

Service Manual

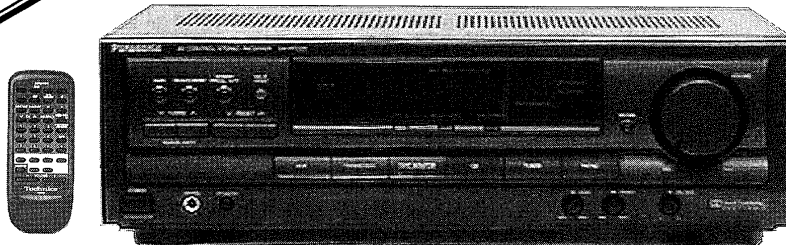
AV Control Stereo Receiver

Receiver



SA-HT220

Simplified



Colour

(K) Black Type

Area

Suffix for Model No.	Area	Colour
(PP)	U.S.A. and Canada	(K)

Please file and use this Service Manual together with the Service Manual for Model No. SA-EX310 (P, PC) Order No. MD9703022C1

Note : This Simplified Service Manual is provided to indicate the main difference between the original Model No. SA-EX310 (P, PC) and the subsequent Model No. SA-HT220 (PP).

Specifications

FM Tuner Section

Frequency range	87.9 — 107.9 MHz
Sensitivity	11.2 dBf (2 μ V, IHF '58)
50 dB quieting Sensitivity	
MONO	18.3 dBf (4.5 μ V, IHF '58)
STEREO	38.3 dBf (45 μ V, IHF '58)
Total harmonic distortion	
MONO	0.2 %
STEREO	0.3 %
S/N	
MONO	73 dB
STEREO	67 dB
Frequency response	20 Hz — 15 kHz (+1 dB, -2 dB)
Alternate channel selectivity	65 dB
Capture ratio	1.5 dB
Image rejection at 98 MHz	40 dB
Spurious response rejection at 98 MHz	75 dB

AM suppression	50 dB
Stereo separation	
1 kHz	40 dB
10 kHz	30 dB
Antenna terminal(s)	75 Ω (unbalanced)

AM Tuner Section

Frequency range	530 — 1710 kHz
Sensitivity	20 μ V, 330 μ V/m
Selectivity	55 dB
IF rejection at 1000 kHz	50 dB

Video Section

Output voltage at 1 V input (unbalanced)	1 \pm 0.1 Vp-p
Maximum input voltage	1.5 Vp-p
Input/output impedance	75 Ω

WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic®

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Amplifier Section

Rated minimum sine wave RMS power output
 40 Hz – 20 kHz both channels driven
 0.8 % total harmonic distortion 70 W per channel (8Ω)

1 kHz continuous power output, both channels driven
 0.05% total harmonic distortion 73 W
 perchannel(8Ω)

Total harmonic distortion
 Rated power at 40 Hz – 20 kHz 0.8 % (8Ω)
 Half power at 1 kHz 0.07 % (8Ω)

Power output at the Dolby Pro Logic operation 0.9 % at 1 kHz,
 Front 2 X 70 W (8Ω)
 Center 70 W (8Ω)
 Surround 70 W (8Ω)

Low frequency damping factor 30 (8Ω)

Load impedance
 Front 8 Ω
 Center 8 Ω
 surround 4 - 8 Ω

Frequency response
 PHONO RIAA standard curve ± 0.8 dB
 CD, TAPE, VCR, TV/DVD/DSS 10 Hz – 70 kHz, ± 3 dB

Input sensitivity
 PHONO 0.4mV (3mV, IHF '66)

CD, TAPE, VCR, TV/DVD/DSS 27mV (200mV, IHF '66)
 S/N (IHF A)
 PHONO 70 dB (78 dB, IHF '66)
 CD, TAPE, VCR, TV/DVD/DSS 75 dB (83 dB, IHF '66)
 Input impedance
 PHONO 47 kΩ
 CD, TAPE, VCR, TV/DVD/DSS 22 kΩ
 Tone controls
 BASS 50 Hz, +10 to -10 dB
 TREBLE 20 kHz, +10 to -10 dB
 Subwoofer frequency response 7 Hz – 100 Hz, ±3 dB

General

Power consumption 175 W (In standby condition : 2W)
 Power supply AC 120V, 60Hz
 Dimensions (W x H x D) 430 x 136 x 309 mm
 (16¹⁵/₁₆" x 5¹¹/₃₂" x 12⁵/₃₂")
 Weight 6.4 kg (14.2 lb.)

Notes :

1. Specifications are subject to change without notice.
 Weight and dimensions are approximate.
2. Total harmonic distortion is measured by the digital spectrum analyzer.

Changes In Replacement Parts List

Notes: * Mentioned in this parts list is only those different from Model No. SA-EX310 (P).
 * [M] Indicates in the Remarks columns indicates parts supplied by MESA.

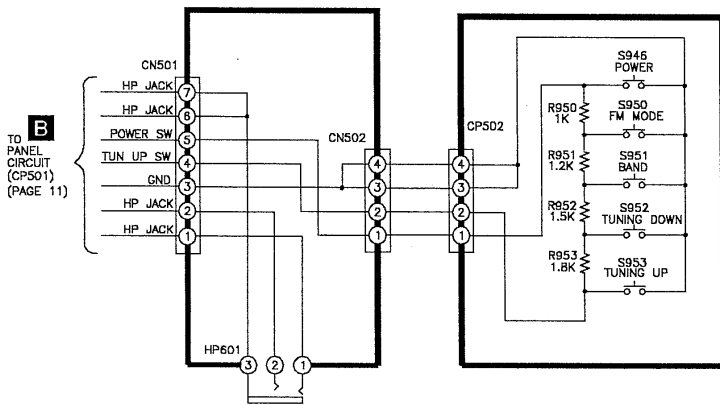
Ref. No.	Description	Change of Parts Number		Remarks
		SA-EX310P-K	SA-HT220PP-K	
CABINET AND CHASSIS				
1	TOP CABINET	RKM0260C-K [M]	RKM0374A-K [M]	Changed
2	REAR PANEL (P)	RGR0251A-A [M]	RGR0251A-E [M]	Changed
7	BOTTOM CHASSIS ASS'Y	RFKJEX310PK [M]	RFKJHT210PPK [M]	Changed
11	SELECTOR BUTTON	RGU1493-K [M]	RGU1493D-K [M]	Changed
16	FRONT PANEL ASS'Y	RFKGEX310PK [M]	RFKGHT220PPK [M]	Changed
16-1	FL WINDOW	RKW0436C-Q [M]	RKW0436G-Q [M]	Changed
29	HELP BUTTON	---	RGU1398-Q [M]	Added
ACCESSORIES				
A1	REMOTE CONTROL	EUR644347 [M]	EUR646464 [M]	Changed
A1-1	REMOTE CONTROL BATTERY COVER	UR64EC1822 [M]	UR64EC1987B [M]	Changed
A4	O/I BOOK	RFKSEX310PK [M]	RQT4264-Y [M]	Changed
A4	O/I BOOK FOR REMOTE CONTROL	---	RQT4422-Y [M]	Added
TRANSISTORS				
Q106	TRANSISTOR	UN411FTA [M]	RVTDTA143XST [M]	Changed
Q705	TRANSISTOR	2SC1740SSTA [M]	2SC3311AQSTA [M]	Changed
Q936	TRANSISTOR	---	RVTDTTC114YST [M]	Added

Ref. No.	Description	Change of Parts Number		Remarks
		SA-EX310P-K	SA-HT220PP-K	
INTERGRATED CIRCUITS				
IC901	IC, MICOM	M38B53M4050F [M]	M38B53M4055F [M]	Changed
DIODE				
D930	DIODE	---	SLR342DC [M]	Added
PACKING MATERIAL				
P2	PACKING CASE (GIFT BOX)	RPG3290 [M]	RPG3781 [M]	Changed
WIRES				
W701	WIRE	---	RWJ1812150CQ [M]	Added
W752	WIRE	---	RWJ1803250CQ [M]	Added
RESISTORS				
R751	3.3M 1/2W	ERC12ZGK335D [M]	ERC12UGK335D [M]	Changed
R928	120 1/4W	---	ERDS2TJ121T [M]	Added
R936	10K 1/4W	ERDS2TJ104T [M]	ERDS2TJ103T [M]	Changed
R937	10K 1/4W	ERDS2TJ104T [M]	ERDS2TJ103T [M]	Changed
R958	12K 1/4W	---	ERDS2TJ123T [M]	Added
CAPACITORS				
C117	820P 50V	ECQB1H821JF3 [M]	ECQB1H821JM3 [M]	Changed
C529	0.027 50V	ECQB1H273JF3 [M]	ECQB1H273JM3 [M]	Changed
C530	0.027 50V	ECQB1H273JF3 [M]	ECQB1H273JM3 [M]	Changed
C753	1000 50V	ECA1EM102B [M]	ECA1EM102E [M]	Changed
C1036	100P 50V	ECBT1H681KB5 [M]	ECBT1H101KB5 [M]	Changed

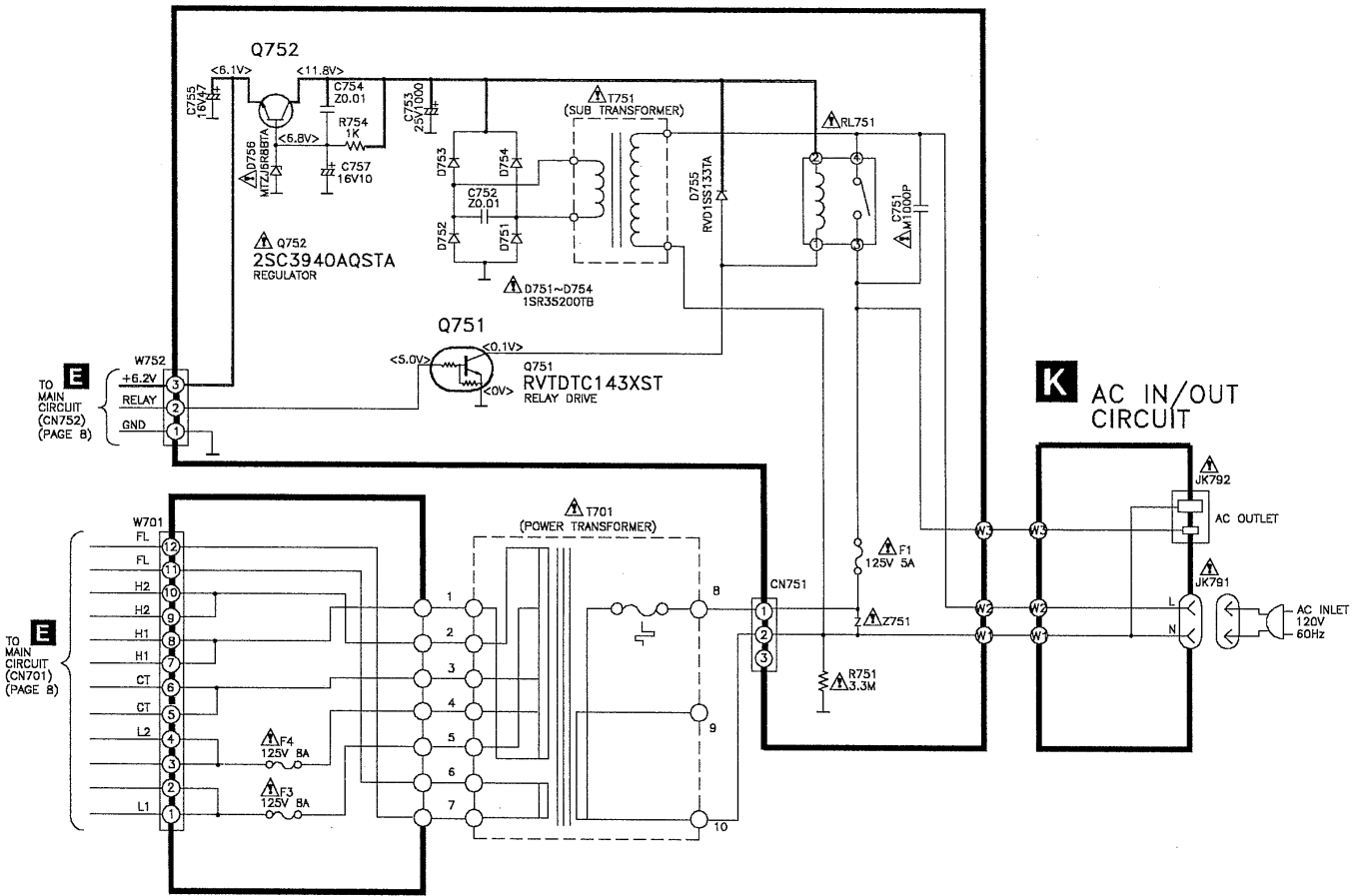
Schematic Diagram

D HEADPHONE JACK CIRCUIT

H POWER SWITCH CIRCUIT



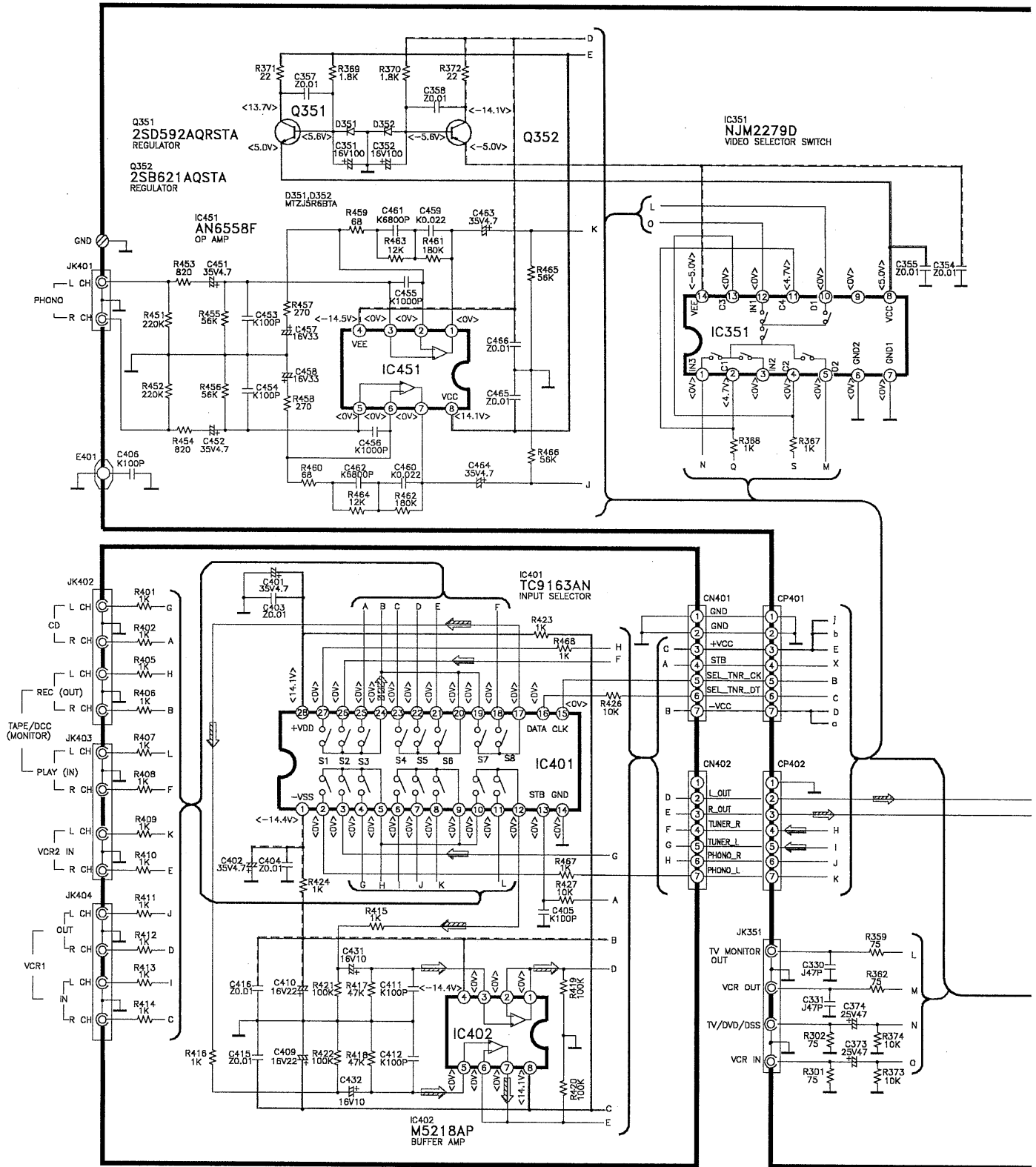
F POWER CIRCUIT



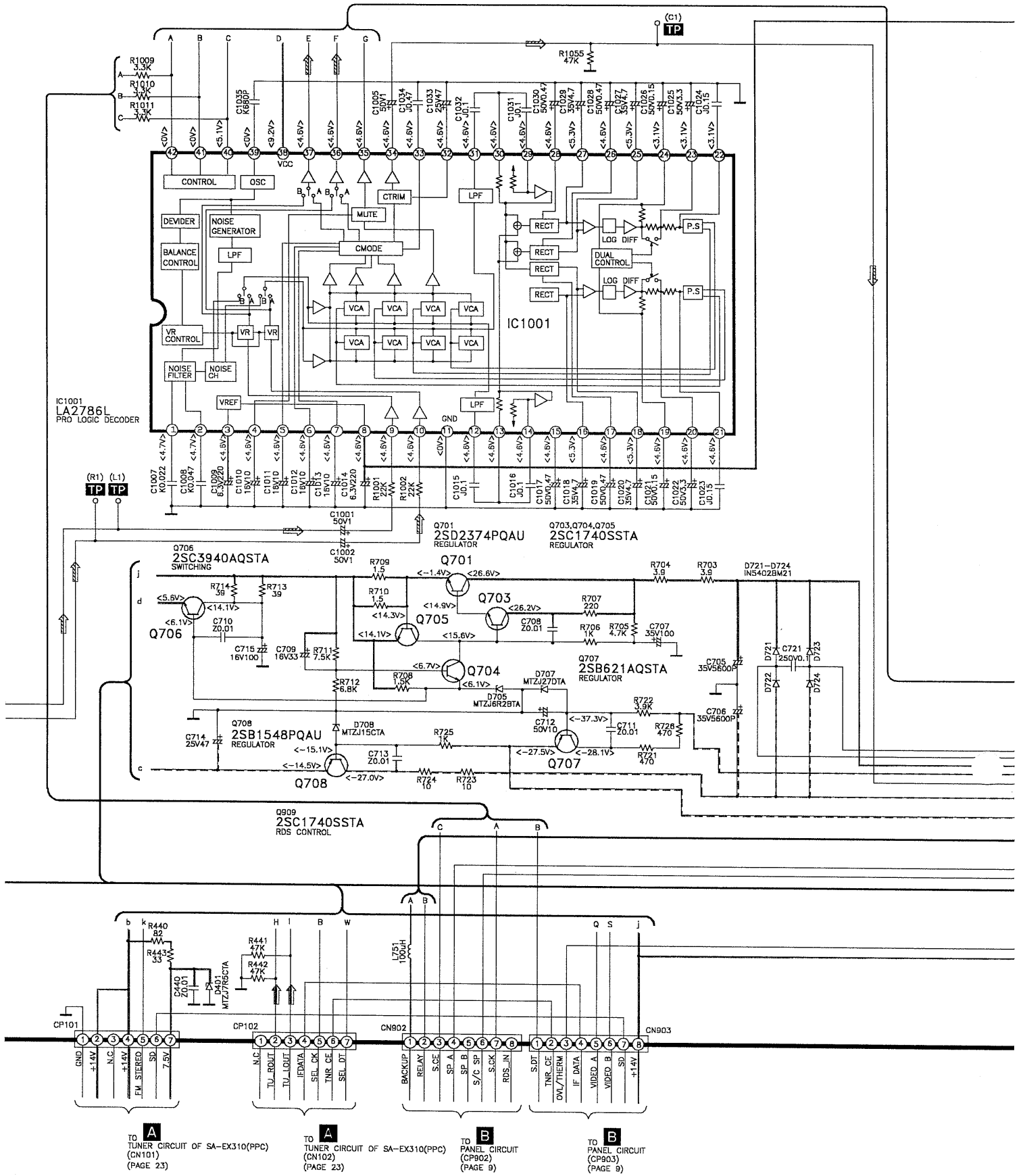
G TRANSFORMER CIRCUIT

K AC IN/OUT CIRCUIT

E MAIN CIRCUIT



L IN/OUT TERMINAL CIRCUIT

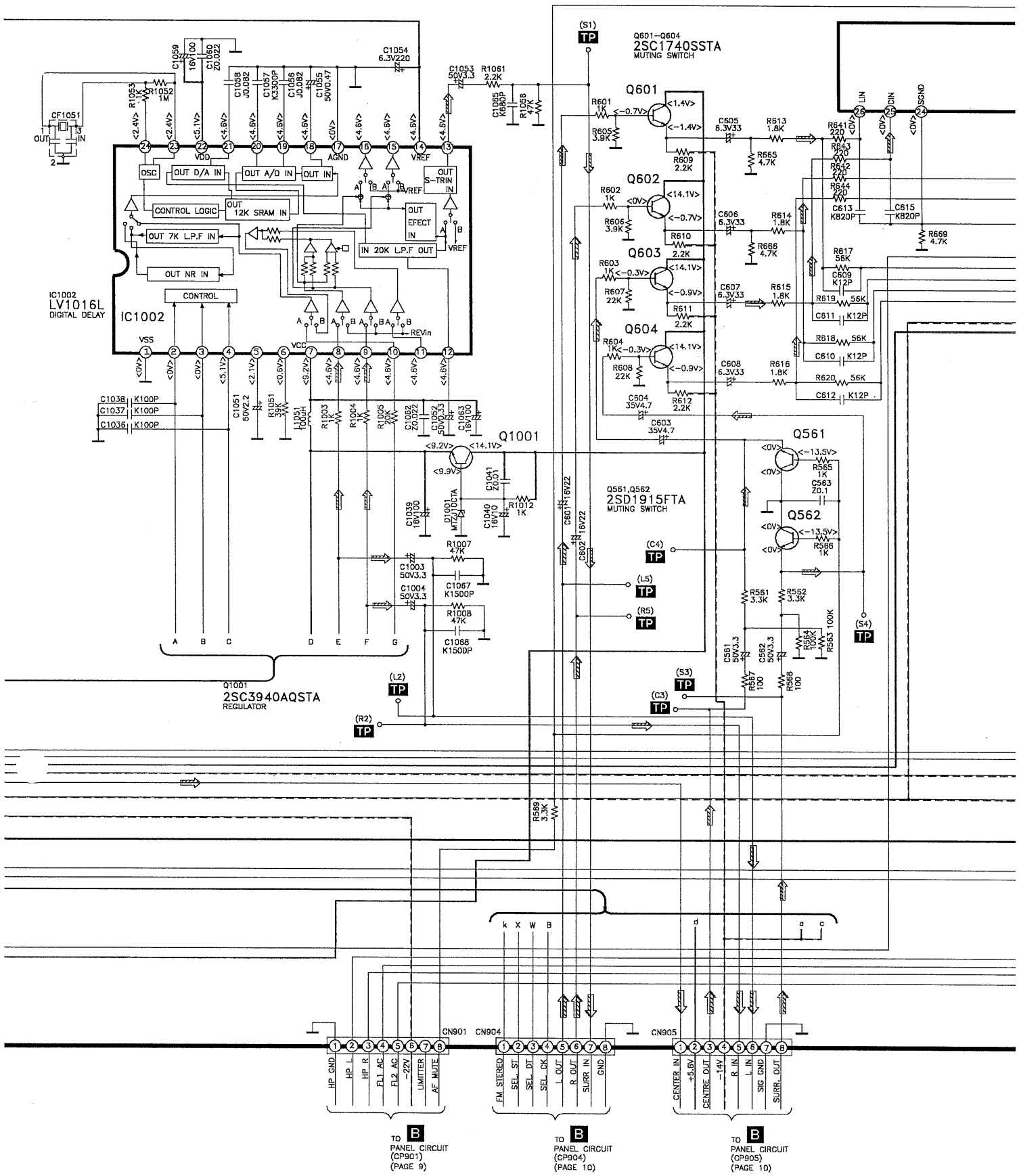


A
TO TUNER CIRCUIT OF SA-EX310(PPC)
(CN101)
(PAGE 23)

A
TO TUNER CIRCUIT OF SA-EX310(PPC)
(CN102)
(PAGE 23)

B
TO PANEL CIRCUIT
(CN902)
(PAGE 9)

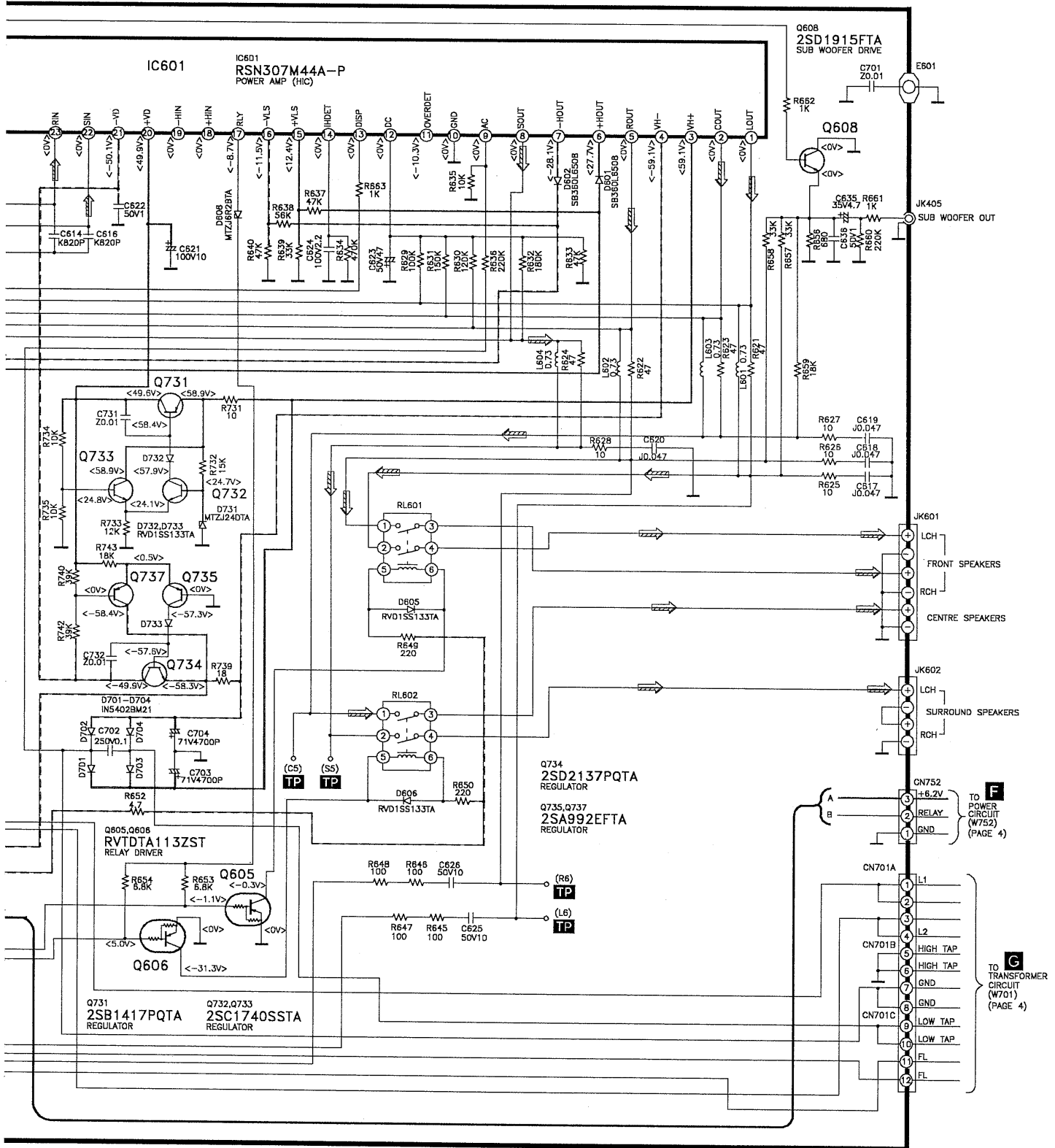
B
TO PANEL CIRCUIT
(CN903)
(PAGE 9)



TO PANEL CIRCUIT (CP901) (PAGE 9)

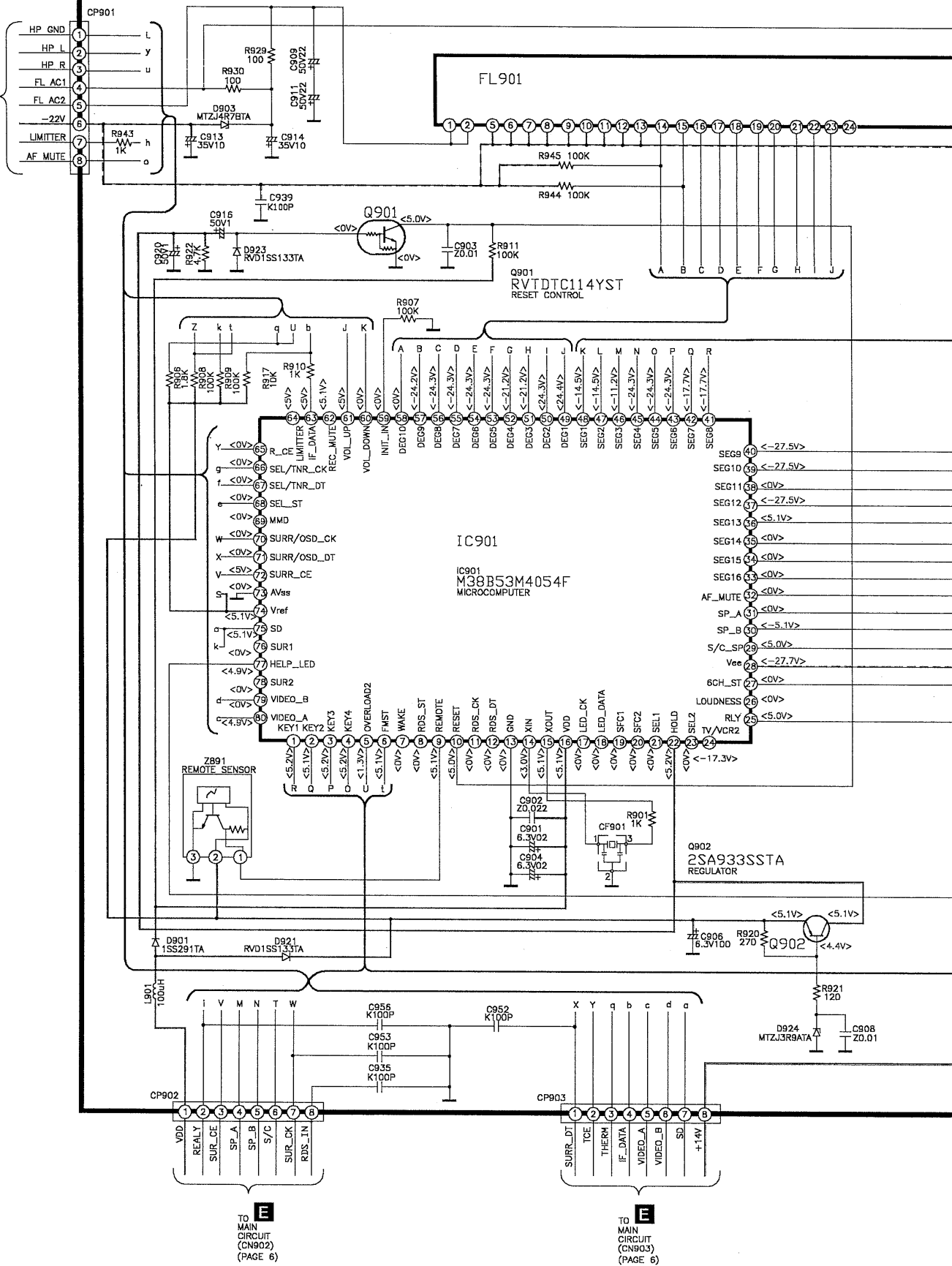
TO PANEL CIRCUIT (CP904) (PAGE 10)

TO PANEL CIRCUIT (CP905) (PAGE 10)



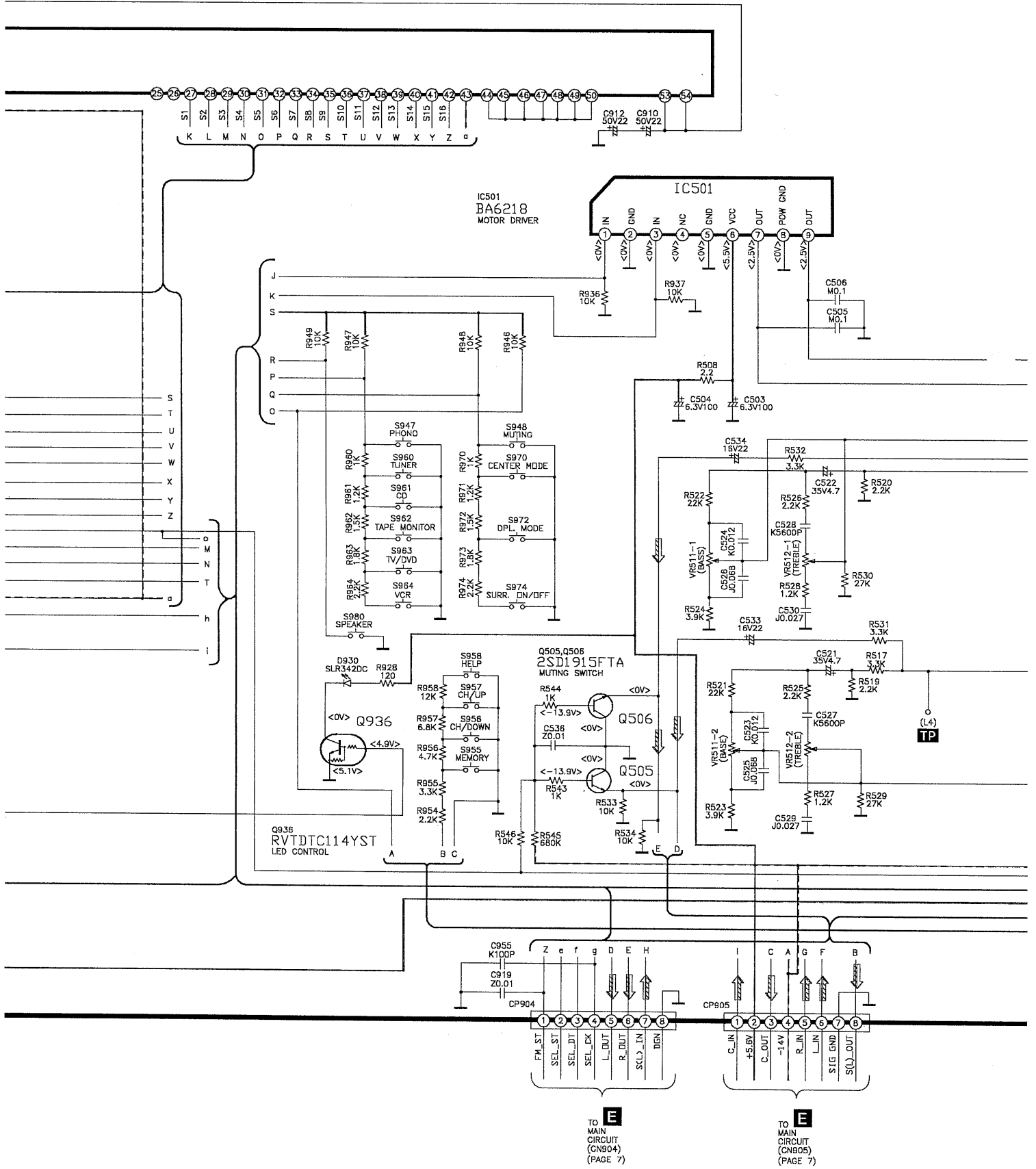
B PANEL CIRCUIT

TO MAIN CIRCUIT (CN901) (PAGE 7)

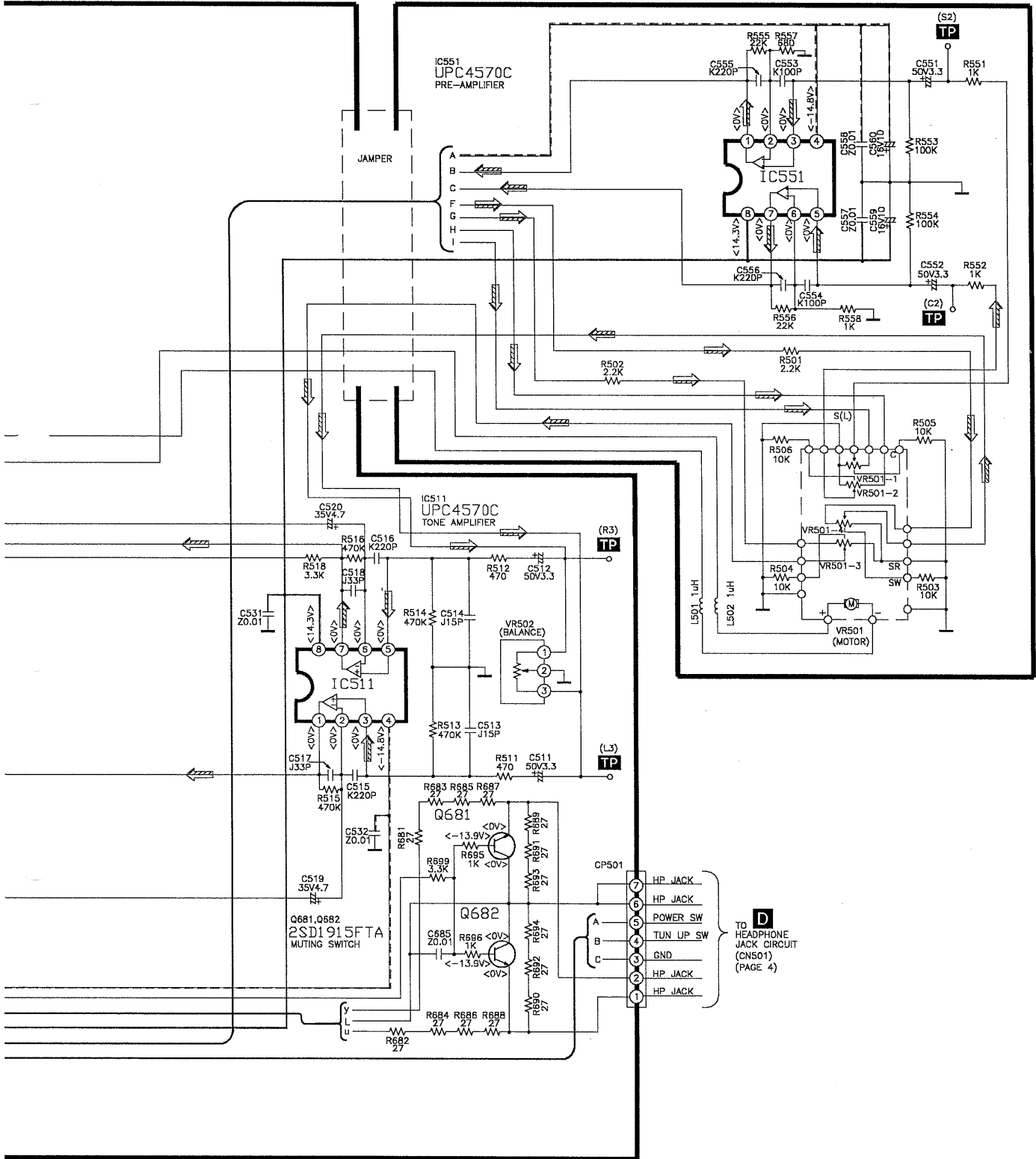


TO MAIN CIRCUIT (CN902) (PAGE 6)

TO MAIN CIRCUIT (CN903) (PAGE 6)



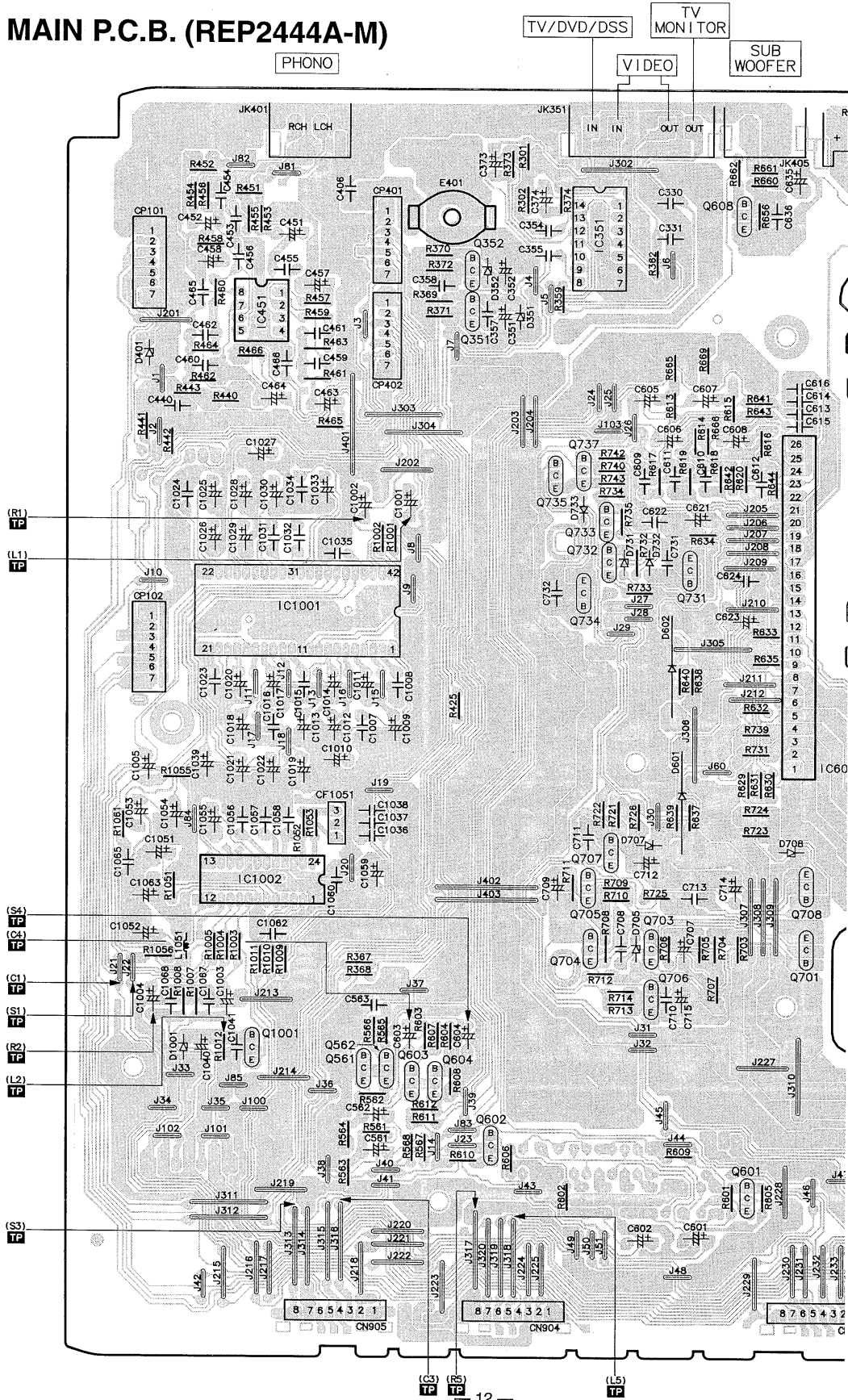
C VOLUME CIRCUIT

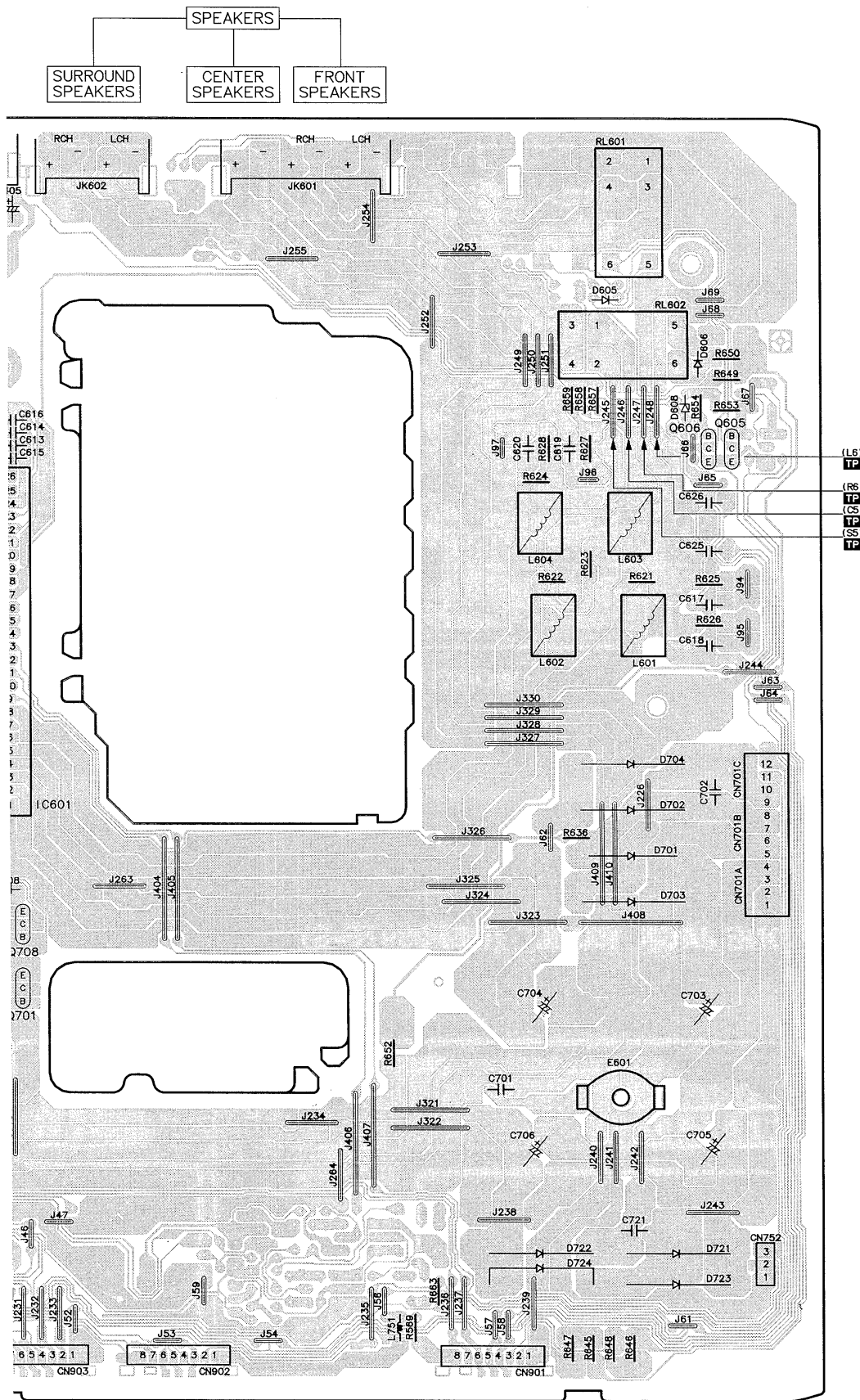


D
TO HEADPHONE JACK CIRCUIT (CP501) (PAGE 4)

Printed Circuit Board

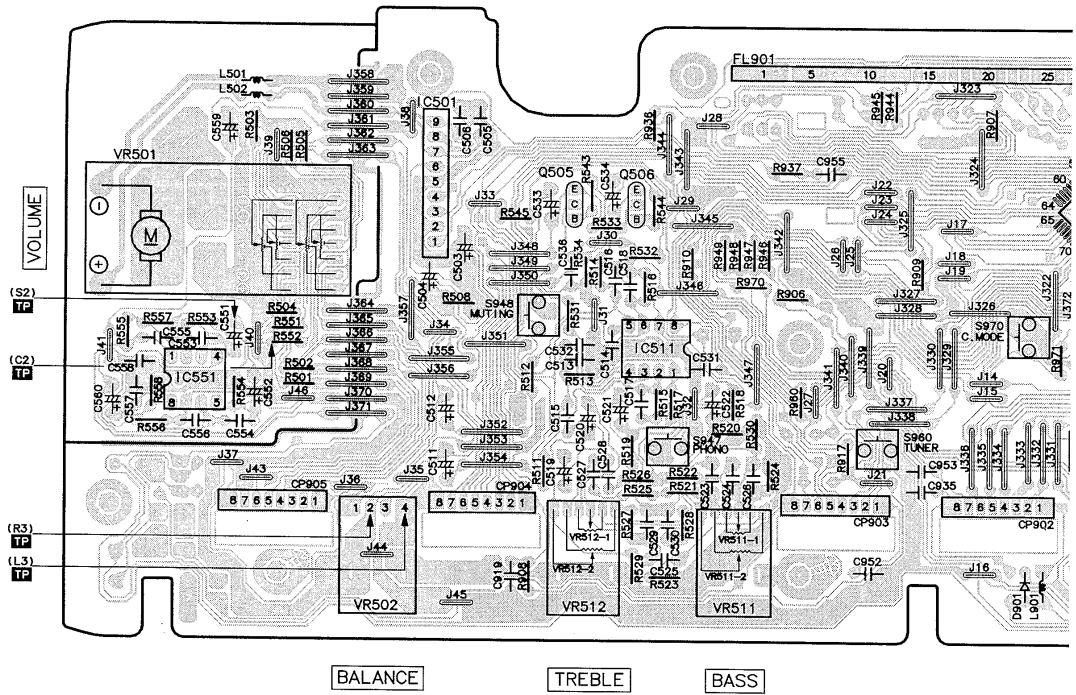
MAIN P.C.B. (REP2444A-M)



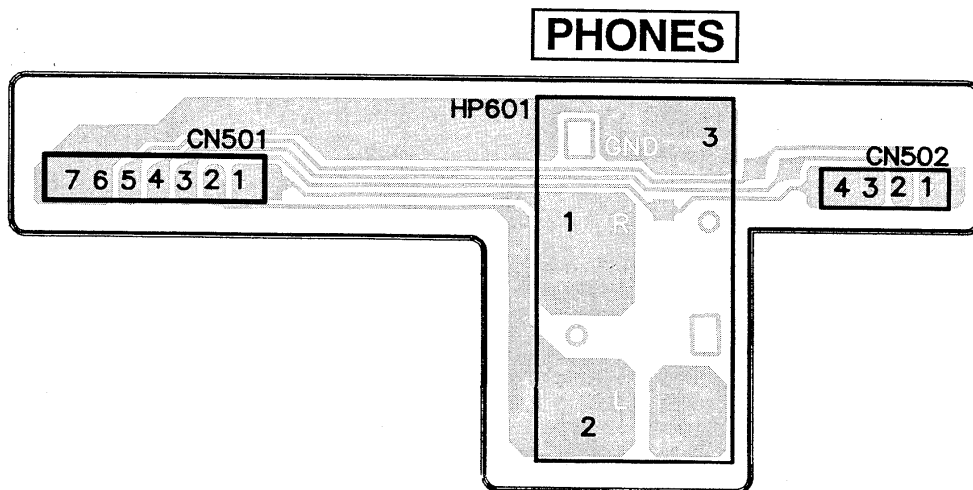


C VOLUME P.C.B. (REP2597B-S)

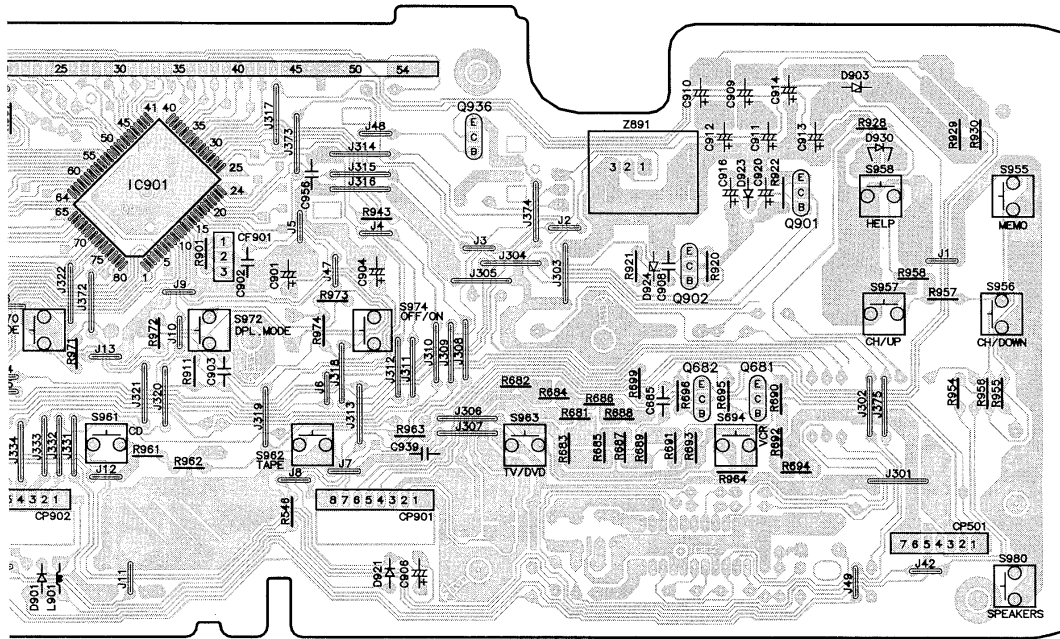
B PANEL P.C.B. (REP2597B-S)



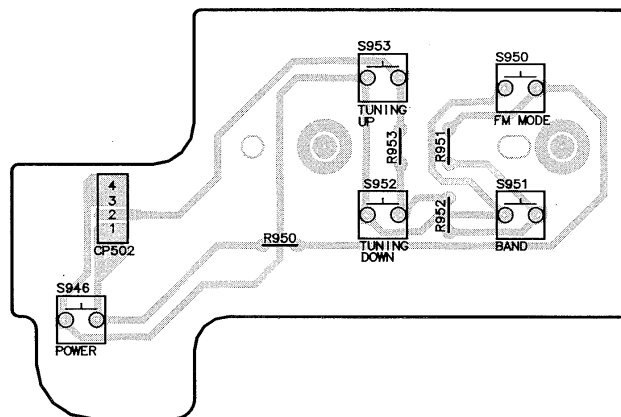
D HEADPHONE JACK P.C.B. (REP2597B-S)



SENSOR

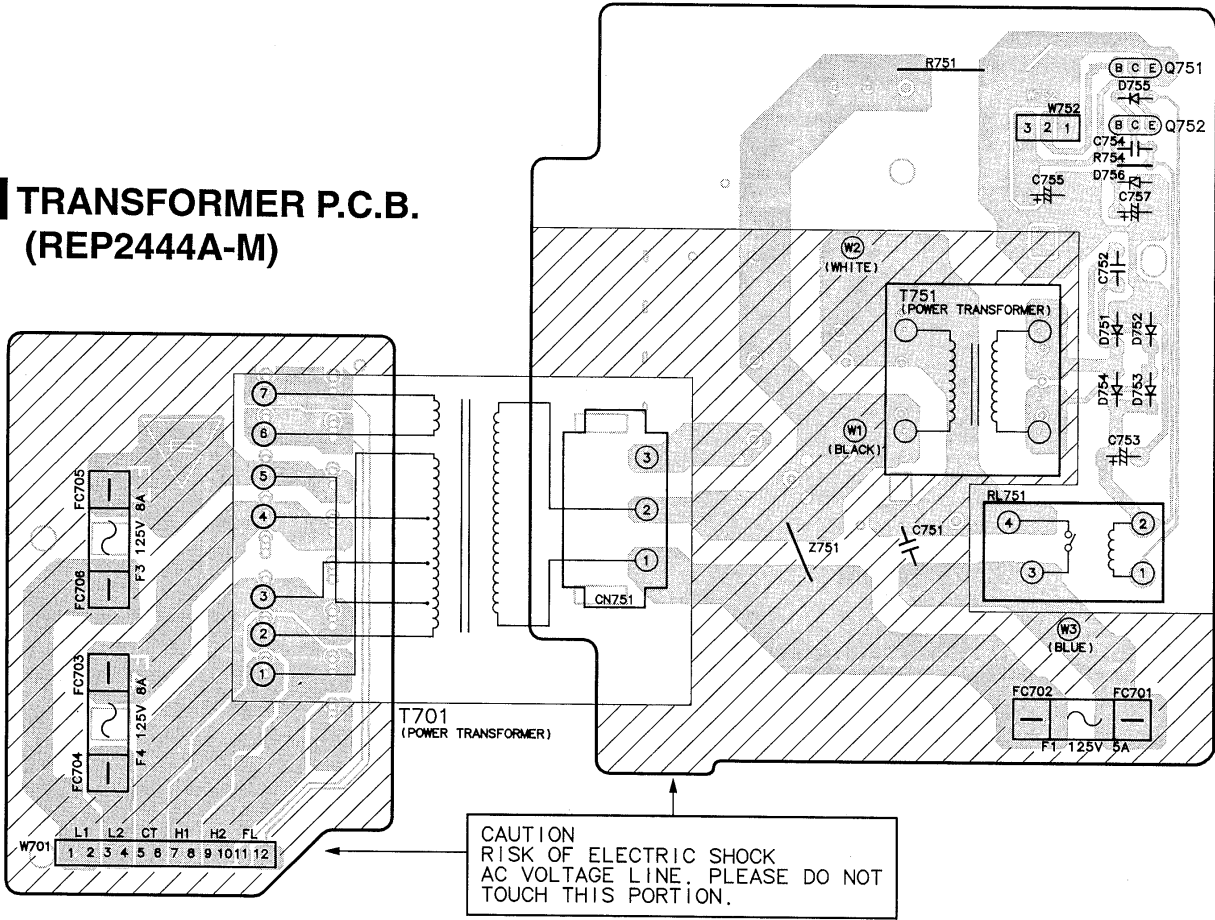


POWER SWITCH P.C.B. (REP2597B-S)

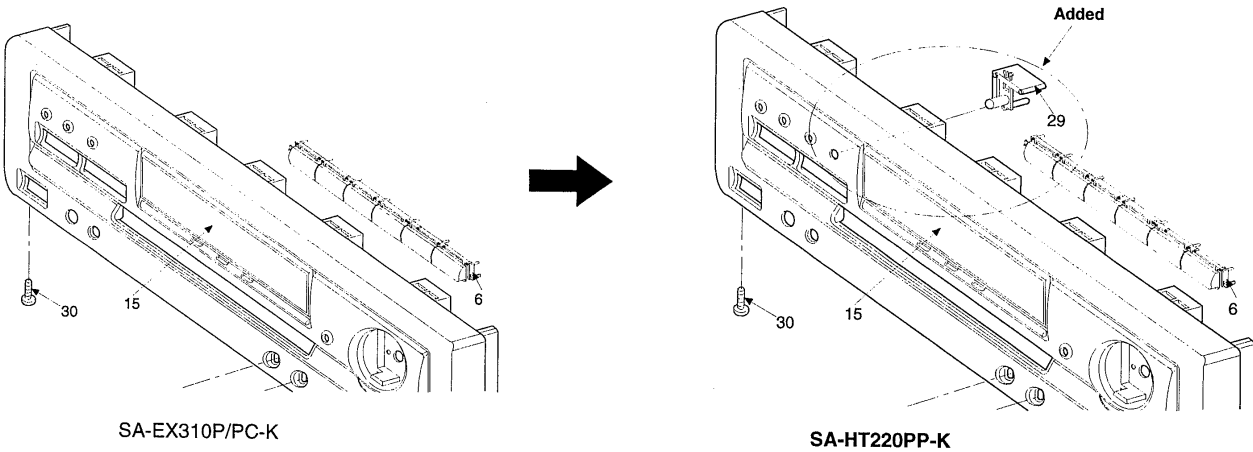


F POWER SUPPLY P.C.B. (REP2446F-P)

G TRANSFORMER P.C.B. (REP2444A-M)



■ Cabinet Parts Location - (Item added)



SA-EX310P/PC-K

SA-HT220PP-K

MESA Printed in Singapore
G980202100 P/K/S/J