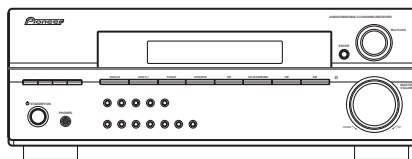


# Service Manual



VSX-415-K

ORDER NO.  
**RRV3091**

**AUDIO/VIDEO MULTI-CHANNEL RECEIVER**

# VSX-415-K VSX-415-S

**THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).**

Model	Type	Power Requirement	Remarks
VSX-415-K	KUCXJ	AC120V	
VSX-415-S	KUCXJ	AC120V	




For details, refer to "Important Check Points for Good Servicing".

1234

# SAFETY INFORMATION

A



This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

B

**WARNING**



This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 – Proposition 65

C



**NOTICE**

(FOR CANADIAN MODEL ONLY)

Fuse symbols  (fast operating fuse) and/or  (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

**REMARQUE**

(POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible  (fusible de type rapide) et/ou  (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

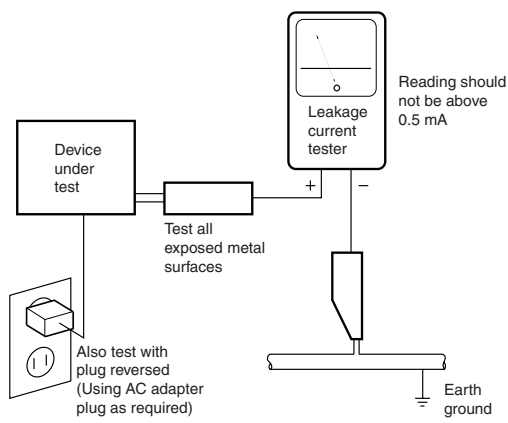
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

## [Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol.  
Please be sure to confirm and follow these procedures.

### 1. Product safety



Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

- ① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

- ② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification (addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

- ③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris.  
Soldering should be finished with the proper quantity. (Refer to the example)

- ④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

- ⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

- ⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs.  
In addition, be sure that there are no pinched wires, etc.

- ⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

- ⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages.  
If you find a damaged power cord, please exchange it with a suitable one.

- ⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

- ⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries.  
Please pay attention to your surroundings and repair safely.

### 2. Adjustments



To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification.  
Adjustments should be performed in accordance with the procedures/instructions described in this manual.

### 3. Lubricants, Glues, and Replacement parts



Use grease and adhesives that are equal to the specified substance.  
Make sure the proper amount is applied.

### 4. Cleaning



For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

### 5. Shipping mode and Shipping screws



To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

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Amplifier section

- **Continuous power output (stereo)**  
Front:  
VSX-415. . . . . 120 W (1kHz, THD 0.2%, 8 Ω) <sup>1</sup>
- **Continuous power output (surround)**  
VSX-415 model:  
Front. . . . . 120 W per channel (1kHz, 10%, 8 Ω)  
Center . . . . . 120 W (1kHz, 10%, 8 Ω)  
Surround . . . . . 120 W per channel  
(1kHz, 10%, 8 Ω)

Audio section

- **Input (Sensitivity/Impedance)**  
CD, DVR/VCR, CD-R/TAPE/MD,  
DVD/LD, TV/SAT . . . . . 200 mV/47 kΩ
- **Frequency response**  
CD, DVR/VCR, CD-R/TAPE/MD, DVD/LD,  
TV/SAT . . . . . 5 Hz to 100,000 Hz ±0 dB
- **Output (Level/Impedance)**  
DVR/VCR REC, CD-R/TAPE/  
MD REC. . . . . 200 mV/2.2 kΩ
- **Tone control**  
Bass. . . . . ± 6 dB (100 Hz)  
Treble. . . . . ± 6 dB (10 kHz)  
Loudness. . . . . +10 dB/+5 dB (100 Hz/10 kHz)  
(at volume level –50 dB)

- **Signal-to-Noise Ratio (IHF, short circuited, A network)**  
CD, DVR/VCR, CD-R/TAPE/MD,  
DVD/LD, TV/SAT. . . . . 96 dB
  - **Signal-to Noise Ratio [EIA, at 1 W (1 kHz)]**  
CD, DVR/VCR, CD-R/TAPE/MD,  
DVD/LD, TV/SAT. . . . . 79 dB
- Video Section**
- **Input (Sensitivity/Impedance)**  
DVR/VCR, DVD/LD, TV/SAT. . . . . 1 Vp-p/75 Ω
  - **Output (Level/Impedance)**  
DVR/VCR, MONITOR OUT. . . . . 1 Vp-p/75 Ω
  - **Frequency response**  
DVR/VCR, DVD/LD,  
TV/SAT ⇒ MONITOR. . . . . 5 Hz to 7 MHz ±0 dB  
Signal-to-Noise Ratio. . . . . 55 dB  
Crosstalk. . . . . 50dB

 **Note**  
1 Continuous average power output of 110 watts\* per channel, min., at 8ohms, from 20 Hz to 20,000 Hz with no more than 0.2%\*\* total harmonic distortion (front).  
\* Measured pursuant to the Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifiers.  
\*\* Measured by Audio Spectrum Analyzer.

- **FM Tuner Section**

Frequency Range. . . . . 87.5 MHz to 108 MHz

Usable Sensitivity . . . . . Mono:13.2 dBf, IHF  
(1.3  $\mu$ V/ 75  $\Omega$ )

50 dB Quieting Sensitivity. . . . . Mono: 20.2 dB  
Stereo: 38.6 dBf

Signal-to-Noise Ratio. . . Mono: 73 dB (at 85 dBf)  
Stereo: 70 dB (at 85 dBf)

Distortion . . . . . Stereo: 0.5 % (1 kHz)

Alternate Channel Selectivity. . . . . 60 dB  
(400 kHz)

Stereo Separation . . . . . 40 dB (1 kHz)

Frequency Response. . . . . 30 Hz to 15 kHz  
( $\pm 1$  dB)

Antenna Input (DIN) . . . . . 75  $\Omega$  unbalanced

## AM Tuner Section

Frequency Range. . . . . 530 kHz to 1,700 kHz

Sensitivity (IHF, Loop antenna). . . . . 350  $\mu$ V/m

Signal-to-Noise Ratio.....50 dB

Antenna ..... Loop antenna

## Miscellaneous

Power requirements ..... AC 120V / 60Hz

Power consumption:

VSX-415.....260 W / 340 VA

In standby.....0.5 W

Dimensions:

VSX-415. . . 16<sup>9</sup>/<sub>16</sub> (W) x 6<sup>1</sup>/<sub>4</sub> (H) x 15<sup>9</sup>/<sub>16</sub> (D) in.  
420 (W) x 158 (H) x 394.5 (D) mm

Weight (without package)

VSX-415..... 18.1 lb (8.5 kg)

## Furnished Parts

AM loop antenna.....1

FM wire antenna .....1

Dry cell batteries (AA size IEC R6) .....2

Remote control .....1

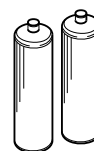
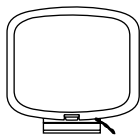
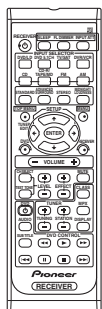
Warranty Card . . . . . 1

## Operating instructions


Manufactured under license from Dolby Laboratories. "Dolby", "Pro Logic", "Surround EX", and the double-D symbol are trademarks of Dolby Laboratories.

"DTS", "DTS-ES Extended Surround" and "Neo:6" are trademarks of Digital Theater Systems, Inc.

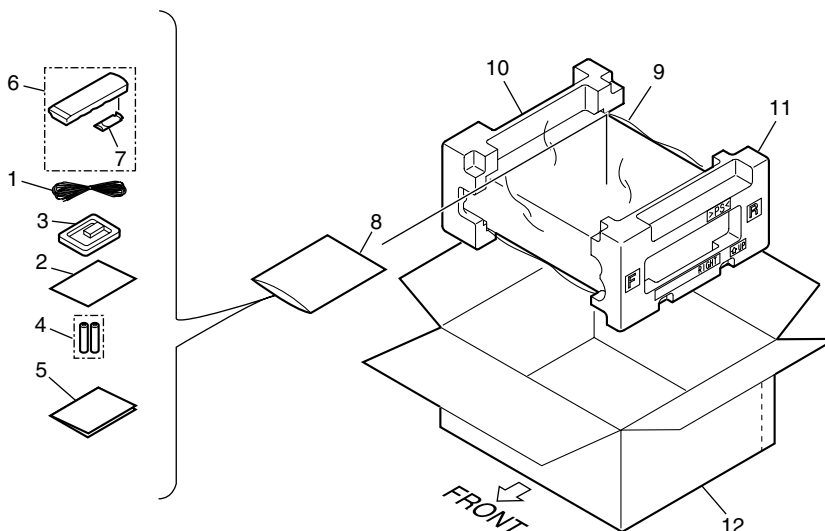
## ■ Accessories



## 2. EXPLODED VIEWS AND PARTS LIST

- NOTES:
- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
  - The  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
  - Screws adjacent to ▼ mark on product are used for disassembly.
  - For the applying amount of lubricants or glue, follow the instructions in this manual.  
(In the case of no amount instructions, apply as you think it appropriate.)

### 2.1 PACKING



#### (1) PACKING SECTION PARTS LIST

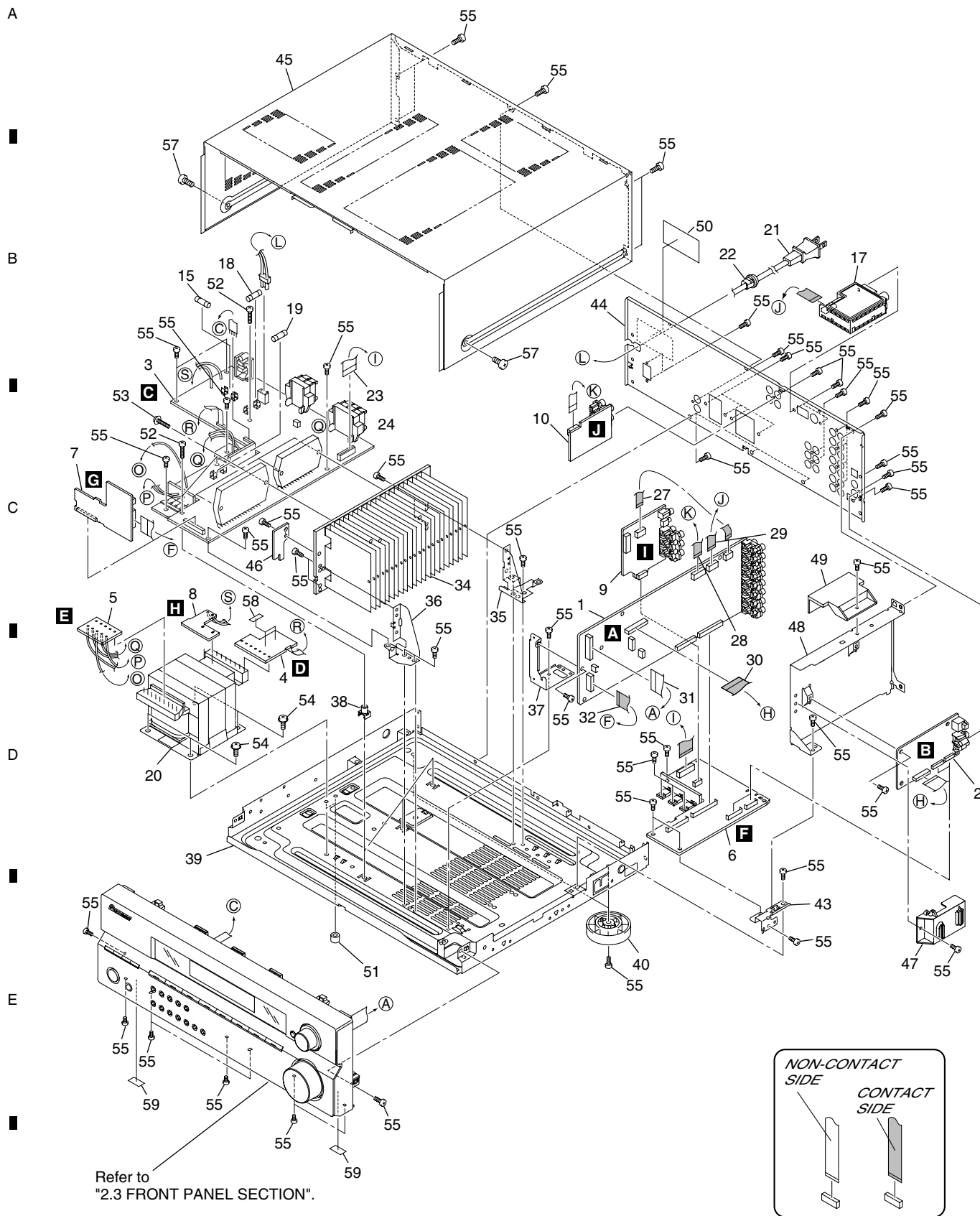
Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	FM wire antenna	ADH7030	6	Remote Control Unit	XXD3067
NSP 2	Warranty Card	ARY7045	7	Battery Cover	XZN3139
3	AM loop antenna	ATB7013	NSP 8	Literature Bag	AHG1180
NSP 4	Dry cell batteries (AA/R6)	VEM1031	9	Packing Sheet	AHG7069
5	Operating instructions (English/French)	XRE3090	10	Left Pad V2	XHA3149
			11	Right Pad V2	XHA3150
			12	Packing Case	See Contrast table(2)

#### (2) CONTRAST TABLE

VSX-415-K/KUCXJ and VSX-415-S/KUCXJ are constructed the same except for the following :

Mark	No.	Description	VSX-415-K/KUCXJ	VSX-415-S/KUCXJ
	12	Packing Case	XHD3476	XHD3477

## 2.2 EXTERIOR





## (1) EXTERIOR SECTION PARTS LIST

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	MAIN Assy	XWK3148	31	J31 17P F.F.C/30V	XDD3118
2	DSP Assy	AWX8418	32	J35 19P F.F.C/30V	XDD3101
3	AMP & PRIMARY Assy	XWZ3894	33	•••••	
4	TRANS2 Assy	XWZ3808	NSP 34	Heatsink 0.4	ANH7109
5	TRANS3 Assy	XWZ3812	35	Heat Sink Angle R	ANG7252
6	REGULATOR Assy	XWZ3796	36	Heat Sink Angle F	ANG7251
7	AMP INPUT Assy	XWZ3800	37	PCB Angle R5	XNG3073
8	TRANS1 Assy	XWZ3805	38	PCB Mold	AMR2533
9	VIDEO Assy	XWZ3903	NSP 39	Under Base R6	XNA3012
10	5.1CH Assy	XWZ3914	40	Insulator	AMR7198
11	•••••		41	•••••	
12	•••••		42	•••••	
13	•••••		43	REG Support R6	XNG3093
14	•••••		44	Rear Panel	XNC3332
⚠ 15	FU2 Fuse (8A)	REK1086	45	Bonnet	See Contrast table(2)
16	•••••		NSP 46	HOLDER Assy	XWZ3819
17	FM/AM TUNER UNIT	AXX7172	47	FFC Holder R6	XMR3072
⚠ 18	FU1 Fuse (10A)	REK1087	48	Shield A R6	XNG3068
⚠ 19	FU701 Fuse (10A)	REK1087	49	FFC Cover R6	XMR3060
⚠ 20	T1 Power Transformer	XTS3084	NSP 50	N Label	See Contrast table(2)
⚠ 21	AC Power Cord	ADG7024	NSP 51	Spacer	AEB7092
22	Cord Stopper	CM-22C	52	Screw	BBZ30P200FTC
23	J36 23P F.F.C/30V	XDD3102	53	Screw 3x23	XBA3012
24	•••••		54	Screw	FBT40P080FNI
25	•••••		55	Screw	BBZ30P080FTC
26	•••••		56	•••••	
27	J33 13P F.F.C/30V	XDD3150	57	Screw	See Contrast table(2)
28	J48 8P F.F.C/30V	XDD3151	NSP 58	ICP Label	XAX3319
29	J34 11P F.F.C/30V	XDD3149	59	Rubber Sheet	AEB1111
30	J43 19P F.F.C/30V	XDD3126			

## (2) CONTRAST TABLE

VSX-415-K/KUCXJ and VSX-415-S/KUCXJ are constructed the same except for the following :

Mark	No.	Description	VSX-415-K/KUCXJ	VSX-415-S/KUCXJ
NSP	45	Bonnet K V1	XZN3148	Not used
	45	Bonnet S V1	Not used	XZN3149
	50	N Label 415K/KU	XAL3215	Not used
	57	Screw	FBT40P080FTB	FBT40P080FNI

1 2 3 4

# 2.3 FRONT PANEL

A

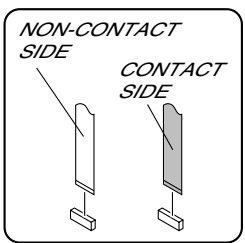
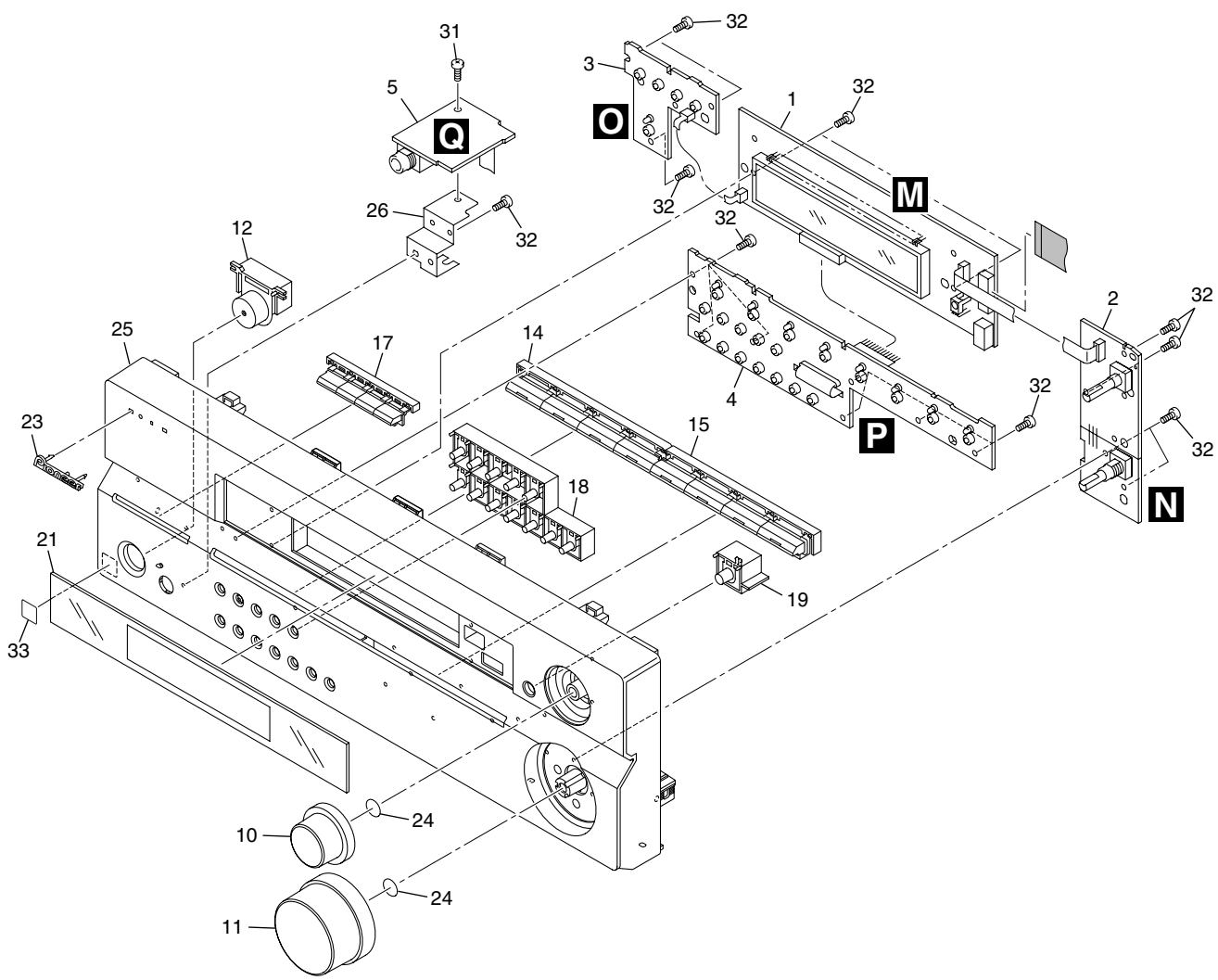
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## (1) FRONT PANEL SECTION PARTS LIST

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	FRONT DISPLAY ASSY	XWZ3908	21	D Panel 415 B	XAK3480
2	R. ENCODER Assy	XWZ3920	22	•••••	
3	P. SW & FUNC. KEY Assy	XWZ3917	23	Pioneer Badge B	See Contrast table(2)
4	FRONT KEY Assy	XWZ3912	NSP 24	C Ring DIM 8.1	XBH3016
5	H.P. Assy	XWZ3923	25	FRT Panel	See Contrast table(2)
6	•••••		26	Earth Plate HP V2	XNG3131
7	•••••		27	•••••	
8	•••••		28	•••••	
9	•••••		29	•••••	
10	JOG Knob	See Contrast table(2)	30	•••••	
11	VOL Knob	See Contrast table(2)	31	Screw	BBZ30P080FTC
12	Standby BTN	See Contrast table(2)	32	Screw	BPZ30P100FTC
13	•••••		NSP 33	Energy Star Label	AAX8022
14	FUNC BTN L	See Contrast table(2)			
15	FUNC BTN R	See Contrast table(2)			
16	•••••				
17	TUNER BTN	See Contrast table(2)			
18	Sub BTN	See Contrast table(2)			
19	JOG BUTTON	See Contrast table(2)			
20	•••••				

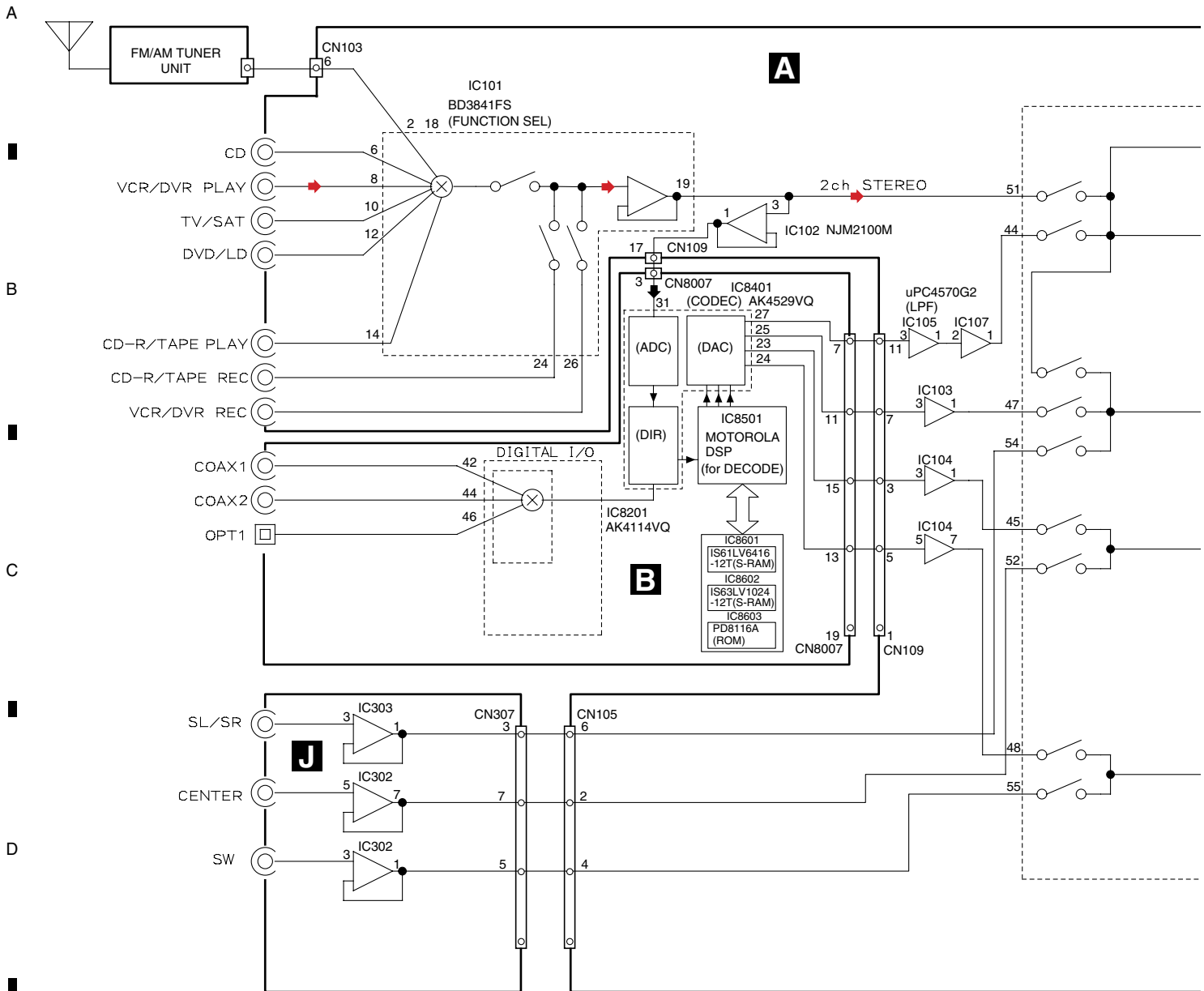
## (2) CONTRAST TABLE

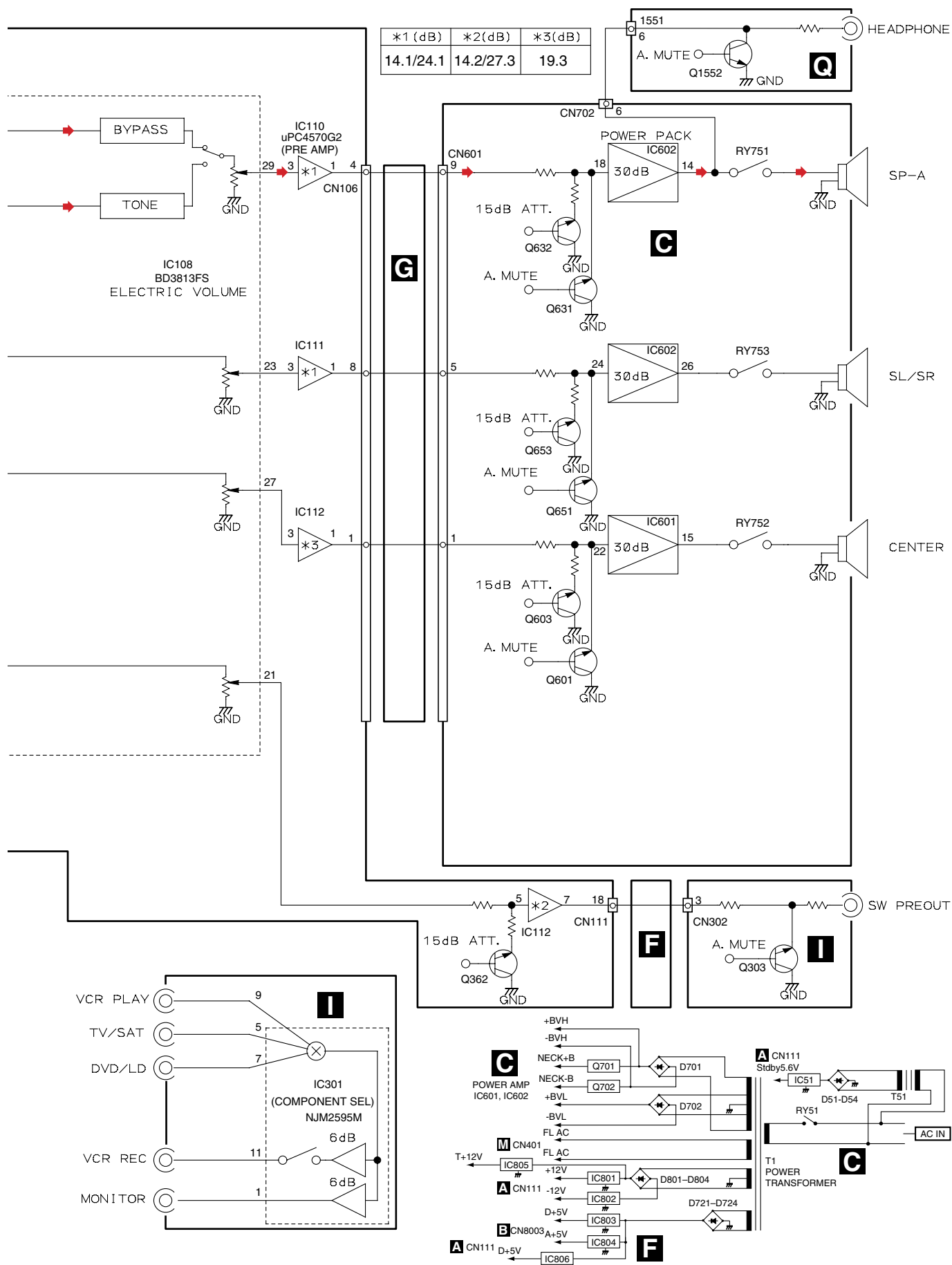
VSX-415-K/KUCXJ and VSX-415-S/KUCXJ are constructed the same except for the following :

Mark	No.	Description	VSX-415-K/KUCXJ	VSX-415-S/KUCXJ
	10	JOG Knob V1K	XAB3038	Not used
	10	JOG Knob V1S	Not used	XAB3042
	11	VOL Knob V1K	XAB3039	Not used
	11	VOL Knob V1S	Not used	XAB3043
	12	Standby BTN 515K	XAD3202	Not used
	12	Standby BTN 515S	Not used	XAD3203
	14	FUNC BTN 515K L	XAD3206	Not used
	14	FUNC BTN 515S L	Not used	XAD3210
	15	FUNC BTN 515K R	XAD3207	Not used
	15	FUNC BTN 515S R	Not used	XAD3211
	17	Tuner BTN V2K	XAD3192	Not used
	17	Tuner BTN V2S	Not used	XAD3193
	18	Sub BTN V2K	XAD3198	Not used
	18	Sub BTN V2S	Not used	XAD3199
	19	Jog Button V2K	XAD3204	Not used
	19	Jog Button V2S	Not used	XAD3205
	23	Pioneer Badge	XAM3006	VAM1129
	25	FRT Panel 415K	XMB3179	Not used
	25	FRT Panel 415S	Not used	XMB3180

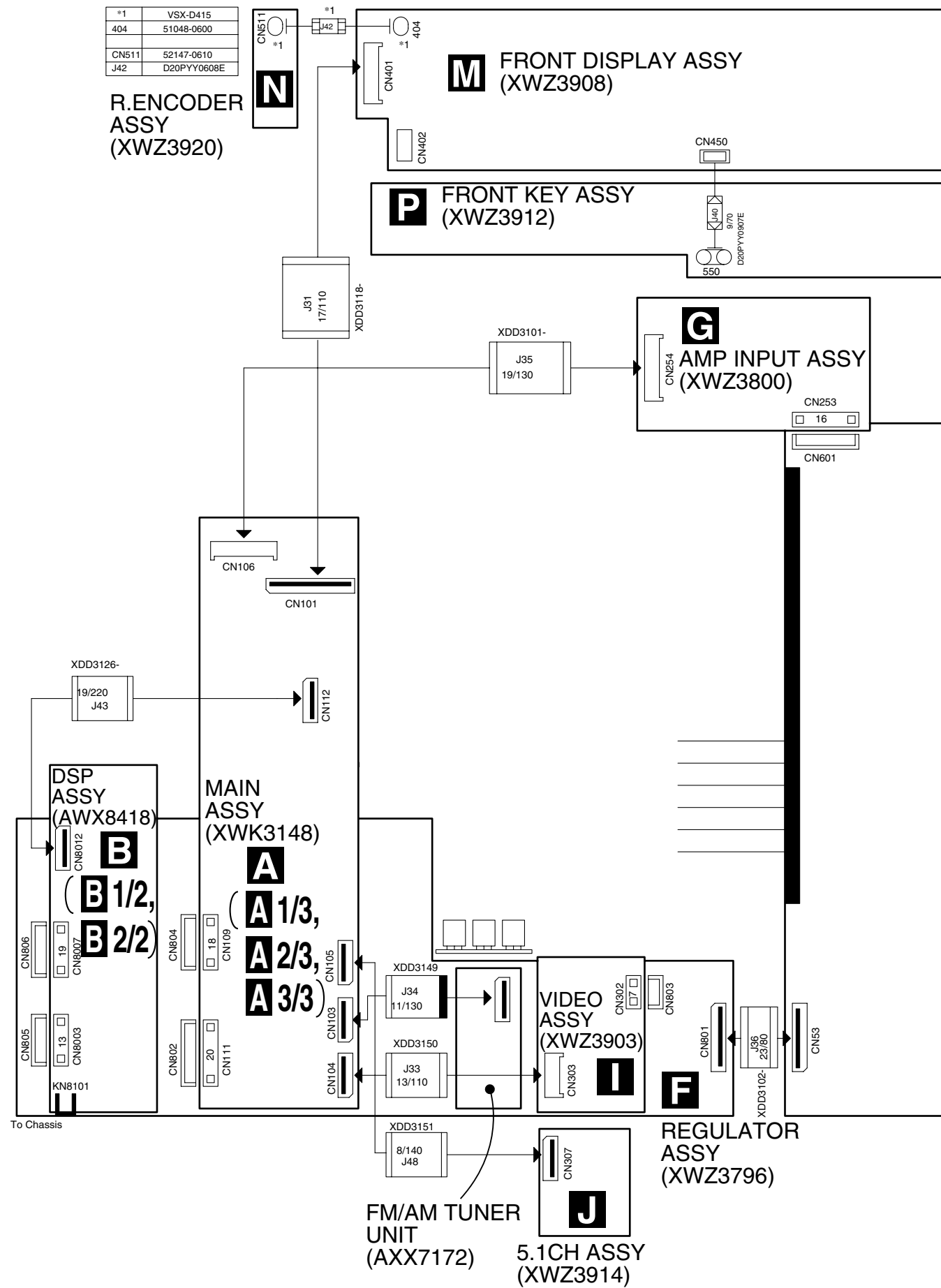
# 3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

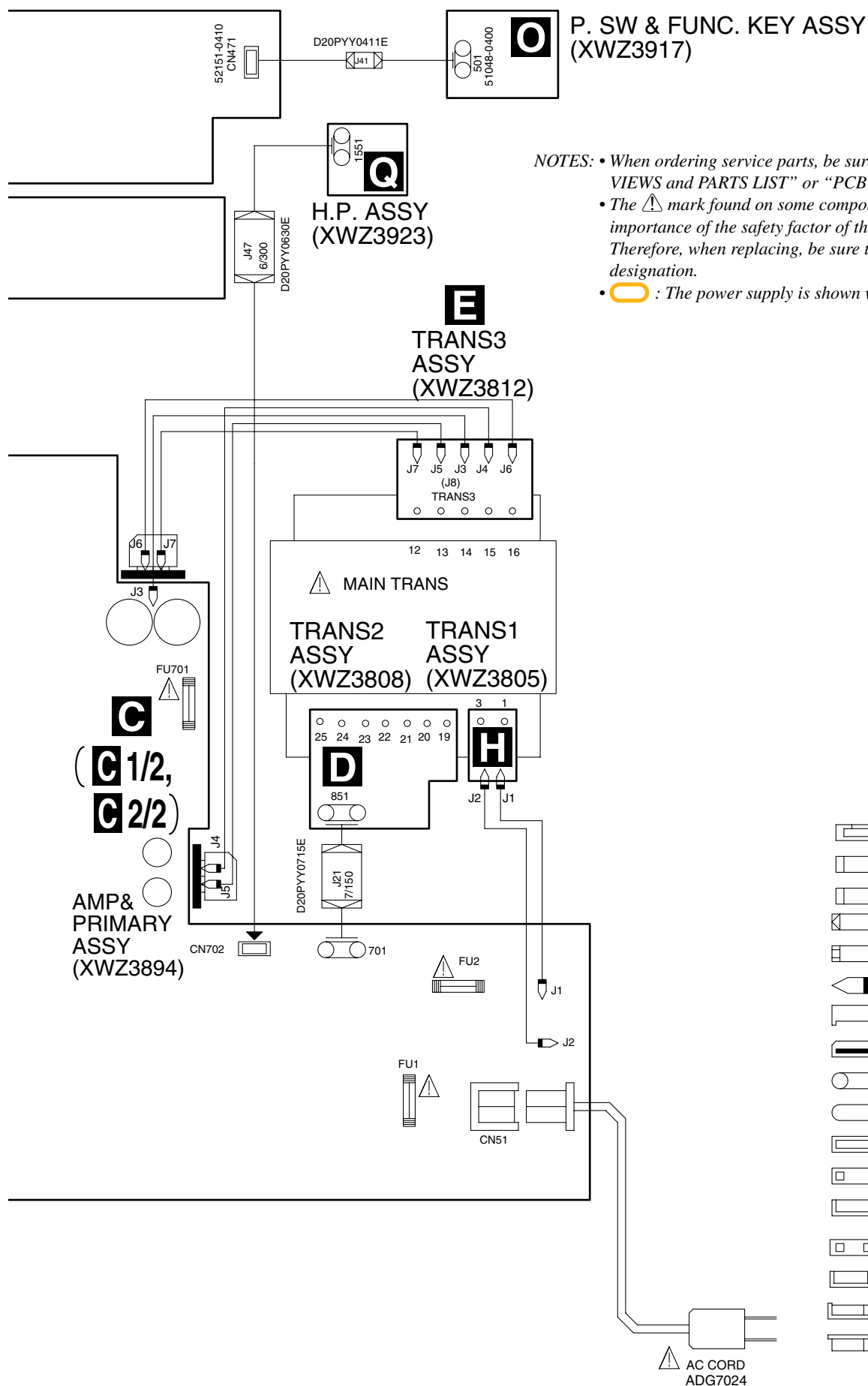
## 3.1 BLOCK DIAGRAM





3.2 OVERALL WIRING CONNECTION DIAGRAM





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### 3.3 MAIN ASSY (1/3)

A

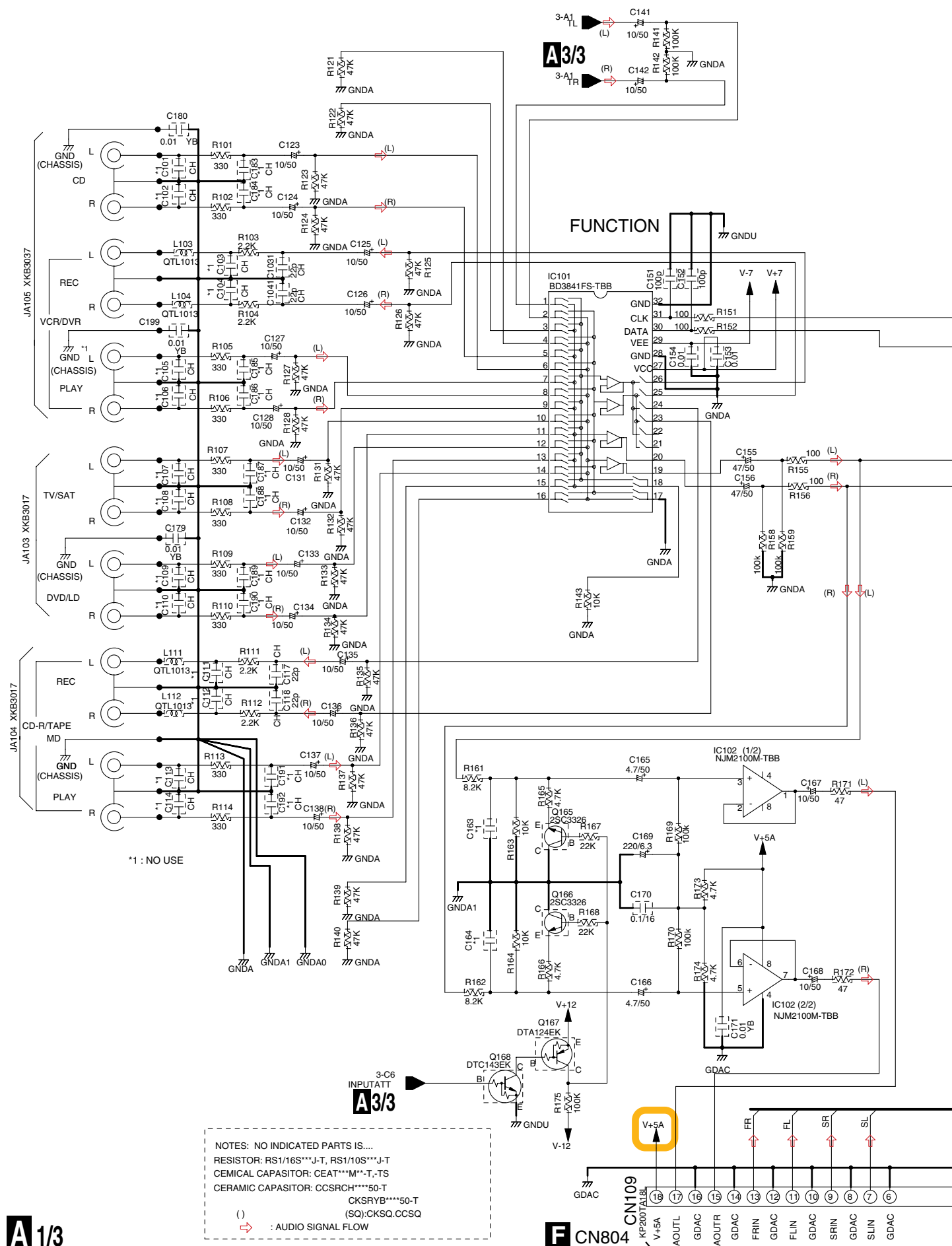
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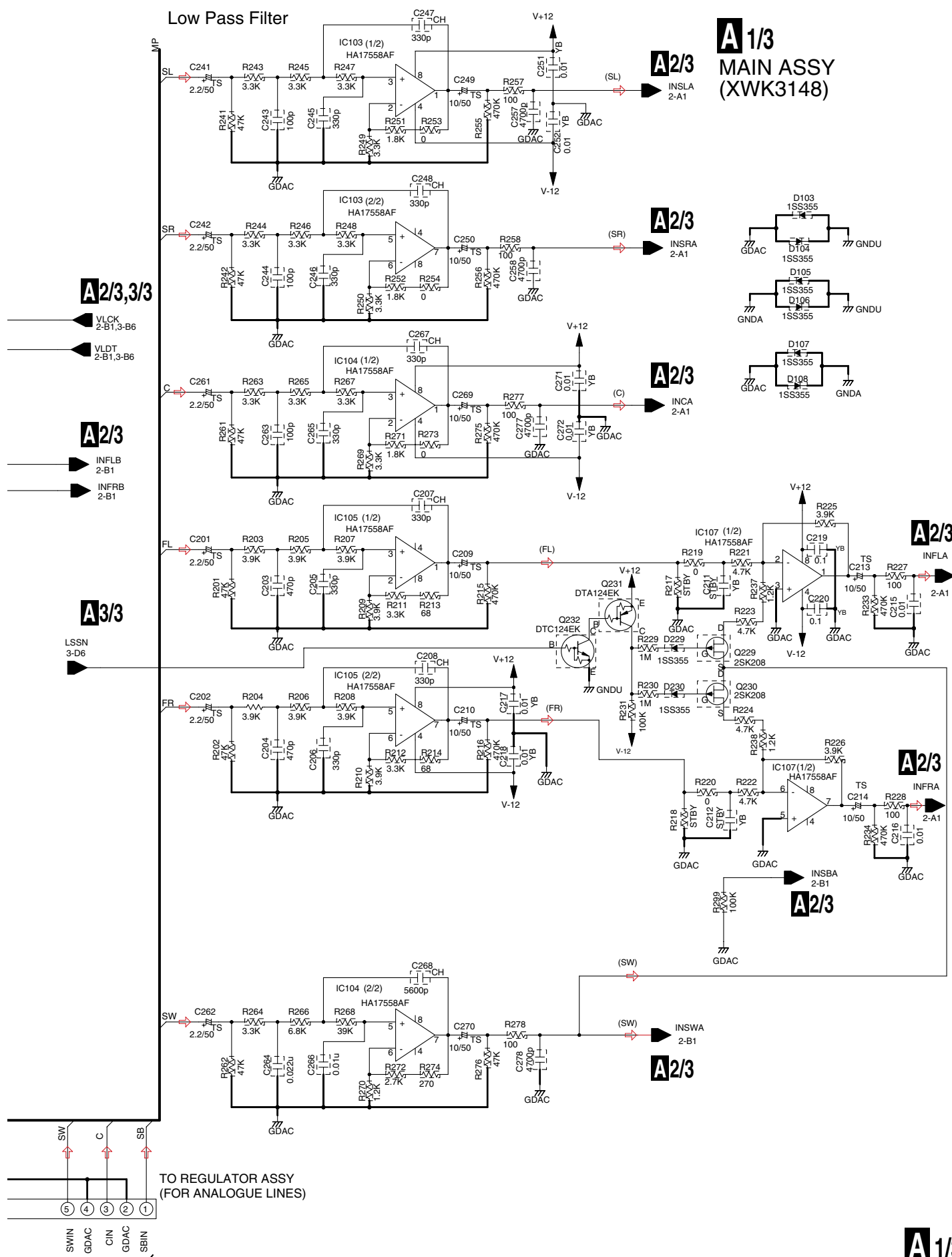


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F CN804

VSX-415-K





## 4



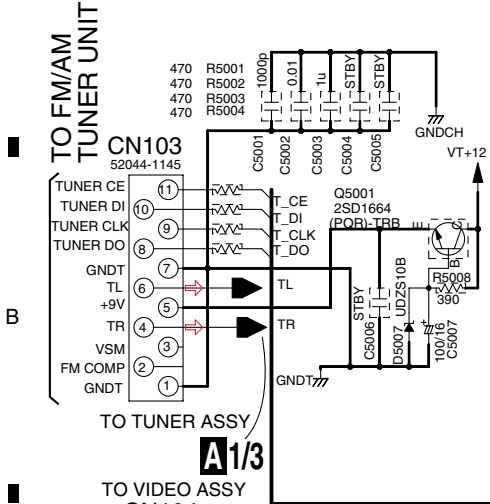
VSX-415-K



**A**  $\frac{2}{3}$

# 3.5 MAIN ASSY (3/3)

A



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**A** 3/3

20

- NOTE**
- RESISTORS**  
Unit: k-kΩ, M-MΩ or Ω unless otherwise noted.  
Rated power: 1/10W unless otherwise noted.  
Tolerance: (J) ± 5% unless otherwise noted.
  - CAPACITORS**  
Unit: p-pF or μF unless otherwise noted.  
Ratings: Capacity(μF)/Voltage(V) unless otherwise noted.  
Rated Voltage: 50V expect for electrolytic capacitors.
- ➡ : AUDIO SIGNAL FLOW

*1	R9023	R9024	R9025	R9026
VSX-415/KUCXJ	-	4.7K	0	6.2K

**F** CN802

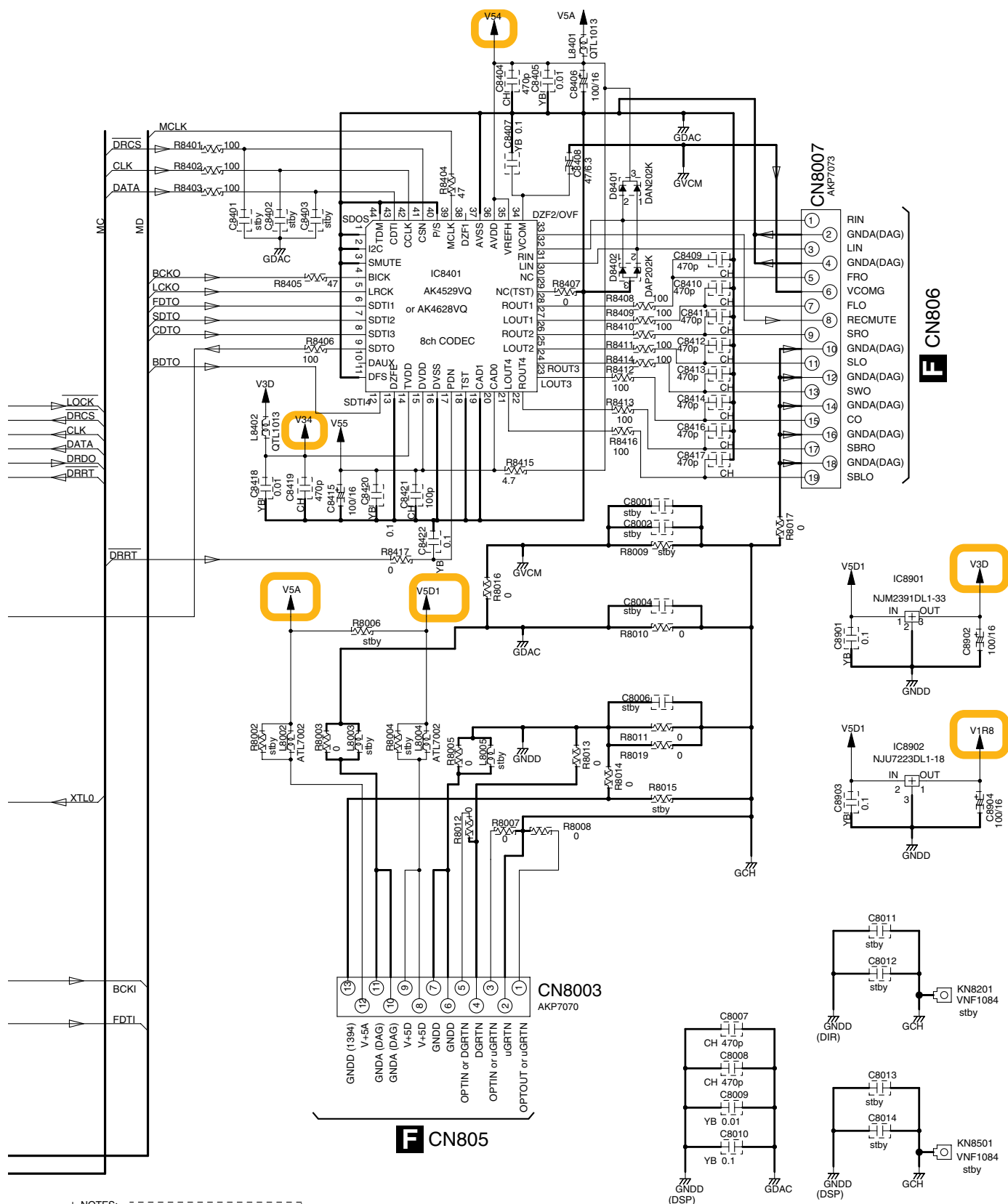
TO REGULATOR ASSY (FOR FRONT CONTROL)

VSX-415-K



△





NOTES:

NO INDICATED PARTS IS...



CCSRCH\*\*\*\*50-T

CKSRYB\*\*\*50-T

CKSBYB333K16-T  
CKSBYB104K16-T

CKSRYB105K6R3-T

CEV\*\*\*M\*\*-T

1992

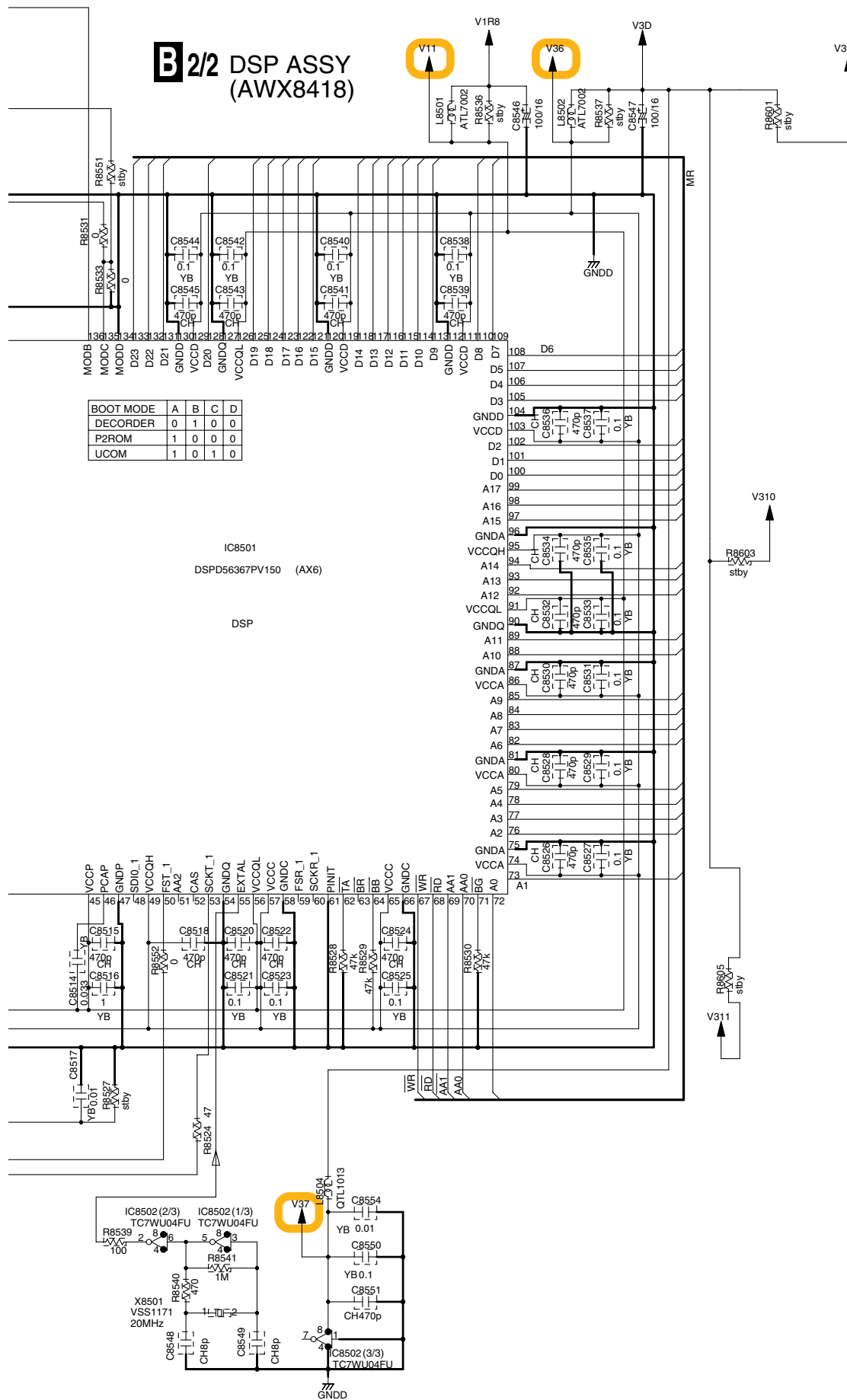
UNLESS OTHERWISE NOTED

△





**B 2/2** DSP ASSY  
(AWX8418)



A

B

C

D

E

F

### 3.8 AMP & PRIMARY (1/2),TRANS2 and TRANS3 ASSYS

#### C 1/2 AMP&PRIMARY ASSY (XWZ3894)

A

B

C

D

E

F

CN601  
KM200TA16

C

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

GNDA

FR

GNDA

SL

GNDA

SR

GNDA

FL

A.MUTE

ATT.

Brd Det/ 6ohm

OL

DC DET.

NECK

GNDA

G CN253

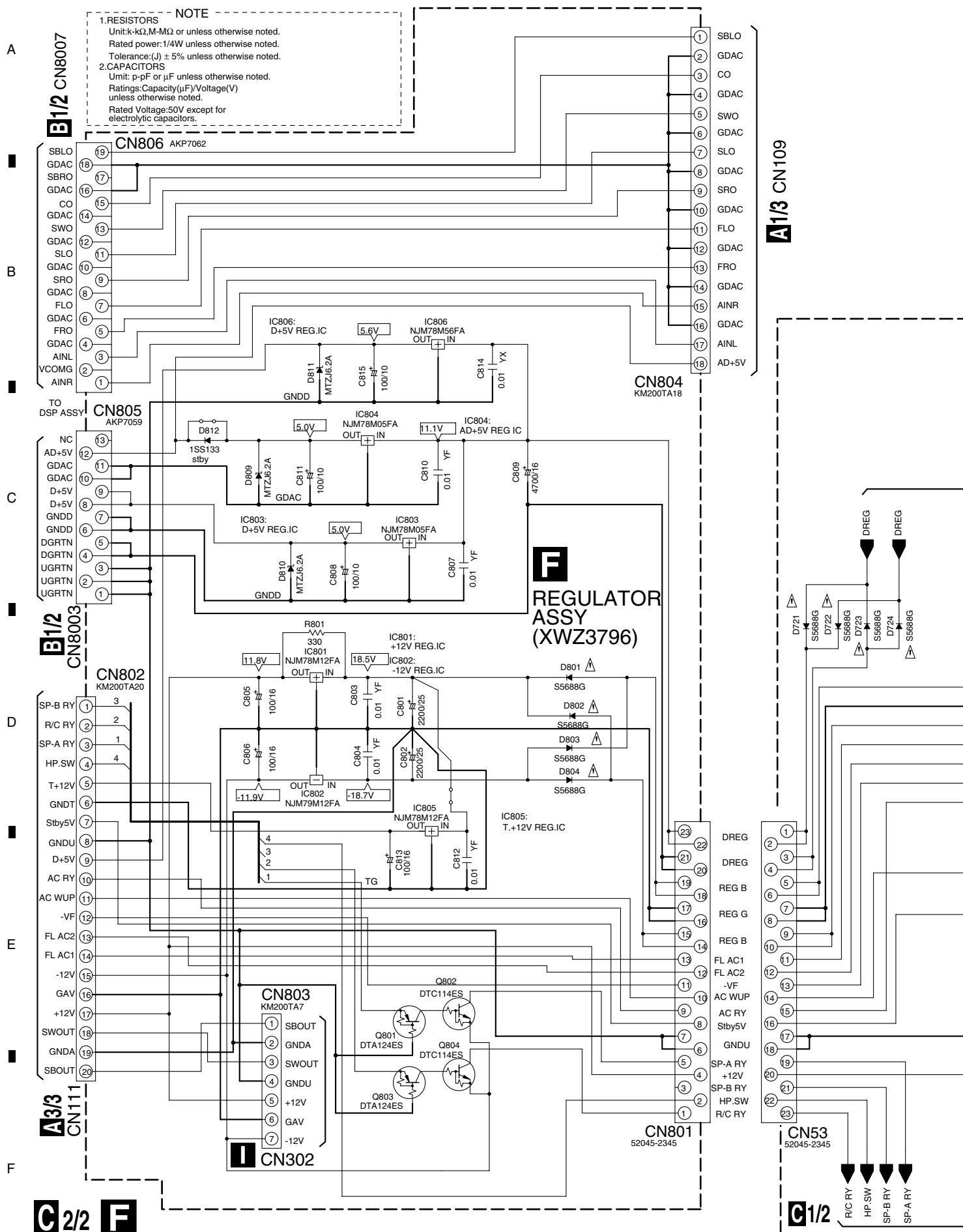
- NOTE**
- RESISTORS**  
Unit:k- $\Omega$ ,M-M $\Omega$  or unless otherwise noted.  
Rated power:1/4W unless otherwise noted.  
Tolerance:(J)  $\pm$  5% unless otherwise noted.
  - CAPACITORS**  
Unit: p-pF or  $\mu$ F unless otherwise noted.  
Ratings:Capacity( $\mu$ F)/Voltage(V) unless otherwise noted.  
Rated Voltage:50V except for electrolytic capacitors.
  - DIODES**  
Indicated in 1SS133-T

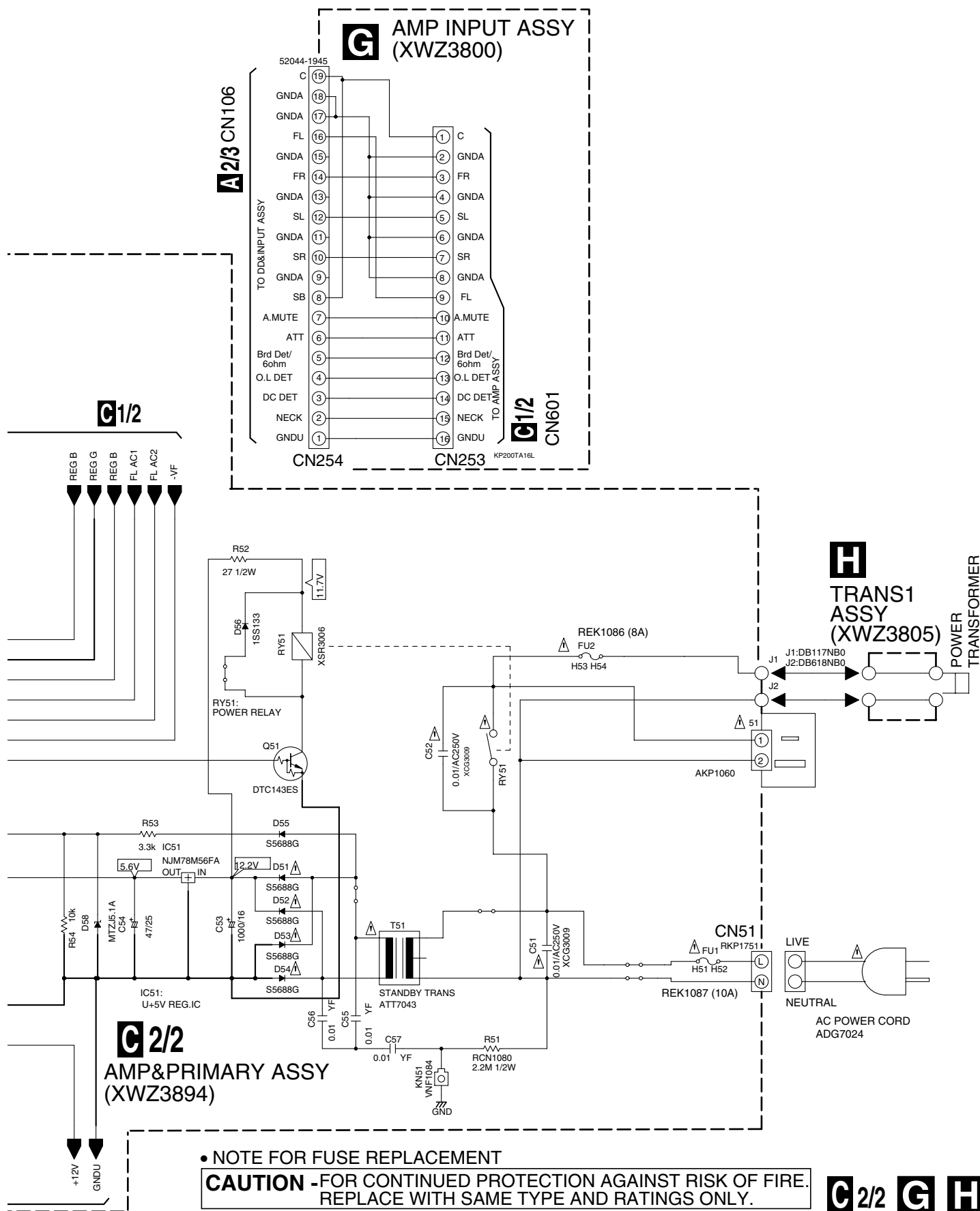
VSX-415-K

C2/2

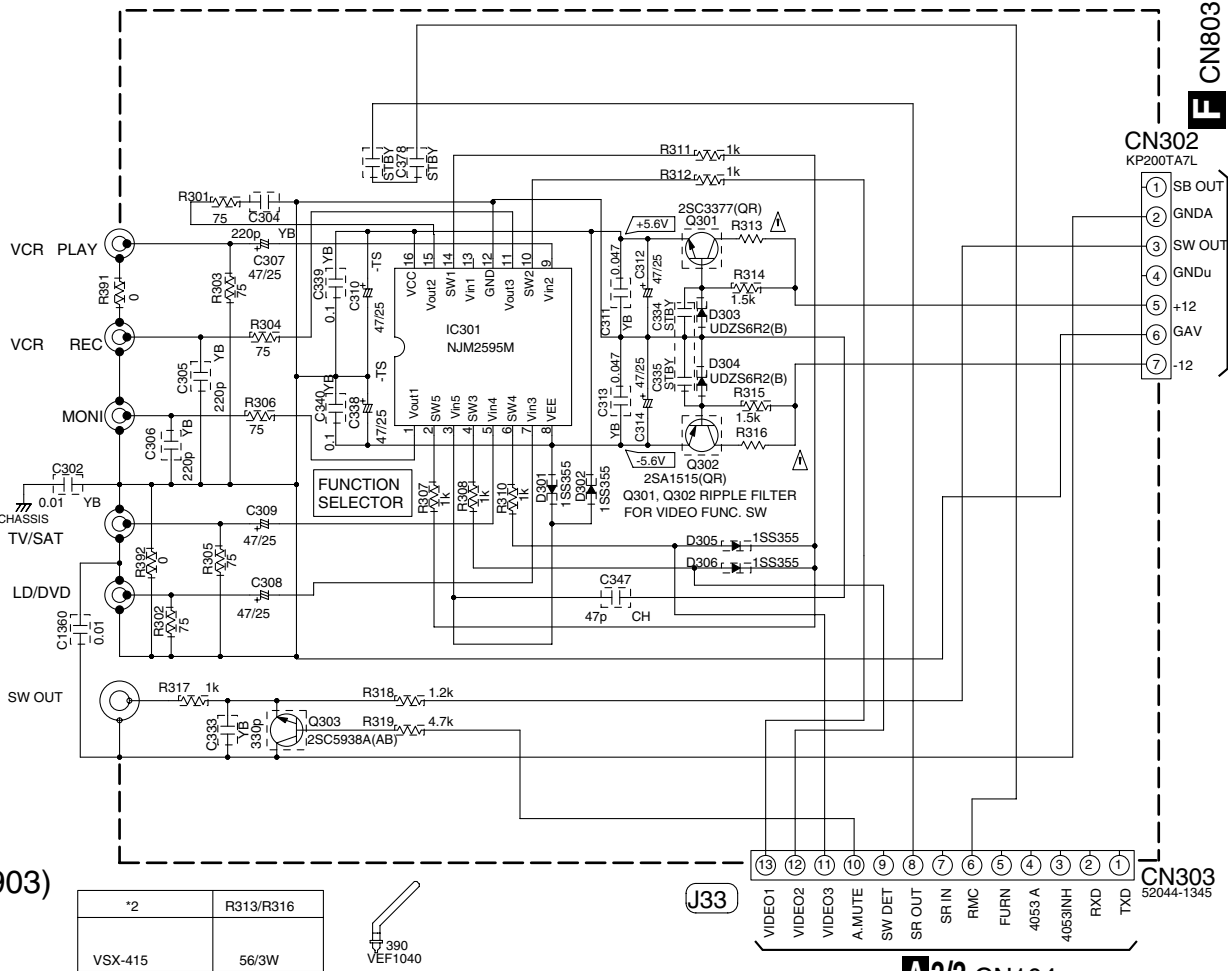


### 3.9 AMP & PRIMARY (2/2), REGULATOR, AMP INPUT and TRANS1 ASSYS





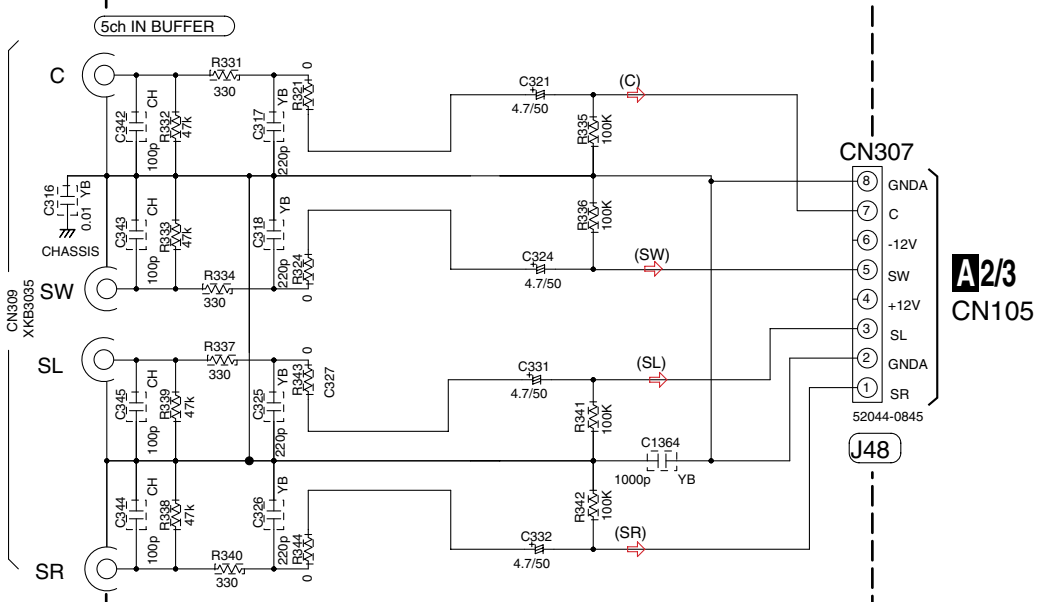
# 3.10 VIDEO and 5.1CH ASSYS



*2	R313/R316
VSX-415	56/3W



## 5.1CH ASSY (XWZ3914)



**1.RESISTORS**  
Unit: k-Ω, M-MΩ or Ω unless otherwise noted.  
Rated power: 1/10W unless otherwise noted.  
Tolerance: (J) ± 5% unless otherwise noted.

**2.CAPACITORS**  
Unit: p-pF or μF unless otherwise noted.  
Ratings: Capacity(μF)/Voltage(V) unless otherwise noted.  
Rated Voltage: 50V expect for electrolytic capacitors.

VSX-415-K

■

5

■

6

■

7

■

8

■

A

■

B

■

C

■

D

■

E

■

F

■

5

■

6

■

7

■

8

■

VSX-415-K

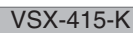






## 4

**Q**


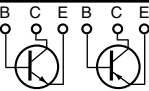

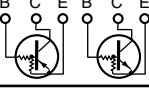

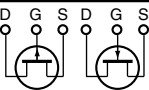

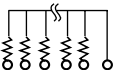




5678

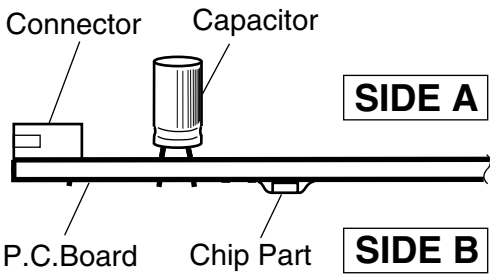
# 4. PCB CONNECTION DIAGRAM

## NOTE FOR PCB DIAGRAMS :

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

3. The parts mounted on this PCB include all necessary parts for several destinations.  
For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.



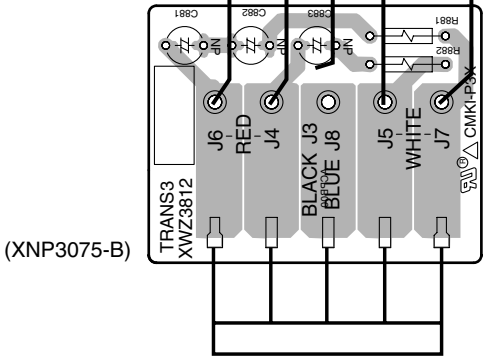
4.1 TRANS2,TRANS3 and TRANS1 ASSYS

SIDE A

SIDE A

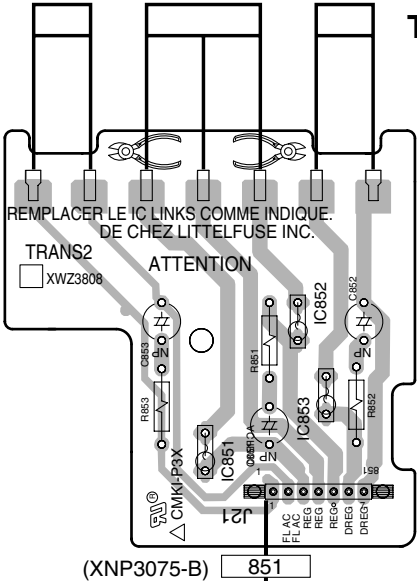
TRANS3 ASSY

J6 J4 J3 J5 J7



POWER TRANSFORMER

TRANS2 ASSY



J1 J2

TRANS1 ASSY

701

DEH

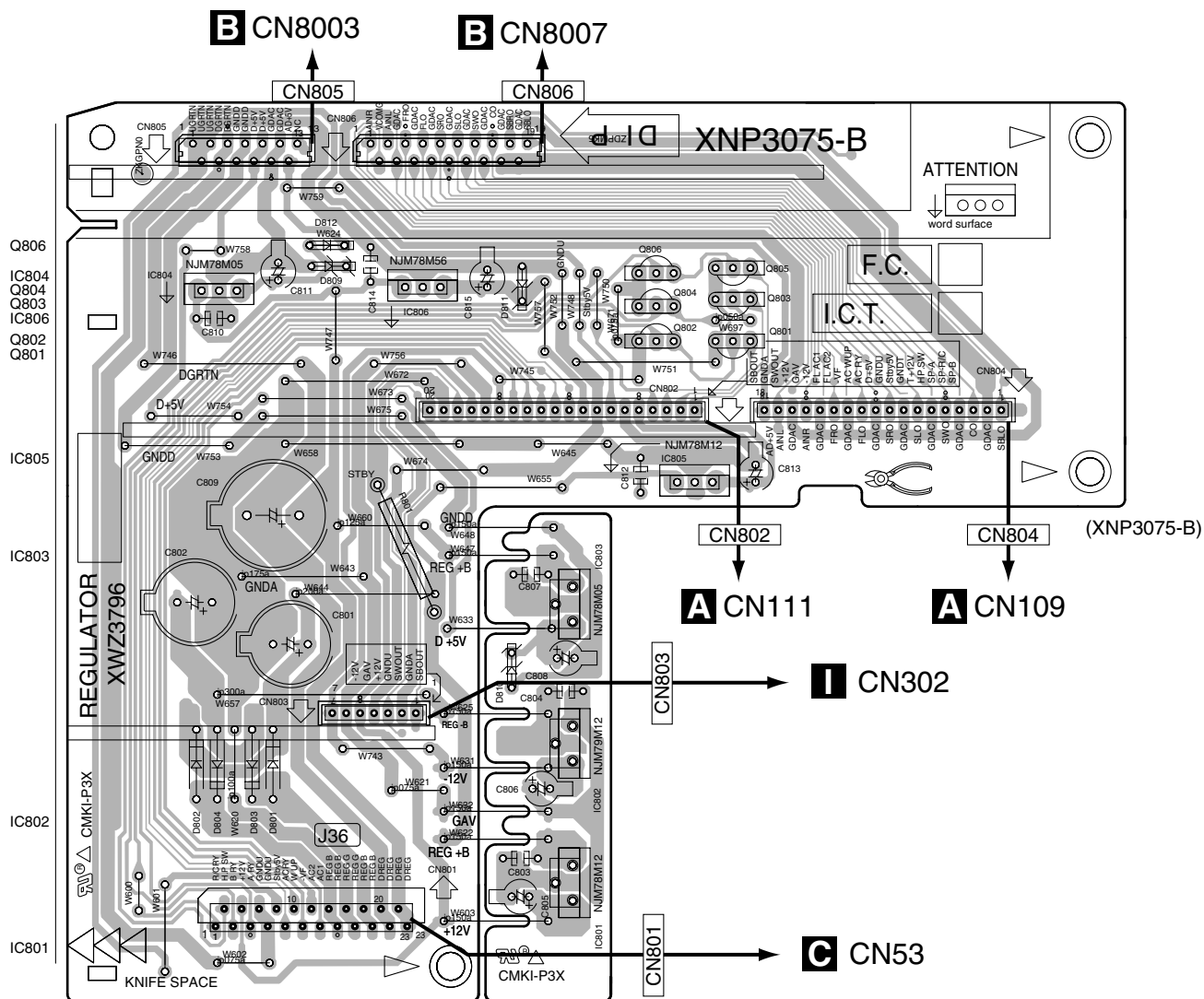
DEH

## 4.2 REGULATOR ASSY

**SIDE A**

**SIDE A**

### **F** REGULATOR ASSY



### 4.3 MAIN ASSY

**SIDE A**

1 2 3 4

A

B

C

D

E

F

**M** CN401

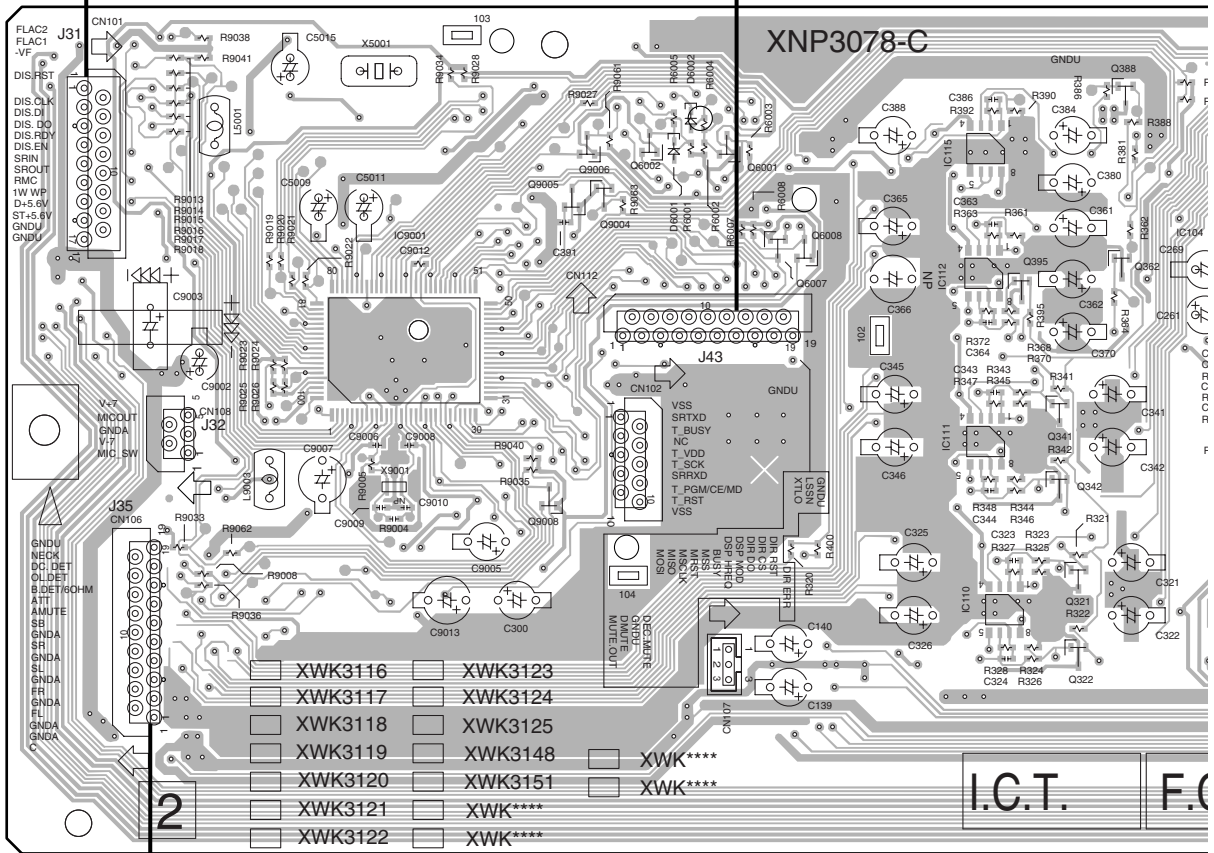
**B** CN8012

**A** MAIN ASSY

CN101

CN112

Q388  
Q5001  
Q6001  
Q6002  
Q9006  
Q9005  
IC115  
IC9001  
Q9004  
IC103  
Q6008  
IC104  
Q395  
Q362  
Q6007  
IC108  
IC111  
Q341  
IC105  
Q342  
IC102  
IC106  
Q9008  
IC110  
Q165  
Q166  
Q321  
Q322



CN106

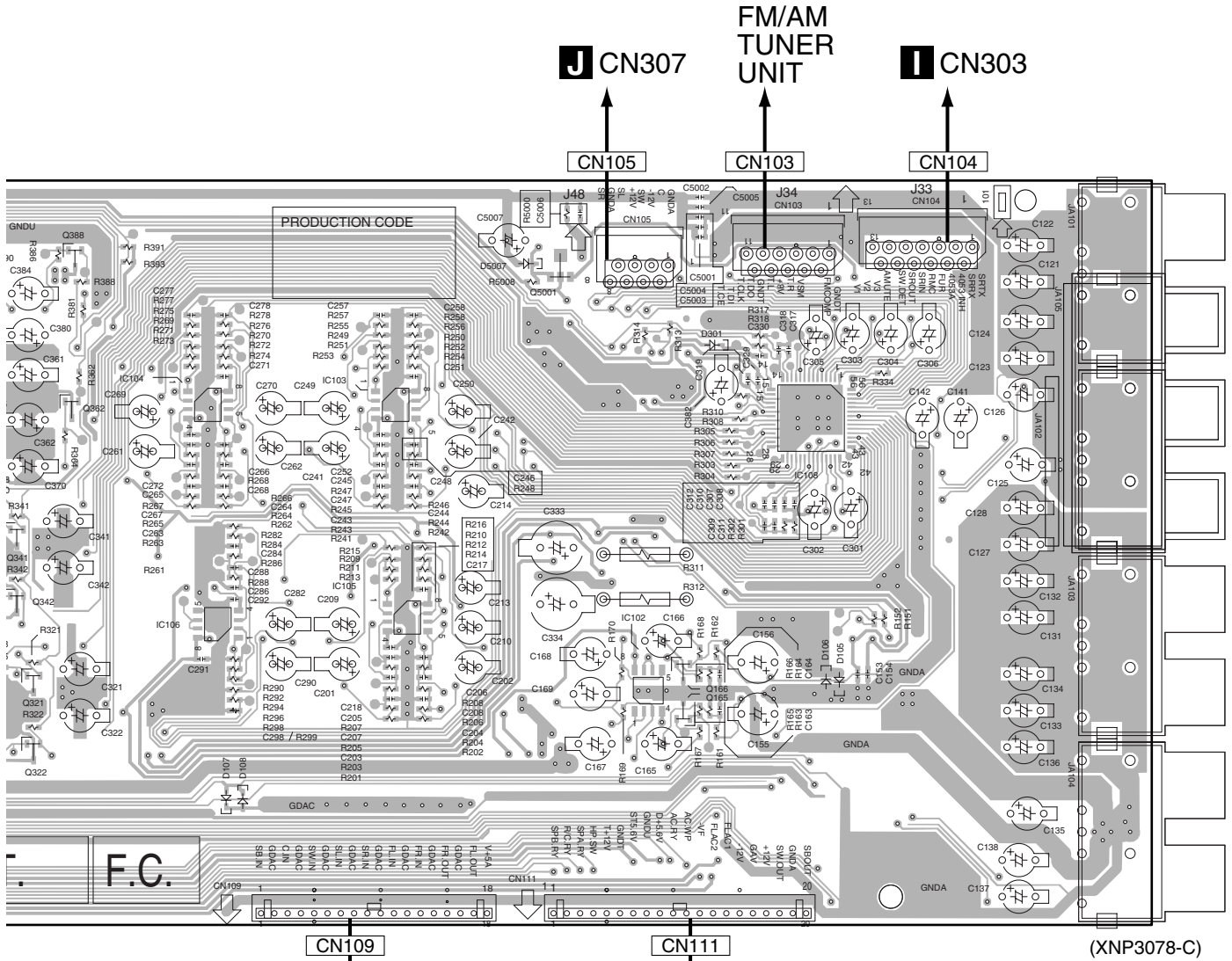
**G** CN254

XWK3116	XWK3123
XWK3117	XWK3124
XWK3118	XWK3125
XWK3119	XWK3148
XWK3120	XWK3151
XWK3121	XWK****
XWK3122	XWK****

I.C.T. F.C

1 2 3 4

**A**



**F** CN804

**F** CN802

(XNP3078-C)

SIDE B

A

B

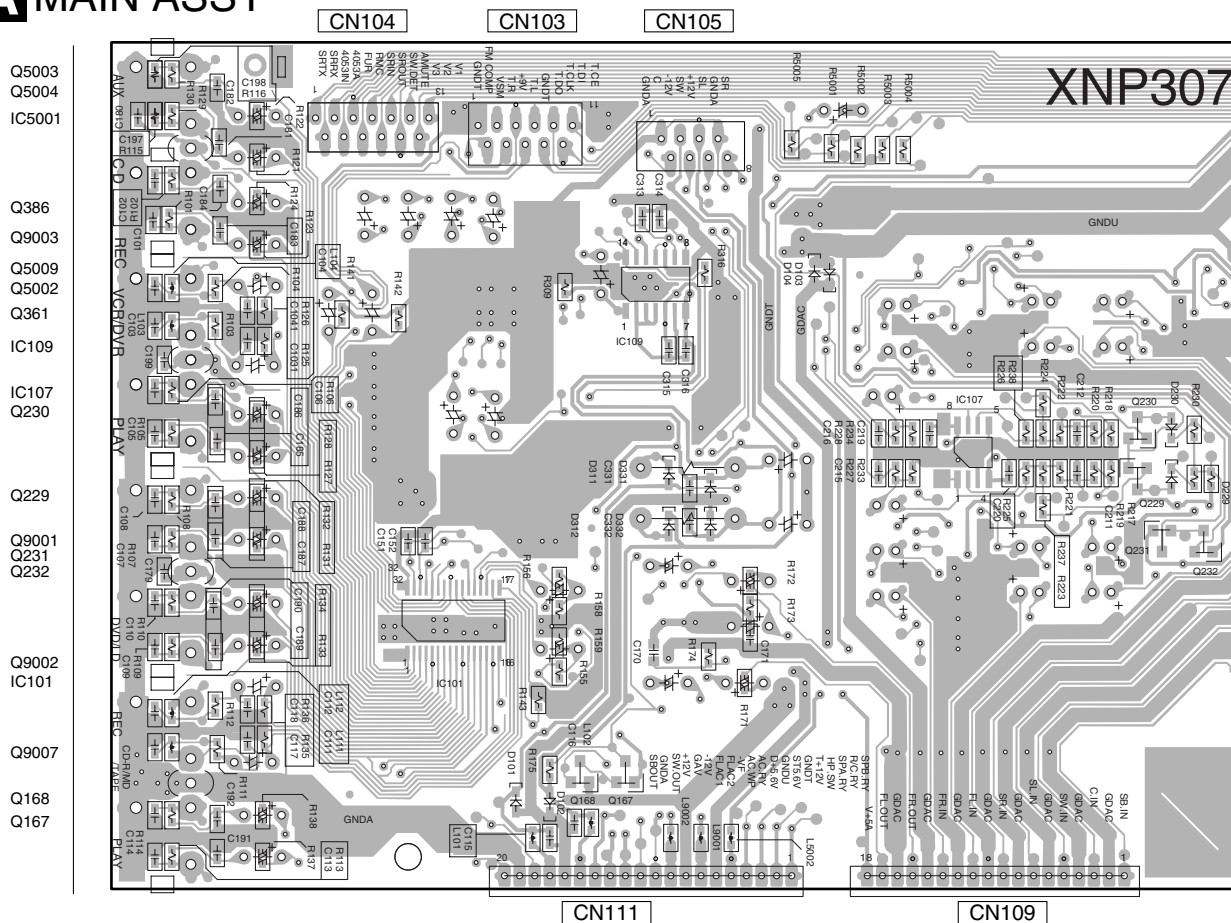
C

D

E

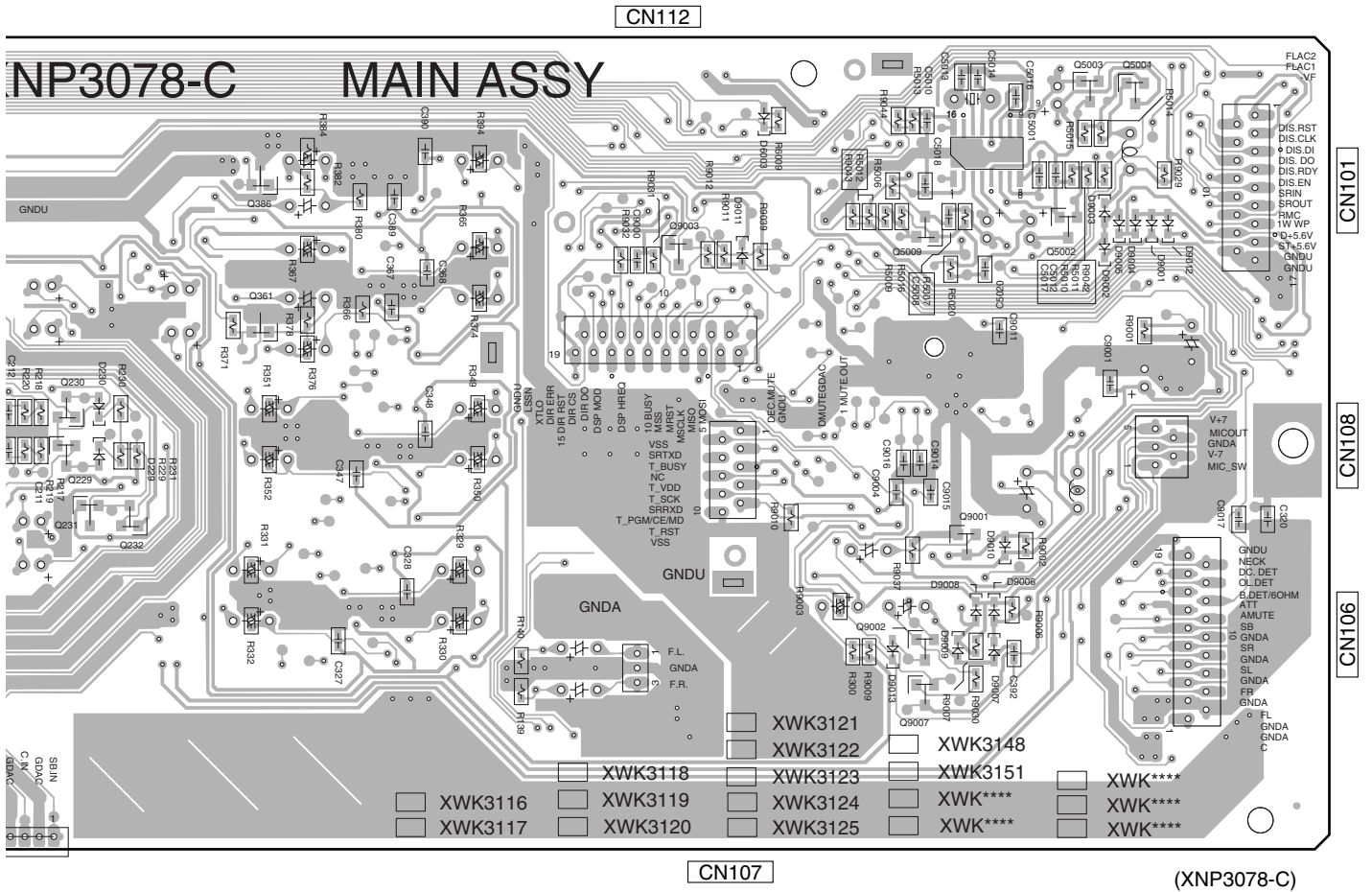
F

A MAIN ASSY



A

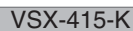




(XNP3078-C)

△

4





**SIDE A**

## G AMP INPUT ASSY

## CAMP&PRIMARY ASSY

**A** CN106

**F** J3

EJ

**E** J6 

**F** J7 ◀

RISK OF  
FIRE-  
REPLACE  
FUSE AS  
MARKED.

IC702 Q704  
Q702  
Q722  
Q703  
Q721

IC701

Q701

Q655

Q602

Q604

Q633

Q606  
Q605  
Q601

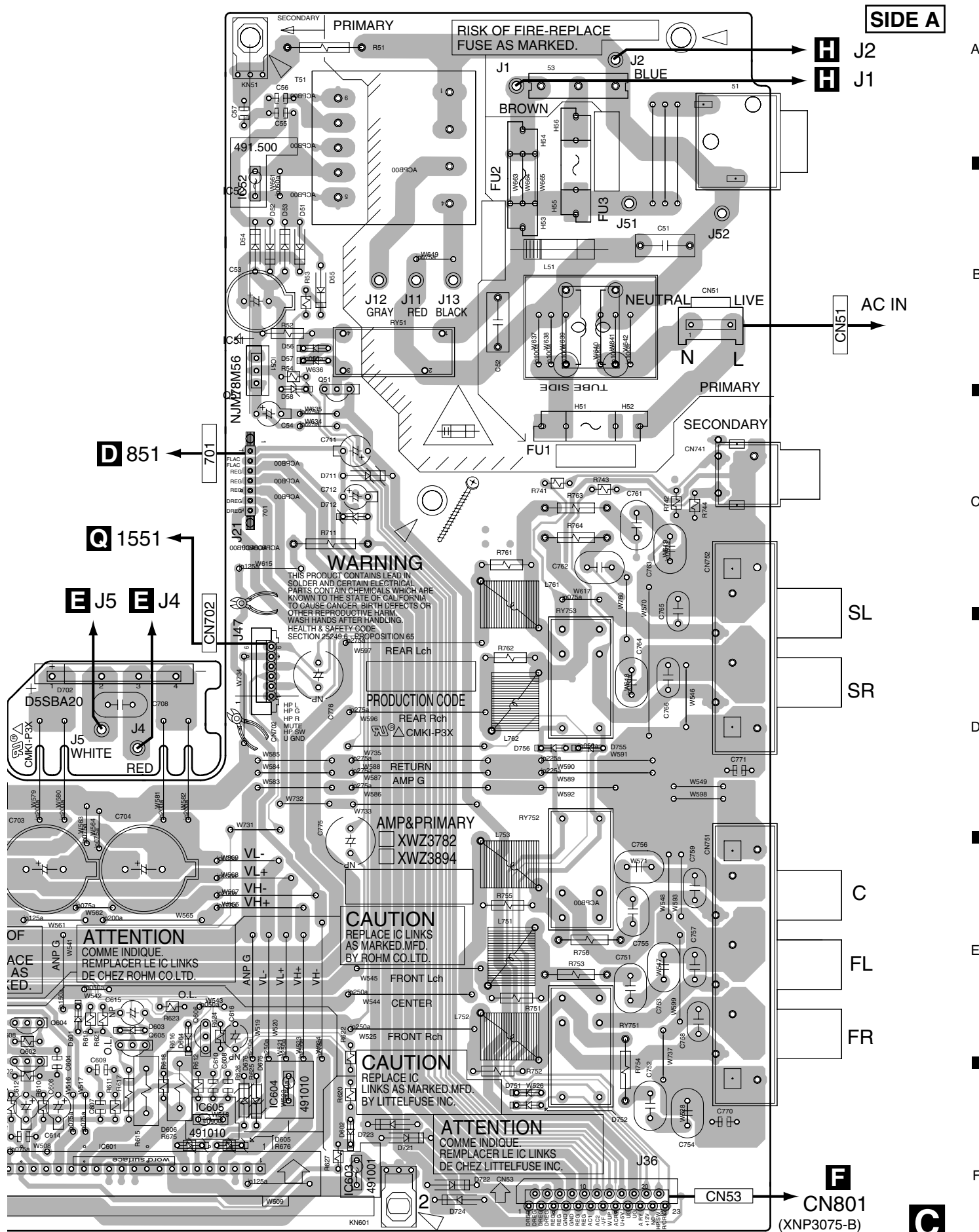
IC607	Q656
IC605	Q654
	Q631

	Q652
IC604	Q603
IC606	Q632

IC603 Q653  
IC601

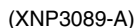
VSX-415-K



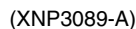
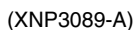


△

## M FRONT DISPLAY ASSY



**Q** H.P ASSY











1 2 3 4

4.7 VIDEO and 5.1CH ASSYS

**SIDE A**

**SIDE A**

**J** 5.1CH ASSY

**A** CN104

**A** CN105

**I** VIDEO ASSY

**F** CN803

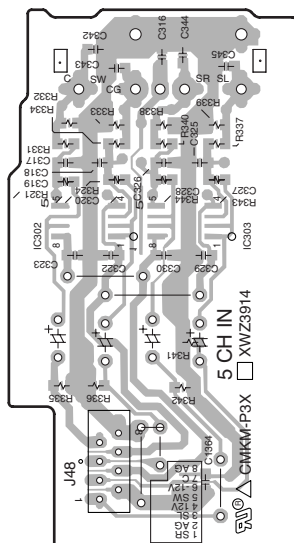
(XNP3089-A)

Q302  
Q301

SIDE B

SIDE B

# J 5.1CH ASSY

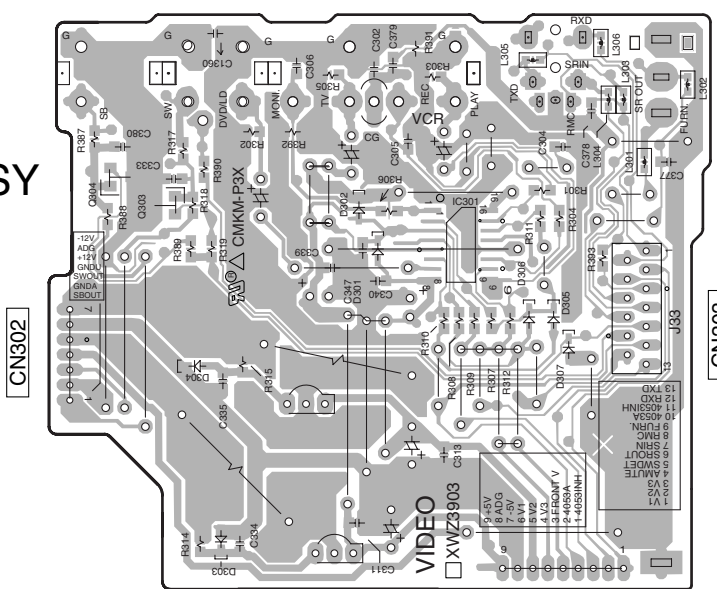


IC302  
IC303

CN307

(XNP3089-A)

# I VIDEO ASSY



Q304  
Q303  
IC301

CN302

CN303

(XNP3089-A)

I J

I J

## 4

5.62k  $\Omega \rightarrow 562 \times 10^1 \rightarrow 5621 \dots\dots\dots RN1/4PC\boxed{5}\boxed{6}\boxed{2}\boxed{1}F$

## 4

5	Mark No.	Description	Part No.
	C9013		CEAT471M6R3
	C165, C166, C370		CEAT4R7M50
	C170		CKSQYB104K16
	C320, C392, C5001, C9015, C9016		CKSRYB102K50
	C115, C116, C153, C154, C171		CKSRYB103K50
	C179, C180, C199, C215–C218		CKSRYB103K50
	C251, C252, C266, C271, C272		CKSRYB103K50
	C319, C327–C330, C347, C348		CKSRYB103K50
	C367, C368, C5002, C9004, C9008		CKSRYB103K50
	C9017		CKSRYB103K50
	C219, C220, C309–C312		CKSRYB104K16
	C5003, C9006		CKSRYB105K10
	C264		CKSRYB223K25
	C257, C258, C277, C278		CKSRYB472K50
	C307, C308, C364		CKSRYB472K50
	C9011, C9014		CKSRYB473K16
	C268		CKSRYB562K50
	C391		CKSRYF104Z16

### RESISTORS

- ⚠ R171, R172
- ⚠ R173, R174
- ⚠ R311, R312
- Other Resistors

### OTHERS

- CN105 8P CONNECTOR
- CN103 11P CONNECTOR
- CN104 13P CONNECTOR
- CN101 17P CONNECTOR
- CN106, CN112 19P CONNECTOR
- CN109 18P 6P PIN JACK
- ⚠ CN111 20P SOCKET
- JA103, JA104 PCB BINDER
- JA105 6P PIN JACK
- X9001 CERAMIC RESONATOR (15.7MHz)

## B DSP ASSY SEMICONDUCTORS

IC8201	AK4114VQ
IC8401	AK4628VQE
IC8501	DSPD56367PV150
IC8901	NJM2391DL1-33
IC8902	NJU7223DL1-18
IC8101	TC74HCU04AF
IC8701	TC74LVX244FT
IC8702	TC74VHCT244AFT
IC8502	TC7WU04FU
Q8504	UMD2N
Q8503	UN5112
D8501	1SS355
D8401	DAN202K
D8402, D8502, D8503	DAP202K

### COILS AND FILTERS

L8002, L8004, L8501, L8502	ATL7002
CHIP SOLID INDUCTOR	
L8101–L8104, L8201, L8203, L8204	QTL1013
L8401, L8402, L8504, L8701, L8702	QTL1013
CHIP SOLID INDUCTOR	

7	Mark No.	Description	Part No.	
	<b>CAPACITORS</b>			
	C8209, C8210		CCSRCH100D50	
	C8421		CCSRCH101J50	A
	C8107, C8112		CCSRCH470J50	
	C8007, C8008, C8109, C8201, C8212		CCSRCH471J50	
	C8214, C8404, C8409–C8414		CCSRCH471J50	
	C8416, C8417, C8419, C8505, C8507		CCSRCH471J50	
	C8509, C8511, C8512, C8515, C8518		CCSRCH471J50	
	C8520, C8522, C8524, C8526, C8528		CCSRCH471J50	
	C8530, C8532, C8534, C8536, C8539		CCSRCH471J50	
	C8541, C8543, C8545, C8551, C8703		CCSRCH471J50	
	C8706		CCSRCH471J50	
	C8548, C8549		CCSRCH8R0D50	
	C8701, C8704		CEVW100M16	B
	C8105, C8406, C8415, C8546, C8547		CEVW101M16	
	C8902, C8904		CEVW101M16	
	C8217, C8225, C8408		CEVW470M6R3	
	C8204, C8555		CKSRYB102K50	
	C8009, C8104, C8114, C8405, C8418		CKSRYB103K50	
	C8517, C8554		CKSRYB103K50	
	C8010, C8115, C8202, C8207, C8213		CKSRYB104K16	
	C8215, C8407, C8420, C8422, C8504		CKSRYB104K16	
	C8513, C8521, C8523, C8525, C8527		CKSRYB104K16	
	C8529, C8531, C8533, C8535		CKSRYB104K16	
	C8537, C8538, C8540, C8542, C8544		CKSRYB104K16	
	C8550, C8702, C8705, C8901, C8903		CKSRYB104K16	C
	C8110, C8516		CKSRYB105K6R3	
	C8514		CKSRYB333K16	
	C8203		CKSRYB473K50	

### RESISTORS

- R8506
- R8201
- Other Resistors
- RAB4C101J
- RS1/16S1802F
- RS1/16S###J

### OTHERS

- CN8012 19P CONNECTOR
- JA8101 2P PIN JACK
- JA8102 OPT. LINK IN
- CN8017 10P CONNECTOR
- CN8003 13P SOCKET
- 52045-1945
- AKB7131
- GP1FA513RZB
- VKN1414
- XKP3077

- CN8007 19P SOCKET
- X8501 CRYSTAL RESONATOR (20MHz)
- X8201 CRYSTAL RESONATOR (24.576MHz)
- XKP3080
- VSS1171
- XSS3003

## C AMP & PRIMARY ASSY SEMICONDUCTORS

- ⚠ IC603 PROTECTOR(1A)
- ⚠ IC604–IC607 PROTECTOR(10A)
- ⚠ IC701, IC702 IC PROTECTOR
- ⚠ IC51
- ⚠ IC601
- ⚠ IC602
- Q703, Q721
- ⚠ Q702
- Q691, Q692
- Q704, Q722
- Q605, Q606, Q633, Q655, Q656
- ⚠ Q701
- AEK7009
- AEK7022
- ICP-N10
- NJM78M56FA
- PAC010A
- PAC011A
- 2SA1145
- 2SA2005
- 2SC1740S
- 2SC1845
- 2SC2240
- 2SC5511

**Mark No. Description**

Q601–Q604, Q631, Q632  
Q651–Q654  
Q51

**Part No.**

2SC5974A  
2SC5974A  
DTC143ES

**Mark No. Description**

CN751 6P SPEAKER TERMINAL  
701 7P CABLE HOLDER

**Part No.**

XKE3012  
XKP3047

## D TRANS2 ASSY

### SEMICONDUCTORS

⚠ IC851–IC853 PROTECTOR(1.6A)

AEK7012

**OTHERS**

851 7P CABLE HOLDER

XKP3047

## E TRANS3 ASSY

TRANS3 ASSY has no service part.

## F REGULATOR ASSY

### SEMICONDUCTORS

⚠ IC803, IC804

⚠ IC801, IC805

⚠ IC806

⚠ IC802

Q801, Q803

NJM78M05FA

NJM78M12FA

NJM78M56FA

NJM79M12FA

DTA124ES

Q802, Q804

D809–D811

⚠ D801–D804

DTC114ES

MTZJ6.2B

S5688G

**CAPACITORS**

C811, C815

C813

C801, C802

C809

C808

CEAT101M10

CEAT101M16

CEAT222M25

CEAT472M16

CEHAT101M10

C805, C806

C803, C804, C807, C810, C812

C814

CEHAT101M16

CKPUYF103Z25

CKPUYF103Z25

**RESISTORS**

R801

RS3LMF331J

**OTHERS**

CN801 23P CONNECTOR

CN804 18P PLUG

CN802 20P PLUG

CN803 7P PLUG

CN805 13P PLUG

52045-2345

KM200TA18

KM200TA20

KM200TA7

XKP3066

CN806 19P PLUG

XKP3069

## G AMP INPUT ASSY

### OTHERS

CN254 19P CONNECTOR

CN253 16P SOCKET

52044-1945

KP200TA16L

## H TRANS1 ASSY

TRANS1 ASSY has no service part.

## I VIDEO ASSY

### SEMICONDUCTORS

⚠ T51 STANDBY TRANSFORMER  
CN601 16P PLUG  
⚠ CN51 AC CODE SOCKET  
KN51, KN601 EARTH METAL FITTING  
CN752 4P SPEAKER TERMINAL

ATT7043  
KM200TA16  
RKP1751  
VNF1084  
XKE3010

**COILS AND FILTERS**

L751–L753, L761, L762 AF COIL

ATH1004

**SWITCHES AND RELAYS**

⚠ RY51  
RY751–RY753

XSR3006  
XSR3007

**CAPACITORS**

C707, C708 (0.01/AC250V)  
C607–C610, C634, C635  
C657–C660  
C615, C616, C638, C665, C666  
C775, C776

ACG1005  
CCPUCH6R8K50  
CCPUCH6R8K50  
CEANP2R2M50  
CEANP470M50

C712  
C611, C612, C636, C661, C662  
C711  
C53  
C692

CEAT101M10  
CEAT101M16  
CEAT101M35  
CEAT102M16  
CEAT221M10

C54  
C605, C606, C633, C655, C656  
C705, C706  
C613, C614, C637, C663, C664  
C691

CEAT470M25  
CEAT4R7M50  
CEHAT100M2A  
CKPUYB101K50  
CKPUYB102K50

C603, C604, C632, C653, C654  
C55–C57  
C751, C752, C755, C761, C762  
C51, C52  
C703, C704 (3300/42V)

CKPUYB331K50  
CKPUYF103Z25  
CQMB A104J50  
XCG3009  
XCH3012

C701, C702 (5600/71V)

XCH3013

**RESISTORS**

⚠ R615, R616, R638, R665, R666  
(0.22 /5W)  
⚠ R51 (2.2M 1/2W)  
⚠ R52  
⚠ R751, R752, R755, R761, R762

ACN7094  
ACN7094  
RCN1080  
RD1/2PM270J  
RD1/4PUF101J

⚠ R753, R754, R756, R763, R764  
⚠ R711  
Other Resistors

RS1LMF4R7J  
RS2LMF392J  
RD1/4PU###J

**OTHERS**

CN53 23P CONNECTOR  
CN702 6P JUMPER CONNECTOR  
CN741 2P PIN JACK  
51 AC SOCKET 1-P  
H51–H54, H701, H702 FUSE CLIP

52045-2345  
52147-0610  
AKB7008  
AKP1060  
AKR7001

⚠ T51 STANDBY TRANSFORMER  
CN601 16P PLUG

ATT7043  
KM200TA16

⚠ CN51 AC CODE SOCKET  
KN51, KN601 EARTH METAL FITTING  
CN752 4P SPEAKER TERMINAL

RKP1751  
VNF1084  
XKE3010



<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>
⚠ R1551,R1552		RS2LMF331J
Other Resistors		RS1/16S###J

# 6. ADJUSTMENT

There is no information to be shown in this chapter.

A

<u>OTHERS</u>	
1551 6P CABLE HOLDER	51048-0600
JA1551 HEADPHONE JACK	RKB1014
KN1551 WRAPPING TERMINAL	VNF1084

■

## FM/AM TUNER UNIT

FM/AM TUNER UNIT has no service part.

B

■

C

■

D

■

E

■

F



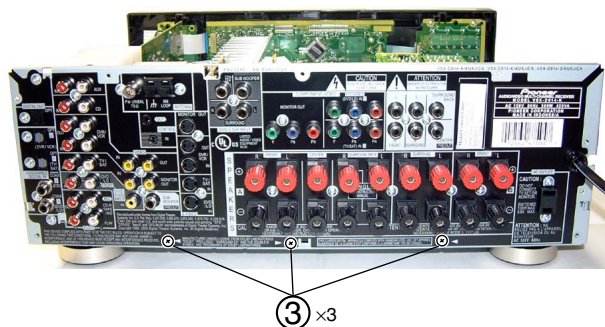
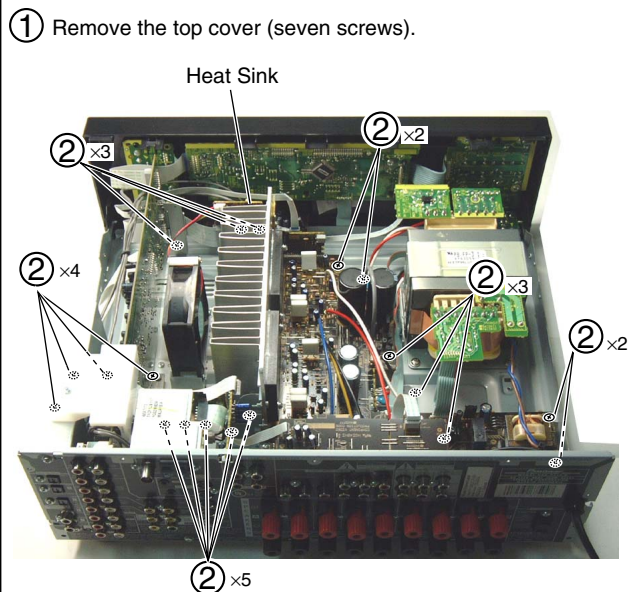
# 7. GENERAL INFORMATION

## 7.1 DIAGNOSIS

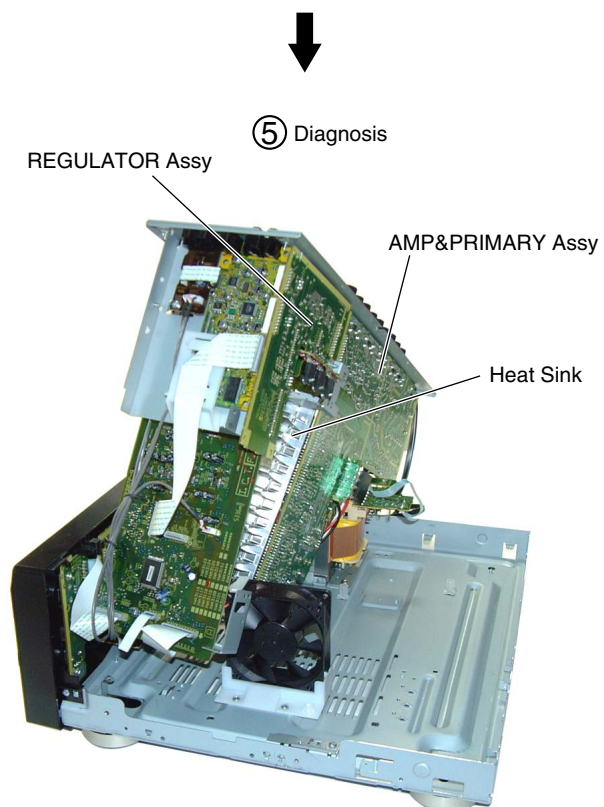
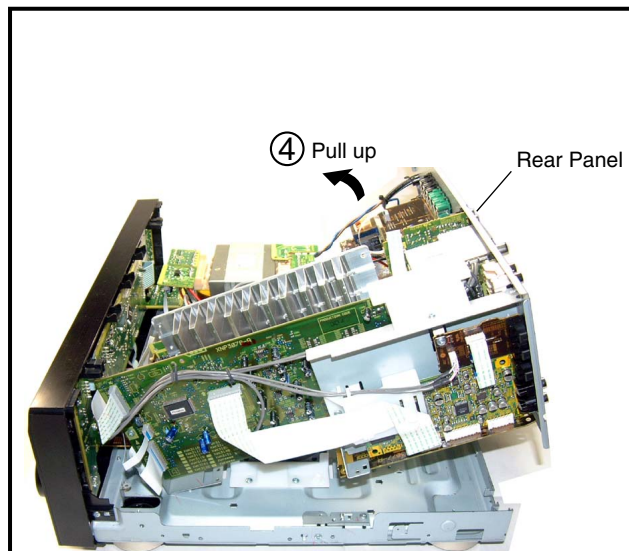
### 7.1.1 DISASSEMBLY

**Note:** Even if the unit shown in the photos and illustrations in this manual may differ from your product, the procedures described here are common.

#### ■ Diagnosis



Note : This photograph may show a different model.  
However, the method for disassembly is the same.



Note : This photograph may show a different model.  
However, the method for disassembly is the same.

Note : The unit does not operate when the screws of Speaker Terminal are taken off from Rear Panel.

**Heat-sink caution in the disassembling :** Because Heat-sink becomes hot, please pay attention.

A

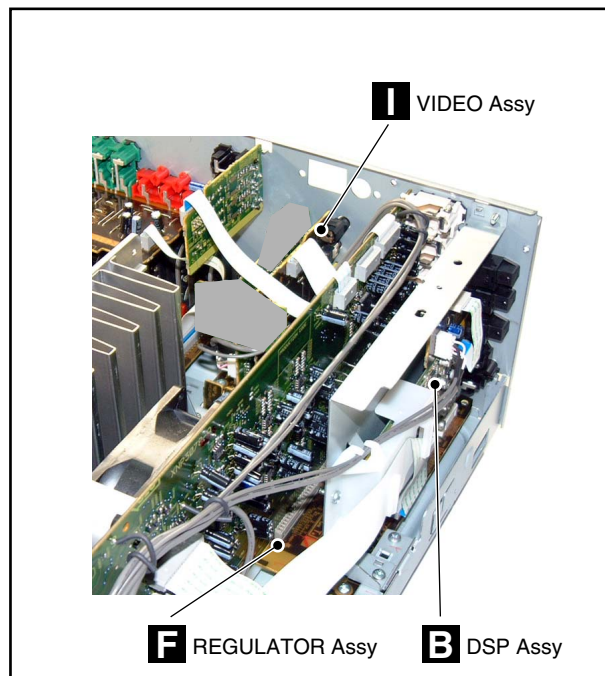
B

C

D

E

F



**C** AMP&PRIMARY Assy

**D** TRANS 2 Assy

**J** 5.1CH Assy

FM/AM TUNER UNIT

**A** MAIN Assy

**G** AMP INPUT Assy

**H** TRANS 1 Assy

**E** TRANS 3 Assy

**N** R. ENCODER Assy

**M** FRONT DISPLAY Assy

**P** FRONT KEY Assy

**Q** H.P. Assy

**O** P. SW & FUNC. KEY Assy

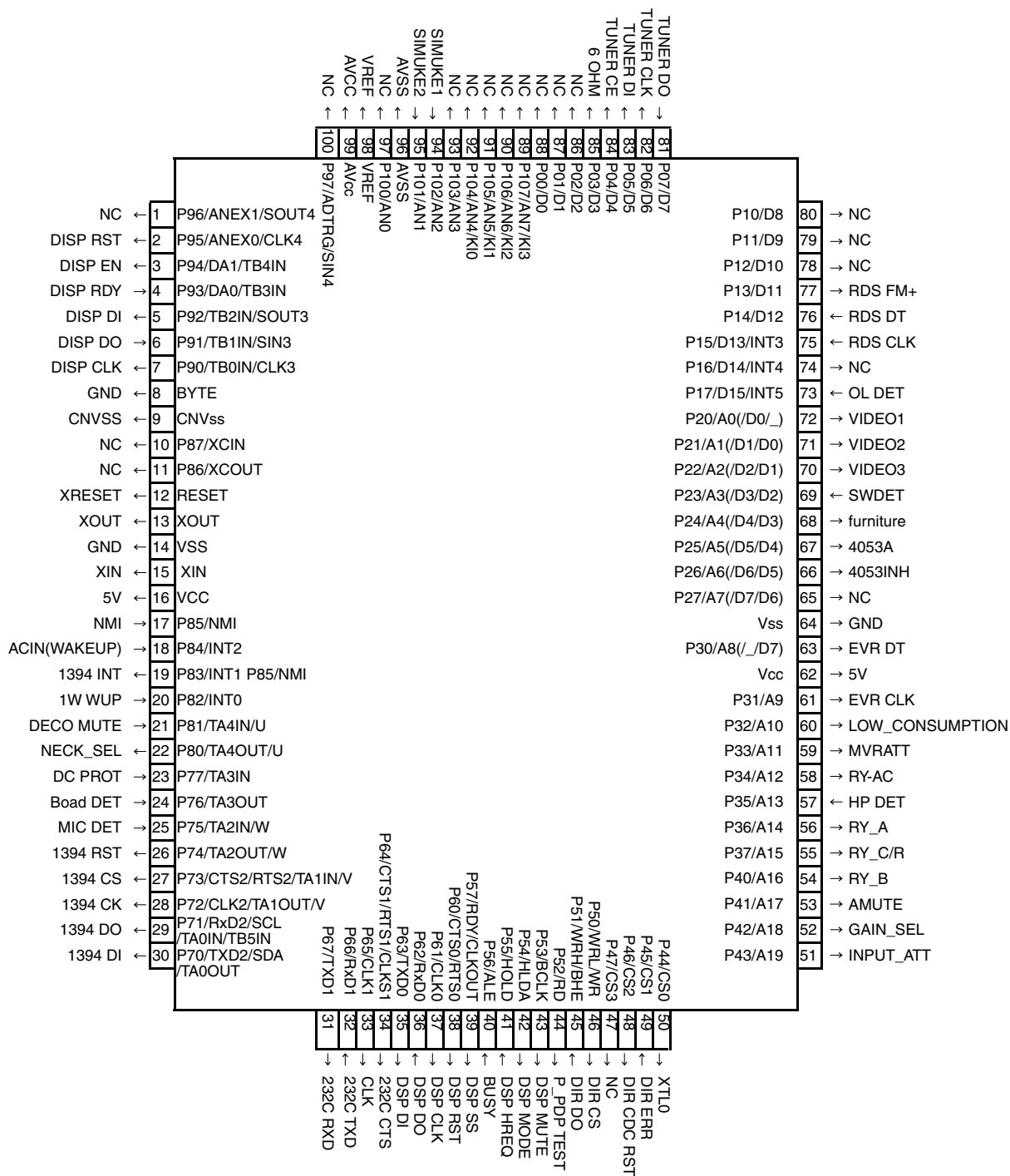
### 7.2.1 IC

- List of IC

■ PD5963C (MAIN ASSY : IC9001)

- **System Control MCU**

### ■ Pin Arrangement (Top View)





# **• Pin Function**

A

B

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D

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F

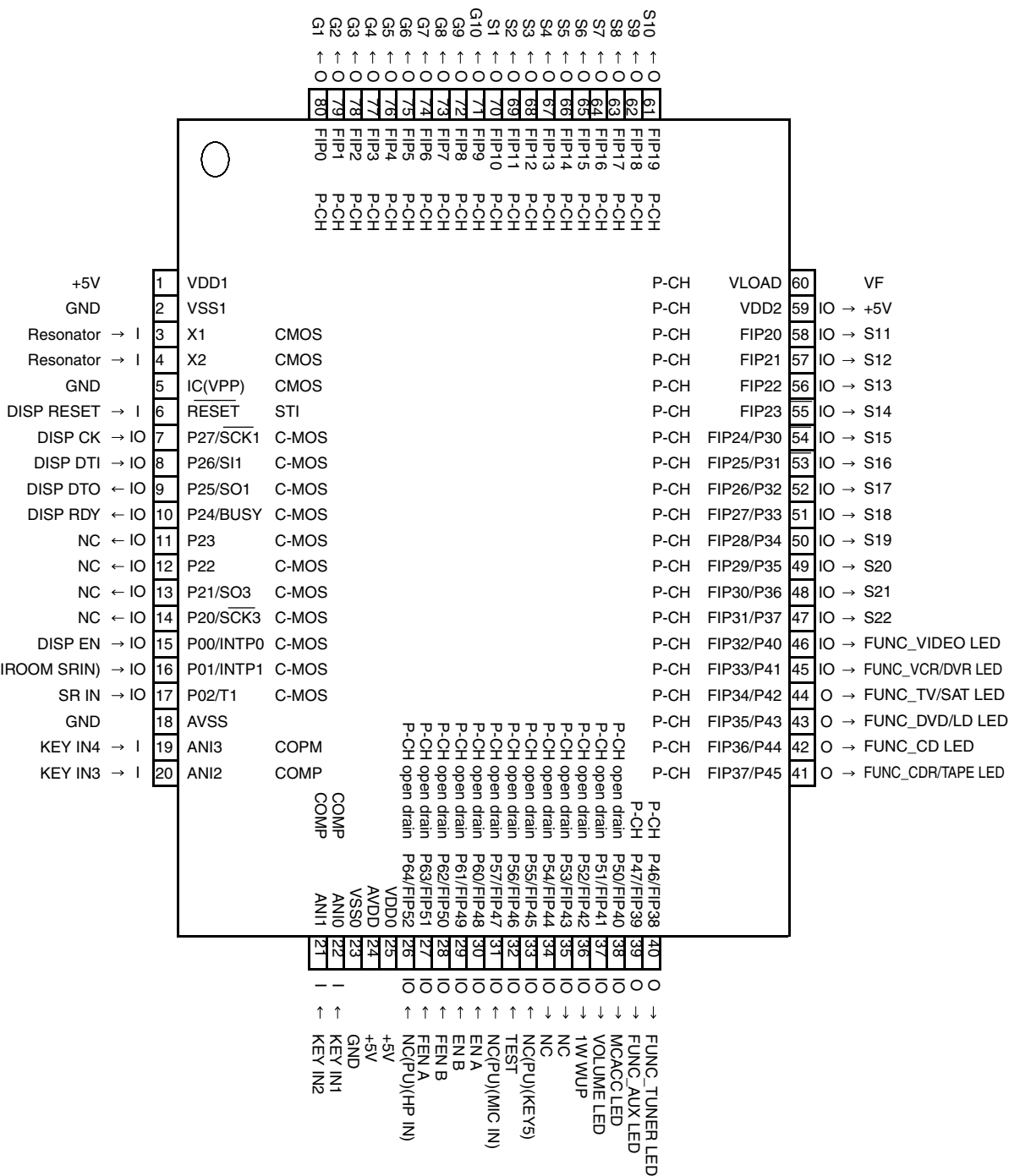
No.	Port	Pin Name	I/O	Pin Function
1	P96/ANEX1/SOUT4	NC	I/O	
2	P95/ANEX0/CLK4	DISP RST	I/O	Reset signal to display u-com
3	P94/DA1/TB4IN	DISP EN	I/O	Enable signal to display u-com
4	P93/DA0/TB3IN	DISP RDY	I/O	Ready signal from display u-com
5	P92/TB2IN/SOUT3	DISP DI	I/O	Data out to display u-com
6	P91/TB1IN/SIN3	DISP DO	I/O	Data input from display u-com
7	P90/TB0IN/CLK3	DISP CLK	I/O	Clock signal to display u-com
8	BYTE	GND		
9	CNVss	CNVSS		
10	P87/XCIN	NC	I/O	
11	P86/XCOUT	NC	I/O	
12	RESET	XRESET	RST	
13	XOUT	XOUT	OSC	
14	VSS	GND	GND	
15	XIN	XIN	OSC	
16	VCC	5V	5V	
17	P85/NMI	NMI	I	No use
18	P84/INT2	ACIN(WAKEUP)	I/O	AC pulse input
19	P83/INT1 P85/NMI	1394 INT	I/O	No use (Standby for 1394)
20	P82/INT0	1W WUP	I/O	Wake up signal from display u-com
21	P81/TA4IN/U	DECO MUTE	I/O	1st DSP Boot success detect port
22	P80/TA4OUT/U	NECK_SEL	I/O	5.1ch, surround mode and A+B Stereo : H / Stereo : L
23	P77/TA3IN	DC PROT	I/O	AMP DC detect
24	P76/TA3OUT	Boad DET	I/O	AMP INPUT ASSY falling off detect, H : detected
25	P75/TA2IN/W	MIC DET	I/O	MIC detect (No Use)
26	P74/TA2OUT/W	1394 RST	I/O	No use (Standby for 1394)
27	P73/CTS2/RTS2/TA1IN/V	1394 CS	I/O	No use (Standby for 1394)
28	P72/CLK2/TA1OUT/V	1394 CK	I/O	No use (Standby for 1394)
29	P71/RxD2/SCL/TA0IN/TB5IN	1394 DO	I/O	No use (Standby for 1394)
30	P70/TXD2/SDA/TA0OUT	1394 DI	I/O	No use (Standby for 1394)
31	P67/TXD1	232C RXD	I/O	No use, fixed to "L" (For rewriting 232C (Data output))
32	P66/RxD1	232C TXD	I/O	No use, fixed to "L" (For rewriting 232C (Data input))
33	P65/CLK1	CLK	I/O	No use (It is necessary when writing for JIG)
34	P64/CTS1/RTS1/CLKS1	232C CTS	I/O	No use, fixed to "L" (For rewriting 232C (Admit communication))
35	P63/TXD0	DSP DI	I/O	Data output signal for communication with DSP and DIR
36	P62/RxD0	DSP DO	I/O	Data input signal for communication with DSP
37	P61/CLK0	DSP CLK	I/O	Clock signal for communication with DSP and DIR
38	P60/CTS0/RTS0	DSP RST	I/O	Reset signal for DSP
39	P57/RDY/CLKOUT	DSP SS	I/O	Slave select signal to DSP
40	P56/ALE	BUSY	I/O	Use it in MCACC
41	P55/HOLD	DSP HREQ	I/O	DSP error detect signal
42	P54/HLDA	DSP MODE	I/O	Mode select of DSP (H : ROMmode, L : RAM(PPP) mode)
43	P53/BCLK	DSP MUTE	I/O	DSP ASSY mute
44	P52/RD	P_PDPTEST	I/O	Fixed to "L" during normal operation. (for SR+ testmode only)
45	P51/WRH/BHE	DIR DO	I/O	Data input signal for communication with DIR/DAC
46	P50/WRL/WR	DIR CS	I/O	Chip select signal for communication with DIR/DAC
47	P47/CS3	NC	I/O	
48	P46/CS2	DIR CDC RST	I/O	Reset signal for DIR CODEC
49	P45/CS1	DIR ERR	I/O	lock/unlock signal
50	P44/CS0	XTL0	I/O	DIR X'tal change

# • Pin Function

No.	Port	Pin Name	I/O	Pin Function
51	P43/A19	INPUT_ATT	I/O	Analog input ATT(H : ATT ON)
52	P42/A18	GAIN_SEL	I/O	Gain select (5.1ch and Stereo of analog input : H )
53	P41/A17	AMUTE	I/O	System mute (L : Mute ON)
54	P40/A16	RY_B	I/O	Speaker B relay ON/OFF
55	P37/A15	RY_C/R	I/O	Rear/Center Speaker relay ON/OFF
56	P36/A14	RY_A	I/O	Speaker A relay ON/OFF
57	P35/A13	HP DET	I/O	HP detect, H : detected
58	P34/A12	RY-AC	I/O	AC relay ON/OFF
59	P33/A11	MVRATT	I/O	ATT control of master volume (less than -15dB : L)
60	P32/A10	LOW_CONSUMPTION	I/O	If stop mode, port L, else H
61	P31/A9	EVR CLK	I/O	Clock signal for Function and E-volume
62	Vcc	5V	5V	
63	P30/A8(/_D7)	EVR DT	I/O	Data signal for Function and E-volume
64	Vss	GND	GND	
65	P27/A7(/D7/D6)	NC	I/O	
66	P26/A6(/D6/D5)	4053INH	I/O	Component terminal control
67	P25/A5(/D5/D4)	4053A	I/O	Component terminal control
68	P24/A4(/D4/D3)	furniture	I/O	Furniture control signal
69	P23/A3(/D3/D2)	SWDET	I/O	SWSP detect
70	P22/A2(/D2/D1)	VIDEO3	I/O	VIDEO input select
71	P21/A1(/D1/D0)	VIDEO2	I/O	VIDEO input select
72	P20/A0(/D0/_)	VIDEO1	I/O	NJM2296 control (VIDEO input select)
73	P17/D15/INT5	OL DET	I/O	Detect overload of AMP
74	P16/D14/INT4	NC	I/O	
75	P15/D13/INT3	RDS CLK	I/O	Fixed to "L".
76	P14/D12	DT	I/O	Fixed to "L".
77	P13/D11	FM+	I/O	Fixed to "L".
78	P12/D10	NC	I/O	
79	P11/D9	NC	I/O	
80	P10/D8	NC	I/O	
81	P07/D7	TUNER DO	I/O	Data input signal for tuner control
82	P06/D6	TUNER CLK	I/O	Clock signal for tuner control
83	P05/D5	TUNER DI	I/O	Data output signal for tuner control
84	P04/D4	TUNER CE	I/O	Chip select signal for tuner control
85	P03/D3	6 OHM	I/O	if stop mode, port L, else L/H depends on selection.
86	P02/D2	NC	I/O	
87	P01/D1	NC	I/O	
88	P00/D0	NC	I/O	
89	P107/AN7/KI3	NC	I/O	
90	P106/AN6/KI2	NC	I/O	
91	P105/AN5/KI1	NC	I/O	
92	P104/AN4/KI0	NC	I/O	
93	P103/AN3	NC	I/O	
94	P102/AN2	SIMUKE1	I/O	Input 1 to switch region
95	P101/AN1	SIMUKE2	I/O	Input 2 to switch region
96	AVSS	AVSS	GND	Connect to VSS
97	P100/AN0	NC	I/O	
98	VREF	VREF	5V	Connect to VCC
99	AVcc	AVCC	5V	Connect to VCC
100	P97/ADTRG/SIN4	NC	I/O	

- **System Control MCU**

### ■ Pin Arrangement (Top View)



# **• Pin Function**

No.	Port	Pin Name	I/O	Pin Function
1	VDD1	+5V	-	positive power supply
2	VSS1	GND	-	ground potential
3	X1	Resonator	I	crystal connection for system clock oscillation
4	X2	Resonator	I	crystal connection for system clock oscillation
5	IC(VPP)	GND	-	
6	RESET	DISP RESET	I	receive reset signal from main u-com
7	P27/SCK1	DISP CK	I/O	clock signal from main u-com
8	P26/SI1	DISP DTI	I/O	datain from main u-com
9	P25/SO1	DISP DTO	I/O	data out to main u-com
10	P24/BUSY	DISP RDY	I/O	ready signal from main u-com
11	P23	NC	I/O	
12	P22	NC	I/O	
13	P21/SO3	NC	I/O	
14	P20/SCK3	NC	I/O	
15	P00/INTP0	DISP EN	I/O	enable signal from main u-com
16	P01/INTP1	NC	I/O	
17	P02/T1	SR IN	I/O	remote control signal input from main room
18	AVSS	GND	-	ground potential for A/D converter
19	ANI3	KEY IN4	I	
20	ANI2	KEY IN3	I	
21	ANI1	KEY IN2	I	
22	ANI0	KEY IN1	I	
23	VSS0	GND	-	ground potential for ports
24	AVDD	'+5V	-	analog power voltage input to A/D converter
25	VDD0	'+5V	-	positive power supply to ports
26	P64/FIP52	NC	I/O	
27	P63/FIP51	FEN A	I/O	MULTI JOG(Right)
28	P62/FIP50	FEN B	I/O	MULTI JOG(Left)
29	P61/FIP49	EN B	I/O	VOLUME JOG1(-)
30	P60/FIP48	EN A	I/O	VOLUME JOG1(+)
31	P57/FIP47	NC	I/O	
32	P56/FIP46	TEST	I/O	test mode input for checker
33	P55/FIP45	NC	I/O	
34	P54/FIP44	NC	I/O	
35	P53/FIP43	NC	I/O	
36	P52/FIP42	1W WUP	I/O	output wakeup signal to main u-com
37	P51/FIP41	VOL LED	I/O	LED Output
38	P50/FIP40	MCACC LED	I/O	LED Output
39	P47/FIP39	FUNC/AUX	O	LED Output
40	P46/FIP38	FUNC_TUNER	O	LED Output

A

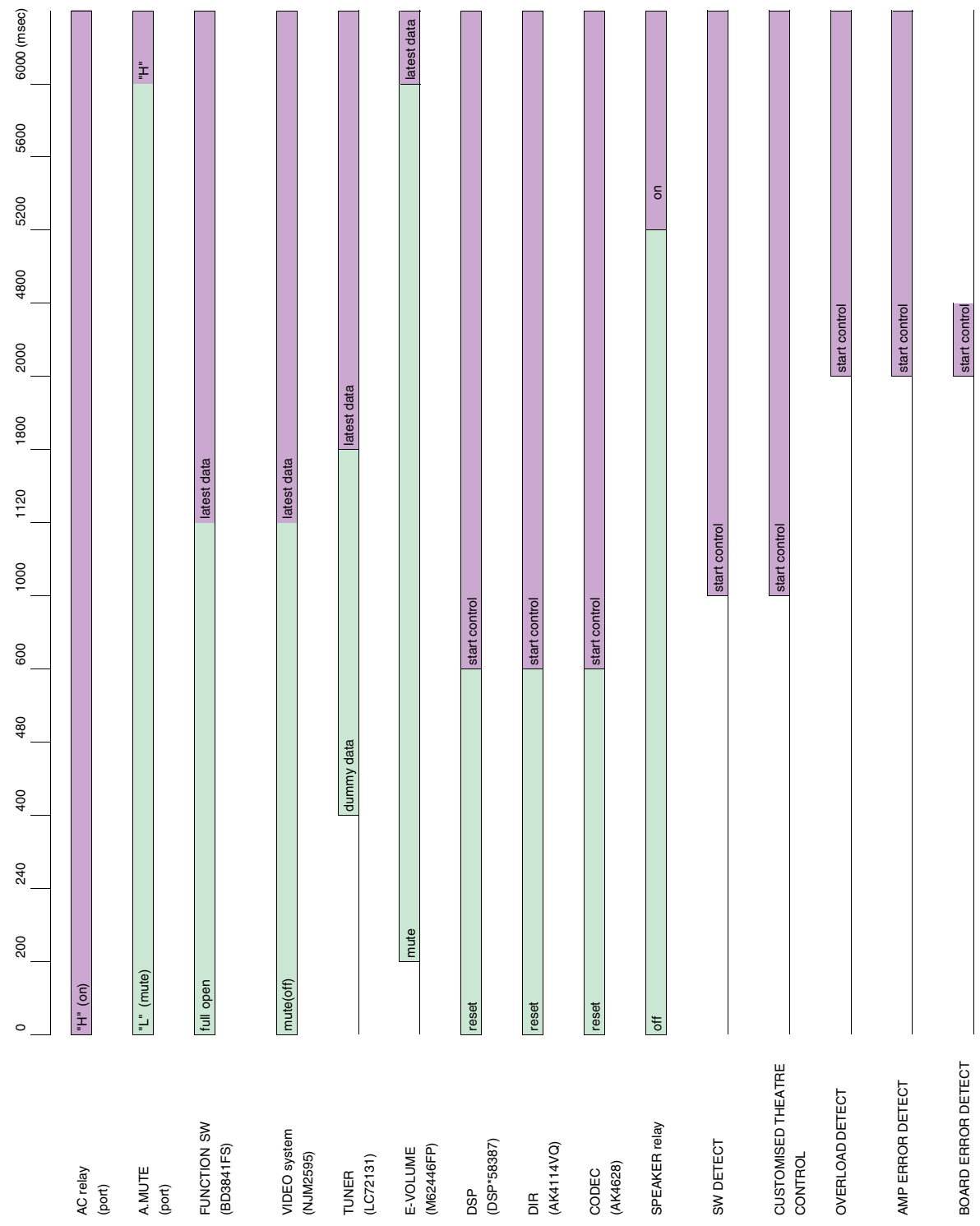
## • Pin Function

No.	Port	Pin Name	I/O	Pin Function
41	FIP37/P45	FUNC_CDR	O	LED Output
42	FIP36/P44	FUNC_CD	O	LED Output
42	FIP35/P43	FUNC_DVD	O	LED Output
44	FIP34/P42	FUNC_TV	O	LED Output
45	FIP33/P41	FUNC_VCR	O	LED Output
46	FIP32/P40	FUNC_VIDEO	O	LED Output
47	FIP31/P37	S22	I/O	Display
48	FIP30/P36	S21	I/O	Display
49	FIP29/P35	S20	I/O	Display
50	FIP28/P34	S19	I/O	Display
51	FIP27/P33	S18	I/O	Display
52	FIP26/P32	S17	I/O	Display
53	FIP25/P31	S16	I/O	Display
54	FIP24/P30	S15	I/O	Display
55	FIP23	S14	O	Display
56	FIP22	S13	O	Display
57	FIP21	S12	O	Display
58	FIP20	S11	O	Display
59	VDD2	'+5V	-	positive power supply to FIP controller.
60	VLOAD	VF	-	pull down resistor connection of FIP controller
61	FIP19	S10	O	Display
62	FIP18	S9	O	Display
63	FIP17	S8	O	Display
64	FIP16	S7	O	Display
65	FIP15	S6	O	Display
66	FIP14	S5	O	Display
67	FIP13	S4	O	Display
68	FIP12	S3	O	Display
69	FIP11	S2	O	Display
70	FIP10	S1	O	Display
71	FIP9	G10	O	Display
72	FIP8	G9	O	Display
73	FIP7	G8	O	Display
74	FIP6	G7	O	Display
75	FIP5	G6	O	Display
76	FIP4	G5	O	Display
77	FIP3	G4	O	Display
78	FIP2	G3	O	Display
79	FIP1	G2	O	Display
80	FIP0	G1	O	Display

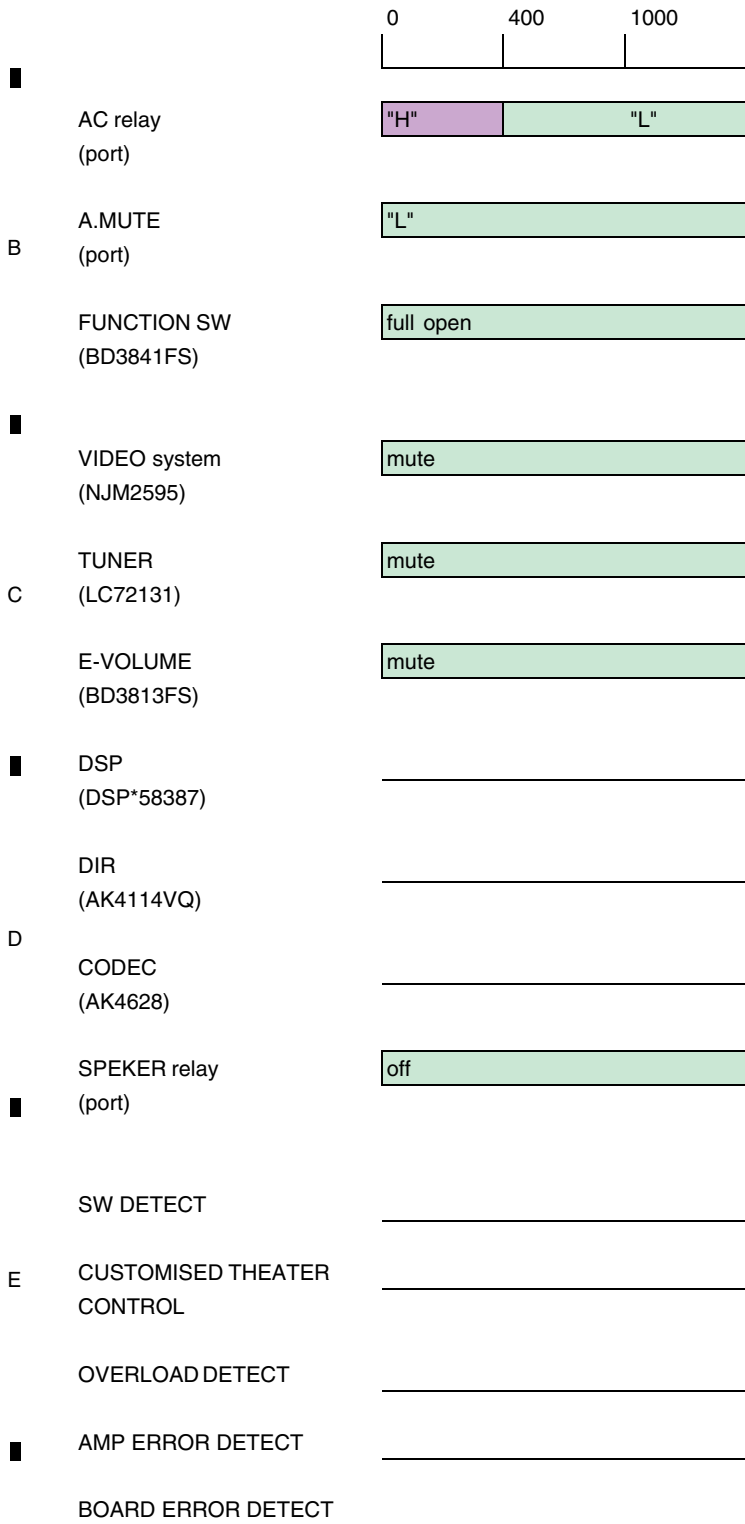
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■ POWER ON INITIAL TIMING CHART



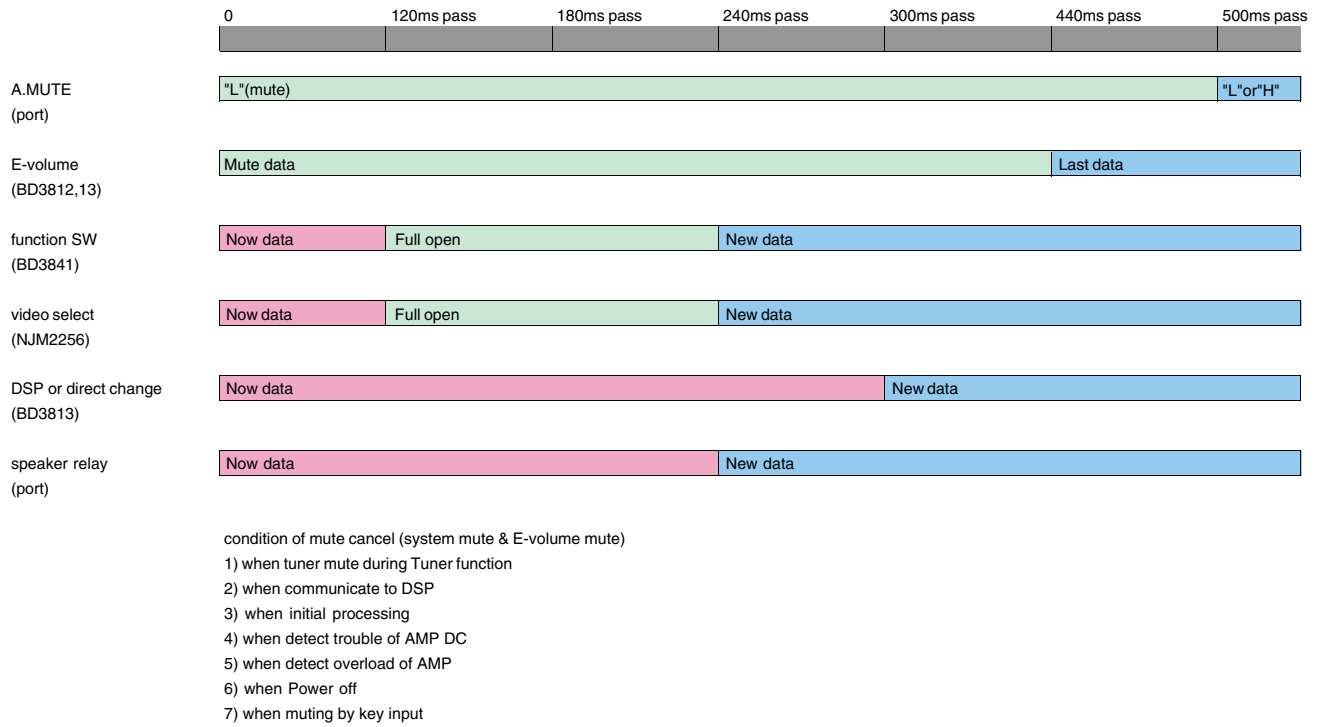
# A ■ POWER OFF INITIAL TIMING CHART



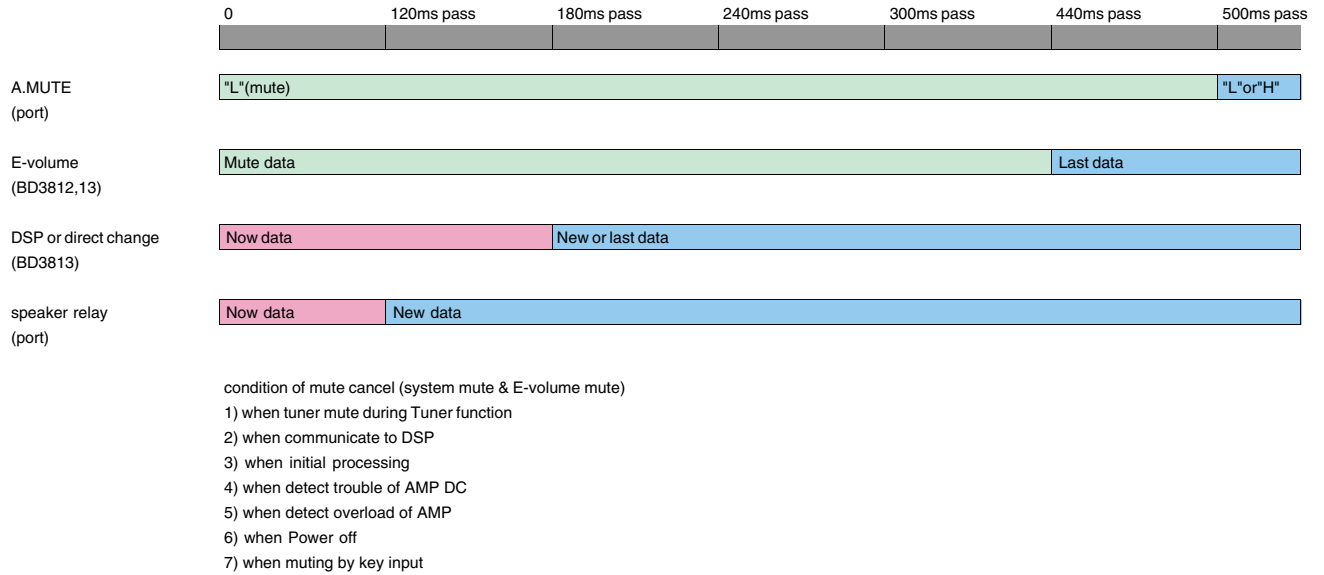
F

IC data transmission timing chart

1.When function chage



2.When except function chage



1 2 3 4

# 7.3.3 DETECTION CIRCUIT

1.DC Detection Circuit Diagram:

A

B

B

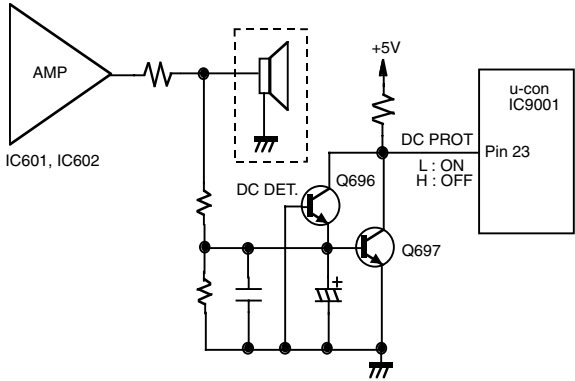
C

D

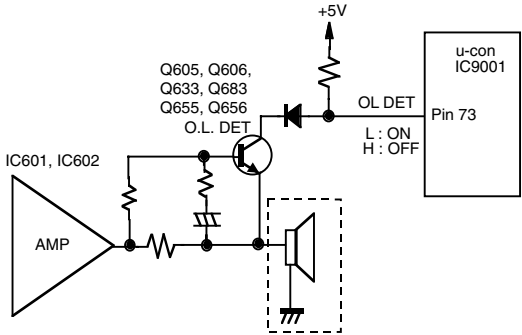
D

E

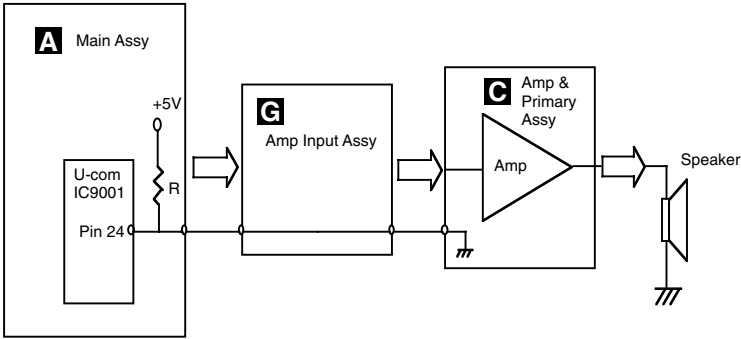
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2. Overload Detection Circuit Diagram:



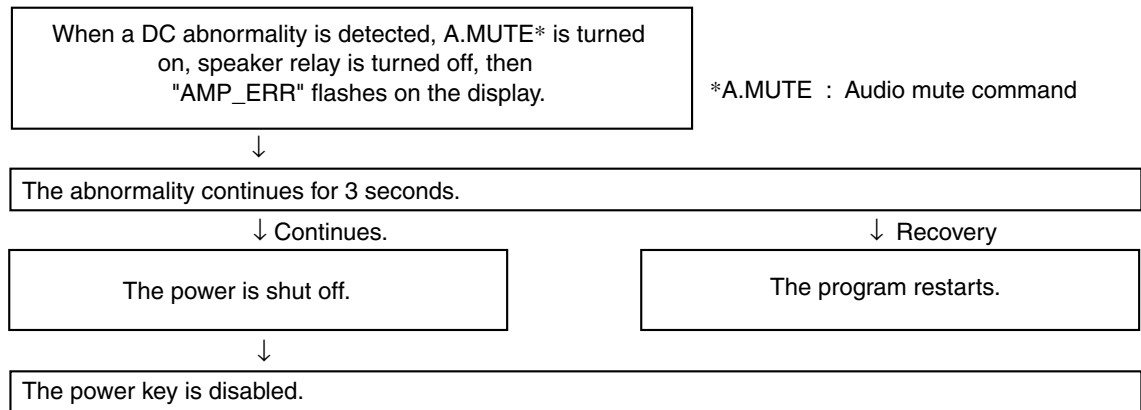
3. PCB Board Protection Circuit Diagram



### 1. DC-abnormality detection

DC detection is only enabled 2 seconds after power-on.  
 If there is a fault in the power amplifier or a high-level signal lower than 5 Hz is input, the DC\_DET port becomes "L".  
 If the "L" is detected, the microprocessor will perform as following flow chart.

In the case of simultaneous detection with the overload protection circuit, DC-abnormality detection is performed preferentially to overload detection.



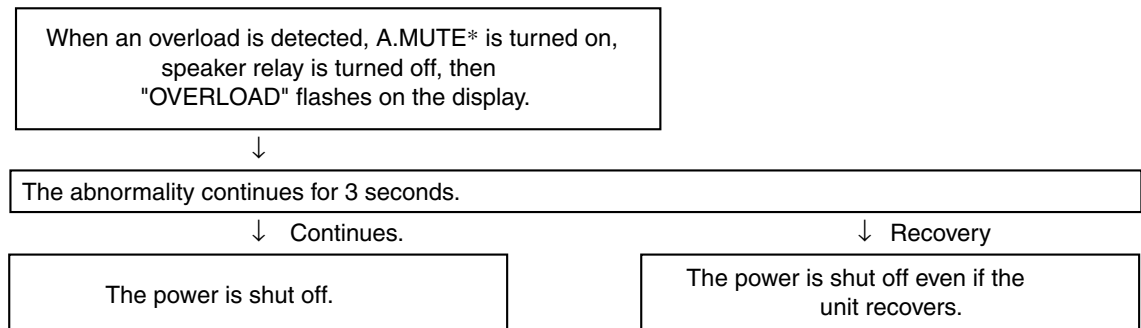
\*A.MUTE : Audio mute command

But be switched on with the following methods.

- ① TESTMODE ON (A55F+A55F)
- ② When power off, push FRONT ENTER key + ADVANCED SURROUND key continuously 2sec.  
 (②: When a DC abnormality is detected and the power is shut off.)

### 2. Overload detection

If the speaker terminals are short-circuited or low-load driving is detected, the OL\_DET port becomes "L".  
 If the "L" is detected, the microprocessor will perform as following flow chart.

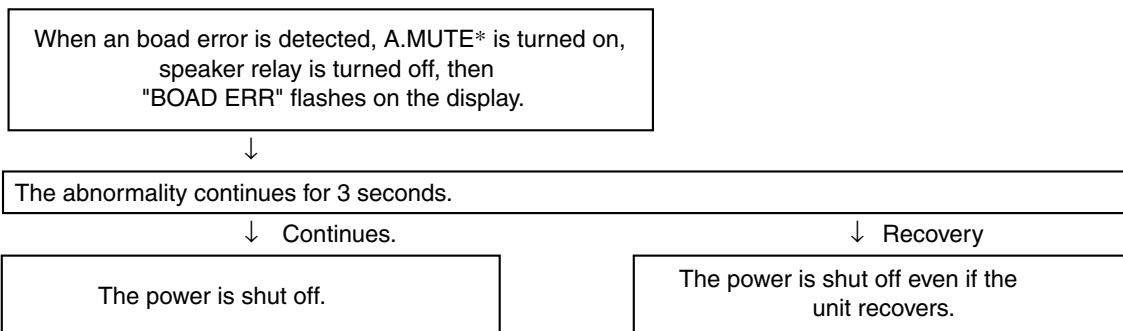


### 3. Board detection

If the board connection from MAIN ASSY to AM & PRIMARY ASSY is interrupted, the BOARD\_DET port becomes "H".

If the "H" is detected, the microprocessor will perform as following flow chart.

In the case of simultaneous detection with the overload protection circuit, Board detection is performed preferentially to DC-abnormality detection and Overload detection.



### 7.3.5 AMPLIFIER FAILURE DIAGNOSIS FLOW CHART

#### ■ Amplifier failure diagnosis flow chart

When DC detection is activated ("AMP\_ERR" flashes on the display), failure (damage) of the power amplifier section is considered.

#### Caution:

When release the lock state of power key before repair, please be careful because there is the possibility that more damages will occur when turns on the power once again!

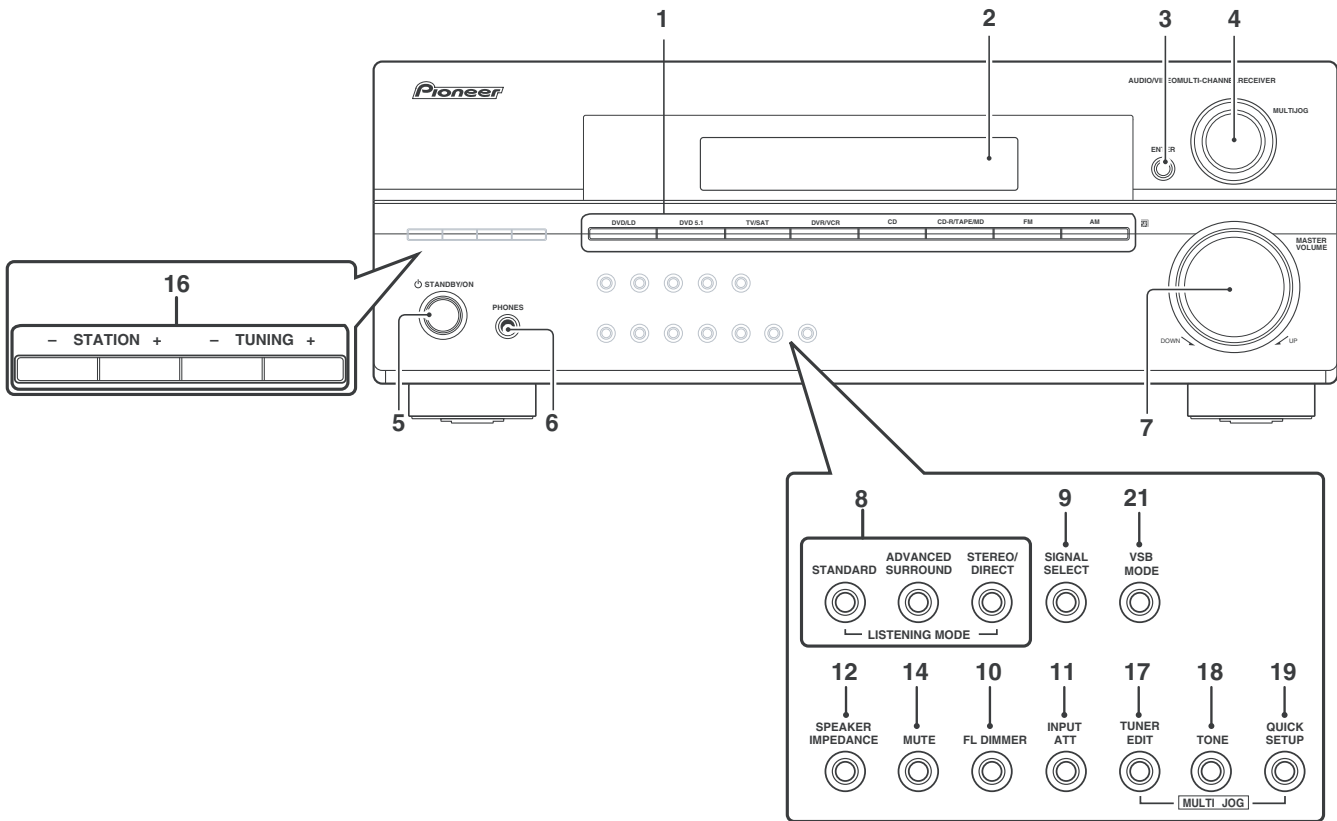
- According to a symptom, perform the following confirmation beforehand.

- 1) Is the operation of fan motor in normal condition?
- 2) Are there any Fuses and IC protectors open?
- 3) After turn on the power, confirm that the supply voltage of the point that can be measured is appropriate.
- 4) Whether the voltage of pin3 of IC601 or IC602 is equal to (VL-0.7V). If not (eg, equal to VH), then change the corresponding power pack IC601 or IC602.
- 5) Furthermore, check the output DC voltage of each channel of power pack IC601 and IC602 to limit the failure channel and identify the defect power pack.

- After identify the failure channel, check that each part is not damaged (resistor, diode... etc. value / open / short)

# 8. PANEL FACILITIES

## Front panel



- 1

Input select buttons

Press to select an input source.
- 2

Character display

See Display.
- 3

ENTER
- 4

MULTI JOG dial

The **MULTI JOG** dial performs a number of tasks. Use it to select options after pressing the designated **MULTI JOG** buttons.
- 5

STANDBY/ON

Switches the receiver between on and standby.

- 6

PHONES jack

Use to connect headphones. When the headphones are connected, there is no sound output from the speakers.
- 7

MASTER VOLUME
- 8

LISTENING MODE buttons

STANDARD

Press for Standard decoding and to switch between the various Pro Logic II and Neo:6 options.



**ADVANCED SURROUND**

Use to switch between the various surround modes.

**STEREO/DIRECT (AUTO SURR)**

Switches between direct and stereo playback. Direct playback bypasses the tone controls and channel levels for the most accurate reproduction of a source.

**18 TONE**

Press this button to access the bass and treble controls, which you can then adjust with the **MULTI JOG** dial.

**19 QUICK SETUP**

See Using the Quick Setup.

**20 •••••**

**9 SIGNAL SELECT**

Use to select an input signal.

**10 FL DIMMER**

Dims or brightens the display.

**11 INPUT ATT**

Attenuates (lowers) the level of an analog input signal to prevent distortion.

**12 SPEAKER IMPEDANCE**

Use to change the impedance setting

**13 •••••**

**21 VSB MODE**

Selects the Virtual Surround Back (VSB) mode.

**14 MUTE**

Mutes the sound (or restores the sound if it has been muted).

**15 •••••**

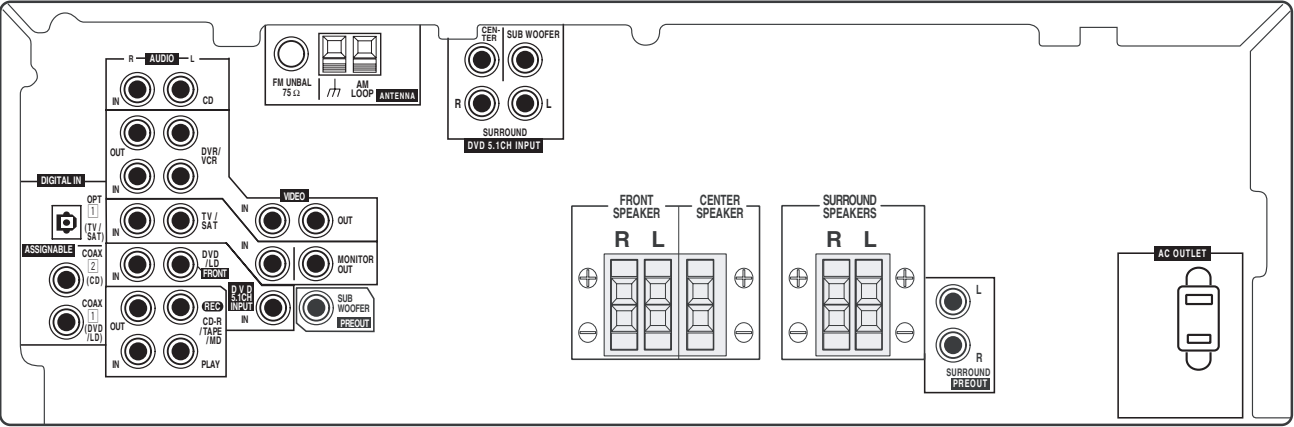
**16 TUNING / STATION buttons**

Selects the frequency and station presets when using the tuner.

**17 TUNER EDIT**

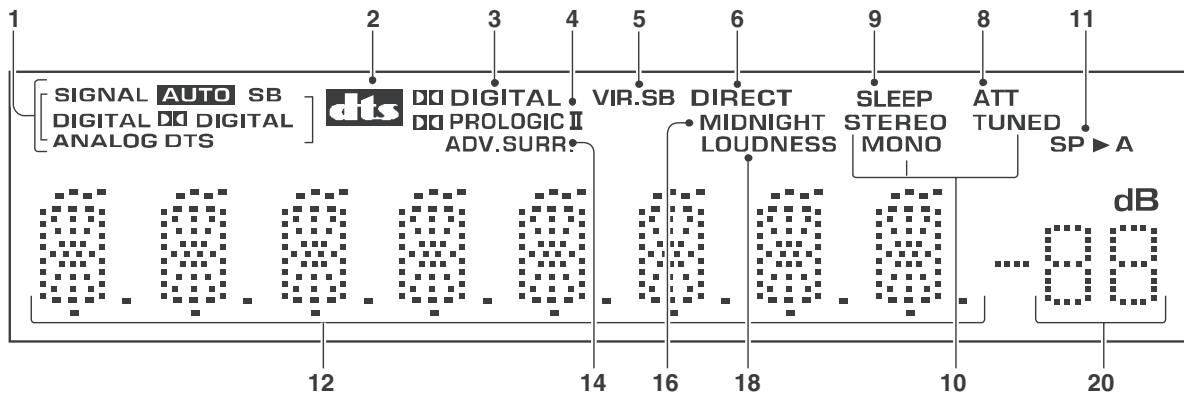
Press to memorize and name a station for recall.

Rear panel



## Display

VSX-415 model:



### 1 SIGNAL SELECT indicators

Lights to indicate the type of input signal assigned for the current component:

#### AUTO

Lights when **AUTO** signal select is on.

#### SB

Depending on the source, this lights when a signal with surround back channel encoding is detected.

#### DIGITAL

Lights when a digital audio signal is detected.

#### DIGITAL

Lights when a Dolby Digital encoded signal is detected.

#### ANALOG

Lights when an analog signal is detected.

#### DTS

Lights when a source with DTS encoded audio signals is detected.

### 2 DTS

When the **STANDARD** mode of the receiver is on, this lights to indicate decoding of a DTS multichannel signal.

### 3 DIGITAL

When the **STANDARD** mode of the receiver is on, this lights to indicate decoding of a Dolby Digital multichannel signal.

### 4 PRO LOGIC II x

When the **(STANDARD)** Pro Logic II mode of the receiver is on, **PRO LOGIC II** lights to indicate Pro Logic II decoding.

### 5 VIR.SB

Lights during Virtual surround back processing.

### 6 DIRECT

Lights when source direct playback is in use. Direct playback bypasses the tone controls and channel levels for the most accurate reproduction of a source.

### 7 .....

### 8 ATT

Lights when **INPUT ATT** is used to attenuate (reduce) the level of the analog input signal.

### 9 SLEEP

Lights when the receiver is in sleep mode.

### 10 Tuner indicators

#### MONO

Lights when the mono mode is set using the **MPX** button.

#### STEREO

Lights when a stereo FM broadcast is being received in auto stereo mode.

#### TUNED

Lights when a broadcast is being received.

### 11 Speaker indicator

Shows if the speaker system is on or not. **SP▶A** means the speakers are switched on. **SP▶** means the headphones are connected.

### 12 Character display

### 13 .....

### 14 ADV.SURR. (Advanced Surround)

Lights when one of the Advanced Surround modes has been selected.

### 15 .....

### 16 MIDNIGHT

Lights during Midnight listening.

### 17 .....

### 18 LOUDNESS

Lights during Loudness listening.

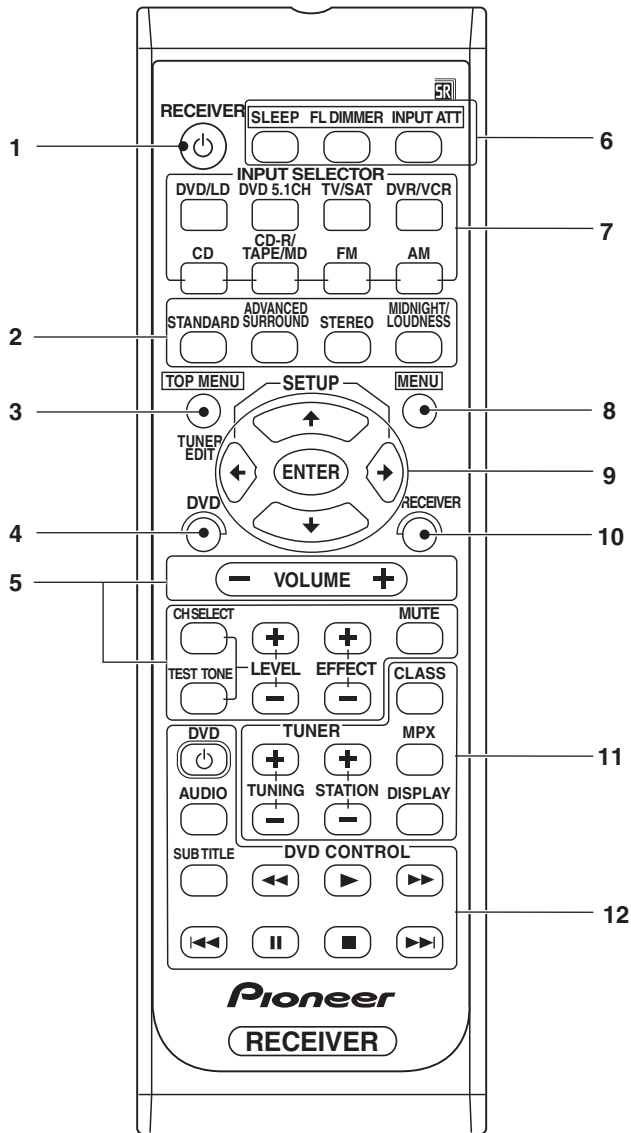
### 19 .....

### 20 Master volume level

Shows the overall volume level. **---dB** indicates the minimum level, and **- 0 dB** indicates the maximum level.

Depending on your level settings for each channel, the maximum volume can range between **-10 dB** and **-0 dB**.

# Remote control



**1 RECEIVER**  
Switches the receiver between standby and on.

**2 Listening mode buttons**  
**STANDARD**  
Press for Standard decoding and to switch between the various Pro Logic II and Neo:6 options.  
**ADVANCED SURROUND**  
Use to switch between the various surround modes.

**STEREO**  
Switches between direct and stereo playback. Direct playback bypasses the tone controls and channel levels for the most accurate reproduction of a source.

**MIDNIGHT/LOUDNESS**  
Switches to Midnight or Loudness listening.

**3 TOP MENU**  
Displays the disc 'top' menu of a DVD.

**TUNER EDIT**  
Press to memorize and name a station for recall.

**4 DVD**  
Press to use the DVD controls on the remote.

**5 RECEIVER CONTROL buttons**  
**VOLUME +/-**  
Use to set the listening volume.  
**MUTE**  
Mutes/unmutes the sound.

**CH SELECT**

Selects a speaker when setting up the surround sound of the receiver.

**TEST TONE**

Sounds the test tone when setting up the surround sound of the receiver.

**LEVEL +/-**

Adjusts the channel levels.

**EFFECT +/-**

Adds or subtracts the amount of effect with the advanced surround modes.

**6 SLEEP**

Use to set the sleep timer.

**FL DIMMER**

Dims or brightens the display.

**INPUT ATT**

Attenuates (lowers) the level of an analog input signal to prevent distortion.

**7 INPUT SELECTOR buttons**

Press to select an input source.

**8 MENU**

Displays the disc menu of DVD-Video discs. It also displays TV menus.

**9 ↑↓←→/ENTER**

Use the arrow buttons when setting up your surround sound system.  
Also used for DVD menus.

**10 RECEIVER**

Use to switch to the receiver controls on the remote control. Also used when setting up the surround sound for the receiver.

**11 TUNER controls**

The **TUNING +/-** buttons can be used to find radio frequencies and the **STATION +/-** buttons can be used to select preset radio stations.

**CLASS**

Switches between the three banks (classes) of station presets.

**MPX**









Use to switch between auto stereo and mono reception of FM broadcasts. If the signal is weak then switching to mono will improve the sound quality.

**DISPLAY**

Switch the display between station preset name and frequency.

**12 DVD CONTROL buttons**

You can use these buttons to control a Pioneer DVD player connected to your system.

Button	What it does
<b>DVD</b> 	Turns DVD power on/off.
<b>AUDIO</b>	Changes the audio language or channel.
<b>SUBTITLE</b>	Displays/changes the subtitles on multilingual DVD-Video discs.
	Starts/resumes normal playback.
	Pauses/unpauses a disc.
	Stops playback.
	Press to start fast reverse scanning.
	Press to start fast forward scanning.
	Skips to the start of the current track or chapter, then previous tracks/chapters.
	Skips to the next track or chapter.