STEREO RECEIVER

RX-V590/R-V901/ RX-V590RDS

SERVICE MANUAL

IMPORTANT NOTICE

This manual has been provided for the use of authorized YAMAHA Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically YAMAHA Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components, and failure of the product to perform as specified. For these reasons, we advise all YAMAHA product owners that any service required should be performed by an authorized YAMAHA Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of YAMAHA are continually striving to improve YAMAHA products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and part replacement. Recheck all work before you apply power to the unit.

■ CONTENTS

100512

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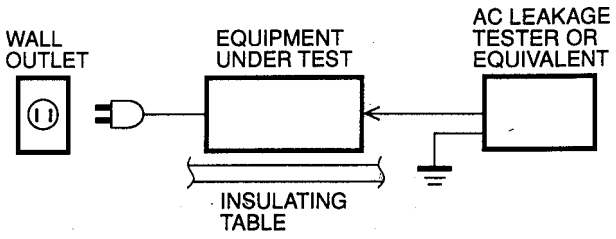
YAMAHA
YAMAHA CORPORATION
P.O.Box1,Hamamatsu,Japan
3.3K-854 Printed in Japan '95.3

■ TO SERVICE PERSONNEL

1. Critical Components Information.
   Components having special characteristics are marked and must be replaced with parts having specifications equal to those originally installed.
2. Leakage Current Measurement (For 120V Models Only).
   When service has been completed, it is imperative to verify that all exposed conductive surfaces are properly insulated from supply circuits.

- Meter impedance should be equivalent to 1500 ohm shunted by 0.15μF.
- Leakage current must not exceed 0.5mA.
- Be sure to test for leakage with the AC plug in both polarities.



WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

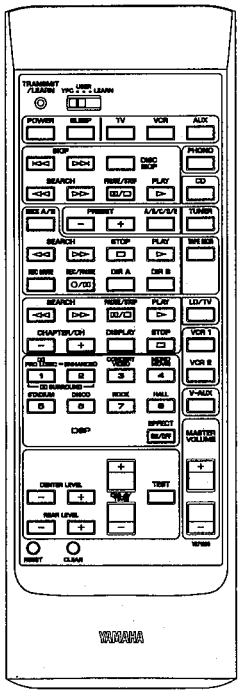
DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHAT SO EVER!

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

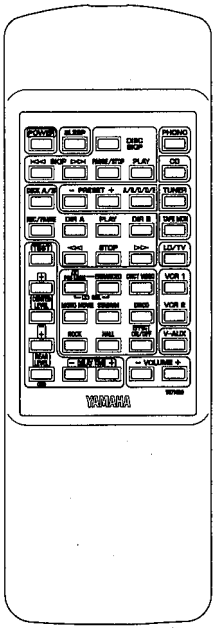
If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

■ REMOTE CONTROL PANELS

▼ RX-V590/R-V901
(U, C, A models)

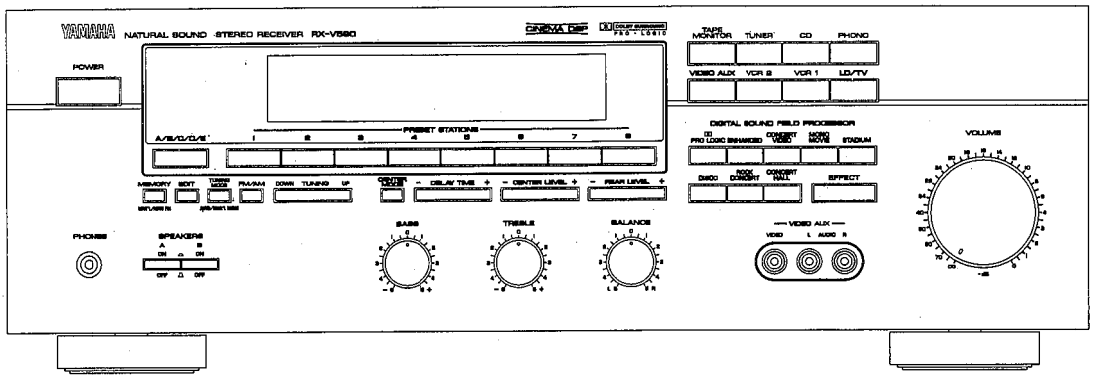


▼ RX-V590/RX-V590RDS
(R, B, G models)

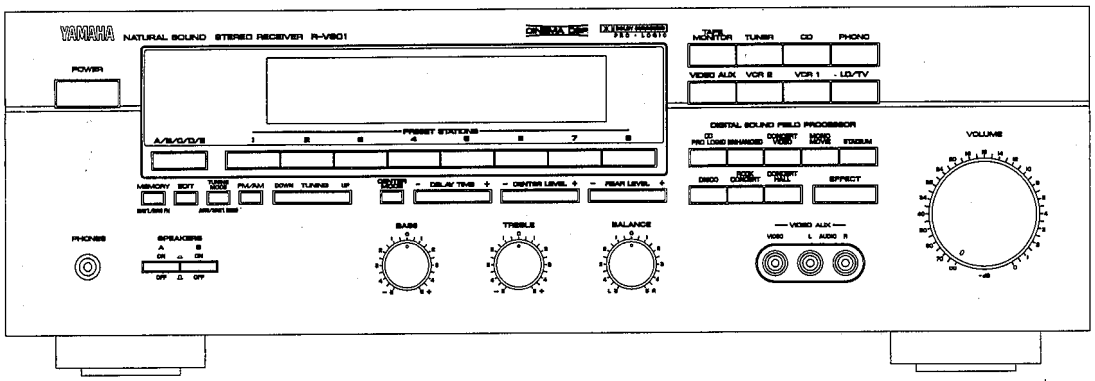


■ FRONT PANELS

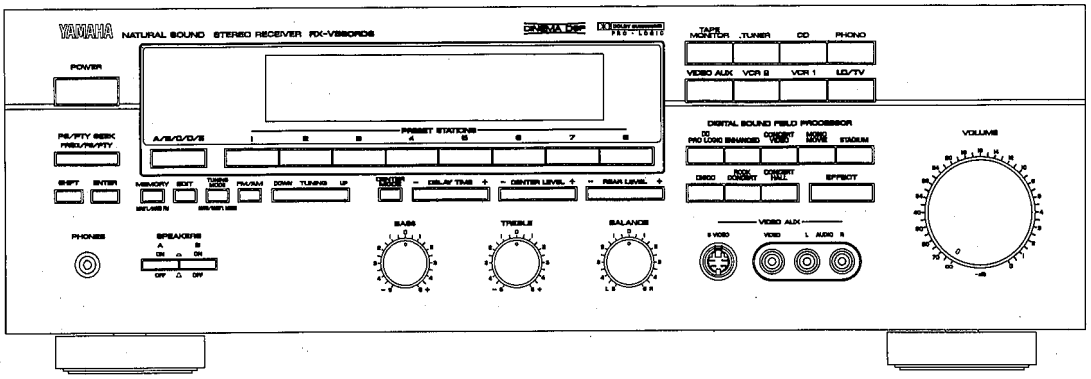
▼ RX-V590



▼ R-V901

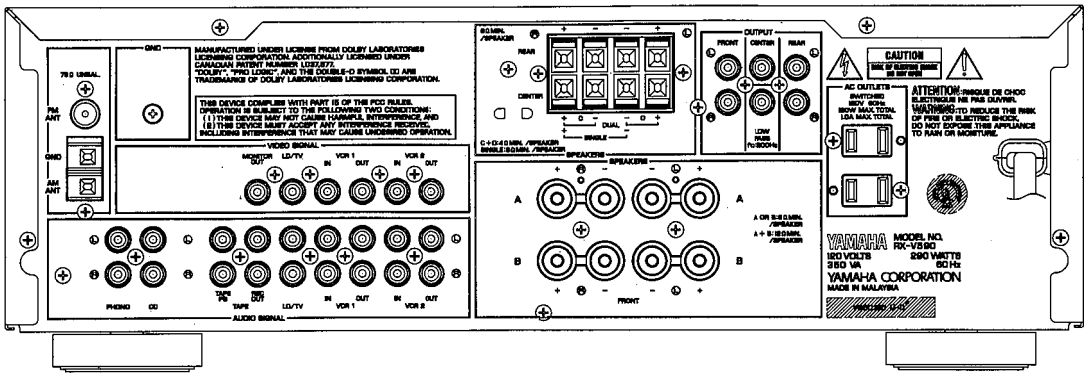


▼ RX-V590RDS

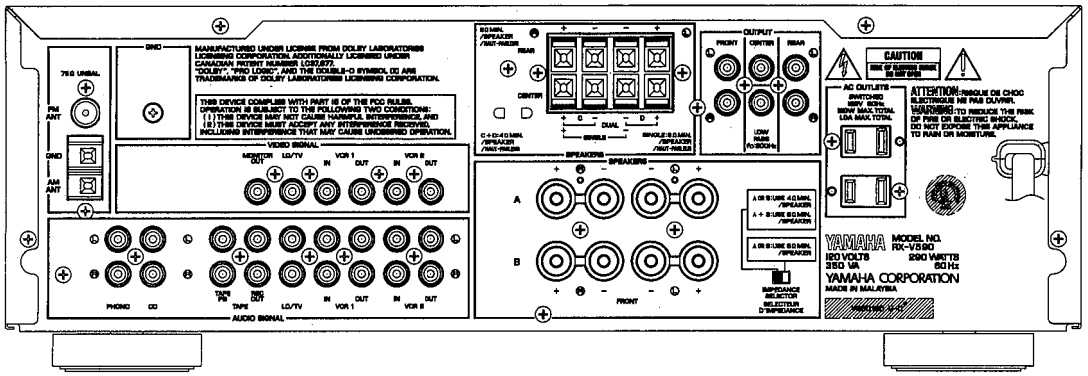


■ REAR PANELS

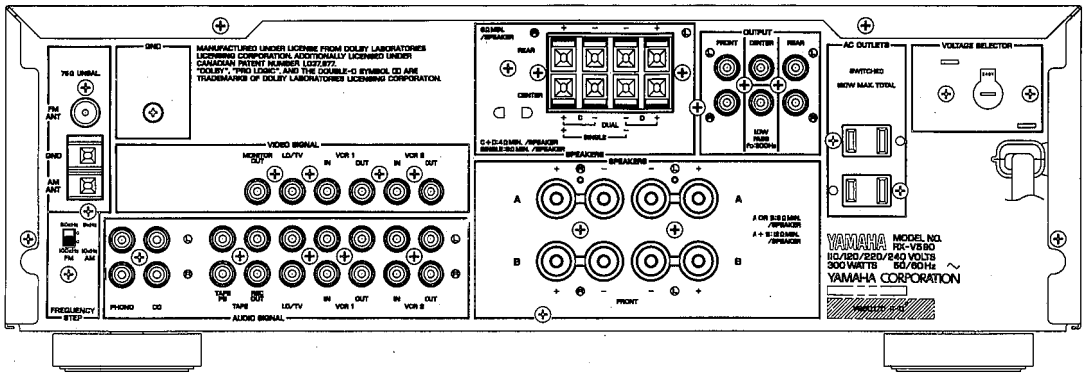
▼ RX-V590/R-V901 U model



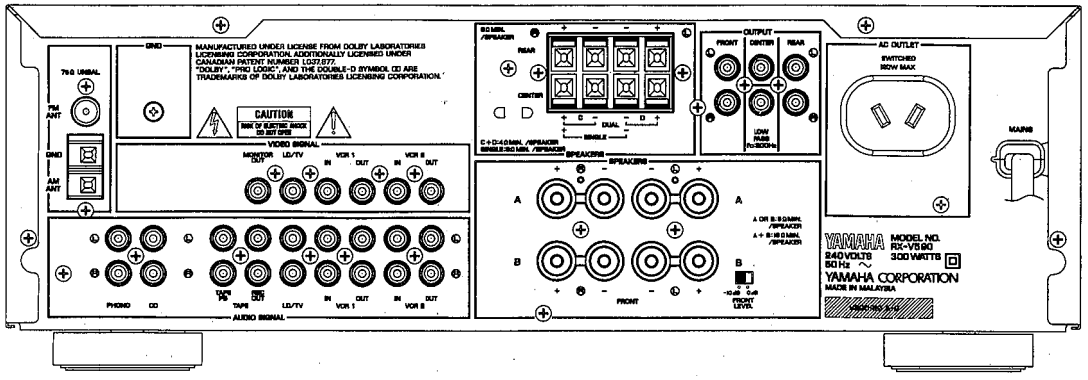
▼ RX-V590/R-V901 C model



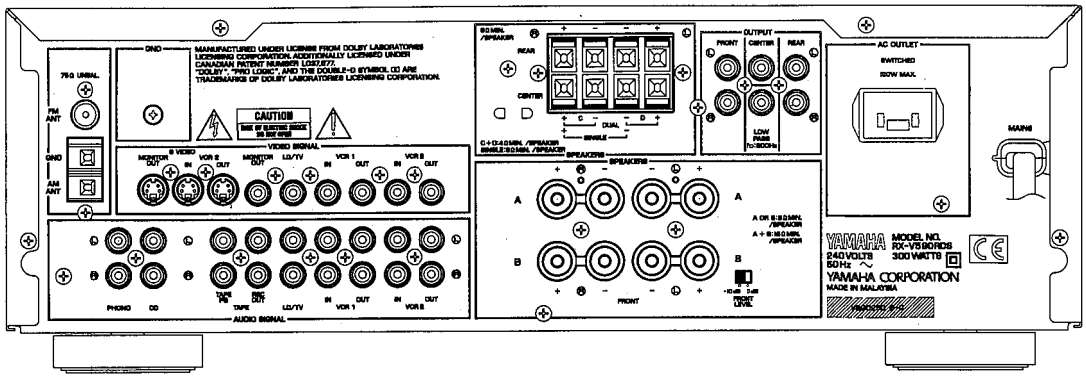
▼ RX-V590 R model



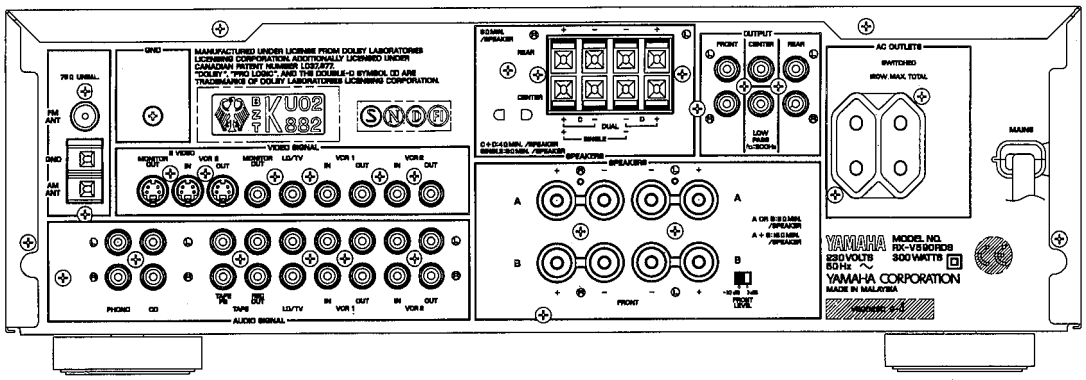
▼ RX-V590 A model



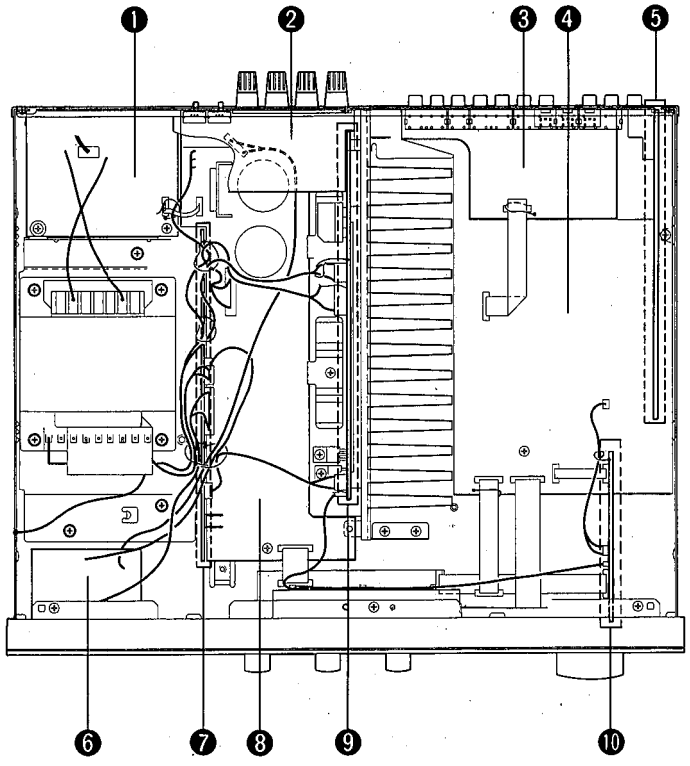
▼ RX-V590RDS B model



▼ RX-V590RDS G model



■ INTERNAL VIEW



1. P. C. B. MAIN (6)
2. P. C. B. MAIN (5)
3. P. C. B. DSP (3)
4. P. C. B. DSP (1)
5. P. C. B. TUNER
6. P. C. B. MAIN (3)
7. P. C. B. MAIN (2)
8. P. C. B. MAIN (1)
9. P. C. B. MAIN (4)
10. P. C. B. DSP (2)

■ SPECIFICATIONS

■ AUDIO SECTION

Minimum RMS Output Power per Channel
RX-V590
FRONT, 20Hz to 20kHz, 0.04% THD, 8Ω
U, C models 75W
R, A models 70W
CENTER, 1kHz, 0.07% THD, 8Ω
U, C models 75W
R, A models 70W
REAR, 1kHz, 0.3% THD, 8Ω 20W
R-V901
FRONT, 1kHz, 0.07% THD, 8Ω 85W
CENTER, 1kHz, 0.07% THD, 8Ω 85W
REAR, 1kHz, 0.3% THD, 8Ω 20W
RX-V590RDS
FRONT, 20Hz to 20kHz, 0.04% THD, 8Ω 70W
CENTER, 1kHz, 0.07% THD, 8Ω 70W
REAR, 1kHz, 0.3% THD, 8Ω 20W
Maximum Power per Channel
RX-V590 (R model only)
FRONT, 1kHz, 10% THD, 8Ω 105W
Dynamic Power per Channel (IHF)
RX-V590/R-V901
8/6/4/2Ω
U, C, models 110/140/170/190W
RX-V590/RX-V590RDS
8/6/4/2Ω
R, A, B, G models 95/120/150/170W
Dynamic Headroom (8Ω)
RX-V590/R-V901
U, C, models 1.66dB
DIN Standard Output Power per Channel
RX-V590RDS (G model only)
1kHz, 0.7% THD, 4Ω 100W
IEC Power
RX-V590RDS (G model only)
1kHz, 0.1% THD, 8Ω 78W
Power Band Width
0.08% THD, 30W, 8Ω .....10Hz to 50kHz
Damping Factor
20Hz to 20kHz, 8Ω .....80 or more
Input Sensitivity/Impedance
PHONO MM 2.5mV/47kΩ
CD etc 150mV/47kΩ
Maximum Input Signal Level (1kHz, 0.5% THD)
PHONO MM 115mV
CD etc 2.2V
Output Level/Impedance
REC OUT 150mV/1kΩ
PRE OUT 2.2V/1.2kΩ
LPF (EFFECT OFF) 3.5V/1.5kΩ
Headphone Jack Rated Output/Impedance
Input 1kHz, 150mV, 8Ω 0.5V/390Ω
Frequency Response (20Hz to 20kHz)
CD etc, FRONT .....0±0.5dB
RIAA Equalization Deviation (20Hz to 20kHz)
PHONO MM .....0±0.5dB
Total Harmonic Distortion (20Hz to 20kHz)
PHONO MM to REC OUT (1V) 0.02%
CD etc to FRONT SP OUT (30W/8Ω) 0.02%
CD etc to REAR SP OUT, 1kHz (10W/8Ω) 0.3%

Signal-to-Noise Ratio (IHF-A-Network)
RX-V590/R-V901
PHONO MM, Input Shorted (5mV) REC OUT
U, C, R, A models 85dB
RX-V590RDS
PHONO MM, Input Shorted (5mV) REC OUT
G, B models 82dB
RX-V590/R-V901/RX-V590RDS
CD etc, Input Shorted SP OUT(EFFECT OFF) 99dB
Residual Noise (IHF-A-Network)
FRONT, SP OUT 140μV
Channel Separation (Vol. –30dB, EFFECT OFF)
PHONO MM, Input Shorted, 1kHz/10kHz 60dB/50dB
CD etc, Input 5.1kΩ Shorted, 1kHz/10kHz 60dB/44dB
Tone Control Characteristics
BASS : Boost/cut .....±10dB (50Hz)
Turnover Frequency 350Hz
TREBLE : Boost/cut .....±10dB (20kHz)
Turnover Frequency 3.5kHz
Filter Characteristics
LPF .....fc=200Hz, 6dB/oct
Gain Tracking Error (0dB to –60dB) 3dB
Tuner Output Level/Impedance
FM (100% mod., 1kHz)
Except G, B models 500mV/2.2kΩ
G, B models (40kHz Dev.) 400mV/2.2kΩ
AM (30% mod., 1kHz) 150mV/2.2kΩ

■ VIDEO SECTION

Video Signal Level 1Vp-p/75Ω
S-Video Signal Level (RX- V590RDS)
Y 1Vp-p/75Ω
C 0.286Vp-p/75Ω
Maximum Input Level 1.5Vp-p
Signal-to-Noise Ratio 50dB
Monitor Output Frequency Response ....5Hz~10MHz, –3dB

■ FM SECTION

Tuning Range
U, C models .....87.5 to 107.9MHz
A, B, G models .....87.50 to 108.00MHz
R model .....87.5 to 108.0/87.50 to 108.00MHz
50dB Quieting Sensitivity (IHF, 75 Ω)
Except G, B models
Mono 1.55μV (15.1dBf)
Stereo 21μV (37.7dBf)
Usable Sensitivity (75 Ω)
(30dB S/N Quieting, 1kHz, 100% mod.)
Except G, B models 0.8μV (9.3dBf)
DIN, Mono (S/N 26dB) G, B models 0.9μV
DIN, Stereo (S/N 46dB) G, B models 24μV
Image Response Ratio
Except G, B models 45dB
G, B models 80dB
IF Response Ratio 80dB
Spurious Response Ratio 70dB
AM Suppression Ratio 55dB
Capture Ratio 1.5dB
Alternate Channel Selectivity
Except G, B models 85dB
Selectivity (two signals, 40kHz Dev.)
G, B models 70dB
Signal-to-Noise Ratio
Mono/Stereo (IHF)
Except G, B models 80/75dB
Mono/Stereo (DIN-weighted, 40kHz Dev.)
G, B models 74/69dB
Harmonic Distortion (1kHz)
Mono/Stereo
Except G, B models 0.1/0.2%
Mono/Stereo (40kHz Dev.)
G, B models 0.1/0.2%
Frequency Response
20Hz to 15kHz .....0 ± 1.5dB
Stereo Separation (1kHz)
Except G, B models 50dB
G, B models (40kHz Dev.) 50dB

■ AM SECTION

Tuning Range
U, C models .....530 to 1710kHz
A, B, G models .....531 to 1611kHz
R model .....531 to 1611/530 to 1710kHz
Usable Sensitivity 100μV/m
Selectivity 32dB
Signal-to-Noise Ratio 50dB
Image Response Ratio 40dB
Spurious Response Ratio 50dB
Harmonic Distortion (1kHz) 0.3%

■ GENERAL

Power Supply
U, C models .....AC 120V, 60Hz
A, B models .....AC 240V, 50Hz
G model .....AC 230V, 50Hz
R model .....AC 110/120/220/240V, 50/60Hz
Power Consumption
U, C models 290W/350VA
R, A, B, G models 300W
AC Outlets
U, C, R, G models, Switched x 2 .....120W max (Total)
A, B models, Switched x 1 .....120W max
Dimensions (W x H x D) .....435 x 146 x 386mm
(17-1/8" x 5-3/4" x 15-3/16")
Weight .....9.5 kg (20 lbs. 15 oz)
Accessories .....AM loop antenna x 1
Indoor FM antenna x 1
Remote Control Transmitter x 1
Battery (size "AA", "R06") x 2

** Specifications subject to change without notice.*

U .....USA model
C .....Canadian model
A .....Australian model
B .....British model
G .....European model
R .....General model

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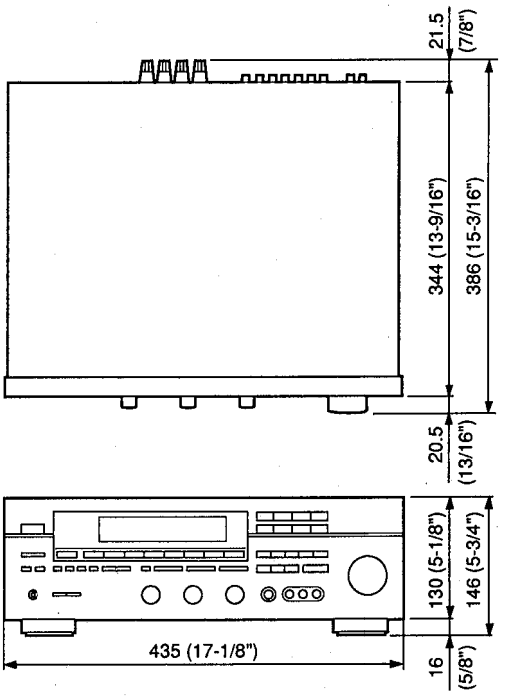
● DIMENSIONS



Units : mm (inch)

■ DISASSEMBLY PROCEDURES (Remove parts in disassembly order as numbered.)

1. Removal of Top Cover
a. Remove 4 screws (①) and 4 screws (②) in Fig. 1.

2. Removal of Bottom Cover
a. Remove 6 screws (③) in Fig. 1.

3. Removal of Front Panel
a. Remove 4 knobs.
b. Remove 6 screws (④) in Fig. 1.

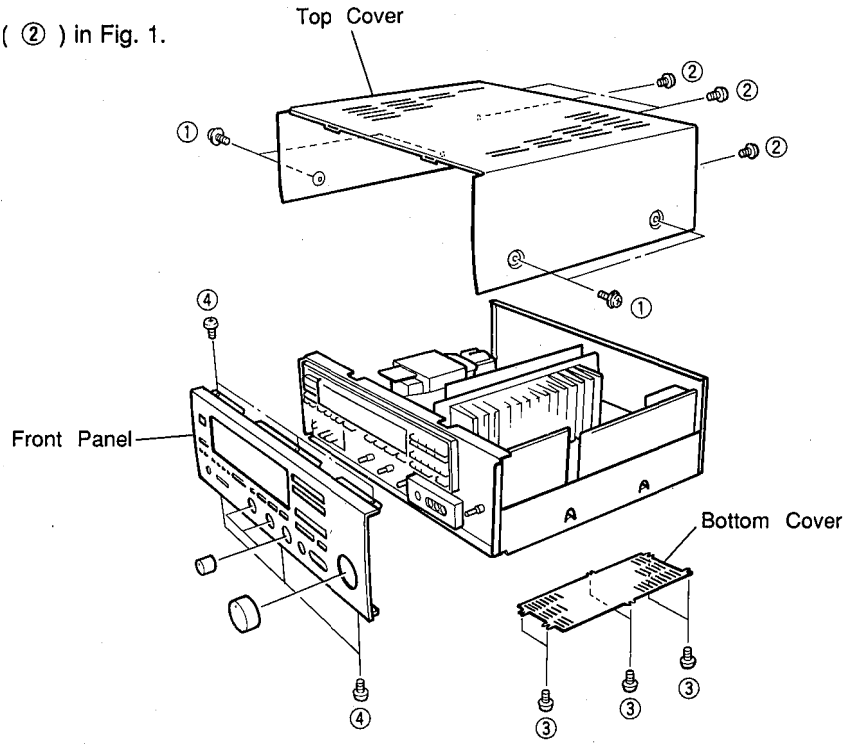


Fig. 1

■ SELF CHECK MODE

This model has the SELF CHECK MODE for facilitating measurement and inspection.

HOW TO START

Turn the POWER switch ON while pressing the PRESET STATION NO. 1, 2, 3 keys simultaneously, and then the unit enters the SELF CHECK MODE.
(FL displays "1 SELF")

HOW TO EXIT

Turning the POWER switch OFF or pressing the PRESET STATION NO. 8 key cancels the SELF CHECK MODE. (The unit enters normal mode)

CONTENTS OF SELF CHECK MODE

No.	Menu	Sub Menu	Select Key
1	MAIN BYPASS		PRESET STATION NO.1
2	FRONT EFFECT		PRESET STATION NO.2
3	MAIN DSP		PRESET STATION NO.3
4	DISPLAY CHECK and EFFECT OFF		PRESET STATION NO.4
5	MANUAL TEST TONE	LEFT/CENTER/RIGHT/SURROUND	PRESET STATION NO.5
6	DOLBY PRO LOGIC		PRESET STATION NO.6
7	KEEP DATA	FACTORY PRESET	PRESET STATION NO.7
(8)	The SELF CHECK MODE is cancelled and returns to the normal operation mode. (MODE EXIT)		PRESET STATION NO.8

HOW TO USE SELF CHECK MODE

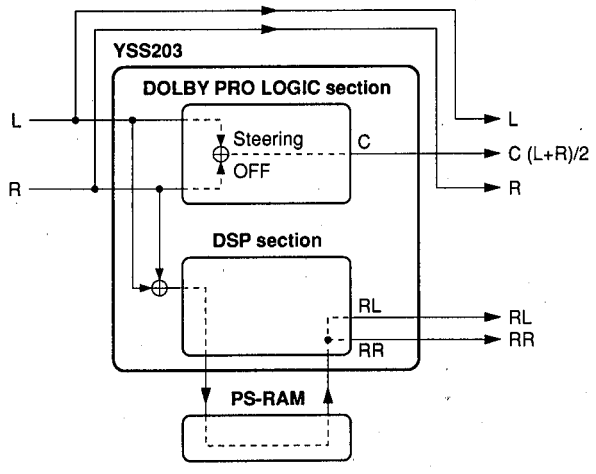
In order to confirm characteristics (specifications) listed in the table below, use SELF NO. 1, 3 and 4. (For specifications, refer to page 5.)

No.	Items
1	• Output Level/Impedance • Frequency Response • Total Harmonic Distortion (Rec Out & Front) • S/N
3	• Minimum RMS Output Power Per Channel (Center & Rear) • Total Harmonic Distortion (Rear)
4	• Minimum RMS Output Power Per Channel (Front) • Input Sensitivity/Impedance • Headphone Jack Rated Output/Impedance • Channel Separation • Tone Control Characteristics

DETAILS OF SELF CONTENT

SELF 1 MAIN BYPASS

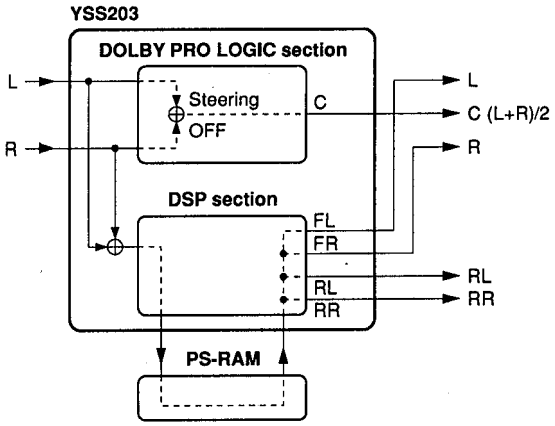
- L/R is output through the bypass.
- CENTER is output with the steering OFF and (L+R)/2.
- RL/RR passes through the PS-RAM and is output through the DSP.
- CENTER level and REAR level are 60 (-10dB).
- FL displays "1 SELF"



CD INPUT : 1kHz, –20dB
VOLUME : MAX
PRE OUT : FRONT +3.3dB±1dB
: REAR –6.2dB±1dB
: CENTER –6.2dB±1dB

SELF 2 FRONT EFFECT

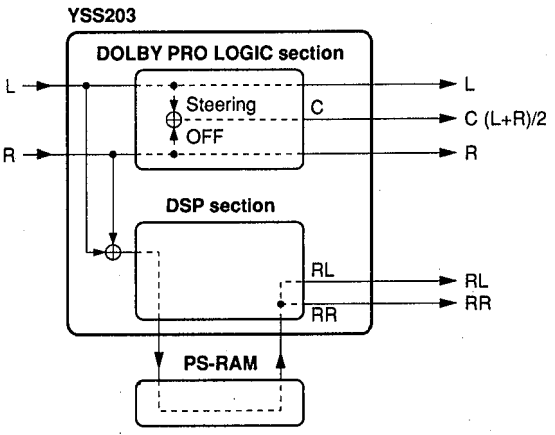
- L/R and RL/RR pass through the PS-RAM and are output through the DSP.
- CENTER is output with the steering OFF and (L+R)/2.
- CENTER level and REAR level are 60 (-10dB).
- FL displays "2 SELF"



CD INPUT : 1kHz, –20dB
VOLUME : MAX
PRE OUT : FRONT +3.3dB±1dB
: REAR –6.2dB±1dB
: CENTER –6.5dB±1dB

SELF 3 MAIN DSP

- L/R is output with the steering OFF.
- CENTER is output with the steering OFF and (L+R)/2.
- RL/RR passes through the PS-RAM and is output through the DSP.
- CENTER level and REAR level are 100 (+10dB).
- FL displays "3 SELF"



CD INPUT : 1kHz, –35dB
VOLUME : MAX
PRE OUT : FRONT –11.7dB±1dB
: REAR –1.2dB±1dB
: CENTER –1.2dB±1dB

SELF 4 DISPLAY CHECK and EFFECT OFF

- Every FL segment turns ON for 3 second.
- L/R is output through the bypass.
- FL displays "4 SELF"

CD INPUT	: 1kHz, –35dB	
VOLUME	: MAX	
PRE OUT	: FRONT	–11.6dB±1dB
	: REAR	–∞dB
	: CENTER	–∞dB

SELF 5 MANUAL TEST TONE

- Every time PRESET STATION NO. 5 key is pressed, the TEST TONE shifts in the order of →L→C→R→S→ and is output.
- The FL displays "L", "C", "R", "S" respectively, the "5 SELF" and "TEST" indicators flash.

SELF 6 DOLBY PRO LOGIC

- The auto input balance which is ON in the normal mode is turned OFF.
- CENTER MODE is changed by pressing the PRESET STATION NO. 6 key or the CENTER MODE key.
- The FL displays "6 SELF" and the center mode.

SELF 7 KEEP DATA and PRESET

- When the unit enters the SELF 7, "7 KEEP DATA" apears on the display. And by pressing again the PRESET STATION NO. 7 key, the unit enters the PRESET MODE. In this mode, by turning off the POWER, FACTORY PRESET will be done.

● Factory Preset

1) SURROUND section

DELAY TIME	: DD PRO LOGIC	20ms
	ENHANCED	20ms
	CONCERT VIDEO	28ms
	MONO MOVIE	20ms
	STADIUM	45ms
	DISCO	14ms
	ROCK CONCERT	17ms
	CONCERT HALL	30ms
CENTER MODE	: NORMAL	
VOLUME LEVEL	: CENTER	80
	REAR	80

2) SELECTOR section

INPUT	: CD
VIDEO (BGV)	: LD/TV

3) TUNER section

Preset group	P1	P2	P3	P4
A / C / E	87.5MHz	90.1MHz	95.1MHz	98.1MHz
B / D	630kHz	1080kHz	1440kHz	530kHz (U, C, R) 531kHz (R, A, B, G)

Preset group	P5	P6	P7	P8
A / C / E	107.9MHz (U, C, R) 108.0MHz (R, A, B, G)	88.1MHz	106.1MHz	107.9MHz (U, C, R) 108.0MHz (R, A, B, G)
B / D	1710kHz (U, C, R) 1611kHz (R, A, B, G)	900kHz	1350kHz	1400kHz (U, C, R) 1404kHz (R, A, B, G)

For all the above, AUTO TUNING and AUTO STEREO are selected as the TUNING mode.

CAUTION : Before setting to the FACTORY PRESET, write down the existing preset memory content of the Tuner in a table as shown below. (This is because setting to the FACTORY PRESET will cause the memory content to be as factory set, i.e., all the preset memory by the user will be erased.)

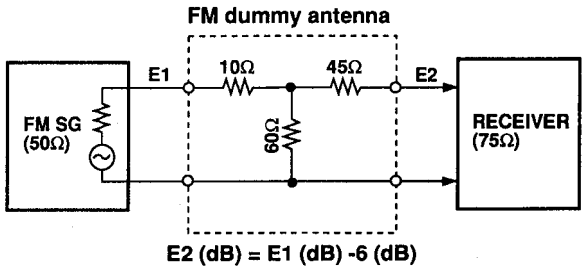
Preset group	P1	P2	P3	P4	P5	P6	P7	P8
A								
B								
C								
D								
E								

■ TUNER ADJUSTMENTS

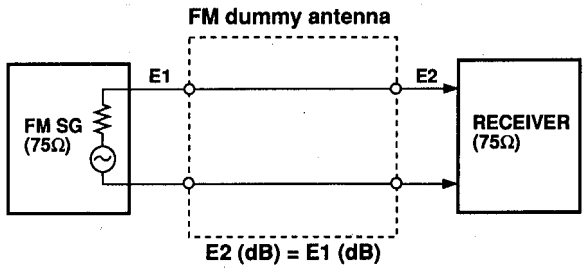
● Measuring Instruments

FM signal generator (FM SG)
Stereo signal generator (SSG)
AM signal generator (AM SG)
Distortion meter (DIST. M)
AC voltmeter (ACVM)
DC voltmeter (DCVM)
Oscilloscope
Low pass filter (YLF-15, fc=15kHz)
Oscillator

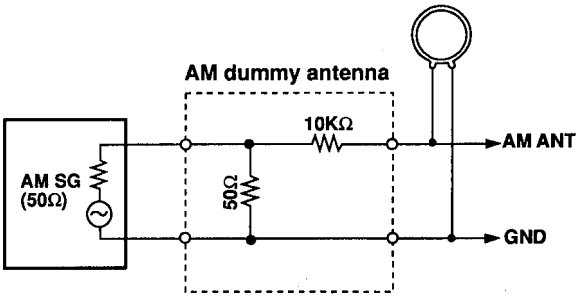
● Dummy antenna



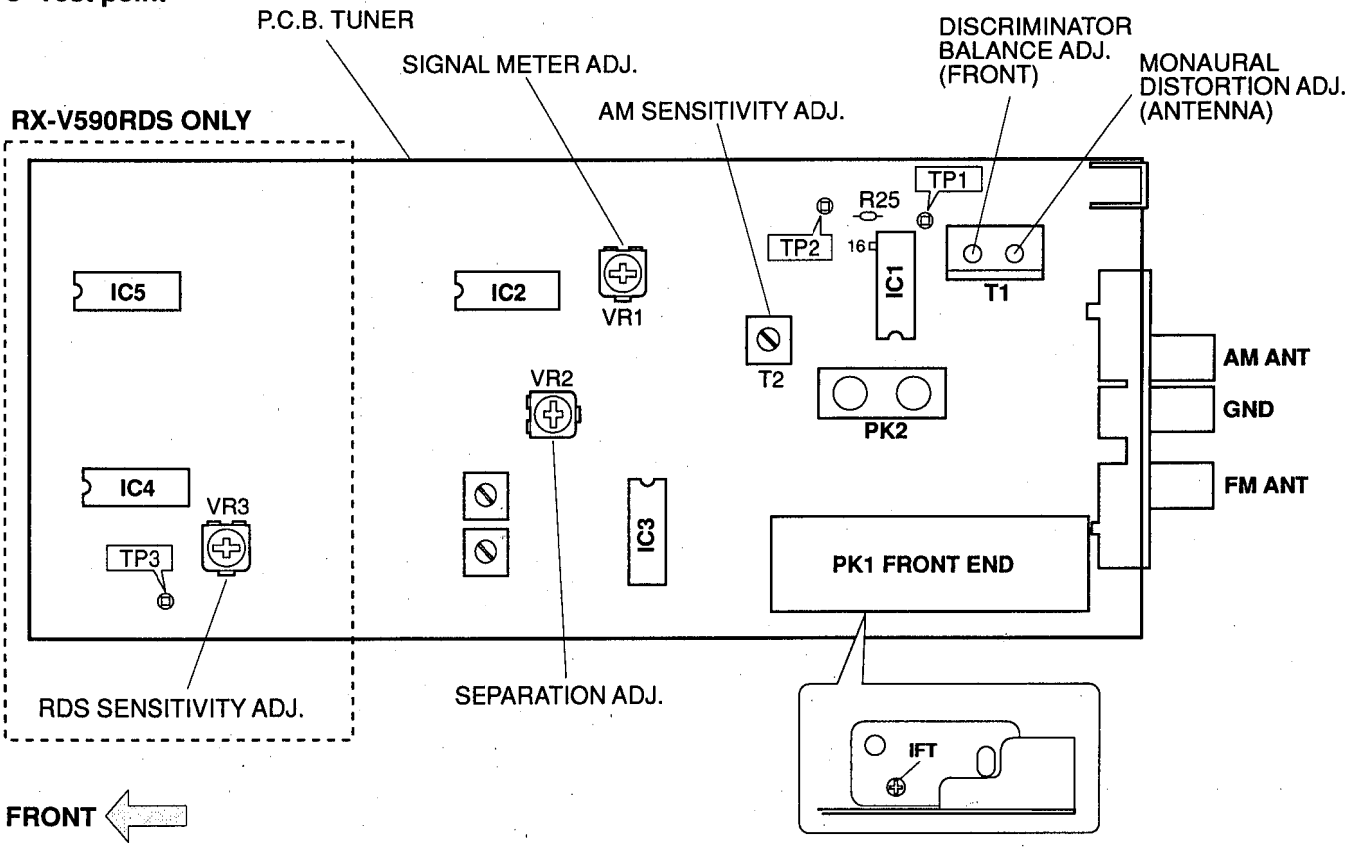
E2 (dB) = E1 (dB) -6 (dB)



E2 (dB) = E1 (dB)



● Test point



FM Adjustment

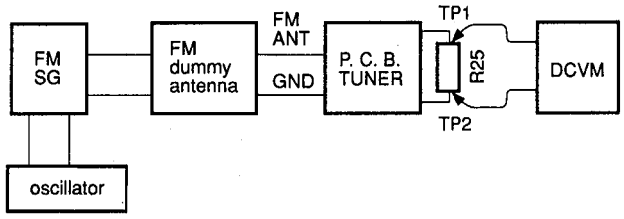
● Before Adjustment

1) For dB, 1μV=0dBμ applies.
   Example : 60dBμ=1mV
2) 100% modulation means that the frequency deviation is 75kHz.
3) Install the Matching Transformer and connect FM SG.
4) Set each switch to the following position unless otherwise specified.

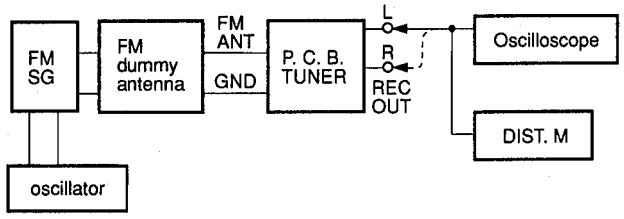
INPUT SELECTOR ..... TUNER
TUNING MODE ..... AUTO

● Connection diagram (Measuring instruments)

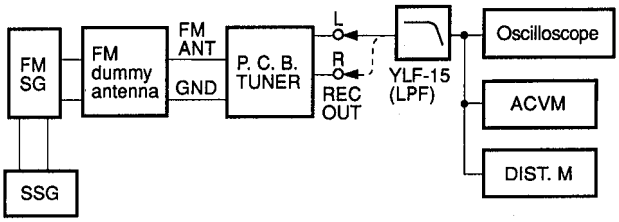
1) Discriminator balance adjustment



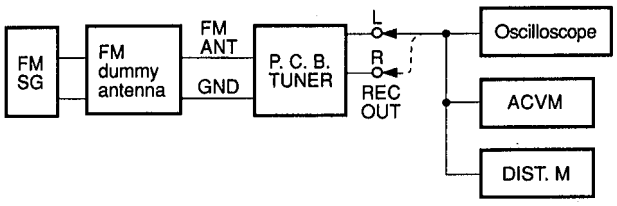
2) Monaural distortion adjustment



3) Stereo distortion adjustment/separation adjustment



4) Sensitivity Verification



See page 10 for TP locations & adjustment points.

Step	Adjustment Item	Signal (ANT IN)	Reception frequency	Adjustment point	Test point	Rating
1	Rough adjustment of discriminator balance	FM ANT (75Ω) 98.1MHz 70dBμ MONO 100Hz 100% modulation	98.1MHz * (A-4)	T1 (Front side core)	Both ends of R25 (Between TP1 and TP2)	DC 0V±100mV
2	Rough adjustment of monaural distortion	Same as Step 1.	98.1MHz * (A-4)	T1 (Antenna side core)	REC OUT L, R	Minimize the distortion.
3	Fine adjustment of discriminator balance	Same as Step 1.	98.1MHz * (A-4)	T1 (Front side core)	Both ends of R25 (Between TP1 and TP2)	DC 0V±50mV
4	Fine adjustment of monaural distortion	Same as Step 1.	98.1MHz * (A-4)	T1 (Antenna side core)	REC OUT L, R	Minimize the distortion (to 0.25% or less).
5	Verification of discriminator balance	Same as Step 1.	98.1MHz * (A-4)	T1 (Front side core)	Both ends of R25 (Between TP1 and TP2)	DC 0V±50mV

* : Execution of FACTORY PRESET (Refer to page 9.) will facilitate setting reception frequency for adjustment.

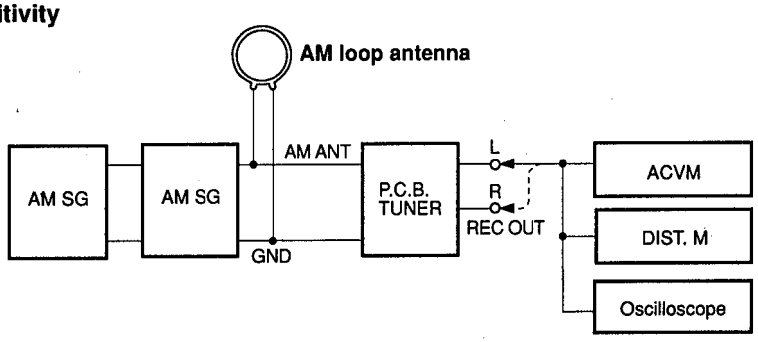
Step	Adjustment item	Signal (ANT IN)	Reception frequency	Adjusted point	Test point	Rating
6	Adjustment of front end IFT	FM ANT (75Ω) 98.1MHz 30dBμ MONO 1kHz, 100% modulation	98.1MHz * (A-4)	Front end IFT	Pin 16 of IC1	Adjust so that the DC voltage is maximum. **CAUTION :** Over-adjustment of the IFT core will reduce the sensitivity. (Maximum ±90°)
7	Verification of monaural distortion	FM ANT (75Ω) 98.1MHz 70dBμ MONO 1kHz, 100% modulation	98.1MHz * (A-4)		REC OUT L, R	0.4% or less (Published spec is 0.1%)
8	Verification of stereo distortion	FM ANT (75Ω) 98.1MHz 70dBμ Stereo L or R 1kHz, 100% modulation	98.1MHz * (A-4) *Tuning mode should be AUTO.		REC OUT L, R	1% or less (Published spec is 0.2%) • STEREO indicator should light.
9	Verification of sensitivity	FM ANT (75Ω) 88.1MHz 98.1MHz 106.1MHz	88.1MHz * (A-6) 98.1MHz * (A-4) 106.1MHz * (A-7)		ANT (75Ω)	1) Set the tuning mode to MAN'L MONO. 2) S/N should be 30dB at each frequency of 88.1MHz, 98.1MHz, and 106.1MHz. 3) Check to ensure that the voltage at the ANT terminal is 3dBμ (14.25dBf) or less. (Published spec is 9.3dBf)
10	Adjustment of Separation	FM ANT (75Ω) 98.1MHz 70dBμ Stereo L or R 1kHz, 100% modulation	98.1MHz * (A-4)	VR2	REC OUT L, R	With SSG output at L or R, the signal leakage level at the other channel should be minimized. 36dB or more (Published spec is 50dB)
11	Adjustment of Signal meter	FM ANT (75Ω) 98.1MHz 45dBμ MONO 1kHz 30% modulation	98.1MHz * (A-4)	VR1		Adjust so that all signal meters light.
		–10dBμ or less				Check to ensure that signal meters turn OFF.
12	Verification of auto tuning	FM ANT (75Ω) 98.1MHz 23dBμ Stereo L or R 1kHz, 30% modulation	98.1MHz			• Automatic reception should be available when the tuning key is moved UP and DOWN. • The stereo indicator should light. • Audio muting should be applied during tuning.

* : Execution of FACTORY PRESET (Refer to page 9.) will facilitate setting reception frequency for adjustment.

AM Adjustment (This should be done after FM adjustment.)

● Connection Diagram (Measuring instruments)

1) Adjustment of sensitivity



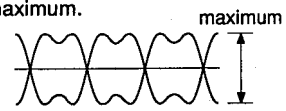
See page 10 for TP locations & adjustment points.

Step	Adjustment Item	Signal (ANT IN)	Reception frequency	Adjustment point	Test point	Rating
1	Adjustment of sensitivity (1440Hz)	AM ANT 1440kHz 50dBμ 1kHz, 30% modulation	1440kHz * (B-3)	T2	REC OUT	Audio output should be maximized.
2	Verification of sensitivity (630kHz)	AM ANT 630kHz 50dBμ 1kHz, 30% modulation	630kHz * (B-1)	T2	REC OUT	Audio output should be maximized. Repeat the Step 1 and 2.
3	Verification of sensitivity	AM ANT 630kHz 1080kHz 1440kHz 1kHz, 30% modulation	630kHz * (B-1) 1080kHz * (B-2) 1440kHz * (B-3)		AM ANT	Distortion should be 10% or less at each frequency. Check to ensure that the voltage at the ANT terminal is 54dBμ or less.
4	Verification of auto tuning	AM ANT 60dBμ				Auto reception should be available when the tuning key is moved UP and DOWN.

* : Execution of FACTORY PRESET (Refer to page 9.) will facilitate setting reception frequency for adjustment.

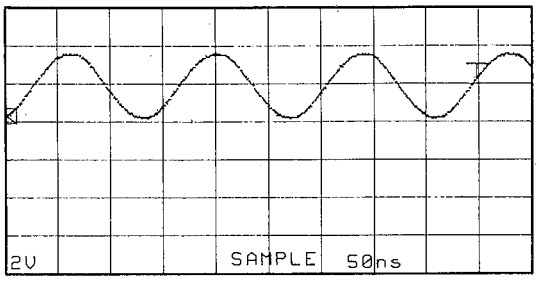
RDS Adjustment (RX-V590RDS ONLY) (This should be done after FM and AM adjustment.)

See page 10 for TP locations & adjustment points.

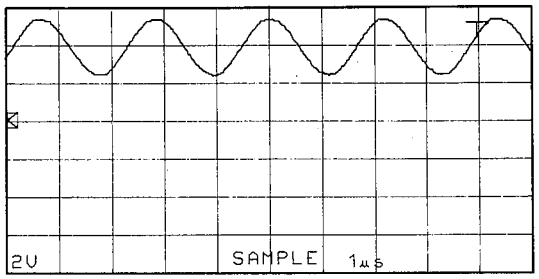
Step	Adjustment Item	Signal (ANT IN)	Reception frequency	Adjustment point	Test point	Rating
1	Adjustment of RDS sensitivity		Receive RDS station.	VR3	Between TP3 and GND.	Adjust so that the AC voltage is maximum. 
2	Verification of auto PS (Program service name)					Confirm that the display automatically tunes to the PS when tuned again.

■ TEST POINT WAVEFORMS

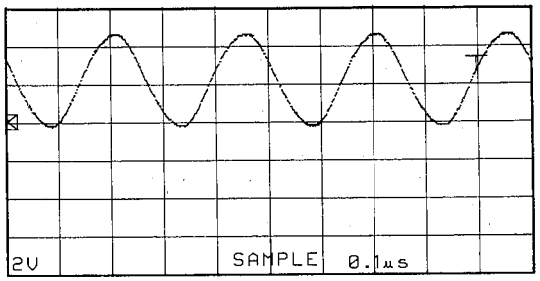
Point ①
(Pin 1 of IC2)
V: 2V/div H : 50nsec/div
DC range 1 : 1 probe



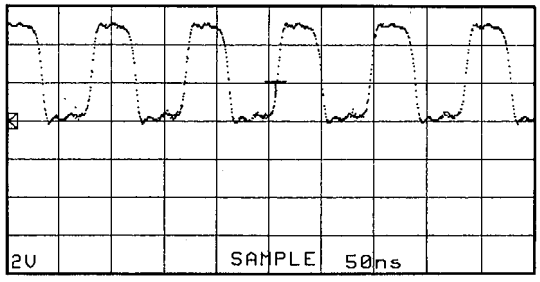
Point ②
(Pin 24 of IC4)
V: 2V/div H : 1µsec/div
DC range 1 : 1 probe



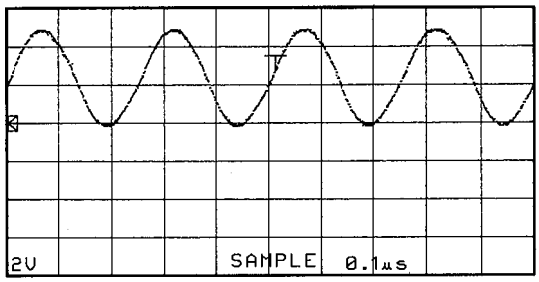
Point ③
(Pin 1 of IC5)
V: 2V/div H : 0.1µsec/div
DC range 1 : 1 probe



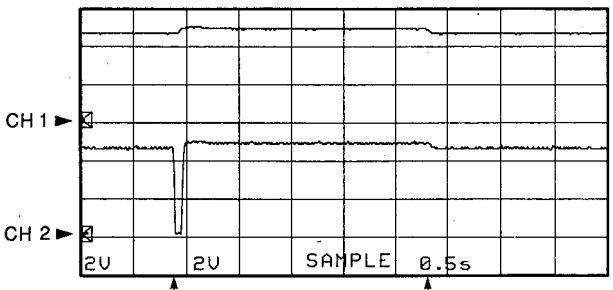
Point ④
(Pin 55 of IC17)
V: 2V/div H : 50nsec/div
DC range 1 : 1 probe



Point ⑤
(Pin 31 of IC903)
V: 2V/div H : 0.1µsec/div
DC range 1 : 1 probe



Point ⑥
(CH 1 : Pin 1 of IC903
CH 2 : Pin 27 of IC903)
V: 2V/div ... CH1 H : 0.5sec/div
V: 2V/div ... CH2 DC range 1 : 1 probe



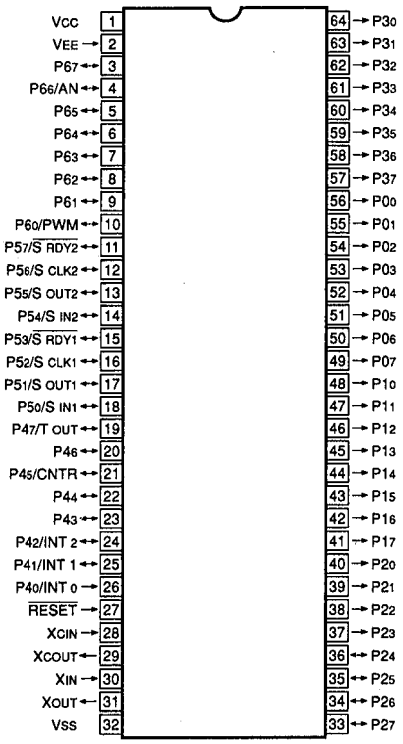
With the POWER switch turned ON, connect the power cord to the AC outlet.

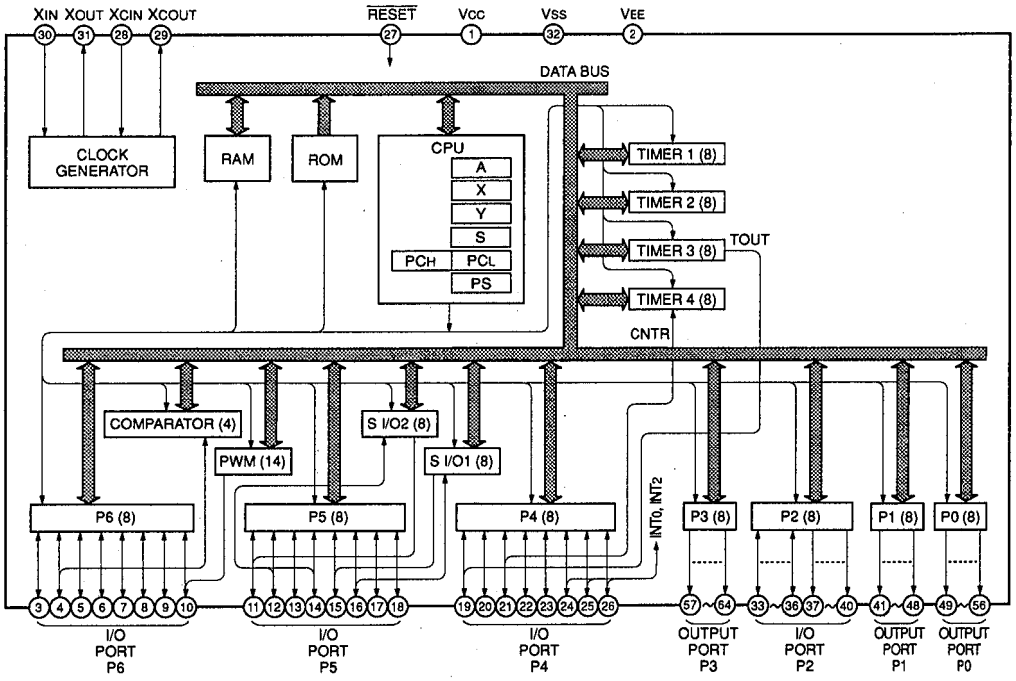
Disconnect the power cord from the AC outlet.

* This waveform is not available by pushing the power switch ON and OFF.

■ IC DATA

IC903 : M38102M4-621SP
8 bit μ-COM





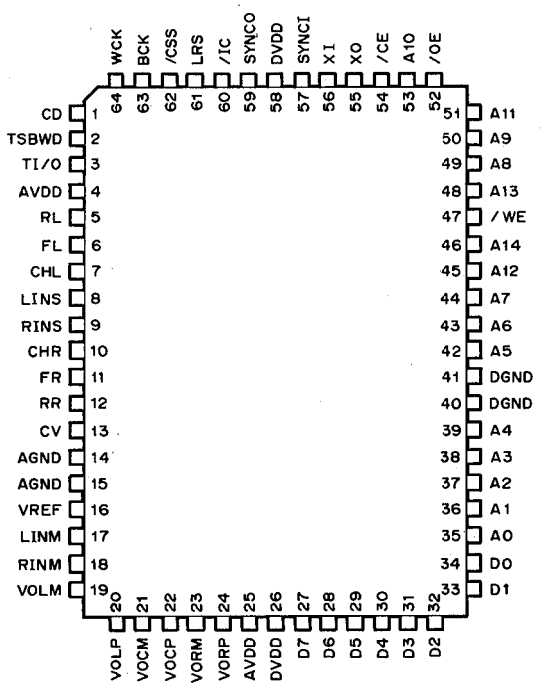
No.	Port	Name	I/O	Function	Logic
1	Vcc	VCC	—	+5V	
2	Vee	VEE	—	-V(-25V)	
3	P67	FMT	O	FULL MUTE out	L : ON
4	P66	METER	I	Tuner Meter In (Comparater)	
5	P65	SPRY	O	Speaker relay out	H : ON
6	P64	PRY	O	Power relay out	H : ON
7	P63	PSW	I	Power switch in	H : ON
8	P62	PRT1	I	Protection 1 detect (The power turns OFF if "L" 2 seconds after the power is turned ON.)	L : PRT

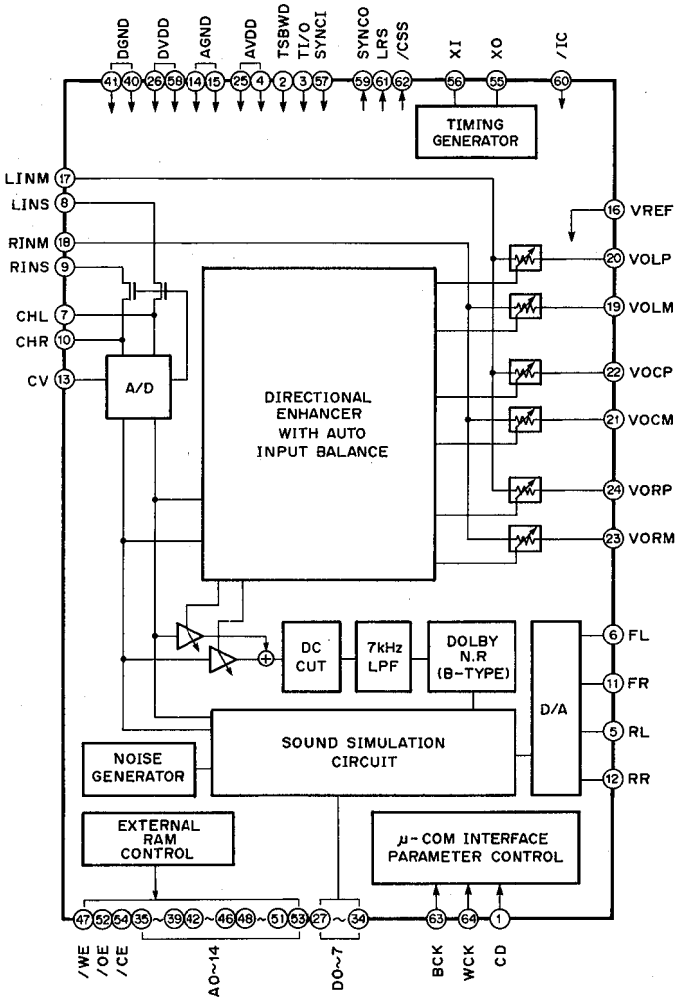
No.	Port	Name	I/O	Function	Logic
9	P61	PRT2	I	Protection 2 detect (The power turns OFF if "H" after the power is ON.)	H : PRT
10	P60	PDET	I	Power down detect	L : DOWN
11	P57	STBY	I/O	*Standby In : H (G model) L : LED ON	
12	P56	SCK	O	SCLK 2 serial clock	
13	P55	SDT	O	SOUT 2 serial data	
14	P54	STOUT	I	STOUT	L : IFOK
15	P53	RDSSEL(S16)	I/O	*RDS select (H : RDS) S16 (L : seg ON)	
16	P52	V1(CLK70)	I	V1 Market Select SCLK in RDS	
17	P51	(/RDSRES)	O	RES out RDS	
18	P50	V2(DI70)	I	V2 Market Select SDATA in RDS	
19	P47	/STSIG	I	/STSIG	L : SIGIN
20	P46	/ST	I	/ST	L : STEREO
21	P45	CKB	O	BU2090 clock out	
22	P44	DTB	O	BU2090 data out	
23	P43	VOLU	O	VOL UP out	
24	P42	VOLD	O	VOL DOWN out	
25	P41	AVX/RX	I	Model select (H : AVX model) START in RDS	
26	P40	REM	I	Remote control signal input	
27	RESET	RESET	I	Reset	L : Reset
28	XCI	XCIN	—	GND	
29	XCO	XCOUT	—	N. C.	
30	XIN	XIN	I	Clock (4MHz)	
31	XOUT	XOUT	O		
32	VSS	VSS	—	GND	
33	P27	K4	I	Key matrix in	
34	P26	K3	I		
35	P25	K2	I		
36	P24	K1	I		
37	P23	D13	O	Fluorescent character display tube anode drive signal & Key scan digit	
38	P22	D12	O		
39	P21	D11	O		
40	P20	D10	O		
41	P17	D9	O		
42	P16	D8	O		
43	P15	D7	O		
44	P14	D6	O		
45	P13	D5	O		
46	P12	D4	O		
47	P11	D3	O		
48	P10	D2	O		
49	P07	D1	O		
50	P06	S15 (RDS)	O	Fluorescent character display tube grid drive signal	H : ON
51	P05	S14	O		H : ON
52	P04	S13	O		H : ON
53	P03	S12	O		H : ON
54	P02	S11	O		H : ON
55	P01	S10	O		H : ON
56	P00	S9	O		H : ON
57	P37	S8	O		H : ON
58	P36	S7	O		H : ON
59	P35	S6	O		H : ON
60	P34	S5	O		H : ON
61	P33	S4	O		H : ON
62	P32	S3	O		H : ON
63	P31	S2	O		H : ON
64	P30	S1	O		H : ON

	K1	K2	K3	K4
D3	FREQ/PS/PTY	SHIFT	ENTER	—
D4	1	2	3	4
D5	5	6	7	8
D6	MEMORY	EDIT	TUNING MODE	FM/AM
D7	—	TUNING DOWN	TUNING UP	EFFECT
D8	A/B/C/D/E	CENTER MODE	DELAY TIME –	DELAY TIME +
D9	CENTER LEVEL –	CENTER LEVEL +	REAR LEVEL –	REAR LEVEL +
D10	PRO LOGIC	DISC	ROCK CONCERT	CONCERT HALL
D11	ENHANCED	CONCERT VIDEO	MONO MOVIE	STADIUM
D12	V-AUX	VCR2	VCR1	LD/TV
D13	TAPE MONITOR	TUNER	CD	PHONO

NOTE) STBY : The standby mode is available if "H" when the microprocessor is reset. The LEDs turn ON at "L" output.
RDSSEL : Useable for the RDS model if "H" when the microprocessor is reset. S16 segment output is provided.

IC17 : YSS203B
Digital Dolby Pro Logic Decoder with Auto Input Balance





No.	Name	I/O	Function
1	CD	Its	Serial data of parameter data input
2	TSBWD	Ic	LSI test terminal Normally connected to DVDD terminal
3	TI/O	Ic	LSI test terminal Normally connected to DVDD terminal
4	AVDD	A—	+5V power supply (D/A, A/D section)
5	RL	AO	RL channel D/A output
6	FL	AO	FL channel D/A output
7	CHL	A—	LINS input Sample/hold Capacitor external terminal
8	LINS	AI	L channel A/D input
9	RINS	AI	R channel A/D input
10	CHR	A—	RINS input Sample/hold Capacitor external terminal
11	FR	AO	FR channel D/A output
12	RR	AO	RR channel D/A output
13	CV	AO	A/D, multiplying DAC center voltage
14	AGND	A—	Ground (D/A, A/D section)
15	AGND	A—	Ground (Multiplying DAC section)
16	VREF	AI	Multiplying DAC reference voltage input
17	LINM	AI	L channel Multiplying DAC input
18	RINM	AI	R channel Multiplying DAC input
19	VOLM	AO	L channel operation amplifier, connected to (–) terminal
20	VOLP	AO	L channel operation amplifier, connected to (+) terminal

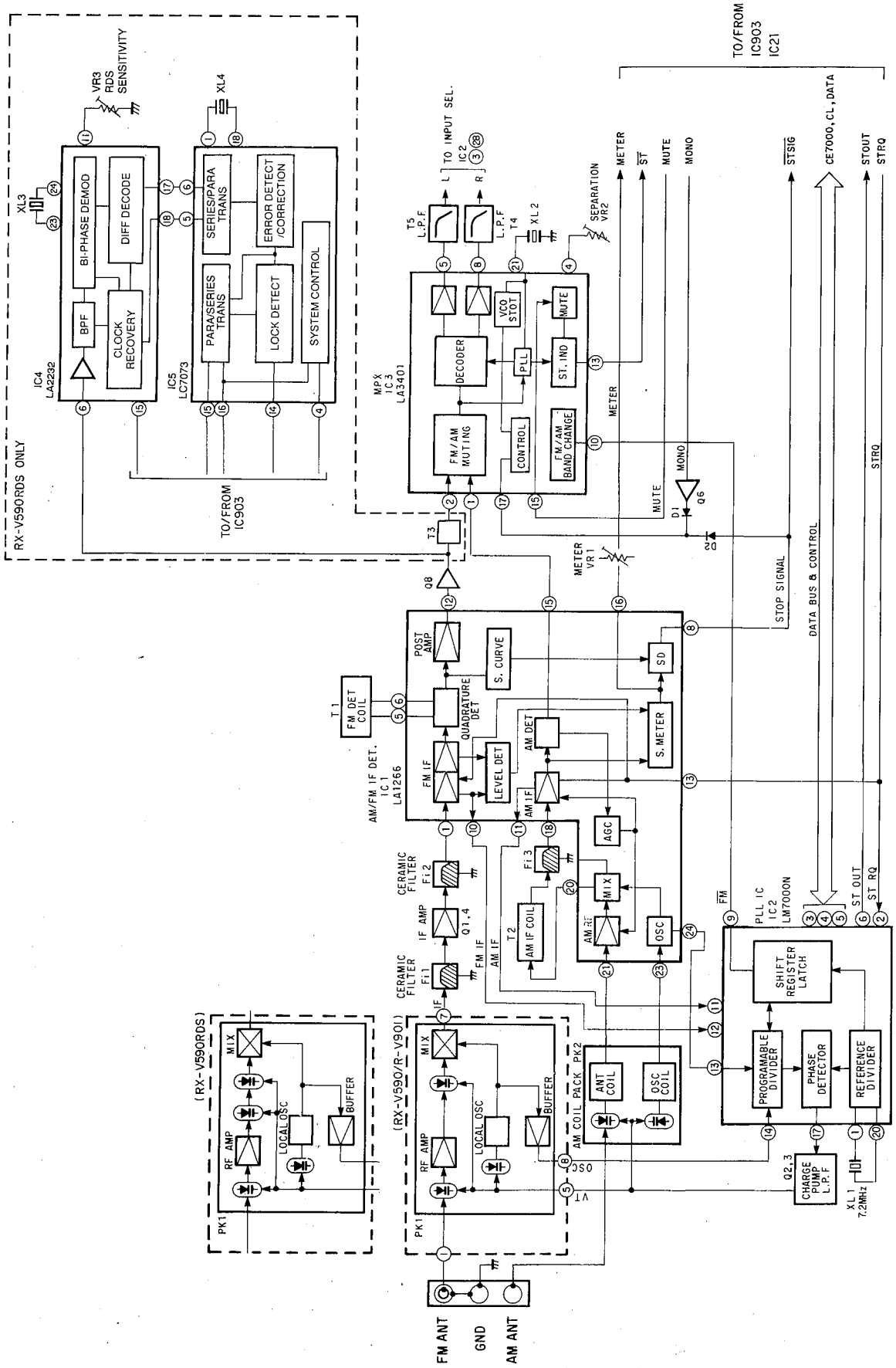
No.	Name	I/O	Function
21	VOCM	AO	C channel operation amplifier, connected to (–) terminal
22	VOCP	AO	C channel operation amplifier, connected to (+) terminal
23	VORM	AO	R channel operation amplifier, connected to (–) terminal
24	VORP	AO	R channel operation amplifier, connected to (+) terminal
25	AVDD	A—	+5V power supply (multiplying DAC section)
26	DVDD	—	+5V power supply (digital section)
27	D7	I/Ot	External delay RAM data terminal
28	D6	I/Ot	External delay RAM data terminal
29	D5	I/Ot	External delay RAM data terminal
30	D4	I/Ot	External delay RAM data terminal
31	D3	I/Ot	External delay RAM data terminal
32	D2	I/Ot	External delay RAM data terminal
33	D1	I/Ot	External delay RAM data terminal
34	D0	I/Ot	External delay RAM data terminal
35	A0	O	External data RAM address terminal
36	A1	O	External data RAM address terminal
37	A2	O	External data RAM address terminal
38	A3	O	External data RAM address terminal
39	A4	O	External data RAM address terminal
40	DGND	—	Ground (digital section)
41	DGND	—	Ground (digital section)
42	A5	O	External data RAM address terminal
43	A6	O	External data RAM address terminal
44	A7	O	External data RAM address terminal
45	A12	O	External data RAM address terminal
46	A14	O	External data RAM address terminal
47	/WE	O	External delay RAM write enable terminal
48	A13	O	External dalay RAM address terminal
49	A8	O	External dalay RAM address terminal
50	A9	O	External dalay RAM address terminal
51	A11	O	External dalay RAM address terminal
52	/OE	O	External dalay RAM output enable terminal
53	A10	O	External dalay RAM address terminal
54	/CE	O	External delay RAM chip enable terminal
55	XO	O	Crystal oscillator connecting terminal
56	XI	I	Crystal oscillator connecting terminal
57	SYNCI	It	Test terminal for system synchronization, normally connected to DVDD
58	DVDD	—	+5V power supply (digital section)
59	SYNCO	O	Test terminal for system synchronization, normally unconnected
60	/IC	Ics	Initial clear terminal (Power ON resetting is necessary)
61	LRS	O	External automatic input balance terminal, normally unconnected
62	/CSS	O	External automatic input balance terminal, normally unconnected
63	BCK	Its	Bit clock for parameter data input
64	WCK	Its	Word clock for parameter data input

Note : Letters used in the above I/O column represent as follows.

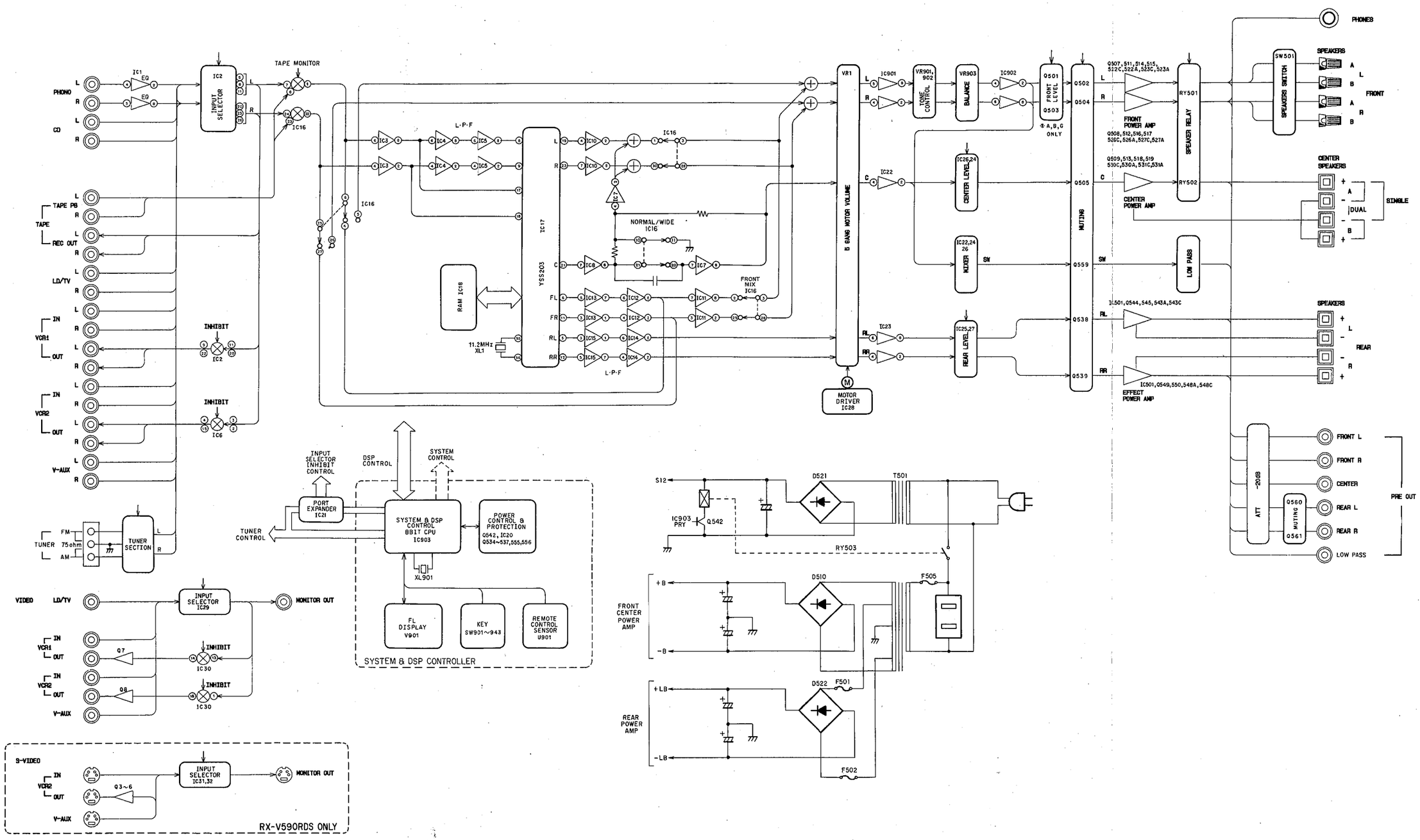
I : Input terminal **O** : Output terminal **t** : TTL level

c : CMOS level **s** : Schmidt input **A** : Analog terminal

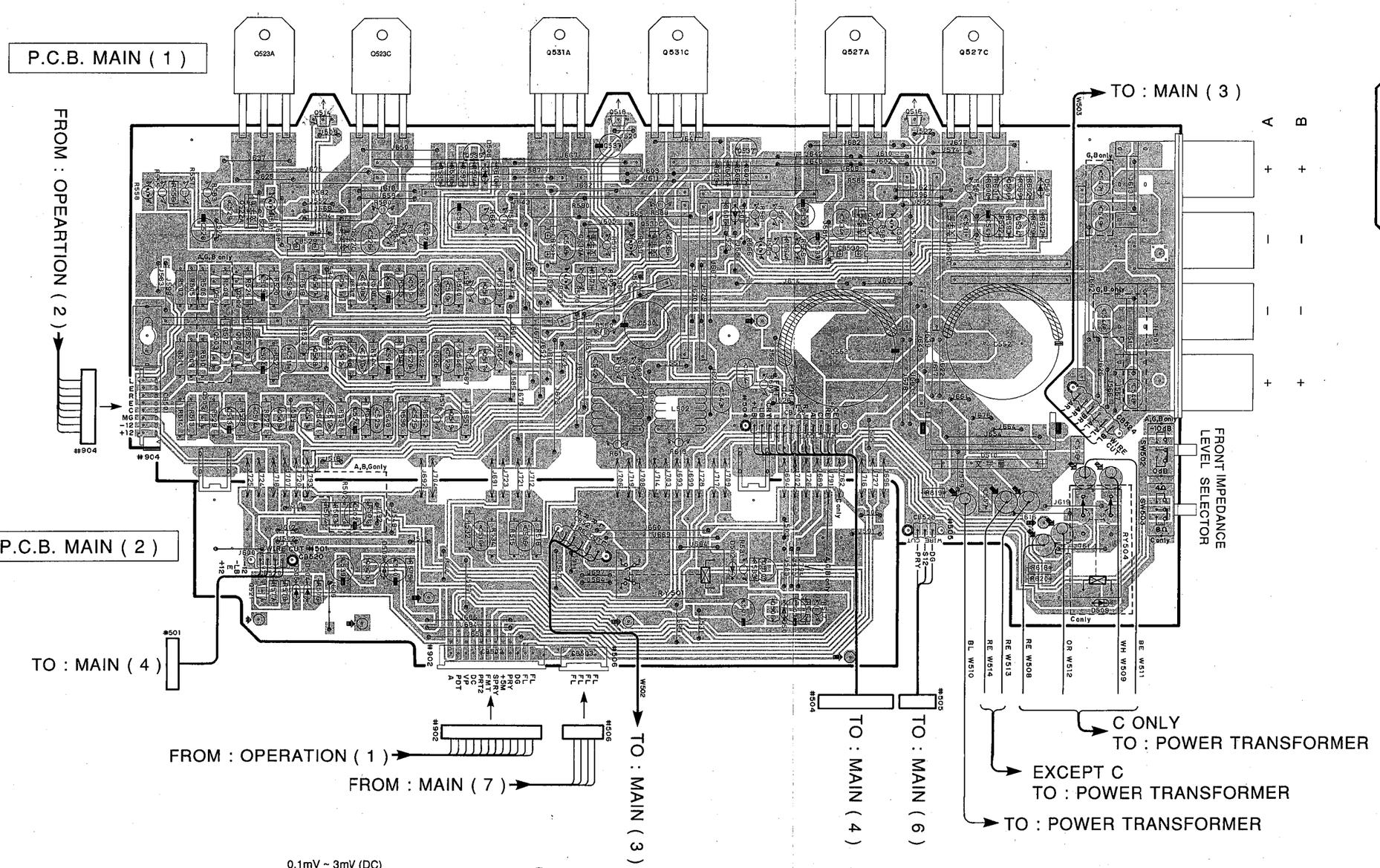
■ BLOCK DIAGRAM



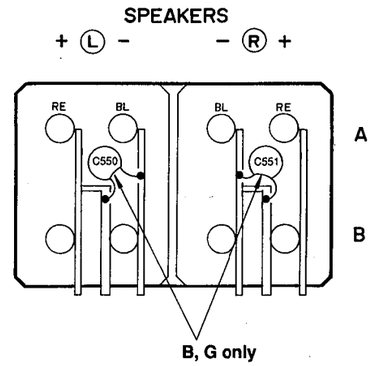
■ BLOCK DIAGRAM



■ PRINTED CIRCUIT BOARD (Foil side)



Note) Mounting of C550, 551 (B, G only) shown as below.

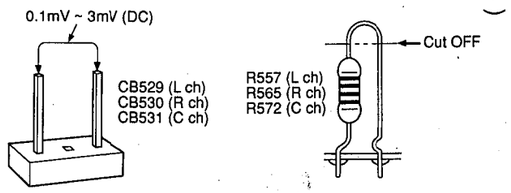


● **Semiconductor Location**

Ref. No.	Location
Q501	B2
Q502	B2
Q503	B3
Q504	B3
Q505	B3
Q506	D4
Q507	B2
Q508	B3
Q509	B3
Q510	D4
Q511	B2
Q512	B3
Q513	B3
Q514	B2
Q515	C2
Q516	E2
Q517	C3
Q518	D2
Q519	C3
Q520	C3
Q521	B4
Q522A	B2
Q522C	B2
Q523A	B1
Q523C	C1
Q526A	E2
Q526C	E2
Q527A	E1
Q527C	E1
Q530A	D2
Q530C	D2
Q531A	C1
Q531C	D1
Q534	E2
Q535	C2
Q536	E2
Q537	D2

● **Confirmation of Idling Current**

1) No signal applied.
2) Non-loaded condition.
3) Aging is not neccessary.



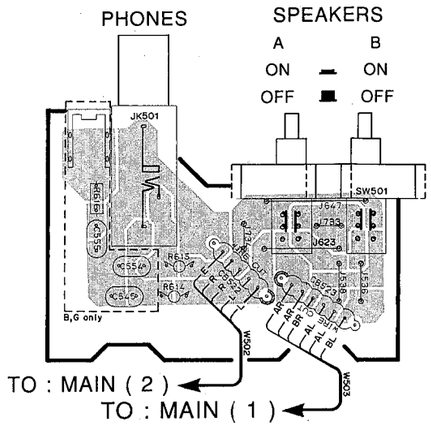
Item	Test Point	Rating (DC)	Note
FRONT L	CB529	0.3mV~3mV	If the measured voltage exceeds 3.1mV, cut the lead wires of R557(L ch), R565(R ch) and R572(C ch) and then check again if each measured value satisfies the rating.
FRONT R	CB530		
CENTER	CB531		

Note)

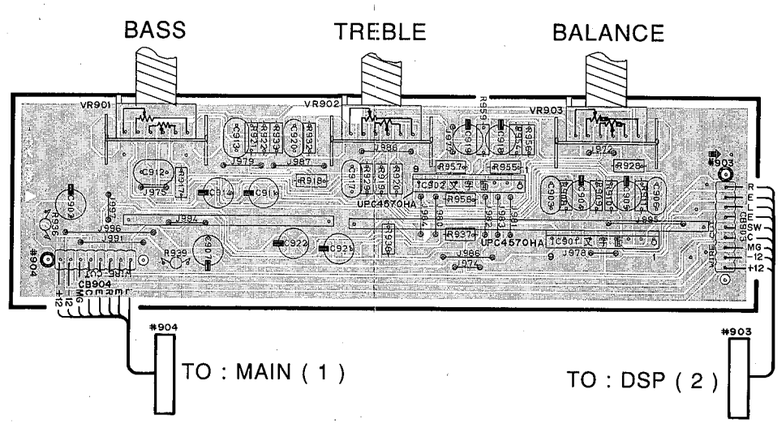
- If R557(L ch), R565(R ch) and R572(C ch) have already been cut off and idling current does not flow, reconnect R557(L ch), R565(R ch) and R572(C ch).
- Q514, Q516 and Q518 are transistors for temperature correction. Apply scilicone grease to contact surface with the heat sink.

■ PRINTED CIRCUIT BOARD (Foil side)

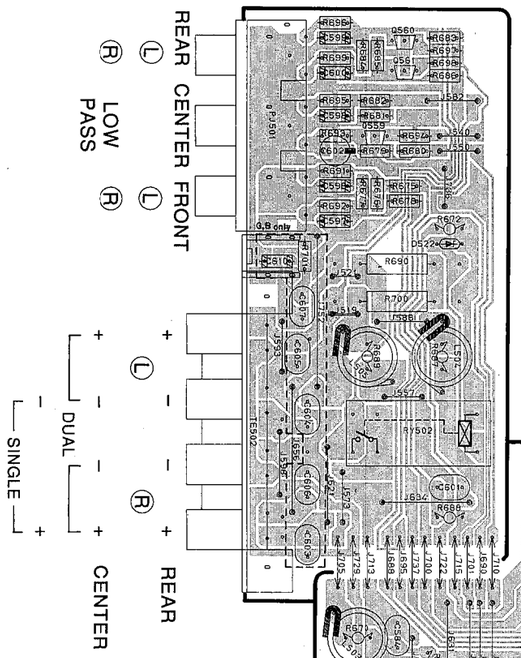
P.C.B. MAIN (3)



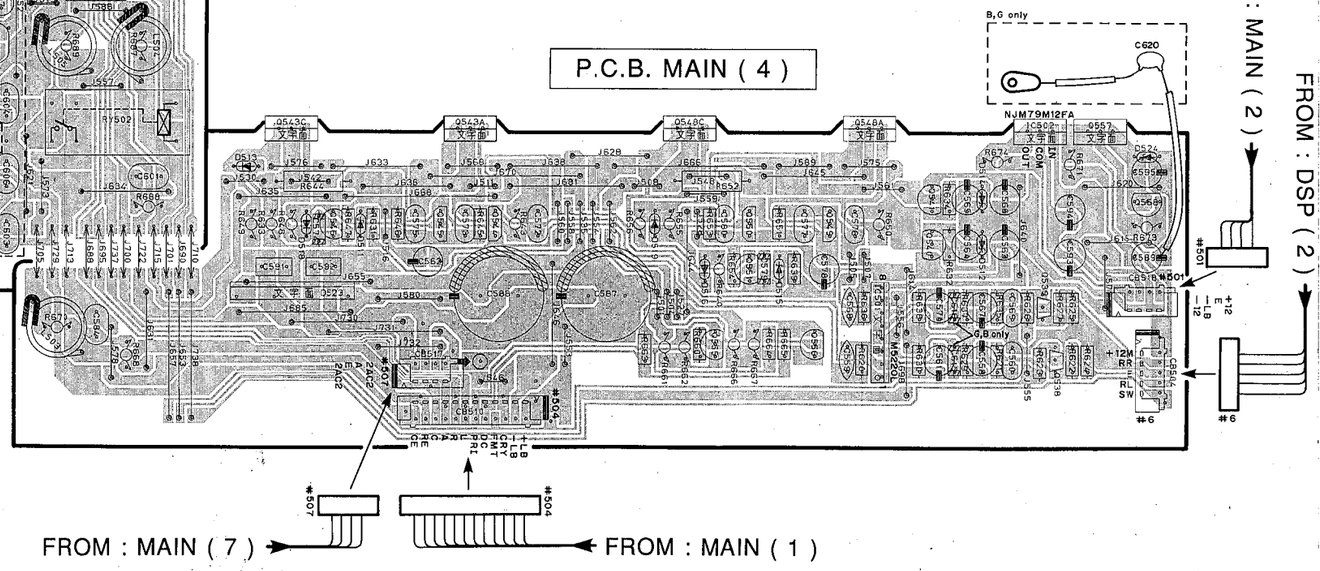
P.C.B. OPERATION (2)



P.C.B. MAIN (5)

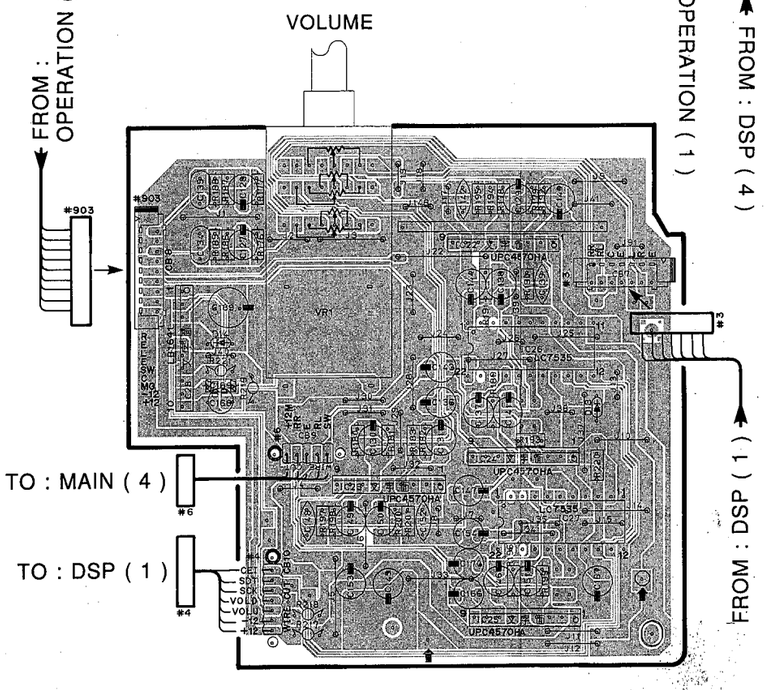


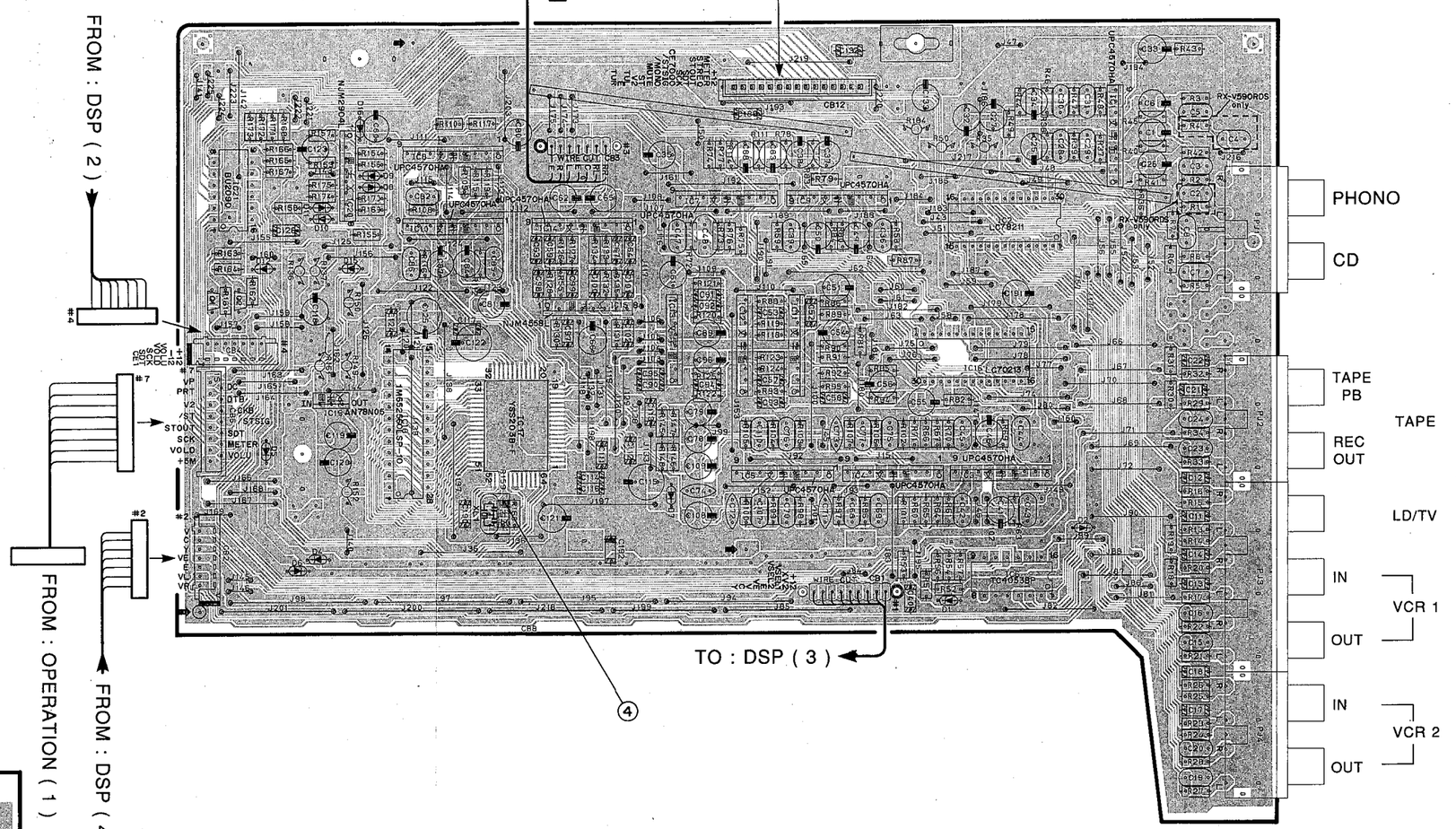
P.C.B. MAIN (4)



● **Semiconductor Location**

Ref. No.	Location
IC501	E5
IC502	E4
Q538	E5
Q539	E5
Q540	E5
Q541	E4
Q543A	C4
Q543C	C4
Q544	C5
Q545	C5
Q546	C5
Q548A	E4
Q548C	D4
Q549	E5
Q550	D5
Q551	D5
Q555	D5
Q556	E5
Q557	F4
Q558	F4
Q559	B3
Q560	B3
Q561	B3





■ PRINTED CIRCUIT BOARD (Foil side)

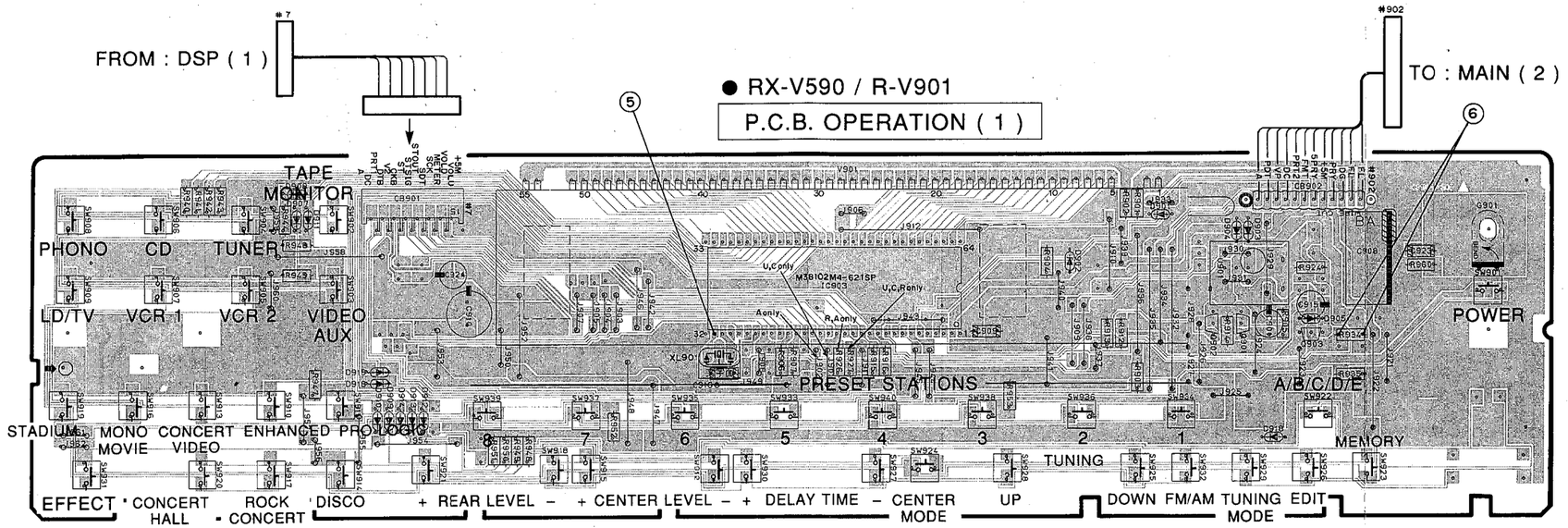
④ : TEST POINT WAVEFORMS (See page 14)

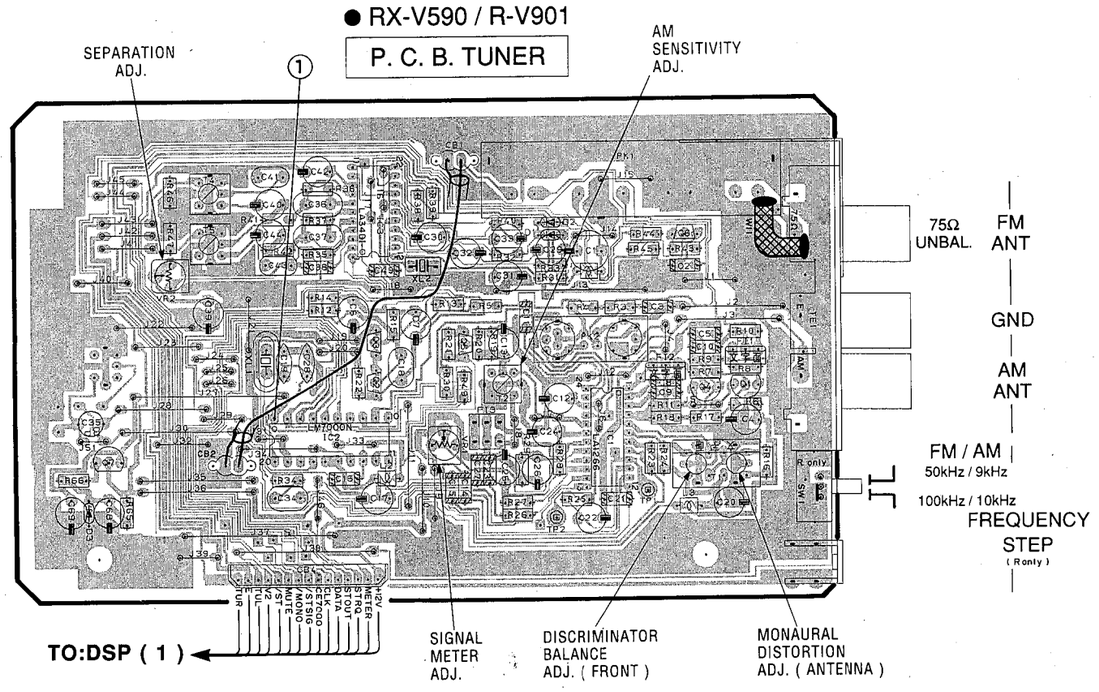
● Semiconductor Location

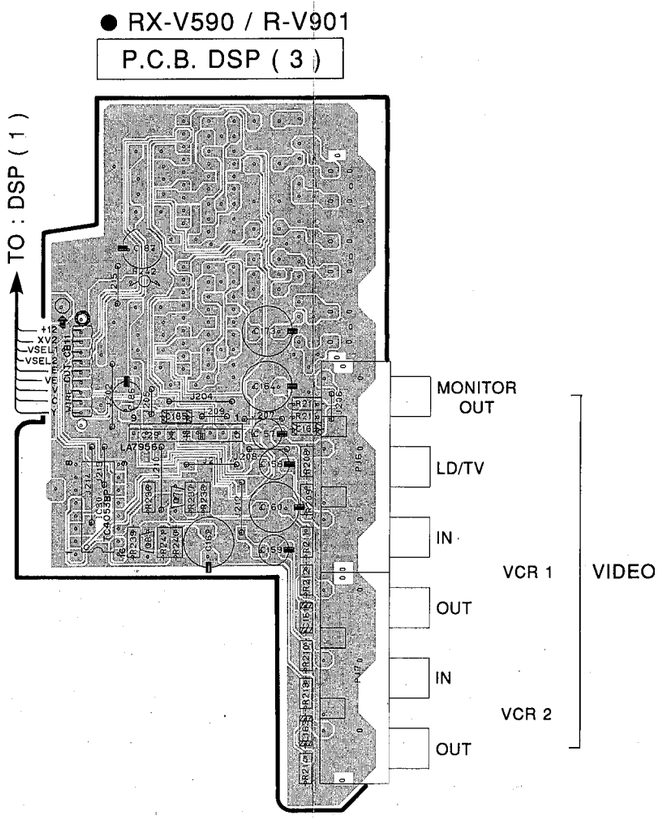
Ref. No.	Location
IC 1	G2
IC 2	F2
IC 3	F3
IC 4	F3
IC 5	F3
IC 6	G3
IC 7	E2
IC 8	D2
IC 9	F2
IC 10	D2
IC 11	F2
IC 12	F2
IC 13	E2
IC 14	E2
IC 15	E2
IC 16	F3
IC 17	E3
IC 18	D3
IC 19	D3
IC 20	D2
IC 21	D2
IC 22	B4
IC 23	B5
IC 24	B5
IC 25	B6
IC 26	B5
IC 27	C5
IC 28	A5
Q 1	D2
Q 2	D2

■ PRINTED CIRCUIT BOARD (Foil side)

①, ⑤, ⑥ : TEST POINT WAVEFORMS (See page 14)





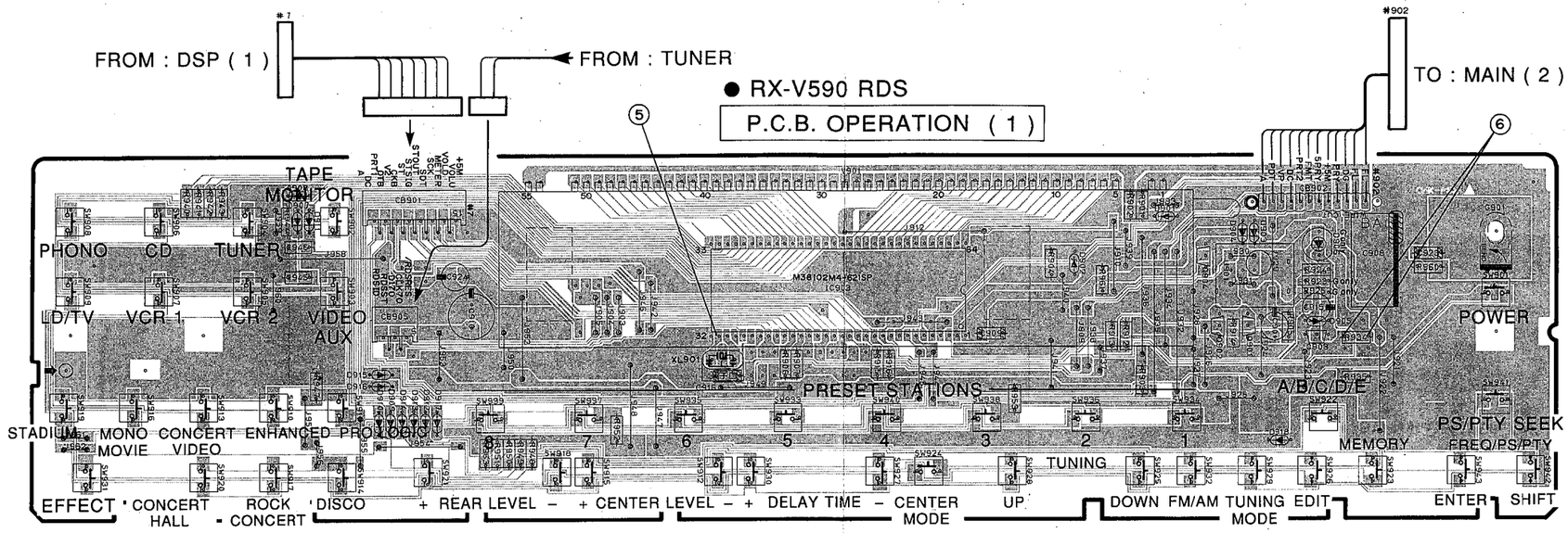


■ PRINTED CIRCUIT BOARD (Foil side)

①~③, ⑤, ⑥ : TEST POINT WAVEFORMS (See page 14)

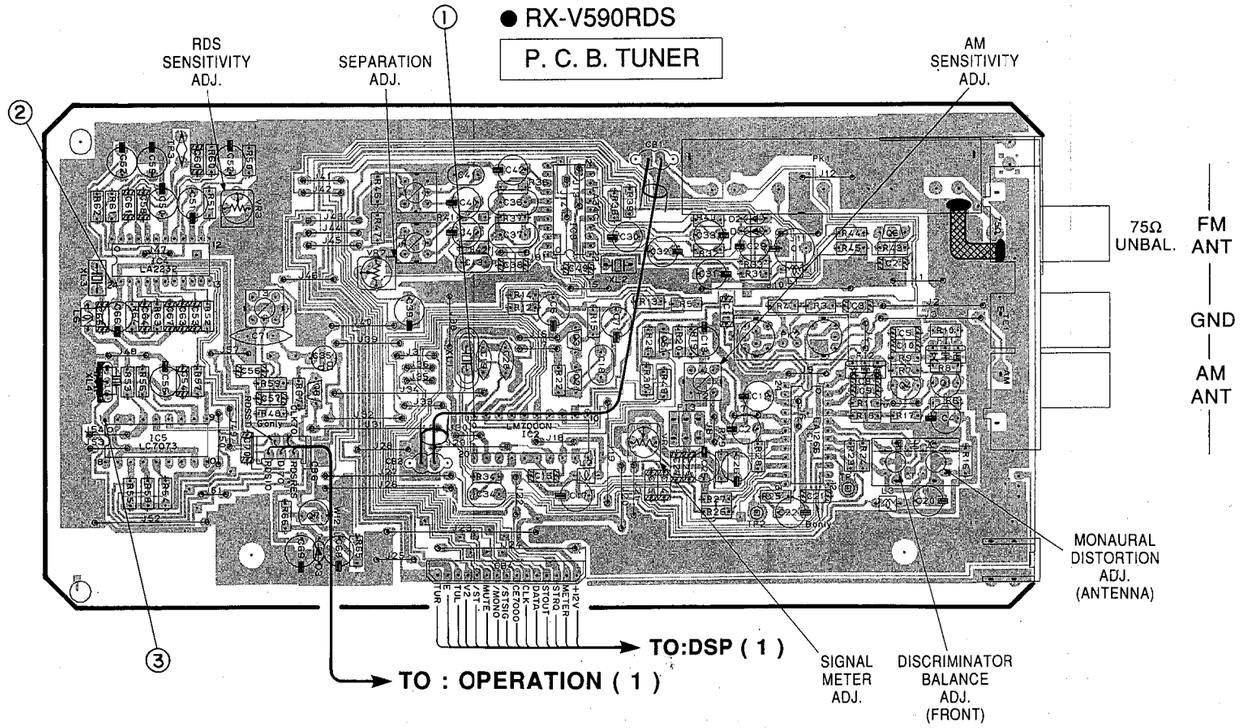
● RX-V590 RDS

P.C.B. OPERATION (1)



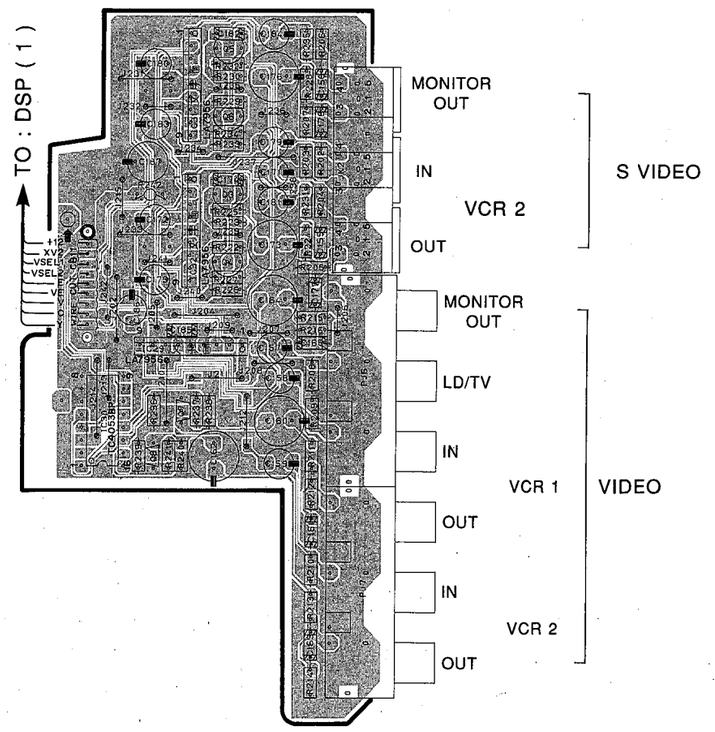
① ● RX-V590RDS

P. C. B. TUNER



● RX-V590 RDS

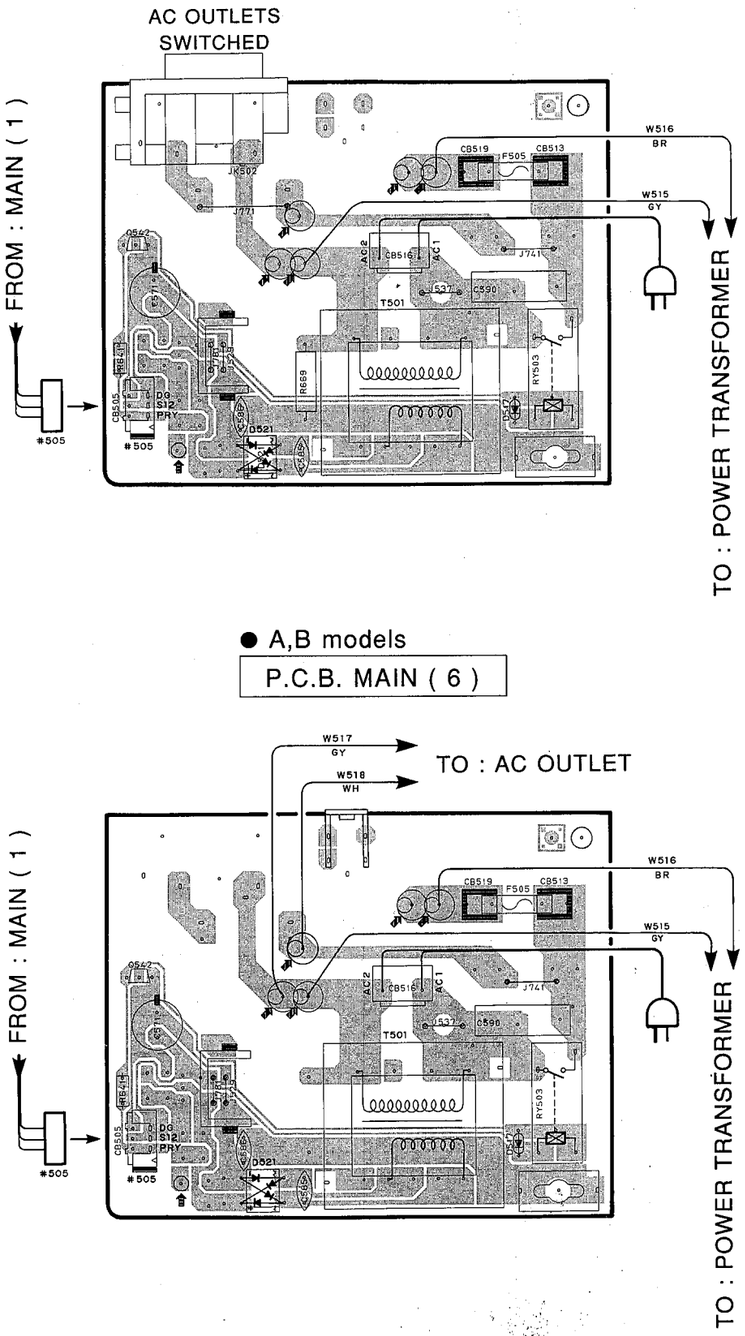
P.C.B. DSP (3)



■ PRINTED CIRCUIT BOARD (Foil side)

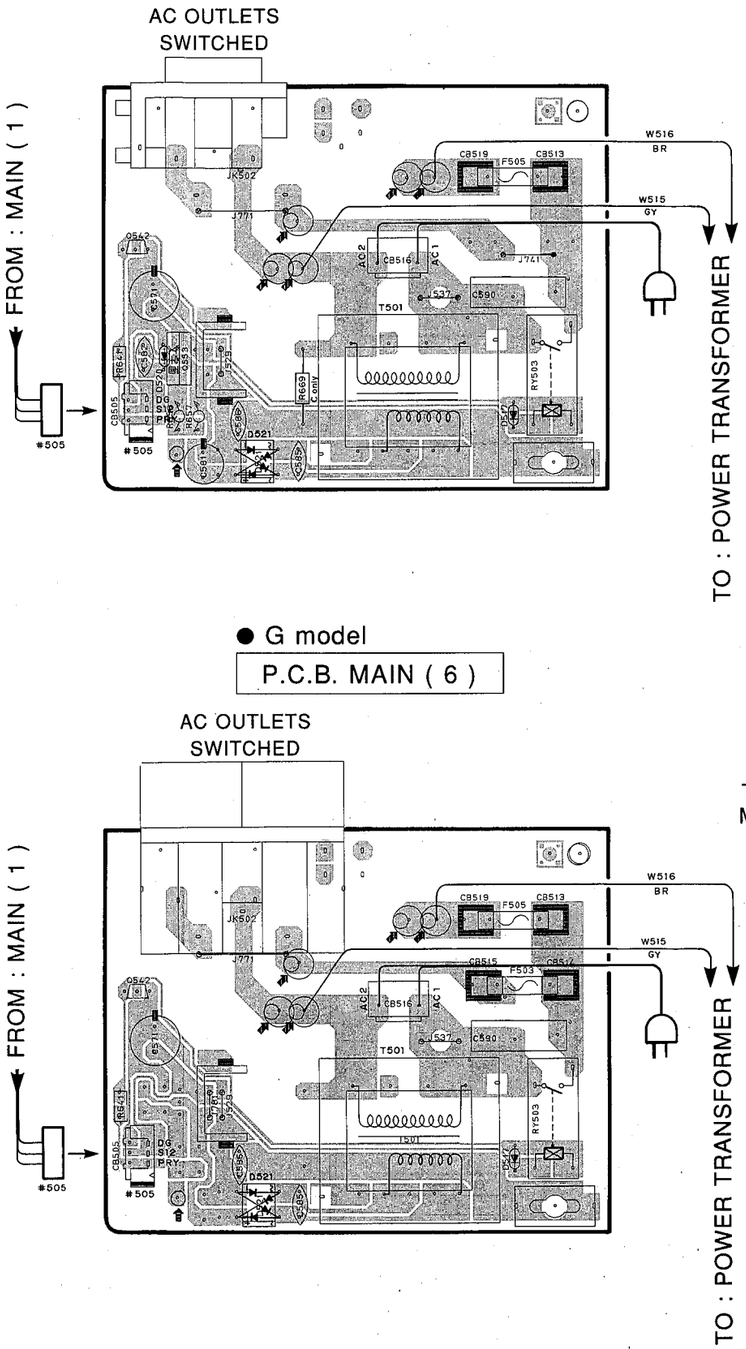
● U model

P.C.B. MAIN (6)



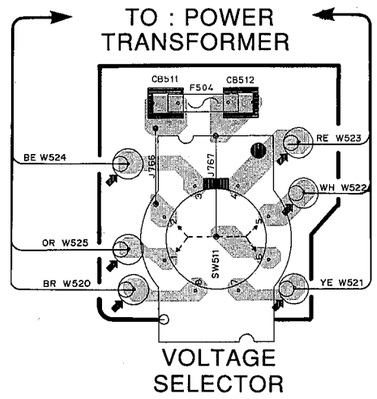
● R,C models

P.C.B. MAIN (6)

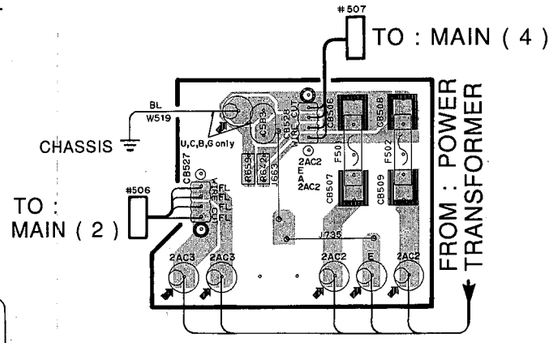


● R only

P.C.B. MAIN (8)



P.C.B. MAIN (7)



● A,B models

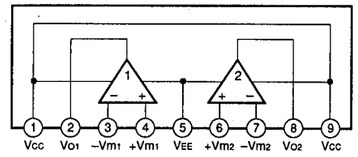
P.C.B. MAIN (6)

● G model

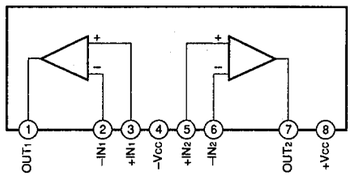
P.C.B. MAIN (6)

■ IC BLOCKS

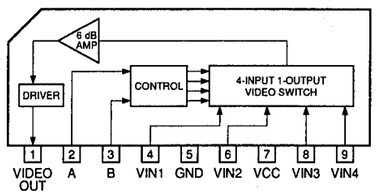
IC1, 3~5, 7~12, 14, 22~25 : μPC4570HA
IC901, 902 : μPC4570HA
Dual OP-Amp



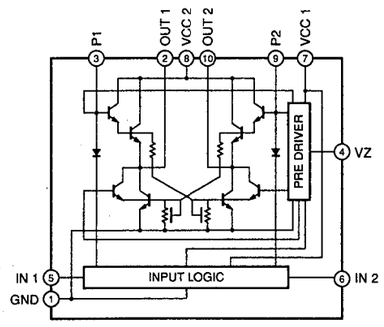
IC20 : NJM2904L
IC13, 15 : NJM4558L
IC501 : M5220L
Dual OP-Amp



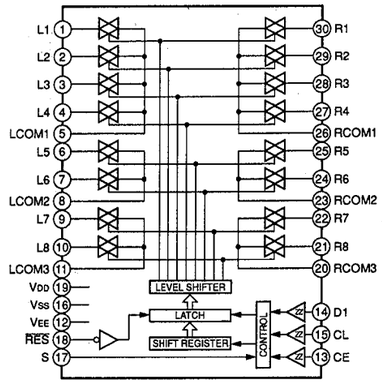
IC29, 31, 32 : LA7956
Video Switch



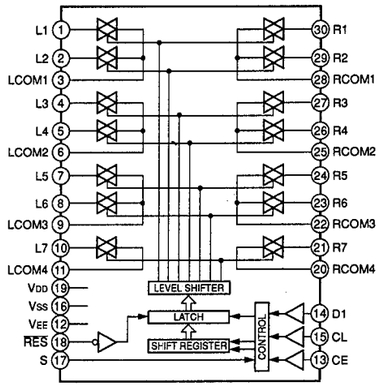
IC28 : LB1641
Motor Driver



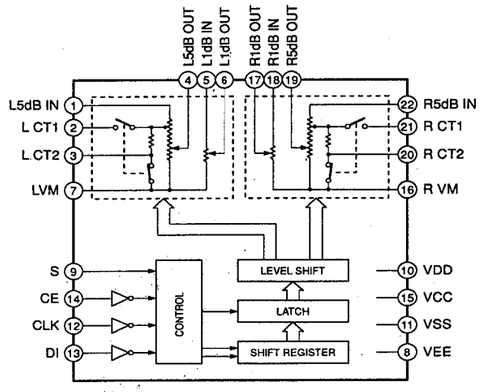
IC2 : LC78211
Analog Function Switch



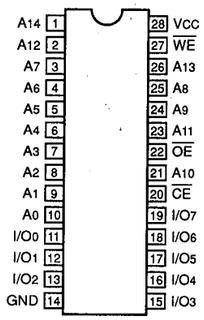
IC16 : LC78213
Analog Function Switch

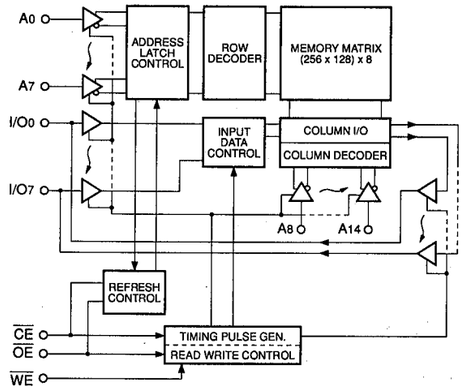


IC26, 27 : LC7535
Electric Controlled Volume

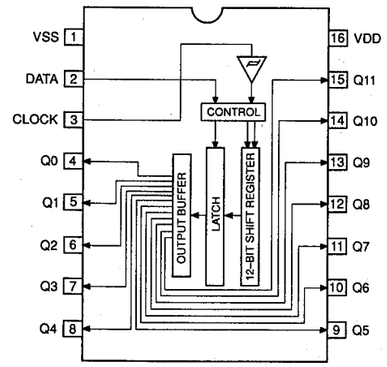


IC18 : HM65256BLSP-10
32768-word x 8 bit High Speed Pseudo Static RAM



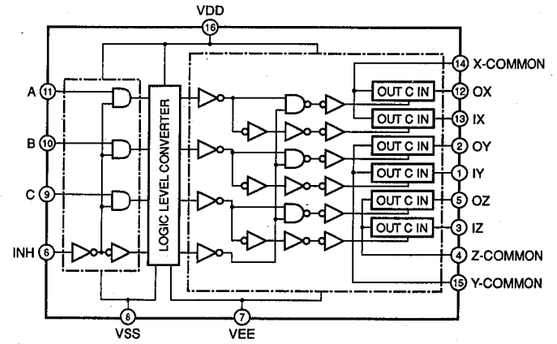


IC21 : BU2090
Serial In/Parallel Out Driver



No.	Port	Name	Function	Logic
1	VSS		GND	
2	DATA		Data in	
3	CLK		Clock in	
4	Q0	STREQ	Stop request (N.C.)	
5	Q1	CE7000	Chip enable LM7000 (N.C.)	
6	Q2	/MONO	Mono out (N.C.)	L:MONO
7	Q3	TMUTE	Tuner mute (N.C.)	H:ON
8	Q4		N.C.	
9	Q5	DSEL	DSP serial select	H:DSP
10	Q6	CEDSP	Chip enable DSP	H:ON
11	Q7	CEISL	Chip enable LC7821/LC7823/LC7535	H:ON
12	Q8		N.C.	
13	Q9	V2INH	VCR2 not select H : not VCR2	L:VCR2
14	Q10	VSELA	Video selector A (LA7956)	
15	Q11	VSELB	Video selector B (LA7956)	
16	VDD		+5V	

IC6, 30 : TC4053BP
Triple 2-Channel Multiplexer/Demultiplexer



CONTROL INPUTS				"ON" CHANNEL
INHIBIT (Pin 6)	C (Pin 9)	B (Pin 10)	A (Pin 11)	0X (Pin 12), 0Y (Pin 2), 0Z (Pin 5) 1X (Pin 13), 1Y (Pin 1), 1Z (Pin 3)
L	L	L	L	0X, 0Y, 0Z
L	L	L	H	1X, 0Y, 0Z
L	L	H	L	0X, 1Y, 0Z
L	L	H	H	1X, 1Y, 0Z
L	H	L	L	0X, 0Y, 1Z
L	H	L	H	1X, 0Y, 1Z
L	H	H	L	0X, 1Y, 1Z
L	H	H	H	1X, 1Y, 1Z
H	*	*	*	NOTE
* Don't Care				

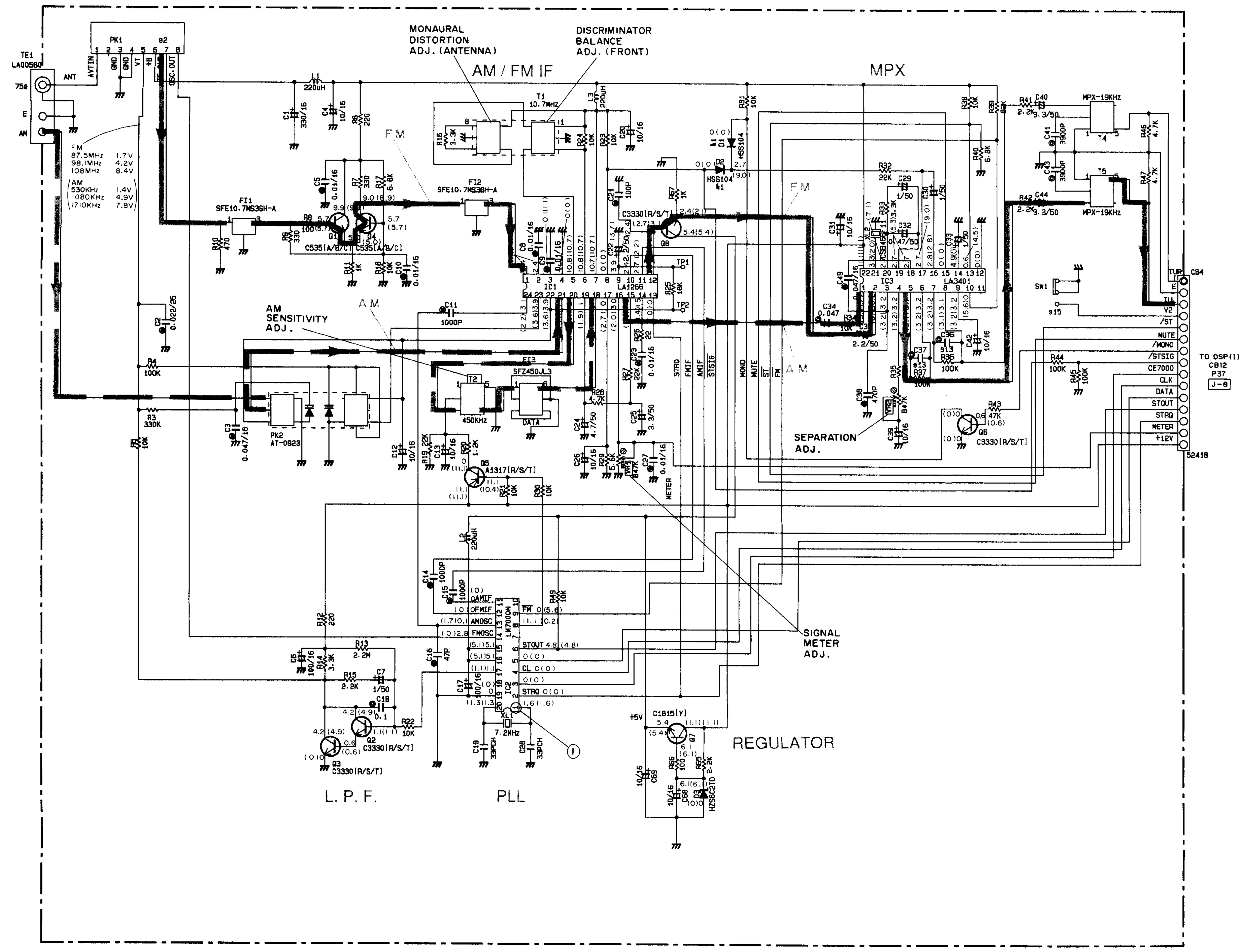
Other IC's
- **IC903 : M38102M4-621SP**→See page 15
- **IC17 : YSS203B**→See page 17

■ SCHEMATIC DIAGRAM (TUNER)

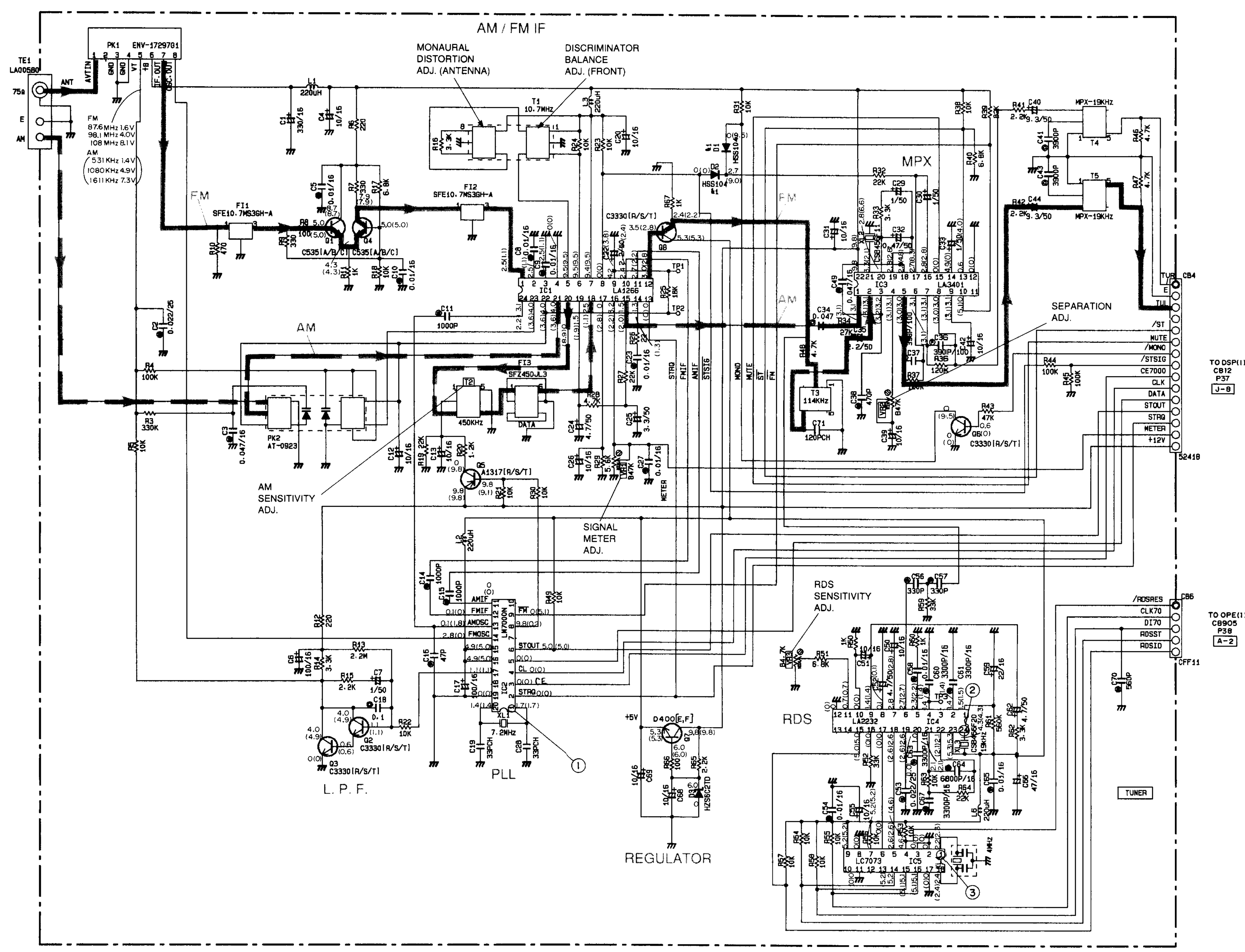
Each voltage given here represents that in the FM (98. 1MHz, STEREO) reception mode but the one in the parentheses ( ) is that in the AM (1080kHz, MAN'L) reception mode.

①-③ : TEST POINT WAVEFORMS (See page 14)

RX-V590/R-V901



RX-V590RDS



B		U·C	R	A
1				
2	PK1	VR24220	VR24220	VR24220
3				
4				
5				
6				
7	C21	100P	100P	100P
8	R34	10K	10K	10K
9	J51	○	○	○
10	R48	×	×	×
11	T3	×	×	×
12	R35	22K	22K	22K
13	C36·37	680P	680P	470P
14	R36·37	100K	100K	100K
15	SW1	×	VF54120	×
16	J61	×	×	×
17				

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
※1	D1·2	HSS104 1SS133 1SS176

CAPACITOR

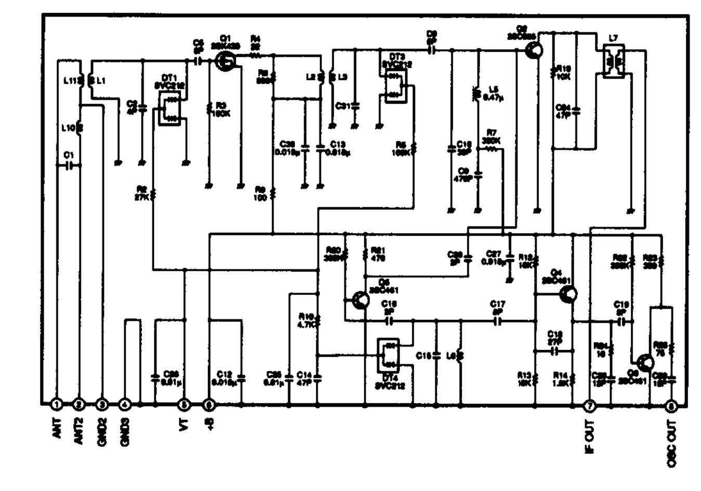
REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	⊣⊢ (polarized)
⊗	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	⊣⊢
◉	CERAMIC TUBULAR CAPACITOR	
◎	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
⦶	MICA CAPACITOR	
Ⓟ	POLYPROPYLENE FILM CAPACITOR	
●	SEMICONDUCTIVE CERAMIC CAPACITOR	

RESISTOR

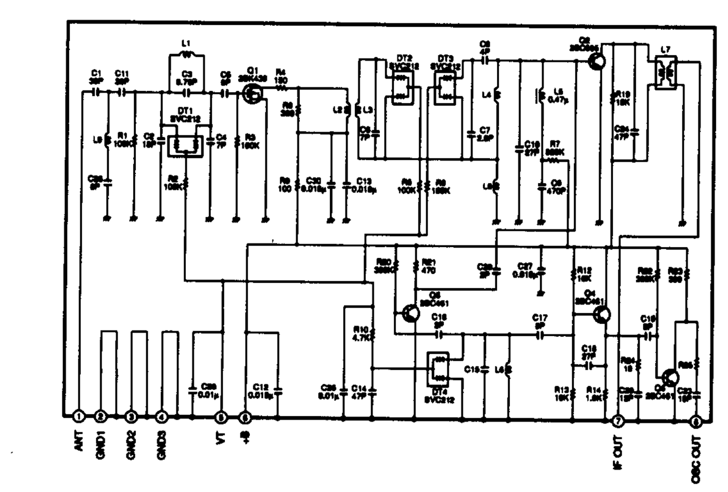
REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
◪	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
◩	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

NOTICE
(J)····· Japanese model
(U)····· U.S.A model
(C)····· Canadian model
(A)····· Australian model
(G)····· European model
(B)····· British model
(R)····· General model
(P)····· RP model

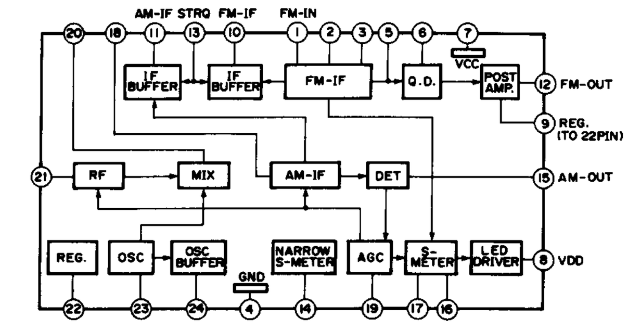
• RX-V590/R-V901
PK1 : ENV-17298GI (VR242200)



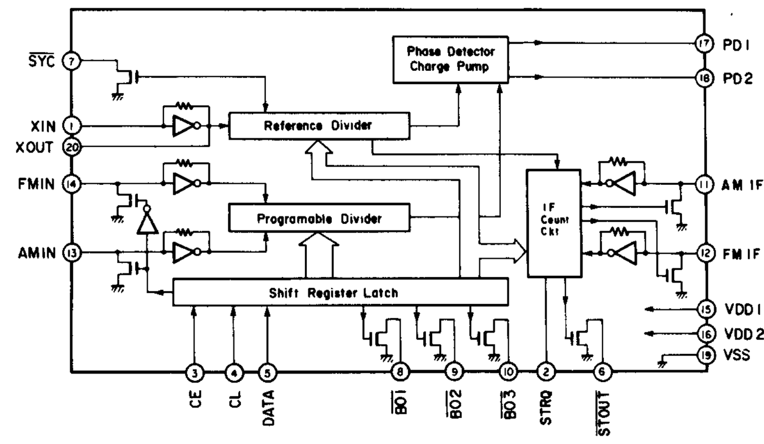
• RX-V590RDS
PK1 : ENV-17297GI (VQ987600)



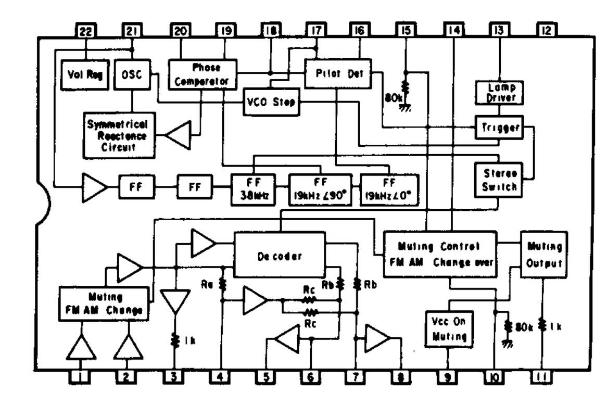
IC1 : LA1266
AM/FM IF



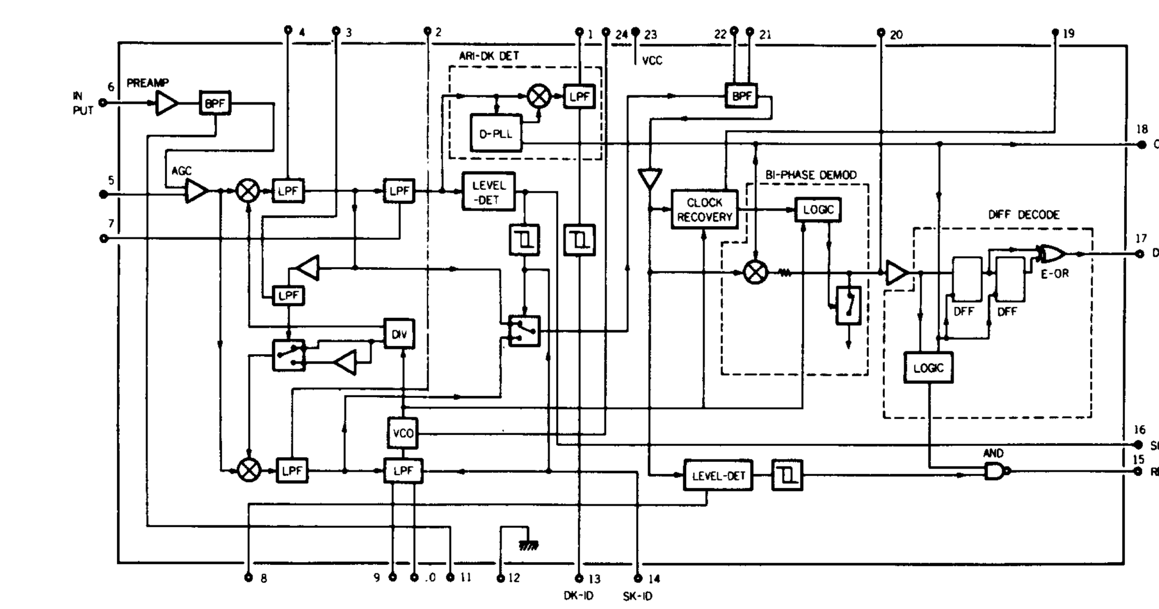
IC2 : LM7000N
PLL Controller



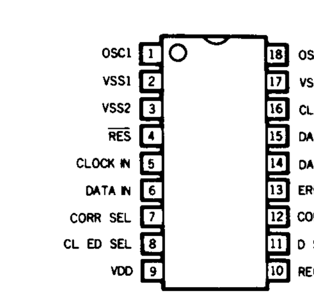
IC3 : LA3401
MPX

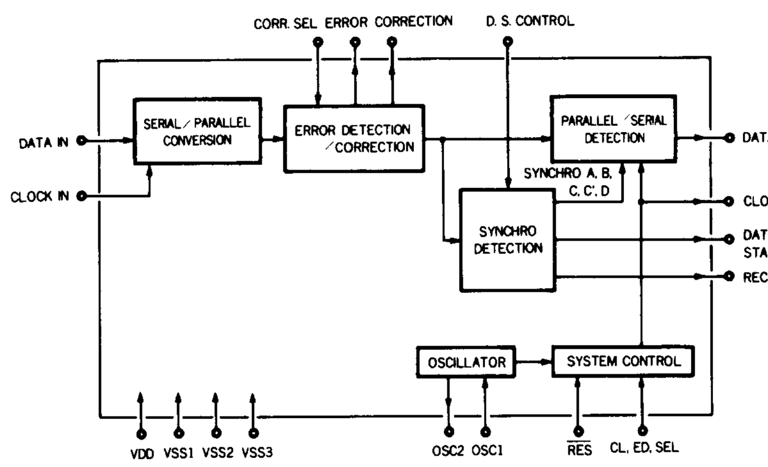


IC4 : LA2232
RDS Decoder

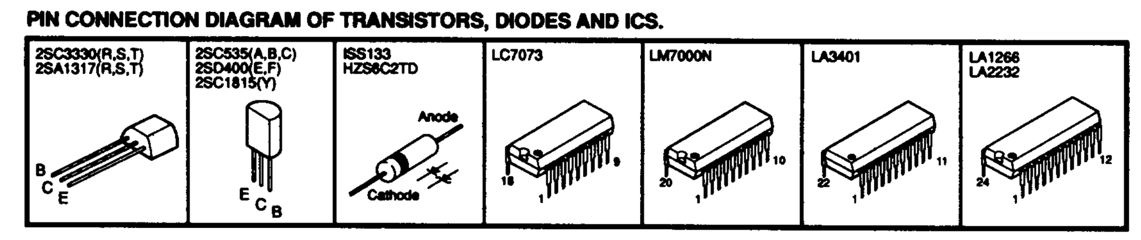


IC5 : LC7073
RDS Converter & Controller





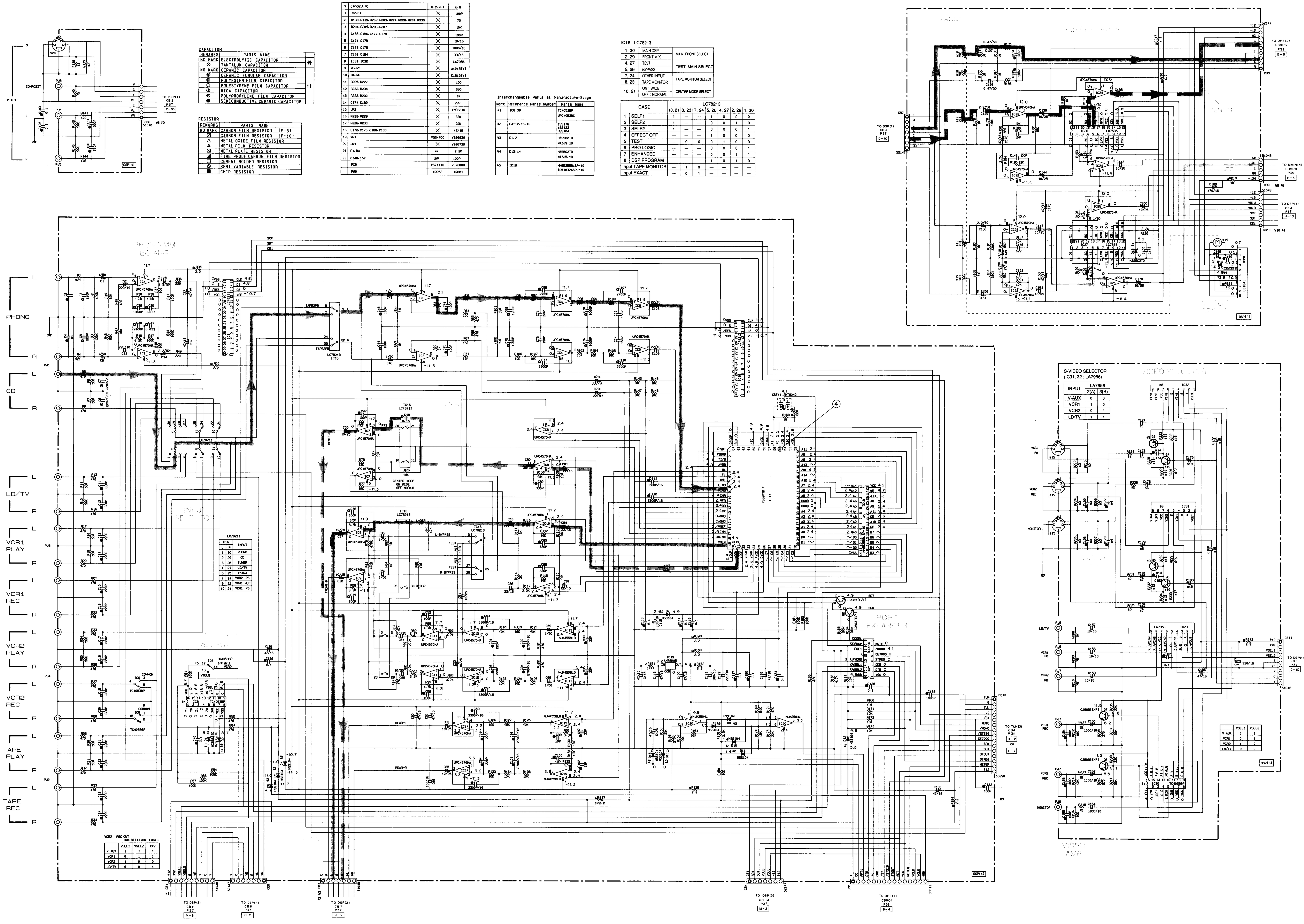
PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICS.



* *All voltage are measured with a 10MΩ/DC electric volt meter.*
* *Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.*
* *Schematic diagram is subject to change without notice.*

■ SCHEMATIC DIAGRAM (DSP)

④ : TEST POINT WAVEFORMS (See page 14)



CAPACITOR

REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	⧣
⊗	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	⊣⊢
◉	CERAMIC TUBULAR CAPACITOR	
◎	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
⦶	MICA CAPACITOR	
Ⓟ	POLYPROPYLENE FILM CAPACITOR	
●	SEMICONDUCTIVE CERAMIC CAPACITOR	

RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
⧄	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
◩	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

5	Circuit No.	U.C.R.A	B.G
1	C2, C4	×	100P
2	R138, R139, R202, R203, R224, R228, R231, R235	×	75
3	R204, R205, R206, R207	×	10K
4	C155, C156, C177, C178	×	100P
5	C171, C179	×	10/16
6	C173, C176	×	1000/10
7	C181, C184	×	33/16
8	IC31, IC32	×	LA7956
9	Q3, Q5	×	A1015(Y)
10	Q4, Q6	×	C1815(Y)
11	R225, R227	×	150
12	R232, R234	×	330
13	R223, R230	×	1K
14	C174, C182	×	22P
15	JK2	×	VN93810
16	R222, R229	×	33K
17	R226, R233	×	22K
18	C172, C175, C180, C183	×	47/16
19	VR1	VQ64700	VS86830
20	JK1	×	VS86730
21	R1, R4	47	2.2K
22	C148, 152	10P	100P
	PCB	VS71110	VS72800
	PWB	X0052	X0081

Interchangeable Parts at Manufacture-Stage

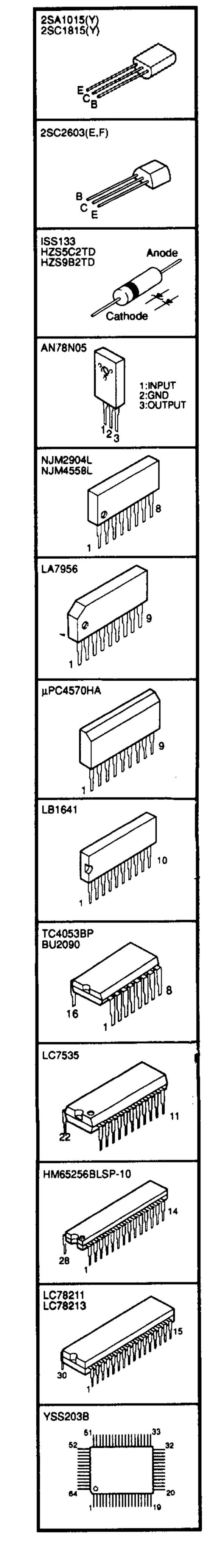
Mark	Reference Parts Number	Parts Name
⚠1	IC6, 30	TC4053BP UPD4053BC
⚠2	D4-12, 15, 16	1SS176 1SS133 HSS104
⚠3	D1, 2	HZS9B2TD MTZJ9.1B
⚠4	D13, 14	HZS5C2TD MTZJ5.1B
⚠5	IC18	HM65256BLSP-10 TC51832ASPL-10

IC16 : LC78213

1, 30	MAIN DSP	MAIN, FRONT SELECT
2, 29	FRONT MIX	
4, 27	TEST	TEST, MAIN SELECT
5, 26	BYPASS	
7, 24	OTHER INPUT	TAPE MONITOR SELECT
8, 23	TAPE MONITOR	
10, 21	ON : WIDE	CENTER MODE SELECT
	OFF : NORMAL	

CASE		LC78213						
		10, 21	8, 23	7, 24	5, 26	4, 27	2, 29	1, 30
1	SELF1	1	—	—	1	0	0	0
2	SELF2	1	—	—	0	0	1	0
3	SELF2	1	—	—	0	0	0	1
4	EFFECT OFF	—	—	—	1	0	0	0
5	TEST	—	0	0	0	1	0	0
6	PRO LOGIC	—	—	—	0	0	0	1
7	ENHANCED	—	—	—	0	0	1	1
8	DSP PROGRAM	—	—	—	1	0	1	0
Input TAPE MONITOR		—	1	0	—	—	—	—
Input EXACT		—	0	1	—	—	—	—

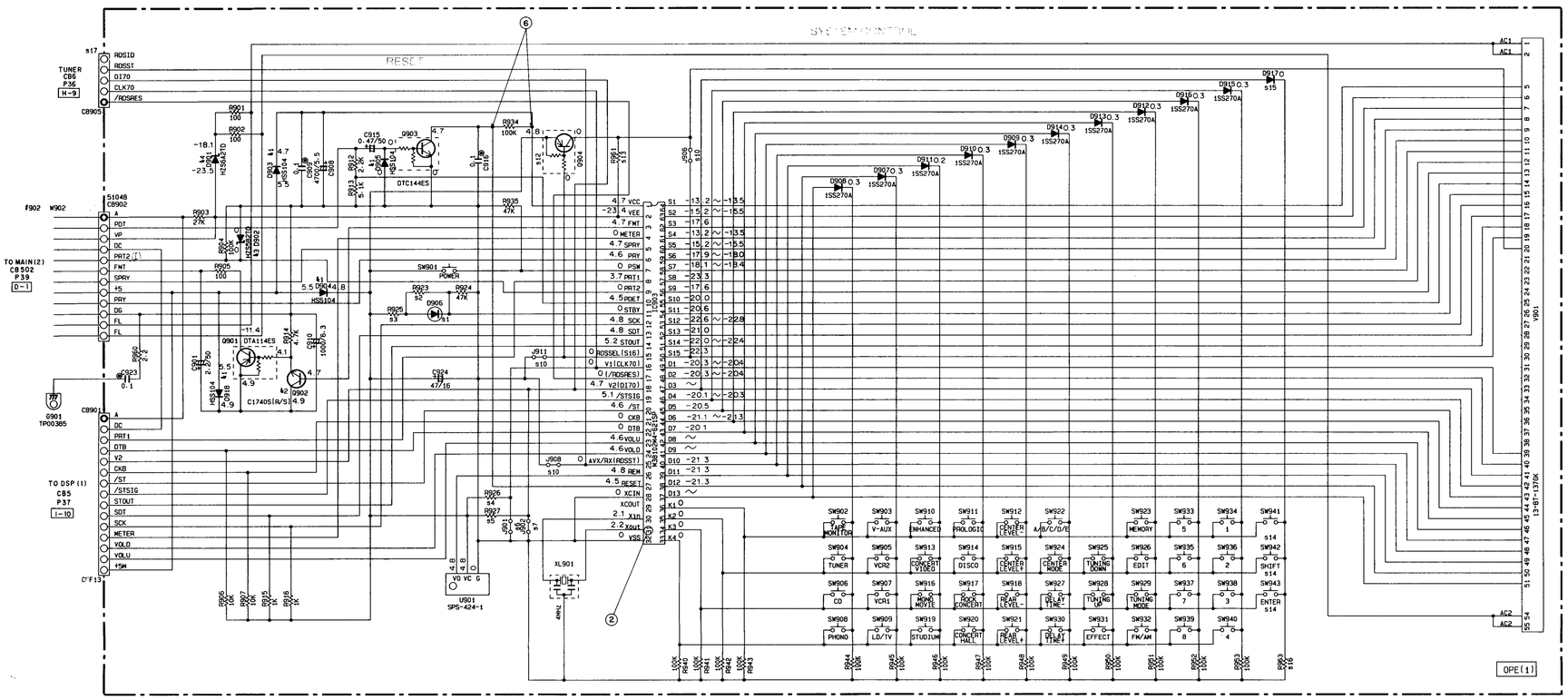
PIN CONNECTION DIAGRAM OF TRANSISTORS,DIODES AND ICS.



* All voltage are measured with a 10MΩ/DC electric volt meter.
* Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.
* Schematic diagram is subject to change without notice.

■ SCHEMATIC DIAGRAM (OPERATION)

⑤, ⑥ : TEST POINT WAVEFORMS (See page 14)



S	Circuit No.	U·C	R	A	B, G
1	D906	×	×	×	SLR-305VCA47
2	R923	×	×	×	33K
3	R925	×	×	×	220
4	R926	×	100K	100K	×
5	R927	100K	100K	×	×
6	J901	○	×	×	×
7	J902	×	×	○	×
8					
9					
10	J906·908·911	○	○	○	×
11					
12	Q904	×	×	×	DTA114ES
13	R961	×	×	×	68K
14	SW941·942·943	×	×	×	VG39290
15	D917	×	×	×	1SS270A
16	R963	×	×	×	100K
17	CB905	×	×	×	VR36120
	PCB	VS71060	VS71070	VS71080	VS72790
	PWB	XQ051	XQ051	XQ051	XQ080

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
&1	D903·905·918	HSS104 1SS133 1SS176
&2	Q902	2SC1740S(R/S) 2SC2603(E/F) 2SC3311A(Q/R/S)
&3	D902	HZS5B2TD MTZJ4.7C
&4	D901	HZS6A2TD MTZJ5.6A

NOTICE
(J)····· Japanese model
(U)····· U.S.A model
(C)····· Canadian model
(A)····· Australian model
(G)····· European model
(B)····· British model
(R)····· General model
(P)····· RP model

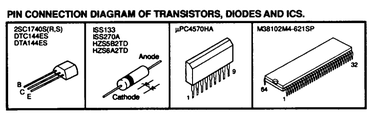
RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
☑	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
◪	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

CAPACITOR

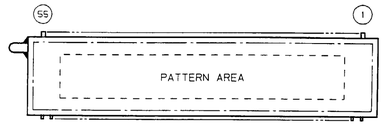
REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	⊟
⊗	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	⊣⊢
◉	CERAMIC TUBULAR CAPACITOR	
◎	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
Ⓘ	MICA CAPACITOR	
Ⓟ	POLYPROPYLENE FILM CAPACITOR	
●	SEMICONDUCTIVE CERAMIC CAPACITOR	

PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICS.



■ DISPLAY DATA

● V901 : 13-BT-137(VS550600)



● PIN CONNECTION

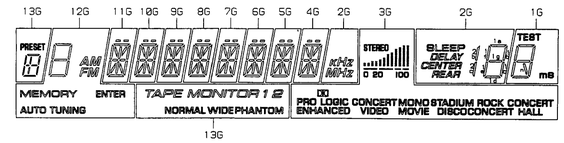
Pin No.	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37
Connection	F2	F2	NP	NP	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15

Pin No.	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	29	18
Connection	P16	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

Pin No.	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Connection	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G	NP	NP	F1	F1

Note 1) F1, F2 ..... Filament
2) NP ..... No Pin
3) NC ..... No Connection
4) P1~P16 ..... Datum Line
5) 1G~13G ..... Grid

● GRID ASSIGMENT



● ANODE CONNECTION

	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	a	a	a	a	a	a	a	a	a	a	CONCERT HALL	1a	a
P2	b, c	b	b	b	b	b	b	b	b	b	ROCK CONCERT	1b	b
P3	d	c	c	c	c	c	c	c	c	c	DISCO	1c	c
P4	e, f	d	d	d	d	d	d	d	d	d	STADIUM	1d	d
P5	g	e	e	e	e	e	e	e	e	e	MONO MOVIE	1e	e
P6	j, p	f	f	f	f	f	f	f	f	f	CONCERT VIDEO	1f	f
P7	m	g	g	g	g	g	g	g	g	g	◫◫ PRO LOGIC	1g	g
P8	PRESET	ENTER	h	h	h	h	h	h	h	h	ENHANCED	2b, 2c	n
P9	NORMAL	AM	j	j	j	j	j	j	j	j	STEREO	*kHz*	TEST
P10	WIDE	FM	k	k	k	k	k	k	k	k	S1	*MHz*	mS
P11	PHANTOM	MEMORY	m	m	m	m	m	m	m	m	B1	*DELAY*	—
P12	*TAPE MONITOR*	AUTO TUNING	n	n	n	n	n	n	n	n	B2	*CENTER*	—
P13	*1*	—	p	p	p	p	p	p	p	p	B3	*REAR*	—
P14	*2*	—	r	r	r	r	r	r	r	r	B4	SLEEP	—
P15	—	—	t	t	t	t	t	t	t	t	—	—	—
P16	—	—	u	u	u	u	u	u	u	u	—	—	—

* All voltage are measured with a 10MΩ/DC electric volt meter.
* Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.
* Schematic diagram is subject to change without notice.

■ SCHEMATIC DIAGRAM (MAIN)

CAPACITOR

REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊗	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
⊗	CERAMIC TUBULAR CAPACITOR
◎	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
Ⓜ	MICA CAPACITOR
Ⓟ	POLYPROPYLENE FILM CAPACITOR
●	SEMICONDUCTIVE CERAMIC CAPACITOR

RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
◪	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
◪	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

PIN CONNECTION DIAGRAM OF TRANSISTORS,DIODES AND ICS.

2SA1015(Y) 2SC1815(Y) 2SA970(GR,BL) 2SA933A(D,E) 2SC2240(GR,BL) 2SC1890A(D,E)

2SA933S(O,R) 2SC2603(E,F) 2SC3320(S,T) 2SD1915F(S,T)

2SA1726(O,P,Y) 2SC4495(S,T) 2SC4518(O,P,Y) 2SD2396(J,K)

2SA1358(O,Y) 2SC3421(O,Y)

2SA1492(O,P,Y) 2SC3858(O,P,Y)

2SA1708(S,T) 2SC4488(S,T)

2SK30ATM(GR)

ISS133 ISS270A HZS6B2TD HZS6C2TD HZS12B2TD HZS12C2TD HZS15ZTD HZS24ZTD — Anode, Cathode

D3SBA20 D5SBA20

S1NB20

NJM79M12FA — 1:OUTPUT 2:INPUT 3:COMMON

M5220L

	Mark	Reference Parts Number	Parts Name				
▲1	0521		2SA933S(D/R) 2SA1115(E/F) 2SA1309A(D/R/S)	▲6	D511.515		HZS15ZTD HTZJ15C
▲2	0505		HZS6B2TD HTZJ5.6C	▲7	D501.502.512.514		HZS24ZTD HTZJ24C
▲3	D504.513.516~519		HSS104 ISS133 ISS176				
▲4	D503		HZS6C2TD HTZJ6.2B				
▲5	D524		HZS12C2TD HTZJ15A				

		U	C	R	A	B	G
s1	R505.509	1K	1K	1K	2.2K	2.2K	2.2K
s2	R508.510	X	X	X	1K	1K	1K
s3	R501.503	X	X	X	D1915F(S/T)	D1915F(S/T)	D1915F(S/T)
s4	R506.512	X	X	X	10K	10K	10K
s5	C545.550.551.554.555	X	X	X	X	0.01	0.01
s6	R616.701	X	X	X	X	2.2	2.2
s7	W512	X	V575110	X	X	X	X
s8	CB511.512	X	X	VP20650	X	X	X
s9	T501	VC31370	VC31370	VK30620	VK50620	VK50620	VK50620
s10	SW502	X	X	X	VS60260	VS60260	VS60260
s11	SW503	X	VS60260	X	X	X	X
s12							
s13	D509	X	1SS133 1SS176 HSS104	X	X	X	X
s14	RY504	X	V124310	X	X	X	X
s15	W511	X	V571600	X		X	X
s16	F501.502	4A125V	4A125V	4A125V	T4AL250V	T4AL250V	T4AL250V
s17	CB83	0.1	0.1	X	X	0.1	0.1
s18	SW511	X	X	VA06180	X	X	X
s19	F504	X	X	T3.15AL250V	X	X	X
s20	W520	X	X	V144430	X	X	X
s21	W525	X	X	V237110	X	X	X
s22	W524	X	X	V237120	X	X	X
s23	W523	X	X	V237130	X	X	X
s24	W522	X	X	V237140	X	X	X
s25	W521	X	X	V237150	X	X	X
s26	W517	X	X	X	VG10540	VG10540	X
s27	W518	X	X	X	VG10530	VG10530	X
s28	W519	V571620	V571620	X	X	V571620	V571620
s29	JK502	VK48060	VK48060	X	X	X	VK48070
s30	J741	0	0	0	0	0	X
s31	F503	X	X	X	X	X	T2.5AL250V
s32	CB514.515	X	X	X	X	X	VP20650
s33	F505	7A125V	7A125V	7A125V	T3.15AL250V	T3.15AL250V	T3.15AL250V
s34	T501	XC083	XB619	XC082	XC084	XC084	XC084
s35	R669	1/2W2.2M	1/2W2.2M	X	X	X	X
s36	C581	X	47/25	47/63	X	X	X
s37	R857.858	X	56	5.6K	X	X	X
s38	D520	X	HZS12B2TD MTZJ13A	HZS12B2TD MTZJ13A	X	X	X
s39	W508	X	V571590	X	X	X	X
s40	W513.514	V571590	X	V571590	V571590	V571590	V571590
s41	C582	X	1000P	1000P	X	X	X
s42	Q553	X	D2396[J/K]	D2396[J/K]	X	X	X
s43	J781	0	X	X	0	0	0
s44	J733.791	X	X	X	0	0	0
s45	C503.505.506	X	X	X	X	0.01	0.01
s46	C504.507	X	X	X	X	0.022	0.022
s47	R501.502	X	X	X	4.7K	4.7K	4.7K
s48	R503	X	X	X	15K	15K	15K
s49	C502	X	X	X	1/50	1/50	1/50
s50	C552.553	VS57830	VS57830	VS57830	VS57830	VS52920	VS52920
s51	J762	X	0	X	X	X	X
s52	R509	X	V575120	X	X	X	X
s53	C510	X	X	X	X	0.1	0.1
s54	C545~549	X	X	X	X	0.022	0.022
s55	C517.520.523	33P	33P	33P	33P	33P/200	33P/200
s56	C515.516	X	X	X	X	100P	100P
s57	C559.568	22P	22P	22P	22P	5P	5P
s58	C560.569	470P	470P	470P	470P	1000P	1000P
s59	C520	X	X	X	X	0.022	0.022

** All voltage are measured with a 10MΩ/DC electric volt meter.*
** Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.*
** Schematic diagram is subject to change without notice.*

PARTS LIST

■ ELECTRICAL PARTS

■ **WARNING**
Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.

- Carbon resistors (1/6W or 1/4W) are not included in the ELECTRICAL PARTS List. For the parts No. of the carbon resistors, refer to last page.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS :

C.A.EL.CHP	: CHIP ALUMI. ELECTROLYTIC CAP
C.CE	: CERAMIC CAP
C.CE.ARRAY	: CERAMIC CAP ARRAY
C.CE.CHP	: CHIP CERAMIC CAP
C.CE.ML	: MULTILAYER CERAMIC CAP
C.CE.M.CHP	: CHIP MULTILAYER CERAMIC CAP
C.CE.SAFTY	: RECOGNIZED CERAMIC CAP
C.CE.TUBLR	: CERAMIC TUBULAR CAP
C.CE.SMI	: SEMI CONDUCTIVE CERAMIC CAP
C.EL	: ELECTROLYTIC CAP
C.MICA	: MICA CAP
C.ML.FLM	: MULTILAYER FILM CAP
C.MP	: METALLIZED PAPER CAP
C.MYLAR	: MYLAR FILM CAP
C.MYLAR.ML	: MULTILAYER MYLAR FILM CAP
C.PAPER	: PAPER CAPACITOR
C.PLS	: POLYSTYRENE FILM CAP
C.POL	: POLYESTER FILM CAP
C.POLY	: POLYETHYLENE FILM CAP
C.PP	: POLYPROPYLENE FILM CAP
C.TNTL	: TANTALUM CAP
C.TNTL.CHP	: CHIP TANTALUM CAP
C.TRIM	: TRIMMER CAP
CN	: CONNECTOR
CN.BS.PIN	: CONNECTOR, BASE PIN
CN.CANNON	: CONNECTOR, CANNON
CN.DIN	: CONNECTOR, DIN
CN.FLAT	: CONNECTOR, FLAT CABLE
CN.POST	: CONNECTOR, BASE POST
COIL.MX.AM	: COIL, AM MIX
COIL.AT.FM	: COIL, FM ANTENNA
COIL.DT.FM	: COIL, FM DETECT
COIL.MX.FM	: COIL, FM MIX
COIL.OUTPT	: OUTPUT COIL
DIOD.ARRAY	: DIODE ARRAY
DIODE.BRG	: DIODE BRIDGE
DIODE.CHP	: CHIP DIODE
DIODE.VAR	: VARACTOR DIODE
DIOD.Z.CHP	: CHIP ZENER DIODE
DIODE.ZENR	: ZENER DIODE
DSCR.CE	: CERAMIC DISCRIMINATOR
FER.BEAD	: FERRITE BEADS
FER.CORE	: FERRITE CORE
FET.CHP	: CHIP FET
FL.DSPLY	: FLUORESCENT DISPLAY
FLTR.CE	: CERAMIC FILTER
FLTR.COMB	: COMB FILTER MODULE
FLTR.LC.RF	: LC FILTER ,EMI
GND.MTL	: GROUND PLATE
GND.TERM	: GROUND TERMINAL
HOLDER.FUS	: FUSE HOLDER
IC.PRTCT	: IC PROTECTOR
JUMPER.CN	: JUMPER CONNECTOR
JUMPER.TST	: JUMPER, TEST POINT
L.DTCT	: LIGHT DETECTING MODULE
L.EMIT	: LIGHT EMITTING MODULE
LED.DSPLY	: LED DISPLAY
LED.INFRD	: LED, INFRARED
MODUL.RF	: MODULATOR, RF
PHOT.CPL	: PHOTO COUPLER
PHOT.INTR	: PHOTO INTERRUPTER
PHOT.RFLCT	: PHOTO REFLECTOR
PIN.TEST	: PIN, TEST POINT
PLST.RIVET	: PLASTIC RIVET
R.ARRAY	: RESISTOR ARRAY
R.CAR	: CARBON RESISTOR
R.CAR.CHP	: CHIP RESISTOR
R.CAR.FP	: FLAME PROOF CARBON RESISTOR
R.FUS	: FUSABLE RESISTOR
R.MTL.CHP	: CHIP METAL FILM RESISTOR
R.MTL.FLM	: METAL FILM RESISTOR
R.MTL.OXD	: METAL OXIDE FILM RESISTOR
R.MTL.PLAT	: METAL PLATE RESISTOR
RSNR.CE	: CERAMIC RESONATOR
RSNR.CRYS	: CRYSTAL RESONATOR
R.TW.CEM	: TWIN CEMENT FIXED RESISTOR
R.WW	: WIRE WOUND RESISTOR
SCR.BND.HD	: BIND HEAD B-TITE SCREW
SCR.BW.HD	: BW HEAD TAPPING SCREW
SCR.CUP	: CUP TITE SCREW
SCR.TERM	: SCREW TERMINAL
SCR.TR	: SCREW, TRANSISTOR
SUPRT.PCB	: SUPPORT, P.C.B.
SURG.PRTCT	: SURGE PROTECTOR
SW.TACT	: TACT SWITCH
SW.LEAF	: LEAF SWITCH
SW.LEVER	: LEVER SWITCH
SW.MICRO	: MICRO SWITCH
SW.PUSH	: PUSH SWITCH
SW.RT.ENC	: ROTARY ENCODER
SW.RT.MTR	: ROTARY SWITCH WITH MOTOR
SW.RT	: ROTARY SWITCH
SW.SLIDE	: SLIDE SWITCH
TERM.SP	: SPEAKER TERMINAL
TERM.WRAP	: WRAPPING TERMINAL
THRMST.CHP	: CHIP THERMISTOR
TR.CHP	: CHIP TRANSISTOR
TR.DGT	: DIGITAL TRANSISTOR
TR.DGT.CHP	: CHIP DIGITAL TRANSISTOR
TRANS	: TRANSFORMER
TRANS.PULS	: PULSE TRANSFORMER
TRANS.PWR	: POWER TRANSFORMER ASS'y
TUNER.AM	: TUNER PACK, AM
TUNER.FM	: TUNER PACK, FM
TUNER.PK	: FRONT-END TUNER PACK
VR	: ROTARY POTENTIOMETER
VR.MTR	: POTENTIOMETER WITH MOTOR
VR.SW	: POTENTIOMETER WITH ROTARY SW
VR.SLIDE	: SLIDE POTENTIOMETER
VR.TRIM	: TRIMMER POTENTIOMETER

Note) Those parts marked with "#" are not included in the P.C.B. ass'y.

P.C.B. DSP

	Schm Ref.	PART NO.	Description		
*		VS711100	P.C.B.	DSP(UCRA)	
*		VS728000	P.C.B.	DSP(BG)	
	CB1	Vi878700	CN.BS.PIN	9P	
	CB2	VK025100	CN.BS.PIN	7P	
	CB3	Vi878500	CN.BS.PIN	7P	
	CB4	VK025100	CN.BS.PIN	7P	
*	CB5	VR358600	CN.BS.PIN	15P	
	CB6	Vi878500	CN.BS.PIN	7P	
	CB7	VK025100	CN.BS.PIN	7P	
	CB8	VK025300	CN.BS.PIN	9P	
	CB9	Vi878300	CN.BS.PIN	5P	
	CB10	Vi878500	CN.BS.PIN	7P	
	CB11	Vi878700	CN.BS.PIN	9P	
*	CB12	VQ963600	CN.BS.PIN	15P	
	C1	VJ839100	C.EL	1uF	50V
	C2	UA652100	C.MYLAR	100pF	50V(BG)
	C3	UA652220	C.MYLAR	220pF	50V
	C4	UA652100	C.MYLAR	100pF	50V(BG)
	C5	UA652220	C.MYLAR	220pF	50V
	C6	VJ839100	C.EL	1uF	50V
	C7	VK534000	C.PP	220pF	200V
	C8	VK534000	C.PP	220pF	200V
	C11	VG278400	C.CE.TUBLR	220pF	50V
	C12	VG278400	C.CE.TUBLR	220pF	50V
	C13	VG278400	C.CE.TUBLR	220pF	50V
	C14	VG278400	C.CE.TUBLR	220pF	50V
	C15	UA652220	C.MYLAR	220pF	50V
	C16	UA652220	C.MYLAR	220pF	50V
	C17	VG278400	C.CE.TUBLR	220pF	50V
	C18	VG278400	C.CE.TUBLR	220pF	50V
	C19	UA652220	C.MYLAR	220pF	50V
	C20	UA652220	C.MYLAR	220pF	50V
	C21	VG278400	C.CE.TUBLR	220pF	50V
	C22	VG278400	C.CE.TUBLR	220pF	50V
	C23	UA652220	C.MYLAR	220pF	50V
	C24	UA652220	C.MYLAR	220pF	50V
	C25	VJ839200	C.EL	2.2uF	50V
	C26	VE117600	C.EL	220uF	10V
	C27	VJ837200	C.EL	47uF	16V
	C28	UA653910	C.MYLAR	9100pF	50V
	C29	UA654330	C.MYLAR	0.033uF	50V
	C30	UA653910	C.MYLAR	9100pF	50V
	C31	UA654330	C.MYLAR	0.033uF	50V
	C32	VJ837200	C.EL	47uF	16V
	C33	VE117600	C.EL	220uF	10V
	C34	VJ839200	C.EL	2.2uF	50V
	C35	UM417100	C.EL	10uF	50V
	C36	UA652100	C.MYLAR	100pF	50V
	C37	UM417100	C.EL	10uF	50V
	C38	UM417100	C.EL	10uF	50V
	C39	UA652100	C.MYLAR	100pF	50V
	C40	VH053100	C.CE.TUBLR	0.1uF	50V
	C41	VJ839100	C.EL	1uF	50V

* New Parts

Schm Ref.	PART NO.	Description		
C42	UA652100	C.MYLAR	100pF	50V
C43	UA652100	C.MYLAR	100pF	50V
C44	UA652100	C.MYLAR	100pF	50V
C45	UA652100	C.MYLAR	100pF	50V
C46	VJ839100	C.EL	1uF	50V
C47	UA652100	C.MYLAR	100pF	50V
C48	UA655150	C.MYLAR	0.15uF	50V
C49	VJ839100	C.EL	1uF	50V
C50	VJ839100	C.EL	1uF	50V
C51	UM417100	C.EL	10uF	50V
C52	VF466800	C.CE.TUBLR	100pF	50V
C53	VG279600	C.CE.TUBLR	3300pF	16V
C54	UM417100	C.EL	10uF	50V
C55	UM417100	C.EL	10uF	50V
C56	UM417100	C.EL	10uF	50V
C57	VG279600	C.CE.TUBLR	3300pF	16V
C58	VF466800	C.CE.TUBLR	100pF	50V
C59	VG279600	C.CE.TUBLR	3300pF	16V
C60	VJ837200	C.EL	47uF	16V
C61	VJ837200	C.EL	47uF	16V
C62	UM417100	C.EL	10uF	50V
C63	VG278400	C.CE.TUBLR	220pF	50V
C64	VG278400	C.CE.TUBLR	220pF	50V
C65	UM417100	C.EL	10uF	50V
C66	VF964800	C.EL	100uF	16V
C67	VG279600	C.CE.TUBLR	3300pF	16V
C68	UA253330	C.MYLAR	3300pF	50V
C69	UA253120	C.MYLAR	1200pF	50V
C70	UA253100	C.MYLAR	1000pF	50V
C71	FG212150	C.CE	150pF	50V
C72	FG212150	C.CE	150pF	50V
C73	FG212150	C.CE	150pF	50V
C74	FG212150	C.CE	150pF	50V
C75	UA253120	C.MYLAR	1200pF	50V
C76	UA253100	C.MYLAR	1000pF	50V
C77	UA253330	C.MYLAR	3300pF	50V
C78	UM407220	C.EL	22uF	25V
C79	UM407220	C.EL	22uF	25V
C80	UM407220	C.EL	22uF	25V
C81	UM407220	C.EL	22uF	25V
C82	UA652330	C.MYLAR	330pF	50V
C83	UM407220	C.EL	22uF	25V
C84	UM407220	C.EL	22uF	25V
C85	UA652330	C.MYLAR	330pF	50V
C86	UA652330	C.MYLAR	330pF	50V
C87	UM407220	C.EL	22uF	25V
C88	UM407220	C.EL	22uF	25V
C89	VJ839100	C.EL	1uF	50V
C90	VG277000	C.CE.TUBLR	33pF	50V
C91	VG278400	C.CE.TUBLR	220pF	50V
C92	VG279500	C.CE.TUBLR	2700pF	16V
C93	VG278400	C.CE.TUBLR	220pF	50V
C94	VG279500	C.CE.TUBLR	2700pF	16V

* New Parts

P.C.B. DSP

Schm Ref.	PART NO.	Description		
C95	VG277000	C.CE.TUBLR	33pF	50V
C96	VJ839100	C.EL	1uF	50V
C97	VG277000	C.CE.TUBLR	33pF	50V
C98	VG279500	C.CE.TUBLR	2700pF	16V
C99	VF466600	C.CE.TUBLR	10pF	50V
C100	VF466600	C.CE.TUBLR	10pF	50V
C101	VG279500	C.CE.TUBLR	2700pF	16V
C102	VG277000	C.CE.TUBLR	33pF	50V
C103	VH053100	C.CE.TUBLR	0.1uF	50V
C104	VG278400	C.CE.TUBLR	220pF	50V
C105	VH053100	C.CE.TUBLR	0.1uF	50V
C106	VG278400	C.CE.TUBLR	220pF	50V
C107	UA653270	C.MYLAR	2700pF	50V
C108	UM407220	C.EL	22uF	25V
C109	UM407220	C.EL	22uF	25V
C110	UA653270	C.MYLAR	2700pF	50V
C111	VG279600	C.CE.TUBLR	3300pF	16V
C112	VG279600	C.CE.TUBLR	3300pF	16V
C113	VH053100	C.CE.TUBLR	0.1uF	50V
C114	VH053100	C.CE.TUBLR	0.1uF	50V
C115	UJ638330	C.EL	330uF	16V
C116	VH053100	C.CE.TUBLR	0.1uF	50V
C117	VH053100	C.CE.TUBLR	0.1uF	50V
C118	VJ837200	C.EL	47uF	16V
C119	VJ837200	C.EL	47uF	16V
C120	VJ837200	C.EL	47uF	16V
C121	VF964800	C.EL	100uF	16V
C122	VE117600	C.EL	220uF	10V
C123	VJ837200	C.EL	47uF	16V
C124	VH053100	C.CE.TUBLR	0.1uF	50V
C125	VJ837200	C.EL	47uF	16V
C126	VH053100	C.CE.TUBLR	0.1uF	50V
C127	VJ839000	C.EL	0.47uF	50V
C128	VJ839000	C.EL	0.47uF	50V
C129	VJ839200	C.EL	2.2uF	50V
C130	VJ839200	C.EL	2.2uF	50V
C131	VJ839200	C.EL	2.2uF	50V
C132	VF466800	C.CE.TUBLR	100pF	50V
C133	VJ837200	C.EL	47uF	16V
C134	UA652100	C.MYLAR	100pF	50V
C135	UA652100	C.MYLAR	100pF	50V
C136	UM417100	C.EL	10uF	50V
C137	UM215100	C.EL	0.1uF	50V
C138	UM417100	C.EL	10uF	50V
C139	FG211100	C.CE	10pF	50V
C140	VJ837200	C.EL	47uF	16V
C141	UM215100	C.EL	0.1uF	50V
C142	FG212100	C.CE	100pF	50V
C143	UM417100	C.EL	10uF	50V
C144	UM417100	C.EL	10uF	50V
C145	VJ837200	C.EL	47uF	16V
C146	UM215100	C.EL	0.1uF	50V
C147	UM417100	C.EL	10uF	50V

*New Parts

Schm Ref.	PART NO.	Description		
C148	FG211100	C.CE	10pF	50V(UCRA)
C148	FG212100	C.CE	100pF	50V(BG)
C149	VJ837200	C.EL	47uF	16V
C150	VJ837200	C.EL	47uF	16V
C151	UM215100	C.EL	0.1uF	50V
C152	FG211100	C.CE	10pF	50V(UCRA)
C152	FG212100	C.CE	100pF	50V(BG)
C153	VJ837200	C.EL	47uF	16V
C154	UM417100	C.EL	10uF	50V
C155	VF466800	C.CE.TUBLR	100pF	50V(BG)
C156	VF466800	C.CE.TUBLR	100pF	50V(BG)
C157	VJ836900	C.EL	10uF	16V
C158	VJ836900	C.EL	10uF	16V
C159	VJ836900	C.EL	10uF	16V
C160	VF637900	C.EL	1000uF	10V
C161	VF466800	C.CE.TUBLR	100pF	50V
C162	VF637900	C.EL	1000uF	10V
C163	VF466800	C.CE.TUBLR	100pF	50V
C164	VF637900	C.EL	1000uF	10V
C165	VF466800	C.CE.TUBLR	100pF	50V
C166	UM417100	C.EL	10uF	50V
C167	VJ839100	C.EL	1uF	50V
* C168	VG722100	C.EL	1uF	50V
C169	VH053100	C.CE.TUBLR	0.1uF	50V
C170	UM417100	C.EL	10uF	50V
C171	VJ836900	C.EL	10uF	16V(BG)
C172	VJ837200	C.EL	47uF	16V(BG)
C173	VF637900	C.EL	1000uF	10V(BG)
C174	VG276600	C.CE.TUBLR	22pF	50V(BG)
C175	VJ837200	C.EL	47uF	16V(BG)
C176	VF637900	C.EL	1000uF	10V(BG)
C177	VF466800	C.CE.TUBLR	100pF	50V(BG)
C178	VF466800	C.CE.TUBLR	100pF	50V(BG)
C179	VJ836900	C.EL	10uF	16V(BG)
C180	VJ837200	C.EL	47uF	16V(BG)
C181	UM397330	C.EL	33uF	16V(BG)
C182	VG276600	C.CE.TUBLR	22pF	50V(BG)
C183	VJ837200	C.EL	47uF	16V(BG)
C184	UM397330	C.EL	33uF	16V(BG)
C185	VH053100	C.CE.TUBLR	0.1uF	50V
C186	VJ837200	C.EL	47uF	16V
C187	UJ638330	C.EL	330uF	16V
C188	VF467000	C.CE.TUBLR	1000pF	50V
C189	UJ638470	C.EL	470uF	16V
C190	VH053100	C.CE.TUBLR	0.1uF	50V
C191	VJ837200	C.EL	47uF	16V
C192	VH053100	C.CE.TUBLR	0.1uF	50V
D1	VM975000	DIODE.ZENR	HZS9B2TD	9.0V
D2	VM975000	DIODE.ZENR	HZS9B2TD	9.0V
D4	VD631600	DIODE	1SS133,176,HSS104	
D5	VD631600	DIODE	1SS133,176,HSS104	
D6	VD631600	DIODE	1SS133,176,HSS104	
D7	VD631600	DIODE	1SS133,176,HSS104	

*New Parts

P.C.B. DSP & MAIN

Schm Ref.	PART NO.	Description	
D8	VD631600	DIODE	1SS133,176,HSS104
D9	VD631600	DIODE	1SS133,176,HSS104
D10	VD631600	DIODE	1SS133,176,HSS104
D11	VD631600	DIODE	1SS133,176,HSS104
D12	VD631600	DIODE	1SS133,176,HSS104
D13	VM974200	DIODE.ZENR	HZS5C2TD 5.0V
D14	VM974200	DIODE.ZENR	HZS5C2TD 5.0V
D15	VD631600	DIODE	1SS133,176,HSS104
D16	VD631600	DIODE	1SS133,176,HSS104
IC1	XB247301	IC	uPC4570HA
* IC2	XP894A00	IC	LC78211
IC3	XB247301	IC	uPC4570HA
IC4	XB247301	IC	uPC4570HA
IC5	XB247301	IC	uPC4570HA
IC6	iG055100	IC	TC4053BP
IC7	XB247301	IC	uPC4570HA
IC8	XB247301	IC	uPC4570HA
IC9	XB247301	IC	uPC4570HA
IC10	XB247301	IC	uPC4570HA
IC11	XB247301	IC	uPC4570HA
IC12	XB247301	IC	uPC4570HA
IC13	XQ212A00	IC	NJM4558LD
IC14	XB247301	IC	uPC4570HA
IC15	XQ212A00	IC	NJM4558LD
* IC16	XP896A00	IC	LC78213
IC17	Xi022B00	IC	YSS203B-F
IC18	XK358A00	IC	HM65256BLSP-10
IC19	XA507A00	IC	AN78N05
IC20	Xi358A00	IC	NJM2904L
* IC21	XP265A00	IC	BU2090
IC22	XB247301	IC	uPC4570HA
IC23	XB247301	IC	uPC4570HA
IC24	XB247301	IC	uPC4570HA
IC25	XB247301	IC	uPC4570HA
IC26	XE536001	IC	LC7535
IC27	XE536001	IC	LC7535
IC28	XF494A00	IC	LB1641
IC29	XH436A00	IC	LA7956
IC30	iG055100	IC	TC4053BP
IC31	XH436A00	IC	LA7956(BG)
IC32	XH436A00	IC	LA7956(BG)
JK1	VS867300	CN.DIN	4P YKF51-5501(BG)
JK2	VN938100	CN.DIN	3P S(BG)
PJ1	VK421600	JACK.PIN	4P
PJ2	VT029100	JACK.PIN	4P
PJ3	VJ794600	JACK.PIN	6P
PJ4	VT029100	JACK.PIN	4P
PJ5	VS549000	JACK.PIN	3P
PJ6	VJ695900	JACK.PIN	3P
PJ7	VJ695900	JACK.PIN	3P
Q1	iC260320	TR	2SC2603 E,F
Q2	iC260320	TR	2SC2603 E,F
Q3	iA101521	TR	2SA1015 Y(BG)

* New Parts

Schm Ref.	PART NO.	Description	
Q4	iC1815C0	TR	2SC1815 Y(BG)
Q5	iA101521	TR	2SA1015 Y(BG)
Q6	iC1815C0	TR	2SC1815 Y(BG)
Q7	iC260320	TR	2SC2603 E,F
Q8	iC260320	TR	2SC2603 E,F
R35	HV453220	R.CAR.FP	2.2Ω 1/4W
R50	HV453220	R.CAR.FP	2.2Ω 1/4W
R136	HV453220	R.CAR.FP	2.2Ω 1/4W
R137	HL313220	R.MTL.FLM	2.2Ω 1W
R149	HV453220	R.CAR.FP	2.2Ω 1/4W
R150	HV453220	R.CAR.FP	2.2Ω 1/4W
R151	HL314470	R.MTL.OXD	47Ω 1W
R152	HV453220	R.CAR.FP	2.2Ω 1/4W
R184	HV453220	R.CAR.FP	2.2Ω 1/4W
R217	HV453470	R.CAR.FP	4.7Ω 1/4W
R218	HV453470	R.CAR.FP	4.7Ω 1/4W
R219	HV454100	R.CAR.FP	10Ω 1/4W
R221	HV454100	R.CAR.FP	10Ω 1/4W
R242	HV453220	R.CAR.FP	2.2Ω 1/4W
VR1	VQ647000	VR.MTR	A100KΩ (UCRA)
VR1	VS868300	VR.MTR	A100KΩ (BG)
XL1	VK175200	RSNR.CE	11.28MHz
	VB966900	CN	IMSA-6024
	VJ828000	PIN	IMSA-6024-03E
	BB071360	SCR.TERM	8.3x13
*	VR264300	PLATE.GND	
*	VS709400	P.C.B.	MAIN(U)
*	VS709500	P.C.B.	MAIN(C)
*	VS709600	P.C.B.	MAIN(R)
*	VS709700	P.C.B.	MAIN(A)
*	VS710000	P.C.B.	MAIN(G)
*	VT208900	P.C.B.	MAIN(B)
CB501	VK025200	CN.BS.PIN	8P
CB502	VK027100	CN.BS.PIN	12P
CB503	VK026300	CN.BS.PIN	4P
CB504	VK024900	CN.BS.PIN	5P
CB505	VK024700	CN.BS.PIN	3P
CB506	VP206500	HOLDER.FUS	EYF-52BC
CB507	VP206500	HOLDER.FUS	EYF-52BC
CB508	VP206500	HOLDER.FUS	EYF-52BC
CB509	VP206500	HOLDER.FUS	EYF-52BC
CB510	VK025600	CN.BS.PIN	12P
CB511	VP206500	HOLDER.FUS	EYF-52BC(R)
CB512	VP206500	HOLDER.FUS	EYF-52BC(R)
CB513	VP206500	HOLDER.FUS	EYF-52BC
CB514	VP206500	HOLDER.FUS	EYF-52BC(G)
CB515	VP206500	HOLDER.FUS	EYF-52BC(G)
CB516	VG879900	CN.BS.PIN	2P
* CB517	VL766100	CN.JUMPER	4P
CB518	VK024800	CN.BS.PIN	4P

* New Parts

P.C.B. MAIN

	Schm Ref.	PART NO.	Description		
	CB519	VP206500	HOLDER. FUS	EYF-52BC	
	CB520	Vi878200	CN. BS. PIN	4P	
*	CB521	VQ584700	CN. BS. PIN	5P	
*	CB522	VQ584700	CN. BS. PIN	5P	
*	CB523	VQ584800	CN. BS. PIN	6P	
*	CB524	VQ584800	CN. BS. PIN	6P	
	CB525	Vi879000	CN. BS. PIN	12P	
	CB526	Vi878100	CN. BS. PIN	3P	
	CB527	Vi878200	CN. BS. PIN	4P	
	CB528	Vi878200	CN. BS. PIN	4P	
	CB529	LA002110	TERM. WRAP	2P	
	CB530	LA002110	TERM. WRAP	2P	
	CB531	LA002110	TERM. WRAP	2P	
	C501	UM416470	C. EL	4.7uF	50V
	C502	VJ839100	C. EL	1uF	50V(AGB)
	C503	UM417100	C. EL	10uF	50V
	C504	UM417100	C. EL	10uF	50V
	C506	VK399200	C. MYLAR. ML	0.39uF	50V
	C507	UM416470	C. EL	4.7uF	50V
	C508	FG251330	C. CE	33pF	50V
	C509	UA652100	C. MYLAR	100pF	50V
	C510	FG251330	C. CE	33pF	50V
	C511	UA652100	C. MYLAR	100pF	50V
	C512	FG251330	C. CE	33pF	50V
	C513	UM417100	C. EL	10uF	50V
	C514	UA652100	C. MYLAR	100pF	50V
	C516	VK399200	C. MYLAR. ML	0.39uF	50V
	C517	VQ245400	C. PP	33pF	200V(GB)
*	C517	VS696700	C. CE	33pF	500V(UCRA)
	C518	VJ837200	C. EL	47uF	16V
	C519	UA253100	C. MYLAR	1000pF	50V
	C520	VQ245400	C. PP	33pF	200V(GB)
*	C520	VS696700	C. CE	33pF	500V(UCRA)
	C521	VJ837200	C. EL	47uF	16V
	C522	UA253100	C. MYLAR	1000pF	50V
	C523	VQ245400	C. PP	33pF	200V(GB)
*	C523	VS696700	C. CE	33pF	500V(UCRA)
	C524	VJ837200	C. EL	47uF	16V
	C525	UA253100	C. MYLAR	1000pF	50V
*	C526	VR325000	C. MYLAR	100pF	100V
	C527	UJ667470	C. EL	47uF	50V
	C528	UJ667470	C. EL	47uF	50V
*	C529	VR325000	C. MYLAR	100pF	100V
	C530	VK699400	C. EL	330uF	63V
*	C531	VR325000	C. MYLAR	100pF	100V
	C532	UJ667470	C. EL	47uF	50V
	C533	UJ667470	C. EL	47uF	50V
*	C534	VR325000	C. MYLAR	100pF	100V
*	C535	VR325000	C. MYLAR	100pF	100V
	C536	UJ667470	C. EL	47uF	50V
	C537	UJ667470	C. EL	47uF	50V
*	C538	VR325000	C. MYLAR	100pF	100V
	C539	VJ836900	C. EL	10uF	16V

* New Parts

	Schm Ref.	PART NO.	Description		
	C540	VJ839200	C. EL	2.2uF	50V
	C541	VJ839100	C. EL	1uF	50V
	C542	UA654680	C. MYLAR	0.068uF	50V
	C543	UA654680	C. MYLAR	0.068uF	50V
	C544	UA654680	C. MYLAR	0.068uF	50V
	C545	UA654100	C. MYLAR	0.01uF	50V(GB)
	C546	UA654220	C. MYLAR	0.022uF	50V(GB)
	C547	UA654220	C. MYLAR	0.022uF	50V(GB)
	C548	UA654220	C. MYLAR	0.022uF	50V(GB)
	C549	UA654220	C. MYLAR	0.022uF	50V(GB)
	C550	UA654100	C. MYLAR	0.01uF	50V(GB)
	C551	UA654100	C. MYLAR	0.01uF	50V(GB)
*	C552	VS529200	C. EL	10000uF	63V(GB)
*	C552	VS578300	C. EL	10000uF	63V(UCRA)
*	C553	VS529200	C. EL	10000uF	63V(GB)
*	C553	VS578300	C. EL	10000uF	63V(UCRA)
	C554	UA654100	C. MYLAR	0.01uF	50V(GB)
	C555	UA654100	C. MYLAR	0.01uF	50V(GB)
*	C556	VS745400	C. POL. MT	0.1uF	100V
*	C557	VS745400	C. POL. MT	0.1uF	100V
	C558	VJ837200	C. EL	47uF	16V
	C559	FG210500	C. CE	5pF	50V(GB)
	C559	FG251220	C. CE	22pF	50V(UCRA)
	C560	UA253100	C. MYLAR	1000pF	50V(GB)
	C560	UA652470	C. MYLAR	470pF	50V(UCRA)
	C561	VJ837200	C. EL	47uF	16V
	C562	UM417100	C. EL	10uF	50V
	C563	UM417100	C. EL	10uF	50V
	C564	VJ839000	C. EL	0.47uF	50V
	C565	VJ839000	C. EL	0.47uF	50V
	C566	UM417100	C. EL	10uF	50V
	C567	VJ837200	C. EL	47uF	16V
	C568	FG210500	C. CE	5pF	50V(GB)
	C568	FG251220	C. CE	22pF	50V(UCRA)
	C569	UA253100	C. MYLAR	1000pF	50V(GB)
	C569	UA652470	C. MYLAR	470pF	50V(UCRA)
	C570	VJ837200	C. EL	47uF	16V
	C571	UJ648470	C. EL	470uF	25V
*	C572	VR325000	C. MYLAR	100pF	100V
	C573	UA654100	C. MYLAR	0.01uF	50V
	C574	VF466800	C. CE. TUBLR	100pF	50V
*	C575	VR325000	C. MYLAR	100pF	100V
*	C576	VR325000	C. MYLAR	100pF	100V
	C577	UA654100	C. MYLAR	0.01uF	50V
	C578	UM417100	C. EL	10uF	50V
	C579	VF466800	C. CE. TUBLR	100pF	50V
*	C580	VR325000	C. MYLAR	100pF	100V
	C581	Ui377470	C. EL	47uF	63V(R)
	C581	UJ667470	C. EL	47uF	50V(C)
	C582	FG213100	C. CE	1000pF	50V(CR)
	C583	UA655100	C. MYLAR	0.1uF	50V(UCGB)
	C584	UA654470	C. MYLAR	0.047uF	50V
	C585	FG214100	C. CE	0.01uF	50V

* New Parts

P.C.B. MAIN

	Schm Ref.	PART NO.	Description	
	C586	UA654100	C.MYLAR	0.01uF 50V
	C587	VL544800	C.EL	3300uF 35V
	C588	VG289900	C.EL	2200uF 35V
	C589	UM416470	C.EL	4.7uF 50V
	C590	VS741700	C.CE.SAFTY	0.01uF 275V
*	C591	VS745400	C.POL.MT	0.1uF 100V
*	C592	VS745400	C.POL.MT	0.1uF 100V
	C593	UJ667470	C.EL	47uF 50V
	C594	VJ839000	C.EL	0.47uF 50V
	C595	VJ837200	C.EL	47uF 16V
	C596	VF466900	C.CE.TUBLR	470pF 50V
	C597	VF466900	C.CE.TUBLR	470pF 50V
	C598	VF466900	C.CE.TUBLR	470pF 50V
	C599	VF466900	C.CE.TUBLR	470pF 50V
	C600	VF466900	C.CE.TUBLR	470pF 50V
	C601	UA654470	C.MYLAR	0.047uF 50V
	C602	VJ839000	C.EL	0.47uF 50V
	C603	UA654100	C.MYLAR	0.01uF 50V(GB)
	C604	UA654220	C.MYLAR	0.022uF 50V(GB)
	C605	UA654100	C.MYLAR	0.01uF 50V(GB)
	C606	UA654100	C.MYLAR	0.01uF 50V(GB)
	C607	UA654220	C.MYLAR	0.022uF 50V(GB)
	C610	VH053100	C.CE.TUBLR	0.1uF 50V(GB)
	C615	VF466800	C.CE.TUBLR	100pF 50V(GB)
	C616	VF466800	C.CE.TUBLR	100pF 50V(GB)
	C620	FG244220	C.CE	0.022uF 50V(GB)
	D501	VM976300	DIODE.ZENR	HZS242TD 24V
	D502	VM976300	DIODE.ZENR	HZS242TD 24V
	D503	VM974500	DIODE.ZENR	HZS6C2TD 6.0V
	D504	VD631600	DIODE	1SS133,176,HSS104
	D505	VM974400	DIODE.ZENR	HZS6B2TD 6.0V
	D506	VN008700	DIODE	1SS270A
	D507	VN008700	DIODE	1SS270A
	D508	VN008700	DIODE	1SS270A
	D509	VD631600	DIODE	1SS133,176(C)
⚠	D510	VN011400	DIODE.BRG	D5SB20 5A 200V
	D511	VM975800	DIODE.ZENR	HZS152TD 15V
	D512	VM976300	DIODE.ZENR	HZS242TD 24V
	D513	VD631600	DIODE	1SS133,176,HSS104
	D514	VM976300	DIODE.ZENR	HZS242TD 24V
	D515	VM975800	DIODE.ZENR	HZS152TD 15V
	D516	VD631600	DIODE	1SS133,176,HSS104
	D517	VD631600	DIODE	1SS133,176,HSS104
	D518	VD631600	DIODE	1SS133,176,HSS104
	D519	VD631600	DIODE	1SS133,176,HSS104
	D520	VM975600	DIODE.ZENR	HZS12B2TD 12V(CR)
⚠	D521	VR253700	DIODE.BRG	S1NB20 1.0A 200V
	D522	VM976300	DIODE.ZENR	HZS242TD 24V
⚠	D523	VN011300	DIODE.BRG	D3SBA20 4A 200V
	D524	VM975700	DIODE.ZENR	HZS12C2TD 12V
⚠	F501	KB000790	FUSE	T4.0A 250V(AGB)
⚠	F501	VS822900	FUSE	T4.0A 125V(UCR)
⚠	F502	KB000790	FUSE	T4.0A 250V(AGB)

* New Parts

	Schm Ref.	PART NO.	Description	
⚠	F502	VS822900	FUSE	T4.0A 125V(UCR)
⚠	F503	KB002980	FUSE	T2.5A 250V(G)
⚠	F504	KB000760	FUSE	T3.15A 250V(R)
⚠	F505	KB000760	FUSE	T3.15A 250V(AGB)
⚠	F505	VP909900	FUSE	T7.0A 125V(UCR)
	IC501	iG092000	IC	M5220L
	IC502	XD343A00	IC	NJM79M12FA
	JK501	LB301720	JACK.PHONE	
⚠	JK502	VK480600	OUTLET.AC	(UCR)
⚠	JK502	VK480700	OUTLET.AC	(G)
*	L501	VR906600	COIL	0.95uH
*	L502	VR906600	COIL	0.95uH
*	L503	VP575600	COIL	1.5uH
*	L504	VP575600	COIL	1.5uH
*	L505	VP575600	COIL	1.5uH
	PJ501	VR245000	JACK.PIN	6P
	Q501	VK432900	TR	2SD1915F S,T(AGB)
	Q502	VK432900	TR	2SD1915F S,T
	Q503	VK432900	TR	2SD1915F S,T(AGB)
	Q504	VK432900	TR	2SD1915F S,T
	Q505	VK432900	TR	2SD1915F S,T
	Q506	iA101521	TR	2SA1015 Y
*	Q507	VP883000	TR	2SA893A D,E
*	Q508	VP883000	TR	2SA893A D,E
*	Q509	VP883000	TR	2SA893A D,E
	Q510	iC224030	TR	2SC2240 GR,BL
*	Q511	VP883000	TR	2SA893A D,E
*	Q512	VP883000	TR	2SA893A D,E
*	Q513	VP883000	TR	2SA893A D,E
	Q514	VC218900	TR	2SC3330 R,S,T
*	Q515	VR325600	TR	2SC2229 O,Y
	Q516	VC218900	TR	2SC3330 R,S,T
*	Q517	VR325600	TR	2SC2229 O,Y
	Q518	VC218900	TR	2SC3330 R,S,T
*	Q519	VR325600	TR	2SC2229 O,Y
	Q520	iD040040	TR	2SD400
	Q521	iA093320	TR	2SA933S Q,R
	Q522A	iX603580	TR	2SA1358
	Q522C	iX603590	TR	2SC3421
#	Q523A	iX606460	TR	2SA1492 O,P,Y
#	Q523C	iX606470	TR	2SC3856 O,P,Y
	Q526A	iX603580	TR	2SA1358
	Q526C	iX603590	TR	2SC3421
#	Q527A	iX606460	TR	2SA1492 O,P,Y
#	Q527C	iX606470	TR	2SC3856 O,P,Y
	Q530A	iX603580	TR	2SA1358
	Q530C	iX603590	TR	2SC3421
#	Q531A	iX633340	TR	2SA1695 O,P,Y
#	Q531C	iX633350	TR	2SC4468 O,P,Y
	Q534	iA097000	TR	2SA970 GR,BL
*	Q535	VP883100	TR	2SC1890A D,E
*	Q536	VP883100	TR	2SC1890A D,E
*	Q537	VP883100	TR	2SC1890A D,E

* New Parts

P.C.B. MAIN

	Schm Ref.	PART NO.	Description		
	Q538	VK432900	TR	2SD1915F S,T	
	Q539	VK432900	TR	2SD1915F S,T	
	Q540	iC1815C0	TR	2SC1815 Y	
	Q541	iA101521	TR	2SA1015 Y	
	Q542	VC218900	TR	2SC3330 R,S,T	
	Q543A	iX619590	TR	2SA1726 O,P,Y	
	Q543C	iX619600	TR	2SC4512 O,P,Y	
*	Q544	VP872700	TR	2SC4488 S,T	
*	Q545	VP872600	TR	2SA1708 S,T	
	Q546	iC224030	TR	2SC2240 GR,BL	
	Q548A	iX619590	TR	2SA1726 O,P,Y	
	Q548C	iX619600	TR	2SC4512 O,P,Y	
*	Q549	VP872700	TR	2SC4488 S,T	
*	Q550	VP872600	TR	2SA1708 S,T	
	Q551	iC224030	TR	2SC2240 GR,BL	
	Q553	VR510800	TR	2SD2396 J,K(CR)	
	Q555	iC224030	TR	2SC2240 GR,BL	
	Q556	iC224030	TR	2SC2240 GR,BL	
	Q557	VN996900	TR	2SC4495	
	Q558	iE000020	FET	2SK30ATM GR	
	Q559	VK432900	TR	2SD1915F S,T	
	Q560	VK432900	TR	2SD1915F S,T	
	Q561	VK432900	TR	2SD1915F S,T	
	R517	HV456100	R.CAR.FP	1KΩ 1/4W	
	R531	HV455150	R.CAR.FP	150Ω 1/4W	
*	R553	HL316560	R.MTL.OXD	5.6KΩ 1W	
*	R554	HL316560	R.MTL.OXD	5.6KΩ 1W	
	R555	HV456270	R.CAR.FP	2.7KΩ 1/4W	
	R557	HV455820	R.CAR.FP	820Ω 1/4W	
	R558	VK189000	R.FUS	1KΩ 1/4W	
	R559	HV454470	R.CAR.FP	47Ω 1/4W	
	R560	HL314100	R.MTL.OXD	10Ω 1W	
*	R561	HL316560	R.MTL.OXD	5.6KΩ 1W	
*	R562	HL316560	R.MTL.OXD	5.6KΩ 1W	
	R563	HV456270	R.CAR.FP	2.7KΩ 1/4W	
	R565	HV455820	R.CAR.FP	820Ω 1/4W	
	R566	VK189000	R.FUS	1KΩ 1/4W	
	R567	HV454470	R.CAR.FP	47Ω 1/4W	
*	R568	HL316560	R.MTL.OXD	5.6KΩ 1W	
*	R569	HL316560	R.MTL.OXD	5.6KΩ 1W	
	R570	HV456270	R.CAR.FP	2.7KΩ 1/4W	
	R572	HV455820	R.CAR.FP	820Ω 1/4W	
	R573	VK189000	R.FUS	1KΩ 1/4W	
	R574	HV454470	R.CAR.FP	47Ω 1/4W	
	R580	HV453470	R.CAR.FP	4.7Ω 1/4W	
	R581	VK188400	R.FUS	330Ω 1/4W	
	R582	VJ695400	R.WW	0.22Ωx2 3W	
	R583	HV453470	R.CAR.FP	4.7Ω 1/4W	
	R584	HV453470	R.CAR.FP	4.7Ω 1/4W	
	R585	VK188400	R.FUS	330Ω 1/4W	
	R586	VJ695400	R.WW	0.22Ωx2 3W	
	R587	HV453470	R.CAR.FP	4.7Ω 1/4W	
	R588	HV453470	R.CAR.FP	4.7Ω 1/4W	

* New Parts

	Schm Ref.	PART NO.	Description		
	R589	VK188400	R.FUS	330Ω 1/4W	
*	R590	HZ003780	R.MTL.PLAT	0.22Ω+0.22 5W	
	R591	HV453470	R.CAR.FP	4.7Ω 1/4W	
	R598	HL314100	R.MTL.OXD	10Ω 1W	
	R603	HL314100	R.MTL.OXD	10Ω 1W	
	R609	HL314100	R.MTL.OXD	10Ω 1W	
	R611	HV454100	R.CAR.FP	10Ω 1/4W	
	R613	HV454100	R.CAR.FP	10Ω 1/4W	
	R614	VP944500	R.MTL.OXD	390Ω 1W	
	R615	VP944500	R.MTL.OXD	390Ω 1W	
	R633	HV455390	R.CAR.FP	390Ω 1/4W	
	R640	HV455390	R.CAR.FP	390Ω 1/4W	
	R643	HV455330	R.CAR.FP	330Ω 1/4W	
	R644	VE869300	R.MTL.OXD	0.1Ω 2W	
	R648	HV454220	R.CAR.FP	22Ω 1/4W	
	R649	HV454470	R.CAR.FP	47Ω 1/4W	
	R650	HV455330	R.CAR.FP	330Ω 1/4W	
	R652	VE869300	R.MTL.OXD	0.1Ω 2W	
	R655	HV454220	R.CAR.FP	22Ω 1/4W	
	R656	HV454470	R.CAR.FP	47Ω 1/4W	
	R657	HV454560	R.CAR.FP	56Ω 1/4W(C)	
	R657	HV456560	R.CAR.FP	5.6KΩ 1/4W(R)	
	R658	HV454560	R.CAR.FP	56Ω 1/4W(C)	
	R658	HV456560	R.CAR.FP	5.6KΩ 1/4W(R)	
	R661	HV456150	R.CAR.FP	1.5KΩ 1/4W	
	R662	HV456220	R.CAR.FP	2.2KΩ 1/4W	
	R666	HV456150	R.CAR.FP	1.5KΩ 1/4W	
	R667	HV456220	R.CAR.FP	2.2KΩ 1/4W	
	R668	HV453220	R.CAR.FP	2.2Ω 1/4W	
	R670	HV454100	R.CAR.FP	10Ω 1/4W	
	R671	HL313220	R.MTL.FLM	2.2Ω 1W	
	R672	HV455150	R.CAR.FP	150Ω 1/4W	
	R673	HL313220	R.MTL.FLM	2.2Ω 1W	
	R674	HV453220	R.CAR.FP	2.2Ω 1/4W	
	R687	HV454100	R.CAR.FP	10Ω 1/4W	
	R688	HV453220	R.CAR.FP	2.2Ω 1/4W	
	R689	HV454100	R.CAR.FP	10Ω 1/4W	
	R690	HL325470	R.MTL.OXD	470Ω 2W	
	R700	HL325470	R.MTL.OXD	470Ω 2W	
	RY501	VK438300	RELAY	DH24D2-OTM-	
	RY502	VS533600	RELAY	DC DH24D2-OS(M)II	
	RY503	VH230800	RELAY	G5P-1-DC12V	
	RY504	VT243100	RELAY	DC DH12D2-O(C)	
	SW501	VJ850200	SW.PUSH	PSE021A2KP 2	
*	SW502	VS602600	SW.SLIDE	SS070-P022 A(ABG)	
*	SW503	VS602600	SW.SLIDE	SS070-P022 A(C)	
⚠	SW511	VA961800	VOLT.SELCT	ESE-37247-F(R)	
⚠	T501	XC082A00	TRANS.PWR	(R)	
⚠	T501	XC083A00	TRANS.PWR	(U)	
⚠	T501	XC084A00	TRANS.PWR	(AGB)	
⚠*	T501	XQ519A00	TRANS.PWR	(C)	
	TE501	VC313700	TERM.SP	8P(UCR)	
	TE501	VK506200	TERM.SP	8P(AGB)	

* New Parts

P.C.B. MAIN & OPERATION

	Schm Ref.	PART NO.	Description	
*	TE502	VS578600	TERM. SP	8P
		VJ828000	PIN	IMSA-6024-03E
*		VS605900	HEAT. SINK	DPS15-45(R)
*		VS606000	HEAT. SINK	DPS35-45
		BB071360	SCR. TERM	8.3x13
*		VR264300	PLATE. GND	
		EP630280	SCR. BND. HD	3x10 FCRM3-BL
		LA000280	TERM. LUG	1P(GB)
*		VS710600	P. C. B.	OPERATION(UC)
*		VS710700	P. C. B.	OPERATION(R)
*		VS710800	P. C. B.	OPERATION(A)
*		VS727800	P. C. B.	OPERATION(BG)
*	CB901	VR362200	CN. BS. PIN	15P
	CB902	Vi879000	CN. BS. PIN	12P
	CB903	Vi878700	CN. BS. PIN	9P
	CB904	Vi878600	CN. BS. PIN	8P
	CB905	VR361200	CN. BS. PIN	5P(BG)
	C901	VJ839200	C. EL	2.2uF 50V
	C902	VJ837200	C. EL	47uF 16V
	C903	UA652100	C. MYLAR	100pF 50V
	C904	VJ839200	C. EL	2.2uF 50V
	C905	VJ839200	C. EL	2.2uF 50V
	C906	UA652100	C. MYLAR	100pF 50V
	C907	VJ837200	C. EL	47uF 16V
	C908	VR357400	C. EL	4700uF 5.5V
	C909	VH053100	C. CE. TUBLR	0.1uF 50V
	C910	VF637900	C. EL	1000uF 10V
	C911	UM407220	C. EL	22uF 25V
	C912	UA655120	C. MYLAR	0.12uF 50V
	C913	UA655120	C. MYLAR	0.12uF 50V
	C914	UM407220	C. EL	22uF 25V
	C915	VJ839000	C. EL	0.47uF 50V
	C916	VH053100	C. CE. TUBLR	0.1uF 50V
	C917	UA654330	C. MYLAR	0.033uF 50V
	C918	VJ839000	C. EL	0.47uF 50V
	C919	VJ839000	C. EL	0.47uF 50V
	C920	UA654330	C. MYLAR	0.033uF 50V
	C921	UM407220	C. EL	22uF 25V
	C922	UM407220	C. EL	22uF 25V
	C923	VH053100	C. CE. TUBLR	0.1uF 50V
	C924	VJ837200	C. EL	47uF 16V
	D901	VM974300	DIODE. ZENR	HZS6A2TD 6.0V
	D902	VM974100	DIODE. ZENR	HZS5B2TD 5.0V
	D903	VD631600	DIODE	1SS133, 176, HSS104
	D904	VD631600	DIODE	1SS133, 176, HSS104
	D905	VD631600	DIODE	1SS133, 176, HSS104
	D906	VP594000	LED(re)	SLR-305VCA47(BG)
	D907	VN008700	DIODE	1SS270A
	D908	VN008700	DIODE	1SS270A
	D909	VN008700	DIODE	1SS270A

* New Parts

Schm Ref.	PART NO.	Description	
D910	VN008700	DIODE	1SS270A
D911	VN008700	DIODE	1SS270A
D912	VN008700	DIODE	1SS270A
D913	VN008700	DIODE	1SS270A
D914	VN008700	DIODE	1SS270A
D915	VN008700	DIODE	1SS270A
D916	VN008700	DIODE	1SS270A
D917	VN008700	DIODE	1SS270A(BG)
D918	VD631600	DIODE	1SS133, 176, HSS104
G901	VR463400	TERM. GND	D3.5 TP00385
IC901	XB247301	IC	uPC4570HA
IC902	XB247301	IC	uPC4570HA
IC903	XQ087A00	IC	M38102M4-621SP
Q901	VD678500	TR. DGT	DTA114ES
Q902	iC174020	TR	2SC1740S R, S
Q903	VG722000	TR. DGT	DTC144ES
Q904	VD678500	TR. DGT	DTA114ES(BG)
R936	HV455100	R. CAR. FP	100Ω 1/4W
R939	HV455100	R. CAR. FP	100Ω 1/4W
SW901	VG392900	SW. TACT	SKHVAA
SW902	VG392900	SW. TACT	SKHVAA
SW903	VG392900	SW. TACT	SKHVAA
SW904	VG392900	SW. TACT	SKHVAA
SW905	VG392900	SW. TACT	SKHVAA
SW906	VG392900	SW. TACT	SKHVAA
SW907	VG392900	SW. TACT	SKHVAA
SW908	VG392900	SW. TACT	SKHVAA
SW909	VG392900	SW. TACT	SKHVAA
SW910	VG392900	SW. TACT	SKHVAA
SW911	VG392900	SW. TACT	SKHVAA
SW912	VG392900	SW. TACT	SKHVAA
SW913	VG392900	SW. TACT	SKHVAA
SW914	VG392900	SW. TACT	SKHVAA
SW915	VG392900	SW. TACT	SKHVAA
SW916	VG392900	SW. TACT	SKHVAA
SW917	VG392900	SW. TACT	SKHVAA
SW918	VG392900	SW. TACT	SKHVAA
SW919	VG392900	SW. TACT	SKHVAA
SW920	VG392900	SW. TACT	SKHVAA
SW921	VG392900	SW. TACT	SKHVAA
SW922	VG392900	SW. TACT	SKHVAA
SW923	VG392900	SW. TACT	SKHVAA
SW924	VG392900	SW. TACT	SKHVAA
SW925	VG392900	SW. TACT	SKHVAA
SW926	VG392900	SW. TACT	SKHVAA
SW927	VG392900	SW. TACT	SKHVAA
SW928	VG392900	SW. TACT	SKHVAA
SW929	VG392900	SW. TACT	SKHVAA
SW930	VG392900	SW. TACT	SKHVAA
SW931	VG392900	SW. TACT	SKHVAA
SW932	VG392900	SW. TACT	SKHVAA
SW933	VG392900	SW. TACT	SKHVAA
SW934	VG392900	SW. TACT	SKHVAA

* New Parts

P.C.B. OPERATION & TUNER

	Schm Ref.	PART NO.	Description	
	SW935	VG392900	SW. TACT	SKHVAA
	SW936	VG392900	SW. TACT	SKHVAA
	SW937	VG392900	SW. TACT	SKHVAA
	SW938	VG392900	SW. TACT	SKHVAA
	SW939	VG392900	SW. TACT	SKHVAA
	SW940	VG392900	SW. TACT	SKHVAA
	SW941	VG392900	SW. TACT	SKHVAA(BG)
	SW942	VG392900	SW. TACT	SKHVAA(BG)
	SW943	VG392900	SW. TACT	SKHVAA(BG)
*	U901	VR023400	L. DETCT	SPS-424-1
*	VR901	VP741800	VR	B20KΩ
*	VR902	VP741900	VR	G25KΩ
*	VR903	VP742000	VR	MN50KΩ
*	V901	VS550600	FL. DSPLY	13-BT-137GK
	XL901	VE906000	RSNR. CE	4MHz
		VJ828000	PIN	IMSA-6024-03E
*		VR380100	SPACER	FL-T6
*		VR011400	SHEET. FL	
		VR341800	P. C. B.	TUNER(UC)
		VR341900	P. C. B.	TUNER(R)
		VR342000	P. C. B.	TUNER(AB)
		VR384100	P. C. B.	TUNER(G)
	CB1	VR428700	CN. BS. PIN	2P
	CB2	VR428700	CN. BS. PIN	2P
*	CB4	VQ961800	CN. BS. PIN	15P
*	CB6	VR357600	CN. BS. PIN	5P
	C1	UJ638330	C. EL	330uF 16V
	C2	VG280100	C. CE. TUBLR	0.022uF 25V
	C3	VJ599000	C. CE. TUBLR	0.047uF 16V
	C4	VJ836900	C. EL	10uF 16V
	C5	VF467300	C. CE. TUBLR	0.01uF 16V
	C6	VF964800	C. EL	100uF 16V
	C7	VJ839100	C. EL	1uF 50V
	C8	VF467300	C. CE. TUBLR	0.01uF 16V
	C9	VF467300	C. CE. TUBLR	0.01uF 16V
	C10	VF467300	C. CE. TUBLR	0.01uF 16V
	C11	VF467000	C. CE. TUBLR	1000pF 50V
	C12	VJ836900	C. EL	10uF 16V
	C13	VJ836900	C. EL	10uF 16V
	C14	VF467000	C. CE. TUBLR	1000pF 50V
	C15	VF467000	C. CE. TUBLR	1000pF 50V
	C16	VF466700	C. CE. TUBLR	47pF 50V
	C17	VF964800	C. EL	100uF 16V
	C18	UA655100	C. MYLAR	0.1uF 50V
	C19	VA761200	C. CE	33pF 50V
	C20	VJ836900	C. EL	10uF 16V
	C21	VF466800	C. CE. TUBLR	100pF 50V(UCRAB)
	C22	VJ839200	C. EL	2.2uF 50V
	C23	VF467300	C. CE. TUBLR	0.01uF 16V
	C24	UM416470	C. EL	4.7uF 50V

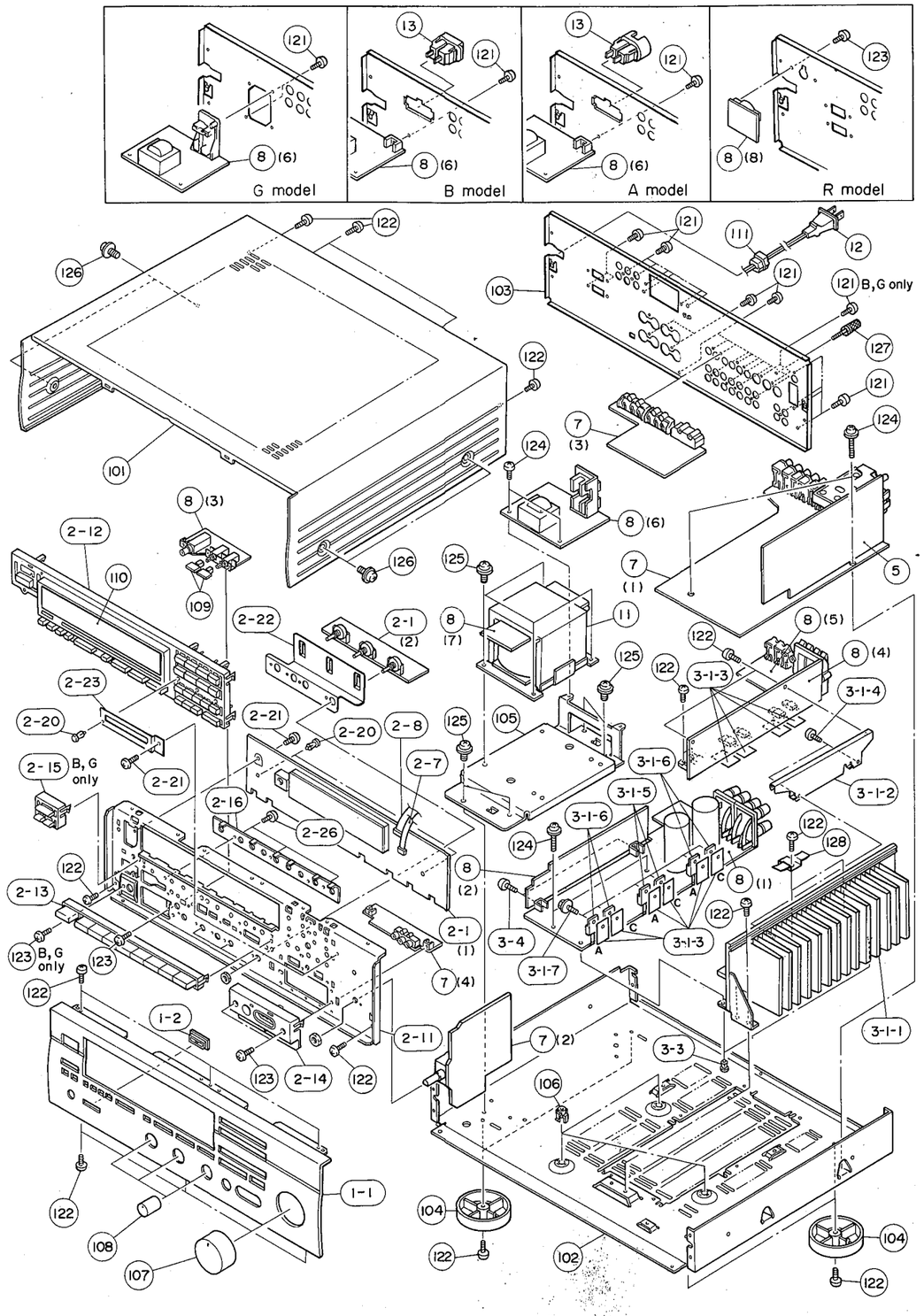
	Schm Ref.	PART NO.	Description	
	C25	UM216330	C. EL	3.3uF 50V
	C26	VJ836900	C. EL	10uF 16V
	C27	VF467300	C. CE. TUBLR	0.01uF 16V
	C28	VA761200	C. CE	33pF 50V
	C29	VJ839100	C. EL	1uF 50V
	C30	VJ839100	C. EL	1uF 50V
	C31	VJ836900	C. EL	10uF 16V
	C32	VJ839000	C. EL	0.47uF 50V
	C33	VJ839100	C. EL	1uF 50V
	C34	UA654470	C. MYLAR	0.047uF 50V
*	C35	VD916400	C. EL	2.2uF 50V
	C36	UA652470	C. MYLAR	470pF 50V(AB)
	C36	UA652680	C. MYLAR	680pF 50V(UCR)
	C36	UT452390	C. PP	390pF 100V(G)
	C37	UA652470	C. MYLAR	470pF 50V(AB)
	C37	UA652680	C. MYLAR	680pF 50V(UCR)
	C37	UT452390	C. PP	390pF 100V(G)
	C38	VF466900	C. CE. TUBLR	470pF 50V
	C39	VJ836900	C. EL	10uF 16V
	C40	UM216330	C. EL	3.3uF 50V
	C41	UA653390	C. MYLAR	3900pF 50V
	C42	VJ836900	C. EL	10uF 16V
	C43	UA653390	C. MYLAR	3900pF 50V
	C44	UM216330	C. EL	3.3uF 50V
	C49	VJ599000	C. CE. TUBLR	0.047uF 16V
	C50	VJ836900	C. EL	10uF 16V(G)
	C51	VJ836900	C. EL	10uF 16V(G)
	C52	UM416470	C. EL	4.7uF 50V(G)
	C53	VG280100	C. CE. TUBLR	0.022uF 25V(G)
	C54	VF467300	C. CE. TUBLR	0.01uF 16V(G)
	C55	VJ836900	C. EL	10uF 16V(G)
	C56	VG278600	C. CE. TUBLR	330pF 50V(G)
	C57	VG278600	C. CE. TUBLR	330pF 50V(G)
	C58	VF467300	C. CE. TUBLR	0.01uF 16V(G)
	C59	UM407220	C. EL	22uF 25V(G)
	C60	VG279600	C. CE. TUBLR	3300pF 16V(G)
	C61	VG279600	C. CE. TUBLR	3300pF 16V(G)
	C62	UM416470	C. EL	4.7uF 50V(G)
	C63	VJ599000	C. CE. TUBLR	0.047uF 16V(G)
	C64	VG279900	C. CE. TUBLR	6800pF 16V(G)
	C65	VF467300	C. CE. TUBLR	0.01uF 16V(G)
	C66	VJ837200	C. EL	47uF 16V(G)
	C67	VJ599000	C. CE. TUBLR	0.047uF 16V(G)
	C68	VJ836900	C. EL	10uF 16V
	C69	VJ836900	C. EL	10uF 16V
	C70	VG278800	C. CE. TUBLR	560pF 50V(G)
	C71	VA777400	C. CE	120pF 50V(G)
	D1	VD631600	DIODE	1SS133, 176, HSS104
	D2	VD631600	DIODE	1SS133, 176, HSS104
	D3	VM974500	DIODE. ZENR	HZS6C2TD 6.0V
	Fi1	GG000560	FLTR. CE	SFE10.7MS3GHY-A
	Fi2	GG000560	FLTR. CE	SFE10.7MS3GHY-A
	Fi3	VC219000	FLTR. CE	SFZ450JL3

P.C.B. TUNER

	Schm Ref.	PART NO.	Description	
	IC1	XB760A00	IC	LA1266
	IC2	XB818A00	IC	LM7000N
	IC3	iG158100	IC	LA3401
	IC4	XL801A00	IC	LA2232(G)
	IC5	XL802A00	IC	LC7073(G)
	L1	Vi546100	COIL	220uH
	L2	Vi546100	COIL	220uH
	L3	Vi546100	COIL	220uH
	L6	Vi546100	COIL	220uH
*	PK1	VQ987600	TUNER. PK	EXV-17296G1(G)
*	PK1	VR242200	TUNER. PK	EXV-17296G1(UCRAB)
	PK2	Vi027300	COIL. AM	
	Q1	iC053540	TR	2SC535 A, B, C
	Q2	VC218900	TR	2SC3330 R, S, T
	Q3	VC218900	TR	2SC3330 R, S, T
	Q4	iC053540	TR	2SC535 A, B, C
	Q5	VC218700	TR	2SA1317 R, S, T
	Q6	VC218900	TR	2SC3330 R, S, T
	Q7	iC1815C0	TR	2SC1815 Y(UCRAB)
	Q7	iD040040	TR	2SD400(G)
	Q8	VC218900	TR	2SC3330 R, S, T(G)
	SW1	VF541200	SW. SLIDE	SSSF11(R)
	T1	VC218600	COIL. DT. FM	10.7MHz
	T2	GE100470	COIL. IF. AM	450KHz
*	T3	VQ365700	FLTR. LP	FB-7SG(G)
*	T4	VQ138200	FLTR. LC	19KHz
*	T5	VQ138200	FLTR. LC	19KHz
	TE1	LA005800	TERM. ANT	YKD31-0215
	TP1	LA004120	PIN. TEST	
	TP2	LA004120	PIN. TEST	
	TP3	VL448600	JUMPER. TST	(G)
	VR1	VJ694000	VR. TRIM	B47KΩ
	VR2	VJ694000	VR. TRIM	B47KΩ
	VR3	VJ693400	VR. TRIM	B4.7KΩ(G)
	XL1	QU003800	RSNR. CRYS	7.2MHz
	XL2	GG000750	RSNR. CE	18.95MHz
	XL3	VP602300	RSNR. CE	19KHz(G)
	XL4	VE906000	RSNR. CE	4MHz(G)
		BB071360	SCR. TERM	8.3x13
*		VR282500	PLATE	ANT.

* New Parts

■ EXPLODED VIEW



■ MECHANICAL PARTS

	Ref. No.	PART NO.	Description		Remarks	Markets
*	1- 1	VT003800	FRONT PANEL		RX-V590	(UCRA)
*	1- 1	VT003900	FRONT PANEL		RX-V590RDS	(BG)
*	1- 1	VT004000	FRONT PANEL		R-V901	
*	1- 2	VQ793400	BUTTON GUIDE			
*	2- 1	VS710600	P.C.B. ASS'Y	OPERATION		(UC)
*	2- 1	VS710700	P.C.B. ASS'Y	OPERATION		(R)
*	2- 1	VS710800	P.C.B. ASS'Y	OPERATION		(A)
*	2- 1	VS727800	P.C.B. ASS'Y	OPERATION		(BG)
*	2- 7	VS756800	CONNECTOR, FLAT CABLE	5P 350mm		(BG)
*	2- 8	VS756900	CONNECTOR, FLAT CABLE	15P 250mm		
*	2-11	VS003200	SUB CHASSIS			
*	2-12	VS003400	BUTTON, CASE			
*	2-13	VS003500	BUTTON, T			
*	2-14	VS195900	ESCUTCHEON			
*	2-15	VS196100	BUTTON, R			(BG)
*	2-16	VT305900	SUPPORT, T			
*	2-20	VQ368600	PUSH RIVET	P3555-B		
	2-21	Ei330086	BIND HEAD B-TITE SCREW	3x8 FCRM3-BL		
*	2-22	VS865700	SHIELD PLATE			
*	2-23	VS906800	HOLDER			
	2-26	Ei330066	BIND HEAD B-TITE SCREW	3x6 FCRM3-BL		
*	3-1-1	VS002400	HEAT SINK ASS'Y			
*	3-1-2	VQ796100	SUPPORT, PCB			
	3-1-3	VK195900	SHEET	19x24		
	3-1-4	Ei330086	BIND HEAD B-TITE SCREW	3x8 FCRM3-BL		
#	3-1-5	iX633340	TRANSISTOR	2SA1695 O,P,Y	Q531A	
#	3-1-5	iX633350	TRANSISTOR	2SC4468 O,P,Y	Q531C	
#	3-1-6	iX606460	TRANSISTOR	2SA1492 O,P,Y	Q523A,Q527A	
#	3-1-6	iX606470	TRANSISTOR	2SC3856 O,P,Y	Q523C,Q527C	
	3-1-7	VK173200	SCREW, TRANSISTOR	3x15 SP FCM3		
*	3-3	VQ368600	PUSH RIVET	P3555-B		
	3-4	ED330066	BIND HEAD SCREW	3x6 FCRM3-BL		
	5	VR341800	P.C.B. ASS'Y	TUNER		(UC)
	5	VR341900	P.C.B. ASS'Y	TUNER		(R)
	5	VR342000	P.C.B. ASS'Y	TUNER		(AB)
	5	VR384100	P.C.B. ASS'Y	TUNER		(G)
*	7	VS711100	P.C.B. ASS'Y	DSP		(UCRA)
*	7	VS728000	P.C.B. ASS'Y	DSP		(BG)
*	8	VS709400	P.C.B. ASS'Y	MAIN		(U)
*	8	VS709500	P.C.B. ASS'Y	MAIN		(C)
*	8	VS709600	P.C.B. ASS'Y	MAIN		(R)
*	8	VS709700	P.C.B. ASS'Y	MAIN		(A)
*	8	VS710000	P.C.B. ASS'Y	MAIN		(G)
*	8	VT208900	P.C.B. ASS'Y	MAIN		(B)
⚠*	11	XP963B00	POWER TRANSFORMER			(U)
⚠*	11	XP964A00	POWER TRANSFORMER			(C)
⚠*	11	XP965B00	POWER TRANSFORMER			(R)
⚠*	11	XP966B00	POWER TRANSFORMER			(AB)
⚠*	11	XP967B00	POWER TRANSFORMER			(G)
⚠*	12	VQ508500	POWER CORD ASS'Y			(R)
⚠*	12	VQ508600	POWER CORD ASS'Y			(A)
⚠*	12	VS168300	POWER CORD ASS'Y			(UC)
⚠*	12	VS168400	POWER CORD ASS'Y			(G)

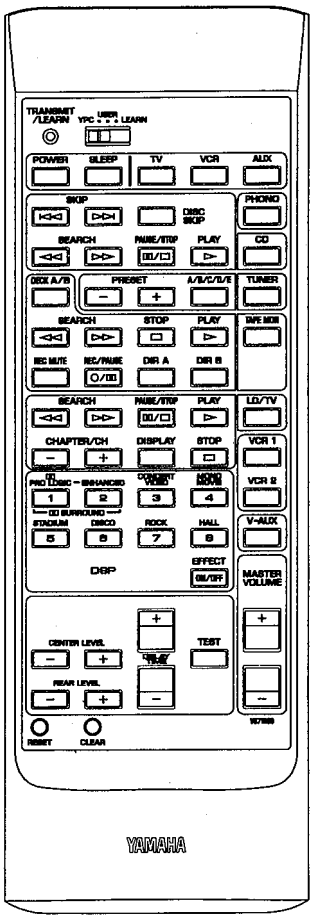
* New Parts

	Ref. No.	PART NO.	Description		Remarks	Markets
⚠*	12	VS680700	POWER CORD ASS'Y			(B)
⚠	13	VJ775000	AC OUTLET	2P		(B)
⚠	13	VP418700	AC OUTLET	2P		(A)
*	101	VS001200	TOP COVER			
*	102	VS001400	CHASSIS			
*	103	VS001500	REAR PANEL			(U)
*	103	VS001600	REAR PANEL		RX-V590	(C)
*	103	VS001700	REAR PANEL		RX-V590	(R)
*	103	VS001800	REAR PANEL		RX-V590	(A)
*	103	VS002500	REAR PANEL		RX-V590RDS	(B)
*	103	VS002600	REAR PANEL		RX-V590RDS	(G)
*	103	VS221800	REAR PANEL		R-V901	(U)
*	103	VS432100	REAR PANEL		R-V901	(C)
	104	VQ780300	LEG	D60xH16		
	104	VQ982800	LEG	D60xH16		
*	105	VS001900	FRAME, PCB			
*	106	VR264400	SPACER, H8			
*	107	VQ795100	KNOB	D42		(UCRA)
	107	VR021500	KNOB	D42		(BG)
*	108	VS409600	KNOB	D18		
	109	VQ779000	BUTTON	3x14		
*	110	VS003600	SHEET, F			(UCRA)
*	110	VS322900	SHEET, F			(BG)
	111	VN158600	CORD STOPPER	No.2104		
	121	EN301010	BIND HEAD BONDING TAP. SCREW	3x8 FCRM3-BL		
	122	Ei330086	BIND HEAD B-TITE SCREW	3x8 FCRM3-BL		
	123	ED330066	BIND HEAD SCREW	3x6 FCRM3-BL		
	124	EL300480	BW HEAD B-TITE SCREW	3x15-8 FCRM3-BL		
	125	EK365020	BW HEAD SCREW	4x6 FCRM3-BL		
	125	EL300470	BW HEAD S-TITE SCREW	4x8-10 FCRM3-BL		
	126	EL300470	BW HEAD S-TITE SCREW	4x8-10 FCRM3-BL		
	127	AA627310	GROUND TERMINAL			
*	128	VS349300	SUPPORT	TR		
			ACCESSORIES			
*	200	VS713900	REMOTE CONTROL TRANSMITTER		(7A, 7C)	(UCA)
*	200	VS714000	REMOTE CONTROL TRANSMITTER		(7A, 7C)	(RBG)
	200-1	CX675150	LID	54x32.9BLALPS		(RGB)
	200-1	CX676010	LID	55x40.5BLAMK	103RRC-031-01R	(UCA)
*		VQ147100	ANTENNA, FM	1P 1.4m		
*		VR248500	ANTENNA, AM LOOP	1P 1.0m		
		VE364900	ANTENNA ADAPTER	PAL 75-300Ω		(B)
			BATTERY, MANGANESE	SUM-3, AA, R06		

* New Parts

REMOTE CONTROL TRANSMITTER

■ RX-V590/R-V901 (U, C, A models)

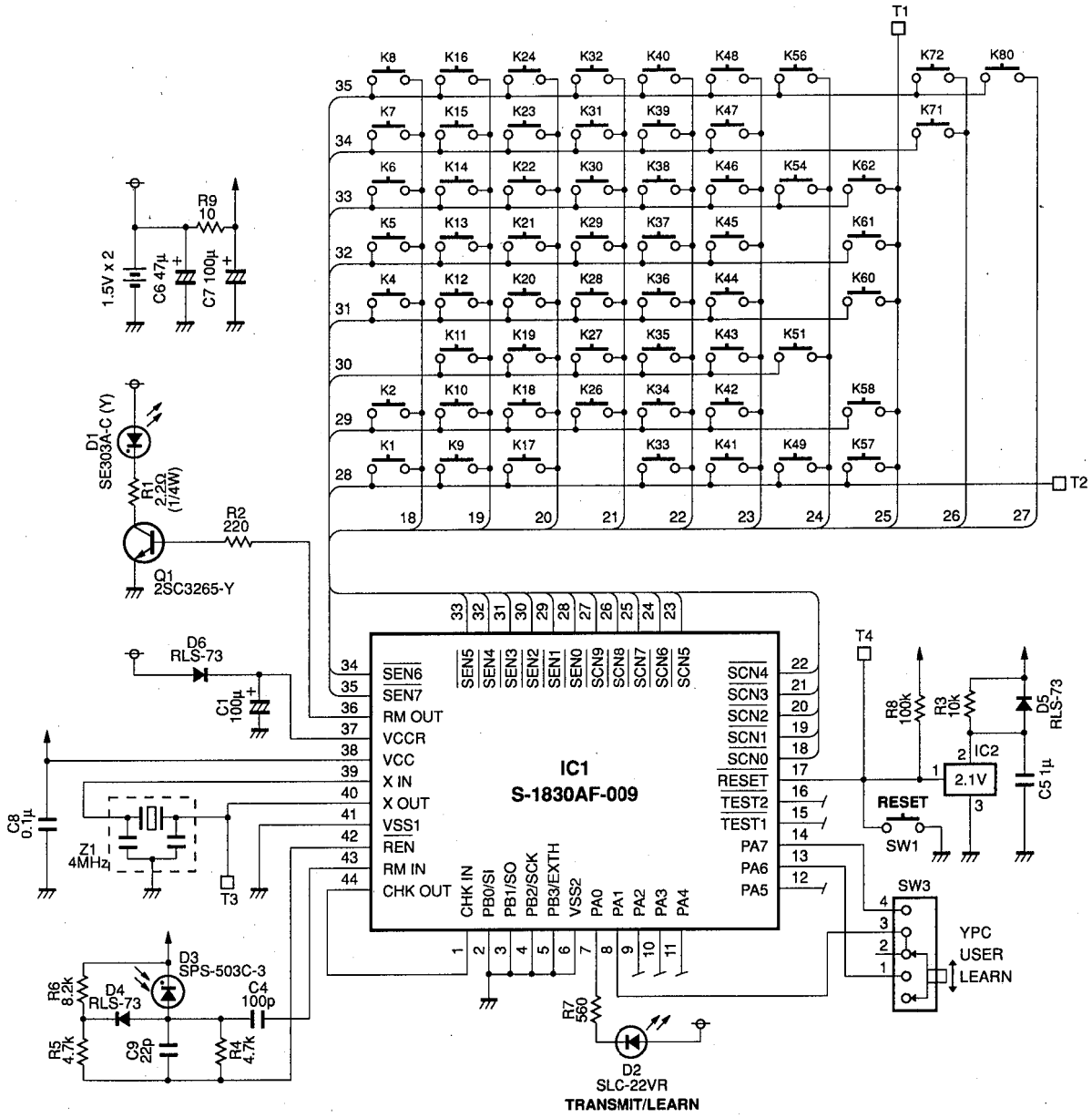


KEY No.	FUNCTION	CONTROL CODE
1	INPUT AUX	—
2	INPUT PHONO	7A-14
4	INPUT VCR	—
5	INPUT TV	—
6	CD DISC SKIP	7A-4F
7	SLEEP	7A-57
8	POWER	7A-1F
9	INPUT TUNER	7A-16
10	INPUT CD	7A-15
11	CD PLAY ►	7A-08
12	CD PAUSE/STOP ❚❚/■	7A-09
13	CD SEARCH ►►	7A-0C
14	CD SEARCH ◄◄	7A-0D
15	CD SKIP ►►|	7A-0A
16	CD SKIP |◄◄	7A-0B
17	TAPE MON	7A-18
18	TUNER A/B/C/D/E	7A-12
19	TAPE PLAY ►	7A-00
20	TUNER PRESET +	7A-10
21	TAPE STOP ■	7A-03

KEY No.	FUNCTION	CONTROL CODE
22	TAPE SEARCH ►►	7A-02
23	TUNER PRESET –	7A-11
24	TAPE DECK A/B	7A-06
26	INPUT LD/TV	7A-17
27	LD PLAY ►	7C-05
28	TAPE DIR B	7A-40
29	TAPE DIR A	7A-07
30	TAPE REC PAUSE	7A-04
31	TAPE REC MUTE	7A-05
32	TAPE SEARCH ◄◄	7A-01
33	INPUT VCR 1	7A-0F
34	LD STOP ■	7C-5B
35	LD DISPLAY	7C-13
36	LD PAUSE/STOP ❚❚/■	7C-04
37	LD SEARCH ◄◄	7C-07
38	LD CHAPTER/CH +	7C-03
39	LD CHAPTER/CH –	7C-02
40	LD SEARCH ►►	7C-06
41	INPUT VCR 2	7A-13
42	INPUT V-AUX	7A-55

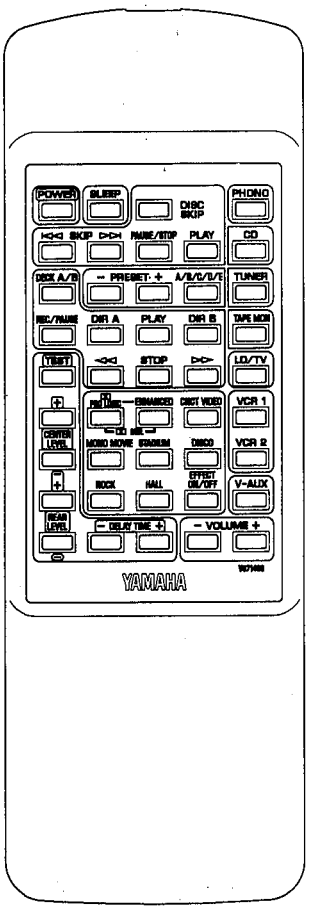
KEY No.	FUNCTION	CONTROL CODE
43	DSP 4	7A-8B
44	DSP 8	7A-8D
45	DSP 7	7A-8C
46	DSP 3	7A-8A
47	DSP 2	7A-89
48	DSP 1	7A-88
49	MASTER VOL +	7A-1A
51	EFFECT ON/OFF	7A-56
54	DSP 6	7A-8F
56	DSP 5	7A-8E
57	MASTER VOL –	7A-1B
58	TEST	7A-85
60	DELAY TIME –	7A-53
61	DELAY TIME +	7A-52
62	CENTER LEVEL +	7A-82
68	REAR LEVEL +	7A-5E
71	CENTER LEVEL –	7A-83
72	REAR LEVEL –	7A-5F
80	CLEAR	

■ SCHEMATIC DIAGRAM

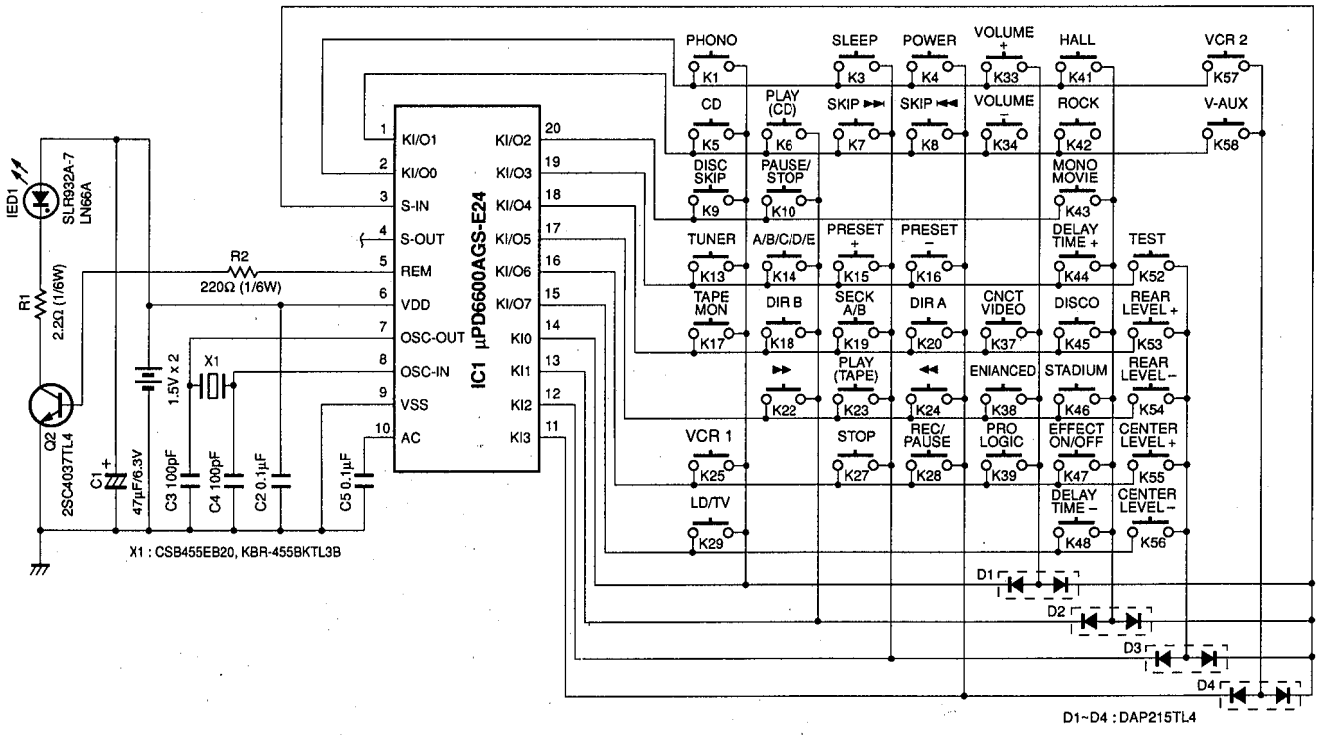


REMOTE CONTROL TRANSMITTER

■ RX-V590/RX-V590RDS (R, B, G models)

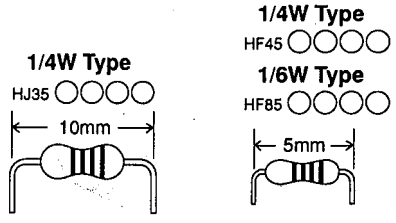


KEY No.	FUNCTION	CUSTOM CODE (HEX)	SUB CUSTOM CODE (HEX)	DATA CODE (HEX)	C0 C7	$\overline{C0}$ $\overline{C7}$	D0 D7	$\overline{D0}$ $\overline{D7}$
1	PHONO	7A	85	14	0101 1110	1010 0001	0010 1000	1101 0111
3	SLEEP	7A	85	57	0101 1110	1010 0001	1110 1010	0001 0101
4	POWER	7A	85	1F	0101 1110	1010 0001	1111 1000	0000 0111
5	CD	7A	85	15	0101 1110	1010 0001	1010 1000	0101 0111
6	PLAY (CD)	7A	85	08	0101 1110	1010 0001	0001 0000	1110 1111
7	SKIP ►►	7A	85	0A	0101 1110	1010 0001	0101 0000	1010 1111
8	SKIP ◄◄	7A	85	0B	0101 1110	1010 0001	1101 0000	0010 1111
9	DISC SKIP	7A	85	4F	0101 1110	1010 0001	1111 0010	0000 1101
10	PAUSE/STOP (CD)	7A	85	09	0101 1110	1010 0001	1001 0000	0110 1111
13	TUNER	7A	85	16	0101 1110	1010 0001	0110 1000	1001 0111
14	A/B/C/D/E	7A	85	12	0101 1110	1010 0001	0100 1000	1011 0111
15	PRESET +	7A	85	10	0101 1110	1010 0001	0000 1000	1111 0111
16	PRESET –	7A	85	11	0101 1110	1010 0001	1000 1000	0111 0111
17	TAPE MON	7A	85	18	0101 1110	1010 0001	0001 1000	1110 0111
18	DIR B	7A	85	40	0101 1110	1010 0001	0000 0010	1111 1101
19	DECK A/B	7A	85	06	0101 1110	1010 0001	0110 0000	1001 1111
20	DIR A	7A	85	07	0101 1110	1010 0001	1110 0000	0001 1111
22	►►	7A	85	02	0101 1110	1010 0001	0100 0000	1011 1111
23	PLAY (TAPE)	7A	85	00	0101 1110	1010 0001	0000 0000	1111 1111
24	◄◄	7A	85	01	0101 1110	1010 0001	1000 0000	0111 1111
25	VCR 1	7A	85	0F	0101 1110	1010 0001	1111 0000	0000 1111
27	STOP (TAPE)	7A	85	03	0101 1110	1010 0001	1100 0000	0011 1111
28	REC/PAUSE	7A	85	04	0101 1110	1010 0001	0010 0000	1101 1111
29	LD/TV	7A	85	17	0101 1110	1010 0001	1110 1000	0001 0111
33	VOLUME +	7A	85	1A	0101 1110	1010 0001	0101 1000	1010 0111
34	VOLUME –	7A	85	1B	0101 1110	1010 0001	1101 1000	0010 0111
37	CONCERT VIDEO	7A	85	8A	0101 1110	1010 0001	0101 0001	1010 1110
38	ENHANCED	7A	85	89	0101 1110	1010 0001	1001 0001	0110 1110
39	PRO LOGIC	7A	85	88	0101 1110	1010 0001	0001 0001	1110 1110
41	CONCERT HALL	7A	85	8D	0101 1110	1010 0001	1011 0001	0100 1110
42	ROCK CONCERT	7A	85	8C	0101 1110	1010 0001	0011 0001	1100 1110
43	MONO MOVIE	7A	85	8B	0101 1110	1010 0001	1101 0001	0010 1110
44	DELAY TIME +	7A	85	52	0101 1110	1010 0001	0100 1010	1011 0101
45	DISCO	7A	85	8F	0101 1110	1010 0001	1111 0001	0000 1110
46	STADIUM	7A	85	8E	0101 1110	1010 0001	0111 0001	1000 1110
47	EFFECT ON/OFF	7A	85	56	0101 1110	1010 0001	0110 1010	1001 0101
48	DELAY TIME –	7A	85	53	0101 1110	1010 0001	1100 1010	0011 0101
52	TEST	7A	85	85	0101 1110	1010 0001	1010 0001	0101 1110
53	REAR LEVEL +	7A	85	5E	0101 1110	1010 0001	0111 1010	1000 0101
54	REAR LEVEL –	7A	85	5F	0101 1110	1010 0001	1111 1010	0000 0101
55	CENTER LEVEL +	7A	85	82	0101 1110	1010 0001	0100 0001	1011 1110
56	CENTER LEVEL –	7A	85	83	0101 1110	1010 0001	1100 0001	0011 1110
57	VCR 2	7A	85	13	0101 1110	1010 0001	1100 1000	0011 0111
58	V-AUX	7A	85	55	0101 1110	1010 0001	1010 1010	0101 0101



Parts List for Carbon Resistors

Value	1/4W Type Part No.	1/6W Type Part No.	Value	1/4W Type Part No.	1/6W Type Part No.
1.0 Ω	HJ35 3100	HF85 3100	10 kΩ	HF45 7100	HF45 7100
1.8 Ω	HJ35 3180	*	11 kΩ	HF45 7110	HF45 7110
2.2 Ω	HJ35 3220	HF85 3220	12 kΩ	HJ35 7120	HF85 7120
3.3 Ω	HJ35 3330	HF85 3330	13 kΩ	HF45 7130	HF45 7130
4.7 Ω	HJ35 3470	HF85 3470	15 kΩ	HF45 7150	HF45 7150
5.6 Ω	HJ35 3560	HF85 3560	18 kΩ	HF45 7180	HF45 7180
10 Ω	HF45 4100	HF45 4100	22 kΩ	HF45 7220	HF45 7220
15 Ω	HJ35 4150	HF85 4150	24 kΩ	HF45 7240	HF45 7240
22 Ω	HF45 4220	HF45 4220	27 kΩ	HJ35 7270	HF85 7270
27 Ω	HJ35 4270	HF85 4270	30 kΩ	HF45 7300	HF45 7300
33 Ω	HF45 4330	HF45 4330	33 kΩ	HF45 7330	HF45 7330
39 Ω	HJ35 4470	HF85 4390	36 kΩ	HF45 7360	HF45 7360
47 Ω	HF45 4470	HF45 4470	39 kΩ	HF45 7390	HF45 7390
56 Ω	HF45 4560	HF45 4560	47 kΩ	HF45 7470	HF45 7470
68 Ω	HF45 4680	HF45 4680	51 kΩ	HF45 7510	HF45 7510
75 Ω	HF45 4750	HF45 4750	56 kΩ	HF45 7560	HF45 7560
82 Ω	HF45 4820	HF45 4820	62 kΩ	HF45 7620	HF45 7620
91 Ω	HF45 4910	HF45 4910	68 kΩ	HF45 7680	HF45 7680
100 Ω	HF45 5100	HF45 5100	82 kΩ	HF45 7820	HF45 7820
110 Ω	HJ35 5110	HF85 5110	91 kΩ	HF45 7910	HF45 7910
120 Ω	HF45 5120	HF45 5120	100 kΩ	HF45 8100	HF45 8100
150 Ω	HF45 5150	HF45 5150	110 kΩ	HF45 8110	HF45 8110
160 Ω	HJ35 5160	*	120 kΩ	HF45 8120	HF45 8120
180 Ω	HF45 5180	HF45 5180	150 kΩ	HF45 8150	HF45 8150
200 Ω	HF45 5200	HF45 5200	180 kΩ	HF45 8180	HF45 8180
220 Ω	HF45 5220	HF45 5220	220 kΩ	HJ35 8220	HF85 8220
270 Ω	HF45 5270	HF45 5270	270 kΩ	HF45 8270	HF45 8270
330 Ω	HF45 5330	HF45 5330	300 kΩ	HF45 8300	HF45 8300
390 Ω	HF45 5390	HF45 5390	330 kΩ	HF45 8330	HF45 8330
430 Ω	HF45 5430	HF45 5430	390 kΩ	HJ35 8390	HF85 8390
470 Ω	HF45 5470	HF45 5470	470 kΩ	HF45 8470	HF45 8470
510 Ω	HF45 5510	HF45 5510	560 kΩ	HJ35 8560	HF85 8560
560 Ω	HF45 5560	HF45 5560	680 kΩ	HJ35 8680	HF85 8680
680 Ω	HF45 5680	HF45 5680	820 kΩ	HJ35 8820	HF85 8820
820 Ω	HF45 5820	HF45 5820	1.0 MΩ	HF45 9100	HF45 9100
910 Ω	HF45 5910	HF45 5910	1.2 MΩ	HJ35 9120	*
1.0 kΩ	HF45 6100	HF45 6100	1.5 MΩ	HJ35 9150	HF85 9150
1.2 kΩ	HF45 6120	HF45 6120	1.8 MΩ	HJ35 9180	HF85 9180
1.5 kΩ	HF45 6150	HF45 6150	2.2 MΩ	HJ35 9220	HF85 9220
1.8 kΩ	HF45 6180	HF45 6180	3.3 MΩ	HJ35 9330	HF85 9330
2.0 kΩ	HJ35 6200	HF85 6200	3.9 MΩ	HJ35 9390	*
2.2 kΩ	HF45 6220	HF45 6220	4.7 MΩ	HJ35 9470	HF85 9470
2.4 kΩ	HJ35 6240	HF85 6240			
2.7 kΩ	HF45 6270	HF45 6270			
3.0 kΩ	HF45 6300	HF45 6300			
3.3 kΩ	HF45 6330	HF45 6330			
3.6 kΩ	HJ35 6360	HF85 6360			
3.9 kΩ	HF45 6390	HF45 6390			
4.7 kΩ	HF45 6470	HF45 6470			
5.1 kΩ	HF45 6510	HF45 6510			
5.6 kΩ	HF45 6560	HF45 6560			
6.8 kΩ	HF45 6680	HF45 6680			
8.2 kΩ	HF45 6820	HF45 6820			
9.1 kΩ	HF45 6910	HF45 6910			



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RX-V590/R-V901/RX-V590RDS

YAMAHA