
Holder		
JL961a	25051088	NSCT-4P875, Wire
P901a	25055675Y	NPLG-2P631, Plug
Terminal		
P902	25051126Y	 NSCT-4P913, AC outlet <D>
P903	25051125Y	 NSCT-4P912, AC outlet <P/W/T>
Resistors		
R901	431533355	 3.3 Mohm,1/2W, Solid <D>
R951	453530824	8.2ohm \pm 5%, 1/2W, Metal <P/W/T/A/K>
Relay		
RL901	25065515	 NRL-1P5A-DC12-096
Switch		
S901	25065437	 NSS-22157P, Slide <W>

VIDEO TERMINAL PC BOARD

(NAETC-5890-1A/1B/1C/1D/1E/1F/2A/2B/2C)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q253	222840661	4066B,IC
Q251,Q252	2213284	2SC1740S-R, Transistor
D251	223163	1SS133, Diode
C251,C252	354721019	100 μ F,6.3V, Elect. capacitor
C255,C256	354724719	470 μ F,6.3V, Elect. capacitor
C257	354721019	100 μ F,6.3V, Elect. capacitor
C259	354741019	100 μ F,16V, Elect. capacitor
JL261b	25055625	NPLG-4P587, Wire trap
P251	25045339	NPJ-4PDYE190, Terminal

HEADPHONE TERMINAL PC BOARD

(NAETC-5891-1A/1B/1C/1D/1E/1F/2A/2B/2C)

CIRCUIT NO.	PART NO.	DESCRIPTION
P503	25045255Y	YKB21-5009, Headphone

VIDEO TERMINAL PC BOARD

(NAETC-5892-1A/1B/1C/1D/1E/1F/2A/2B/2C)

CIRCUIT NO.	PART NO.	DESCRIPTION
JL914b	25050281	NSCT-4P109, Wire trap
JL622b	25055631	NPLG-10P593, Wire trap
P1501	25060114	NTM-2PDMNL048, Terminal
P805	25045460Y	NPJ-4PDBL281, Terminal
P806	25045456Y	NPJ-2PDBL277, Terminal
P807	25045459Y or	NPJ-1PDBL280 or
	25045302Y	NPJ-1PDBL161, Terminal

VOLUME CIRCUIT PC BOARD (NAAF-5894-1A/1B/1C/2/2A)

CIRCUIT NO.	PART NO.	DESCRIPTION
ICs		
Q601,Q603	222502	NJM4558D-X
Q602	22241053	NJW1102AF
Q604	222840661	4066B <SE>
Q605	22240800	TC9164AN
Q651	22240995 or	NJU9702D or
	22240686	M65830P
Q671,Q672	222956	NJM2068D-D
Q673,Q674	22241054	M62429FP

REAR AMPLIFIER PC BOARD (NAAF-5895-1A/1B/1C/2/2A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q801,Q802	2211732 or 2215116	2SC1845-F or 2SC1775-F
Q803~Q806	2211353	2SA949-O
Q807,Q808	2211633	2SC2229-O
Q809,Q810	2211732 or 2215116	2SC1845-F or 2SC1775-F
Q811,Q812	2213284	2SC1740S-R
Q813,Q814	2211353	2SA949-O
Q815,Q816	2213284	2SC1740S-R
Q817,Q818	2211633	2SC2229-O
Q819,Q820	2215163	2SD667A-C
Q821,Q822	2215173	2SB647A-C
Q823,Q824	2202923 or 2202922	* 2SC5196-O or * 2SC5196-R
Q825,Q826	2202913 or 2202912	* 2SA1939-O or * 2SA1939-R
Q827~Q830	2211732 or 2215116	2SC1845-F or 2SC1775-F
	Diode	
D801,D802	22380032	1SR139-100
	Capacitors	
C801,C802	354742209	22 μ F,16V, Elect.
C805,C806	354744709	47 μ F,16V, Elect.
C807,C808	354741019	100 μ F,16V, Elect.
C815,C816	354781009	10 μ F,50V, Elect.
C819,C820	354781009	10 μ F,50V, Elect.
C823,C824	374724734	0.047 μ F \pm 5%, 50V, Plastic
C827,C828	354764709	47 μ F,35V, Elect.
C831,C832	354762219	220 μ F,35V, Elect.
	Resistors	
R823~R826	443526804	68ohm \pm 5%, 1/2W, Metal oxide
R833,R834	443525604	56ohm \pm 5%, 1/2W, Metal oxide
R835,R836	443526804	68ohm \pm 5%, 1/2W, Metal oxide
R841,R842	443521014	100ohm \pm 5%, 1/2W, Metal oxide
R843~R846	453530224	2.2ohm \pm 5%, 1/2W, Metal
R847,R848	4800047	RGC22,0.1 ohm \times 2, Metal plate
R855,R856	453630824	8.2ohm \pm 5%, 1W, Metal
R859,R860	453530224	2.2ohm \pm 5%, 1/2W, Metal
	Wire traps	
JL621b	25055624	NPLG-3P586
JL711b	25055627	NPLG-6P589
JL912b	25050271	NSCT-7P99
JL961b	25055625	NPLG-4P587
	Switch	
S961	25065286	NSS-22112, Slide <W>
	Terminals	
P961	25045439Y	NPJ-1PDBL263
P801	25060161Y	NTM-4PDMNL087

DIGITAL CIRCUIT PC BOARD (NADG-5896-1)

TX-SE500 only

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q1103	22241060	YSS240
Q1104	222780565JRC	NIM78M56FA
Q1105	22241061	YAC516
Q1106~Q1110	222956	NJM2068D-D
Q1111	22241062	HM62256BLSP-7
Q1112	222956	NJM2068D-D
	Diodes	
D1101~D1106	223163	1SS133
	Oscillator	
X1101	3010112	KD6586FFB

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q606	221281	DTC114YS <SE>
Q607	2213090	DTA114YS <SE>
Q652	2215163	2SD667A-C
Q675	2213631	RN1241-A
Q677,Q678	2213631	RN1241-A
	Oscillator	
X651	3010217	CST2.04MG040, Ceramic
	Diodes	
D651	224470682	MTZJ6.8B, Zener
D652~D657	223163	1SS133
D659	223163	1SS133
	Capacitors	
C601,C602	354780229	2.2 μ F,50V, Elect.
C605,C606	354781009	10 μ F,50V, Elect.
C607~C610	374721044	0.1 μ F \pm 5%, 50V, Plastic
C611,C612	374726814	680pF \pm 5%, 50V, Plastic
C613,C614	354741009	10 μ F,16V, Elect.
C616,C619	354742209	22 μ F,16V, Elect.
C617	374724724	4700pF \pm 5%, 50V, Plastic
C618,C657	354744709	47 μ F,16V, Elect.
C620~C622	354741009	10 μ F,16V, Elect.
C623,C638	354781099	0.1 μ F,50V, Elect.
C624	354741009	10 μ F,16V, Elect.
C625	354722219	220 μ F,6.3V, Elect.
C627	374725614	560pF \pm 5%, 50V, Plastic
C628	374721024	1000pF \pm 5%, 50V, Plastic
C629,C656	374725624	5600pF \pm 5%, 50V, Plastic
C630	374724734	0.047 μ F \pm 5%, 50V, Plastic
C631	354786899	0.68 μ F,50V, Elect.
C632,C633	354782299	0.22 μ F,50V, Elect.
C634,C635	354780479	4.7 μ F,50V, Elect.
C636,C637	354782299	0.22 μ F,50V, Elect.
C639,C640	374724734	0.047 μ F \pm 5%, 50V, Plastic
C641,C642	354781099	0.1 μ F,50V, Elect.
C643,C644	374722234	0.022 μ F \pm 5%, 50V, Plastic
C645	354781099	0.1 μ F,50V, Elect.
C647~C649	354741009	10 μ F,16V, Elect.
C650	354780479	4.7 μ F,50V, Elect.
C651	374722224	2200pF \pm 5%, 50V, Plastic
C652,C653	374725614	560pF \pm 5%, 50V, Plastic
C654,C655	374721044	0.1 μ F \pm 5%, 50V, Plastic
C658,C659	374724734	0.047 μ F \pm 5%, 50V, Plastic
C660	354781009	10 μ F,50V, Elect.
C661,C662	354721019	100 μ F,6.3V, Elect.
C663	354741009	10 μ F,16V, Elect.
C664	354741019	100 μ F,16V, Elect.
C665,C666	354741009	10 μ F,16V, Elect. <SE>
C667,C668	354741009	10 μ F,16V, Elect.
C669,C670	354780229	2.2 μ F,50V, Elect.
C671~C673	354741009	10 μ F,16V, Elect.
C674	354780229	2.2 μ F,50V, Elect.
C676,C677	354741009	10 μ F,16V, Elect.
C685,C686	354721019	100 μ F,6.3V, Elect.
C687	354741009	10 μ F,16V, Elect.
C689~C691	354741009	10 μ F,16V, Elect.
	Resistor	
R696	5104392	N16RFL50KA25F, Variable
	Sockets	
JL621a	25051087	NSCT-3P874
JL622a	25051094	NSCT-10P881
P611b	25055885Y	NPLG-12P841
P612b	25051235Y	NSCT-10P1025

CIRCUIT NO.	PART NO.	DESCRIPTION
Capacitors		
C1116,C1117	354741009	10 μ F,16V, Elect.
C1118~C1120	374723324	3300pF \pm 5%, 50V, Plastic
C1121,C1131	354741009	10 μ F,16V, Elect.
C1122	374721024	1000pF \pm 5%, 50V, Plastic
C1123	354741019	100 μ F,16V, Elect.
C1126~C1129	354741009	10 μ F,16V, Elect.
C1130,C1165	374721044	0.1 μ F \pm 5%, 50V, Plastic
C1132,C1133	374721044	0.1 μ F \pm 5%, 50V, Plastic
C1134,C1138	354741009	10 μ F,16V, Elect.
C1135,C1136	374721044	0.1 μ F \pm 5%, 50V, Plastic
C1139,C1147	374722724	2700pF \pm 5%, 50V, Plastic
C1140,C1148	374726824	6800pF \pm 5%, 50V, Plastic
C1141,C1149	374723915	390pF \pm 10%, 50V, Plastic
C1142~C1146	354741009	10 μ F,16V, Elect.
C1150,C1156	374722724	2700pF \pm 5%, 50V, Plastic
C1151,C1154	374726824	6800pF \pm 5%, 50V, Plastic
C1152,C1158	374723915	390pF \pm 10%, 50V, Plastic
C1153,C1159	374721824	1800pF \pm 5%, 50V, Plastic
C1155,C1161	374722715	270pF \pm 10%, 50V, Plastic
C1157,C1160	374726824	6800pF \pm 5%, 50V, Plastic
C1162	374722724	2700pF \pm 5%, 50V, Plastic
C1163	374726824	6800pF \pm 5%, 50V, Plastic
C1164	374723915	390pF \pm 10%, 50V, Plastic
C1170,C1171	374721015	100pF \pm 10%, 50V, Plastic
Plugs		
JL623b	25055626Y	NPLG-5P588
JL752b	25055672Y	NPLG-6P589
P1103a	25055884Y	NPLG-6P840
P1104a	25055889Y	NPLG-3P842

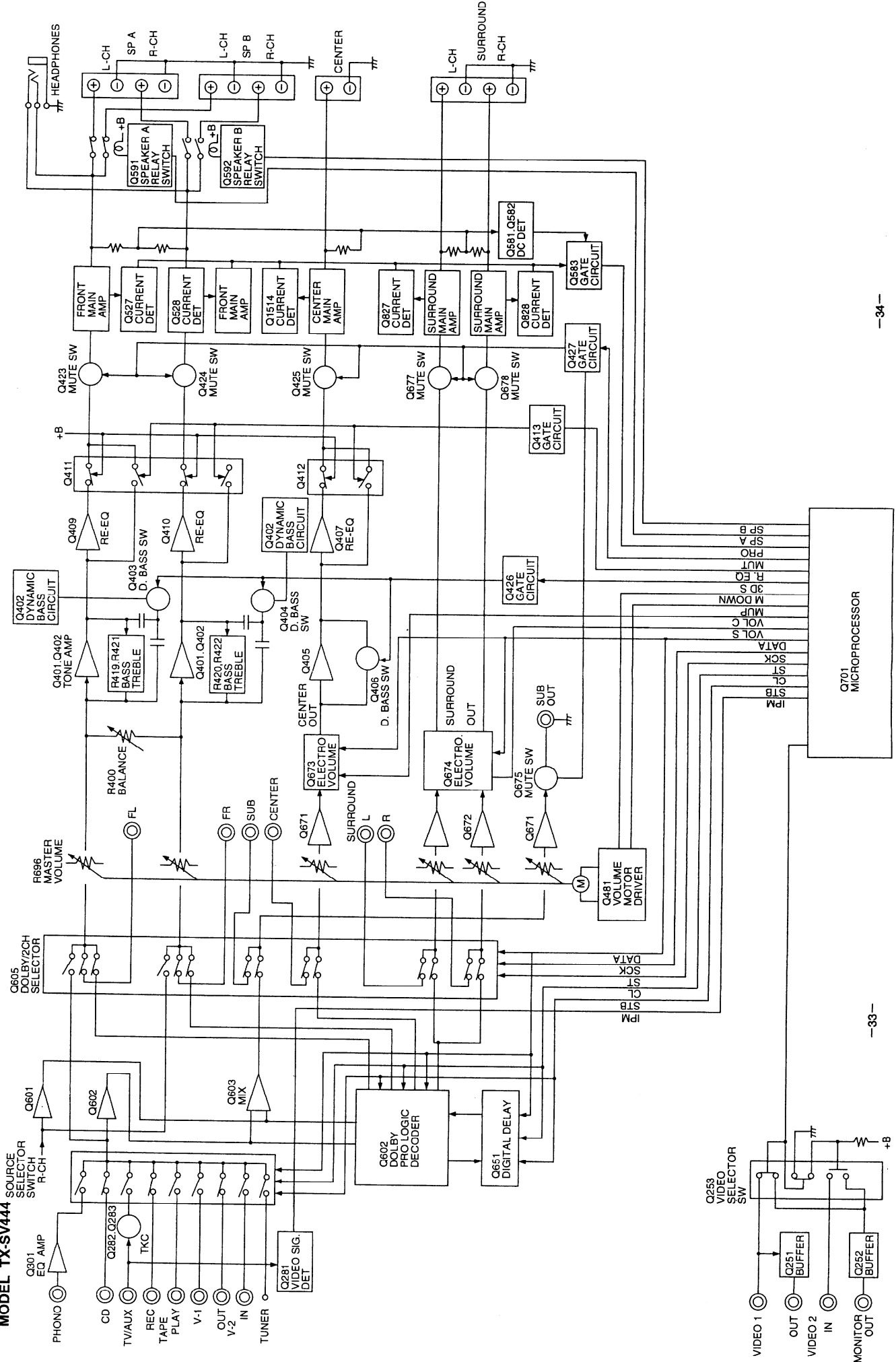
MIC. TERMINAL PC BOARD (NAETC-5897-1)

TX-SE500 only

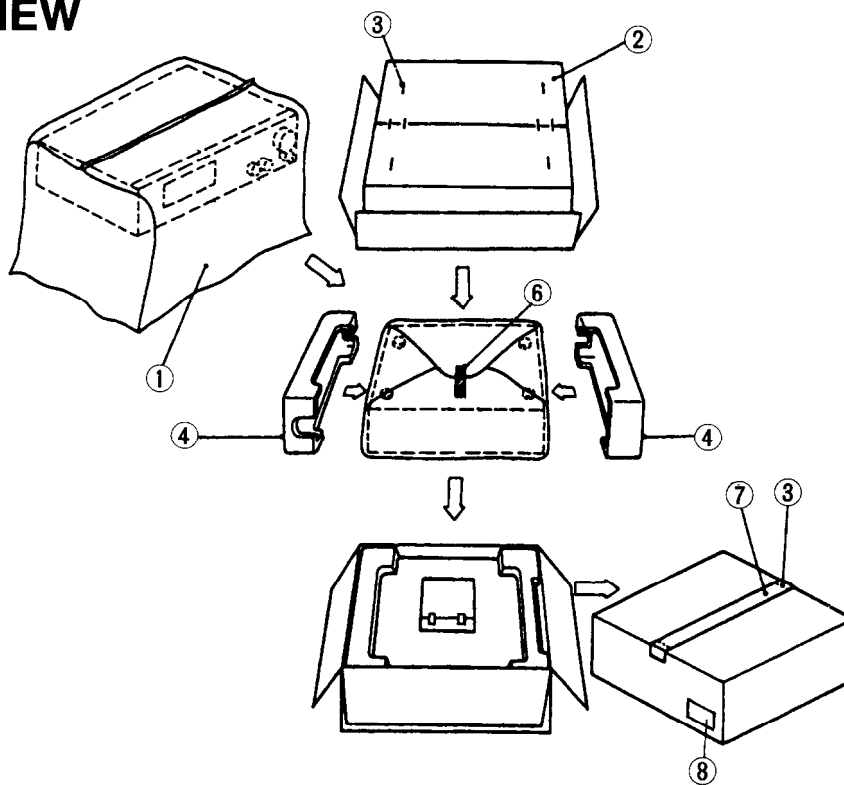
CIRCUIT NO.	PART NO.	DESCRIPTION
ICs		
Q1101,Q1102	222956	NJM2068D-D
Capacitors		
C1101	374721015	100pF \pm 10%, 50V, Plastic
C1102	354744709	47 μ F,16V, Elect.
C1103	374722224	2200pF \pm 5%, 50V, Plastic
C1104	374721215	120pF \pm 10%, 50V, Plastic
C1105,C1106	354741019	100 μ F,16V, Elect.
C1107	374721015	100pF \pm 10%, 50V, Plastic
C1108	354744709	47 μ F,16V, Elect.
C1109	374722224	2200pF \pm 5%, 50V, Plastic
C1110	374721215	120pF \pm 10%, 50V, Plastic
C1111	374721024	1000pF \pm 5%, 50V, Plastic
C1112	354742209	22 μ F,16V, Elect.
C1113	354744709	47 μ F,16V, Elect.
C1114,C1115	374721015	100pF \pm 10%, 50V, Plastic
Terminals		
P1101,P1102	25045492Y	NPJ-1PDBL309
Plug		
JL751a	25055628Y	NPLG-7P590
Socket		
JL752a	25051090Y	NSCT-6P877

NOTE: <D>:120V model only
<P>:230V model only
<W>: Asian model only
<T>: Taiwanese model only
<A>: Australian model only
<K>: Korean model only
<SE>: TX-SE500 only

BLOCK DIAGRAM
MODEL TX-SV444



PACKING VIEW



MODEL TX-SV444

REF. NO.	PART NO.	DESCRIPTION
1	29100034-1AY	850x650, Poly bag
2	29053089Y	Carton box <D>
2	29053090AY	Carton box <A/K/T/W>
2	29053091Y	Carton box <P>
3	282321	Staple
4	29091763AY	Pad ass'y
6	261504	Paper tape
7	29110071	P. P tape
8	29362093Y	Label EAN <P>
	232140	NMA-3057, AM loop antenna
	3010054	UM-3, Battery
	24140327Y	RC-327S, Remote control
	25055018	CV-1K-1, Conversion plug <W>
	25065462Y	YAE21-0237, FM adaptor <K/A/T>
	29100097-1AY	350x250, Poly bag
	292111Y	FM antenna <D>
	292112Y	FM antenna <P/K/A/T/W>
	29342375Y	Instruction manual E
	29342376Y	Instruction manual FSI <P>
	29342377Y	Instruction manual GSWD <P>
	29342378Y	Instruction manual T <T/W>
	29358002K	Service station list <D>
	29361786Y	Label <K/A/W>
	29365019B	Warranty card <D>

NOTE: <D>:120V model only
<P>:230V model only
<W>:Taiwanese model only
<A>:Australian model only
<T>:Asian model only
<K>:Korean model only

MODEL TX-SE500

REF. NO.	PART NO.	DESCRIPTION
1	29100034-1AY	850x650, Poly bag
2	29053092Y	Carton box
	29053146Y	Carton box <G>
3	282321	Staple
4	29091763AY	Pad ass'y
6	261504	Paper tape
7	29110071	P. P tape
8	29362094Y	Label EAN
	29362134Y	Label EAN <G>
		Accessory bag ass'y
	24140326Y	RC-326S, Remote control
	3010054	UM-3, Battery
	232140	NMA-3057, AM loop antenna
	292112Y	FM antenna
	25065462Y	YAE21-0237, FM adaptor
	29342375Y	Instruction manual E
	29342378Y	Instruction manual T <P/W>
	29355221Y	Instruction sheet
	25055018	CV-1K-1, CV Plug
	29100097-1AY	350x250, Poly bag

NOTES: : Black model only
<G>: Golden model only
<P>: Asian model only
<W>: Taiwanese model only
<K>: Korean model only

SERVICE INFORMATION

Ref. No. 9708
Date Aug. 5, '97

This Ref. No. 9708 is revision of Ref. No. 9707.

MODEL	TX-SV444/TX-SE500
ITEM	Changes of circuit

Symptom: No sound

Cause: The abnormal idling current flows according to the error tolerance of parts or the attachment position of thermal compensation transistors, and the power transistors, resistors etc. are broken.

Countermeasure: The parts below were changed to decrease the idling current.

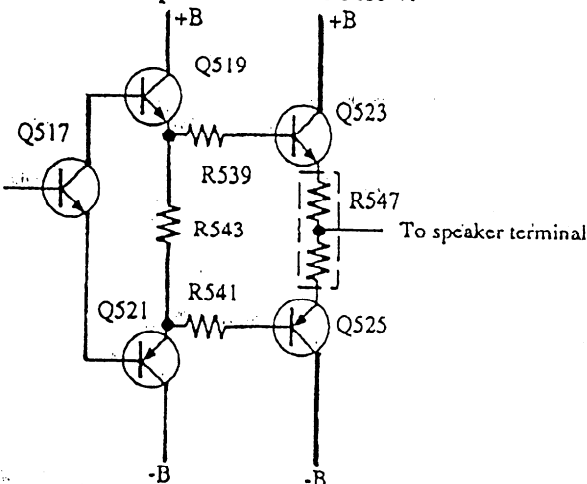
Circuit No.	Part Name	After Change		Before Change		Note
		Description	Part No.	Description	Part No.	
R533, R534, R1521 R533 534 1519	Carbon resistors	R16J 330	417343314	R16J 3.3K	417343324	*1
	Metal resistors	1/8WG330	4500132			*2
R537, R538, R1520	Carbon resistors	R16J 820	417348214	R16J 6.8K	417346824	*1
	Metal resistors	1/6WCF820	4500116			*3
R573, R1532	Carbon resistors	R16J 5.6K	417345624	R16J 150K	417341544	
R574	Carbon resistor	R16J 4.7K	417344724	R16J 100K	417341044	
C524	Ceramic C	50V 040C	345020401	50V 020C	345020201	
Q517, Q518, Q1509	Transistors	2SC2229-O	2211633	2SC1740S-R	2213284	

Application of change: *1: From March, '97
*2: From June, '97
*3: From July, '97

Table 1

Service Procedures

1. Check all parts as shown below.



Spare parts kit : Part No. 0T1011

Part Name : IDLING

Component List

Part Name	Description	Part No.	Q'ty
Metal resistors	1/8WG330	4500132	3
Metal resistors	1/6WCF820	4500116	3
Carbon resistors	R16J 5.6K	417345624	2
Carbon resistor	R16J 4.7K	417344724	1
Ceramic C	50V 040C	345020401	1
Transistors	2SC2229-O	2211633	3