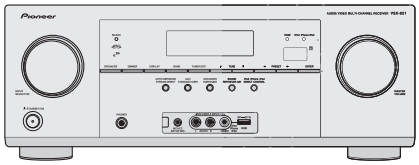
Pioneer

Service Manual



VSX-821-K

ORDER NO.
RRV4167

AUDIO/VIDEO MULTI-CHANNEL RECEIVER

VSX-821-K
VSX-921-K
VSX-521-K

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

Model	Type	Power Requirement	Remarks
VSX-821-K	CUXCNSM	AC 120 V	
VSX-921-K	UXCNCB	AC 120 V	
VSX-521-K	CUXCNSM	AC 120 V	

For details, refer to "Important Check Points for good servicing".

PIONEER CORPORATION 1-1, Shin-ogura, Saiwai-ku, Kawasaki-shi, Kanagawa 212-0031, Japan
PIONEER ELECTRONICS (USA) INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
PIONEER EUROPE NV Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 253 Alexandra Road, #04-01, Singapore 159936

K-IZV MAR. 2011 Printed in Japan

SAFETY INFORMATION

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.

WARNING

This product may contain a chemical known to the State of California to cause cancer, or birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 - Proposition 65

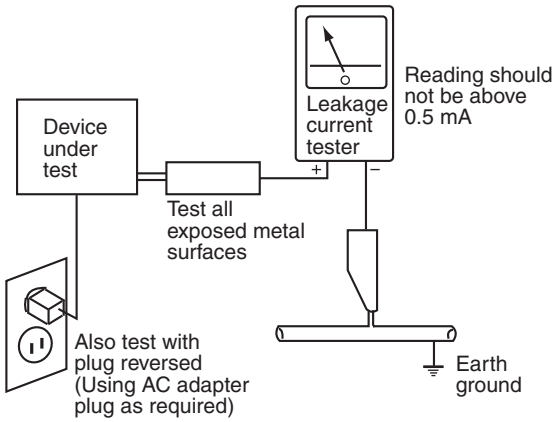
(FOR USA MODEL ONLY)

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 120 V 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.

CONTENTS

1. SERVICE PRECAUTIONS

1.1 NOTES ON SOLDERING

- For environmental protection, lead-free solder is used on the printed circuit boards mounted in this unit.
  Be sure to use lead-free solder and a soldering iron that can meet specifications for use with lead-free solders for repairs accompanied by reworking of soldering.

- Compared with conventional eutectic solders, lead-free solders have higher melting points, by approximately 40 ºC.
  Therefore, for lead-free soldering, the tip temperature of a soldering iron must be set to around 373 ºC in general, although the temperature depends on the heat capacity of the PC board on which reworking is required and the weight of the tip of the soldering iron.

Do NOT use a soldering iron whose tip temperature cannot be controlled.

Compared with eutectic solders, lead-free solders have higher bond strengths but slower wetting times and higher melting temperatures (hard to melt/easy to harden).

The following lead-free solders are available as service parts:
- Parts numbers of lead-free solder:
  GYP1006 1.0 in dia.
  GYP1007 0.6 in dia.
  GYP1008 0.3 in dia.

1.2 SERVICE NOTICE

- **Discharging**
  For more detail, please refer to "7. DISASSEMBLY - 1. Discharging".

- **Notes on Ground Points Connection**
  For more detail, please refer to "7. DISASSEMBLY - 2. Notes on Ground Points Connection".

2. SPECIFICATIONS

VSX-821-K

Amplifier section

Continuous average power output of 80 watts* per channel, min., at 8 ohms, from 20 Hz to 20 000 Hz with no more than 0.08 % total harmonic distortion.**

Front (stereo).....80 W + 80 W
Power output (1 kHz, 8 Ω, 0.05 %).....110 W per channel
Guaranteed speaker impedance
FRONT:A, B.....6 Ω to 16 Ω
FRONT:A+B.....12 Ω to 16 Ω
SURROUND, CENTER.....6 Ω to 16 Ω
* Measured pursuant to the Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifiers
** Measured by Audio Spectrum Analyzer

Audio Section

Input (Sensitivity/Impedance)
LINE.....200 mV/47 kΩ
Output (Level/Impedance)
REC.....200 mV/2.2 kΩ
Signal-to-Noise Ratio (IHF, short circuited, A network)
LINE.....98 dB
Signal-to-Noise Ratio [EIA, at 1 W (1 kHz)]
LINE.....79 dB

Video Section

Signal level
Composite.....1 Vp-p (75 Ω)
Component Video.....Y: 1.0 Vp-p (75 Ω)
PB, PR: 0.7 Vp-p (75 Ω)
Corresponding maximum resolution
Component Video.....1080p (1125p)

Tuner Section

Frequency Range (FM).....87.5 MHz to 108 MHz
Antenna Input (FM).....75 Ω unbalanced
Frequency Range (AM).....530 kHz to 1700 kHz
Antenna (AM).....Loop antenna

Digital In/Out Section

HDMI terminal.....Type A (19-pin)
HDMI output type.....5 V, 100 mA
USB terminal.....USB2.0 Full Speed (Type A)
iPod terminal.....USB, and Video (Composite)
SIRIUS antenna cable.....8-pin mini DIN cable
ADAPTER PORT terminal.....5 V, 100 mA

Miscellaneous

Power Requirements.....AC 120 V, 60 Hz
Power Consumption.....415 W
In standby.....0.4 W (Control OFF)
Dimensions.....435 mm (W) x 168 mm (H) x 362.5 mm (D)
$17^{3}/16$ in. (W) x $6^{5}/8$ in. (H) x $14^{5}/16$ in. (D)
Weight (without package).....9.2 kg (20 lb 5 oz)

Furnished Parts

Microphone (for Auto MCACC setup).....1
Remote control.....1
Dry cell batteries (AAA size IEC R03).....2
AM loop antenna.....1
FM wire antenna.....1
iPod cable.....1
Operating instructions.....1

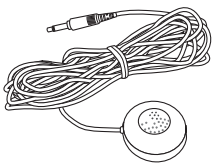
Note

Specifications and the design are subject to possible modifications without notice, due to improvements.

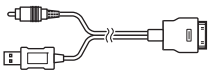
Accessories

AM loop antenna
(E601019000010-IL)

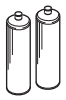
FM wire antenna
(E605010140010-IL)



Microphone (for Auto MCACC setup)
(APM7008)



iPod cable
(L308102013020-IL)



Dry cell batteries
(AAA size IEC R03) x2

Remote control
(8300762100010-IL)

VSX-921-K

Amplifier section

Continuous average power output of 80 watts* per channel, min., at 8 ohms, from 20 Hz to 20 000 Hz with no more than 0.08 % total harmonic distortion.**

Front (stereo).....80 W + 80 W
Power output (1 kHz, 8 Ω, 0.05 %).....110 W per channel
Guaranteed speaker impedance.....6 Ω to 16 Ω
* Measured pursuant to the Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifiers
** Measured by Audio Spectrum Analyzer

Audio Section

Input (Sensitivity/Impedance)
LINE.....200 mV/47 kΩ
Output (Level/Impedance)
REC.....200 mV/2.2 kΩ
Signal-to-Noise Ratio (IHF, short circuited, A network)
LINE.....98 dB
Signal-to-Noise Ratio [EIA, at 1 W (1 kHz)]
LINE.....79 dB

Video Section

Signal level
Composite.....1 Vp-p (75 Ω)
Component Video.....Y: 1.0 Vp-p (75 Ω)
PB, PR: 0.7 Vp-p (75 Ω)
Corresponding maximum resolution
Component Video.....1080p (1125p)

Tuner Section

Frequency Range (FM).....87.5 MHz to 108 MHz
Antenna Input (FM).....75 Ω unbalanced
Frequency Range (AM).....530 kHz to 1700 kHz
Antenna (AM).....Loop antenna

Digital In/Out Section

HDMI terminal.....Type A (19-pin)
HDMI output type.....5 V, 100 mA
USB terminal.....USB2.0 Full Speed (Type A)
iPod terminal.....USB, and Video (Composite)
SIRIUS antenna cable.....8-pin mini DIN cable
ADAPTER PORT terminal.....5 V, 100 mA

Miscellaneous

Power Requirements.....AC 120 V, 60 Hz
Power Consumption.....500 W
In standby.....0.4 W (Control OFF)
Dimensions.....435 mm (W) x 168 mm (H) x 362.5 mm (D)
$17^3/16$ in. (W) x $6^5/8$ in. (H) x $14^5/16$ in. (D)
Weight (without package).....9.6 kg (21 lb 3 oz)

Furnished Parts

Microphone (for Auto MCACC setup).....1
Remote control.....1
Dry cell batteries (AAA size IEC R03).....2
AM loop antenna.....1
FM wire antenna.....1
iPod cable.....1
Operating instructions.....1

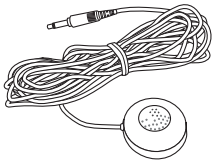
Note

Specifications and the design are subject to possible modifications without notice, due to improvements.

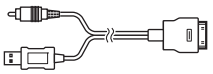
Accessories

AM loop antenna
(E601019000010-IL)

FM wire antenna
(E605010140010-IL)



Microphone (for Auto MCACC setup)
(APM7008)



iPod cable
(L308102013020-IL)

Dry cell batteries
(AAA size IEC R03) x2

Remote control
(8300762100010-IL)

VSX-521-K

Amplifier section

Continuous average power output of 80 watts* per channel, min., at 8 ohms, from 20 Hz to 20 000 Hz with no more than 0.08 % total harmonic distortion.**

Front (stereo).....80 W + 80 W
Power output (1 kHz, 8 Ω, 0.05 %).....110 W per channel
Guaranteed speaker impedance.....6 Ω to 16 Ω
* Measured pursuant to the Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifiers
** Measured by Audio Spectrum Analyzer

Audio Section

Input (Sensitivity/Impedance)
LINE.....200 mV/47 kΩ
Output (Level/Impedance)
REC.....200 mV/2.2 kΩ
Signal-to-Noise Ratio (IHF, short circuited, A network)
LINE.....98 dB
Signal-to-Noise Ratio [EIA, at 1 W (1 kHz)]
LINE.....79 dB

Video Section

Signal level
Composite.....1 Vp-p (75 Ω)
Component Video.....Y: 1.0 Vp-p (75 Ω)
PB, PR: 0.7 Vp-p (75 Ω)
Corresponding maximum resolution
Component Video.....1080p (1125p)

Tuner Section

Frequency Range (FM).....87.5 MHz to 108 MHz
Antenna Input (FM).....75 Ω unbalanced
Frequency Range (AM).....530 kHz to 1700 kHz
Antenna (AM).....Loop antenna

Digital In/Out Section

HDMI terminal.....Type A (19-pin)
HDMI output type.....5 V, 100 mA
ADAPTER PORT terminal.....5 V, 100 mA

Miscellaneous

Power Requirements.....AC 120 V, 60 Hz
Power Consumption.....415 W
In standby.....0.4 W (Control OFF)
Dimensions.....435 mm (W) x 168 mm (H) x 362.5 mm (D)
$17^{3}/16$ in. (W) x $6^{5}/8$ in. (H) x $14^{5}/16$ in. (D)
Weight (without package).....9.0 kg (19 lb 14 oz)

Furnished Parts

Microphone (for Auto MCACC setup).....1
Remote control.....1
Dry cell batteries (AAA size IEC R03).....2
AM loop antenna.....1
FM wire antenna.....1
Operating instructions.....1

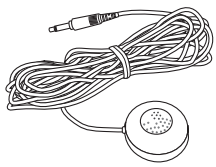
Note

Specifications and the design are subject to possible modifications without notice, due to improvements.

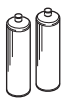
Accessories

AM loop antenna
(E601019000010-IL)

FM wire antenna
(E605010140010-IL)



Microphone (for Auto MCACC setup)
(APM7008)



Dry cell batteries
(AAA size IEC R03) x2

Remote control
(8300761900010-IL)

3. BASIC ITEMS FOR SERVICE

3.1 CHECK POINTS AFTER SERVICING

Items to be checked after servicing

To keep the product quality after servicing, confirm recommended check points shown below.

No.	Procedures	Check points
1	Confirm whether the customer complain has been solved. If the customer complain occurs with the particular source, such as Dolby Digital, DTS, AAC, DVD-A and HDMI, input it for the operation check.	The customer complain must not be reappeared. Video, Audio and operations must be normal.
2	Check the analog audio playback. (Make the analog connections with a DVD player.)	Each channel audio and operations must be normal.
3	Check the digital audio playback. (Make the digital connections with a DVD player.)	Each channel audio and operations must be normal.
4	Check surround playback. (Select Surround mode and check the multichannel operations via the DSP circuit.)	Each channel audio and operations must be normal.
5	Check the video outputs. (Connect with a DVD player.)	Video and operations must be normal.
6	Check the tuner (AM and FM) operations.	Audio and operations must be normal.
7	Check the sound from headphone output.	Sound must be normal, without noise.
8	Check the appearance of the product.	No scratches or dirt on its appearance after receiving it for service.

See the table below for the items to be checked regarding video and audio.

Item to be checked regarding video	Item to be checked regarding audio
Block noise	Distortion
Horizontal noise	Noise
Flicker	Volume too low
Disturbed image (video jumpiness)	Volume too high
Too dark	Volume fluctuating
Too bright	Sound interrupted
Mottled color	

3.2 JIGS LIST

■ Jigs List

Jig Name	Part No.	Remarks
RS-232C update jig (Jig + 10P FFC)	GGF1642	Firmware update (RS-232C ↔ Rear panel)
RS-232C cable (9-pin to 9-pin, straight cable)	————	
Board to board extension jig cable	GGD1733	Diagnosis (D-MAIN Assy ↔ CPU Assy)
Board to board extension jig cable	GGD1734	Diagnosis (D-MAIN Assy ↔ BRIDGE A Assy)
31P extension jig FFC	GGD1738	Diagnosis (DISPLAY Assy ↔ CPU Assy)
9P extension jig cable (for 5 ch)	GGD1739	Diagnosis (AMP Assy ↔ AUDIO Assy)
13P extension jig cable (for 7 ch)	GGD1740	

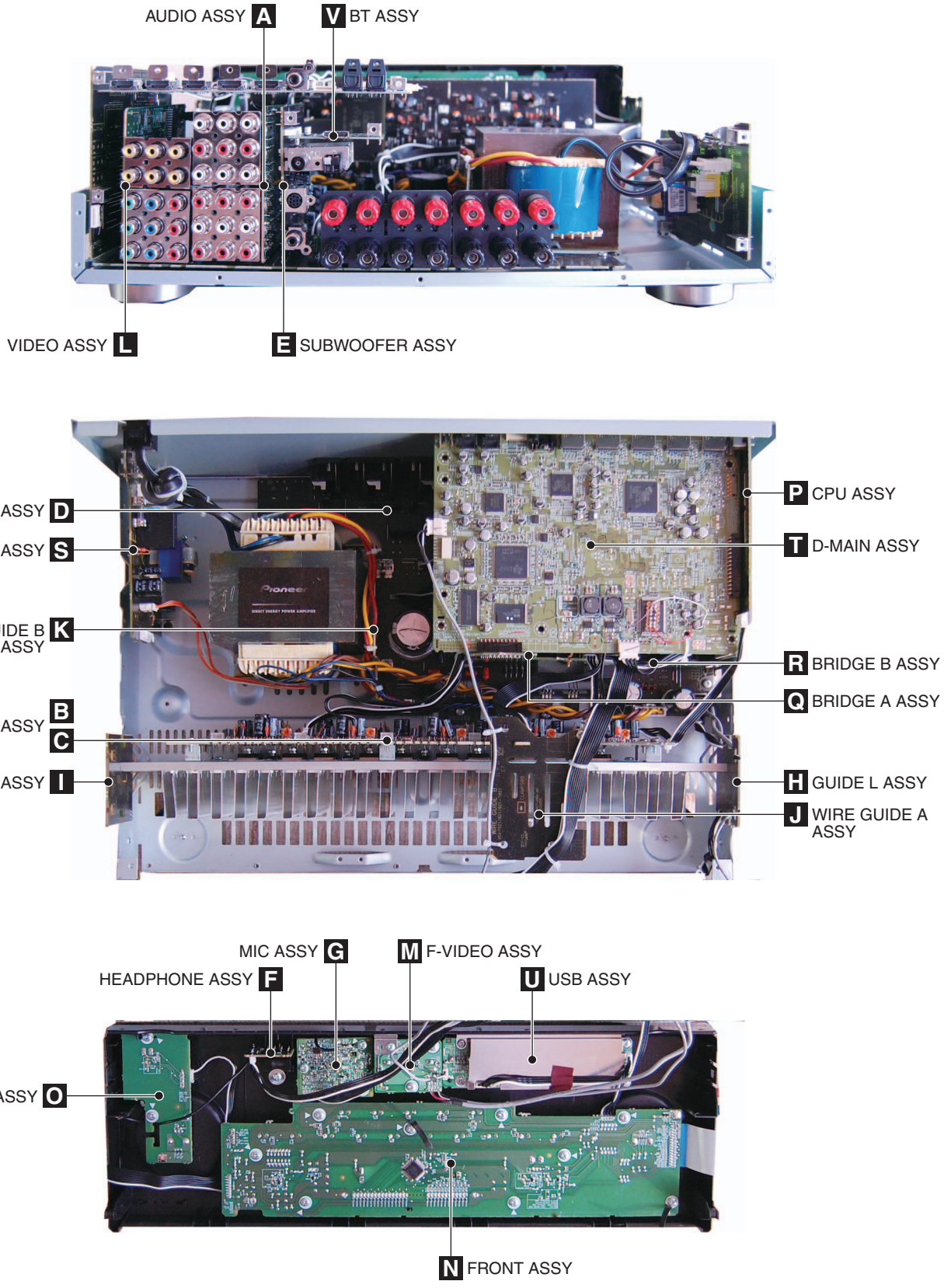
■ Lubricants and Glues List

Name	Part No.	Remarks
Silicon grease	GEM1057	Refer to "9.2 EXTERIOR SECTION (VSX-821-K, VSX-921-K)" and "9.3 EXTERIOR SECTION (VSX-521-K)".
Silicon adhesive	GYA1011 (KE40RTV-W)	Refer to "9.2 EXTERIOR SECTION (VSX-821-K, VSX-921-K)" and "9.3 EXTERIOR SECTION (VSX-521-K)".

3.3 PCB LOCATIONS

VSX-821-K, VSX-921-K

• This photo. is VSX-821-K.

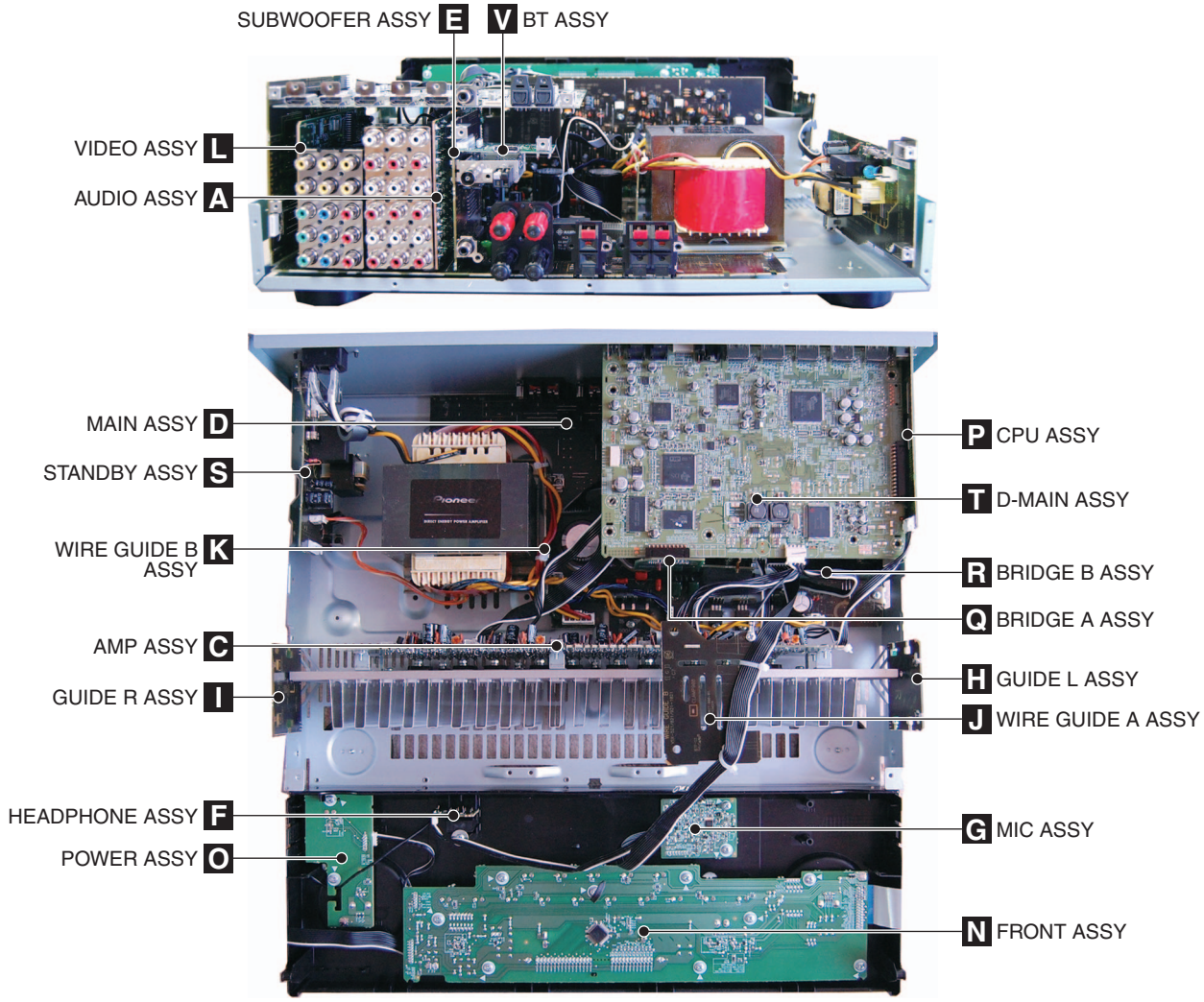


NOTES: ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
NSP	1	..MAIN ASSY (VSX-821-K)	7025HK1011010-IL
NSP	1	..MAIN ASSY (VSX-921-K)	7025HK1014010-IL
	2	..MAIN ASSY (VSX-821-K)	70280702710H0-IL
	2	..MAIN ASSY (VSX-921-K)	70280702710G0-IL
	2	..SUBWOOFER ASSY	7028070272070-IL
	2	..GUIDE L ASSY	7028070273070-IL
	2	..GUIDE R ASSY	7028070274070-IL
	2	..WIRE GUIDE A ASSY	7028070276070-IL
	2	..WIRE GUIDE B ASSY	7028070277070-IL
NSP	1	..AMP1 ASSY (VSX-821-K ONLY)	7025HK1011017-IL
	2	..AMP ASSY (VSX-821-K ONLY)	7028070241030-IL
NSP	1	..AMP2 ASSY (VSX-921-K ONLY)	7025HK1014016-IL
	2	..AMP ASSY (VSX-921-K ONLY)	7028070251040-IL
NSP	1	..BT ASSY	7025HK1009019-IL
	2	..BT ASSY	7028070231010-IL
NSP	1	..VIDEO ASSY (VSX-821-K)	7025HK1011016-IL
NSP	1	..VIDEO ASSY (VSX-921-K)	7025HK1014017-IL
	2	..VIDEO ASSY (VSX-821-K)	7028070261060-IL
	2	..VIDEO ASSY (VSX-921-K)	7028070261070-IL
NSP	1	..CPU ASSY (VSX-821-K)	7025HK1011011-IL
NSP	1	..CPU ASSY (VSX-921-K)	7025HK1014014-IL
	2	..CPU ASSY (VSX-821-K)	7028070221030-IL
	2	..CPU ASSY (VSX-921-K)	7028070221070-IL
	2	..BRIDGE A ASSY	7028070222070-IL
	2	..BRIDGE B ASSY	7028070223070-IL
	2	..STANDBY ASSY (VSX-821-K)	7028070225030-IL
	2	..STANDBY ASSY (VSX-921-K)	7028070225070-IL
NSP	1	..FRONT ASSY (VSX-821-K)	7025HK1011013-IL
NSP	1	..FRONT ASSY (VSX-921-K)	7025HK1014013-IL
	2	..FRONT ASSY	7028070211050-IL
	2	..POWER ASSY	7028070212050-IL
	2	..MIC ASSY	7028070213050-IL
	2	..F-VIDEO ASSY	7028070214050-IL
	2	..HEADPHONE ASSY	7028070215050-IL
NSP	1	..AUDIO ASSY (VSX-821-K)	7025HK1011014-IL
NSP	1	..AUDIO ASSY (VSX-921-K)	7025HK1014011-IL
	2	..AUDIO ASSY (VSX-821-K)	7028070181030-IL
	2	..AUDIO ASSY (VSX-921-K)	7028070181050-IL
NSP	1	..USB ASSY	7025HK1014012-IL
	2	..USB ASSY	7028070201050-IL
NSP	1	..D-MAIN ASSY (VSX-821-K)	7025HK1011012-IL
NSP	1	..D-MAIN ASSY (VSX-921-K)	7025HK1014018-IL
	2	..D-MAIN ASSY (VSX-821-K)	7028070191030-IL
	2	..D-MAIN ASSY (VSX-921-K)	7028070191050-IL

VSX-521-K



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.*

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
NSP	1	MAIN ASSY	7025HK1012010-IL
	2	MAIN ASSY	70280702710D0-IL
	2	SUBWOOFER ASSY	7028070272050-IL
	2	GUIDE L ASSY	7028070273070-IL
	2	GUIDE R ASSY	7028070274070-IL
	2	WIRE GUIDE A ASSY	7028070276070-IL
	2	WIRE GUIDE B ASSY	7028070277070-IL
NSP	1	AMP1 ASSY	7025HK1011017-IL
	2	AMP ASSY	7028070241030-IL
NSP	1	BT ASSY	7025HK1009019-IL
	2	BT ASSY	7028070231010-IL
NSP	1	VIDEO ASSY	7025HK1011016-IL
	2	VIDEO ASSY	7028070261060-IL
NSP	1	CPU ASSY	7025HK1012011-IL
	2	CPU ASSY	7028070221020-IL
	2	BRIDGE A ASSY	7028070222070-IL
	2	BRIDGE B ASSY	7028070223070-IL
	2	STANDBY ASSY	7028070225030-IL
NSP	1	FRONT ASSY	7025HK1012013-IL
	2	FRONT ASSY	7028070211020-IL
	2	POWER ASSY	7028070212050-IL
	2	MIC ASSY	7028070213020-IL
	2	HEADPHONE ASSY	7028070215050-IL
NSP	1	AUDIO ASSY	7025HK1011014-IL
	2	AUDIO ASSY	7028070181030-IL
NSP	1	D-MAIN ASSY	7025HK1012012-IL
	2	D-MAIN ASSY	7028070191020-IL

A

B

C

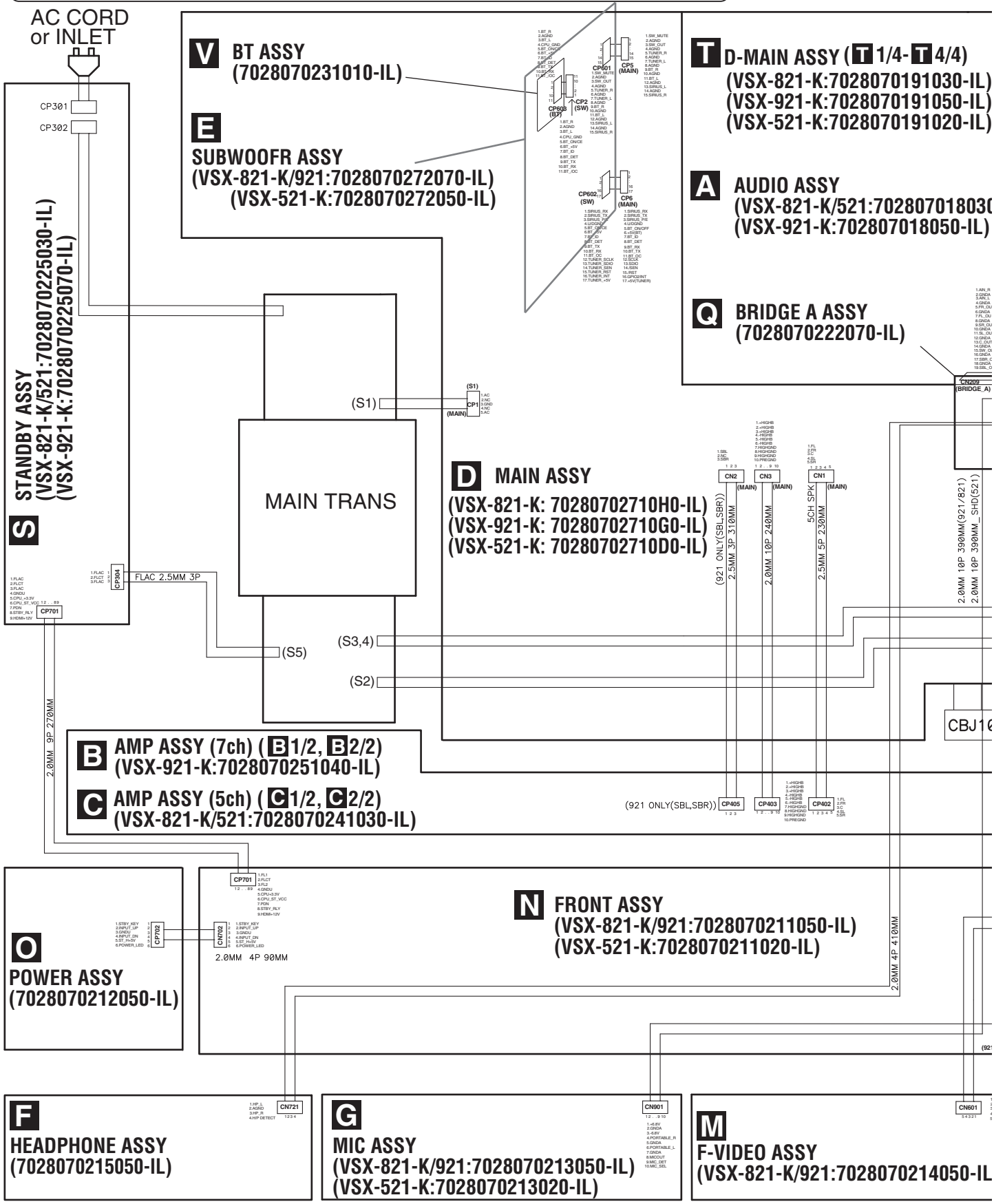
D

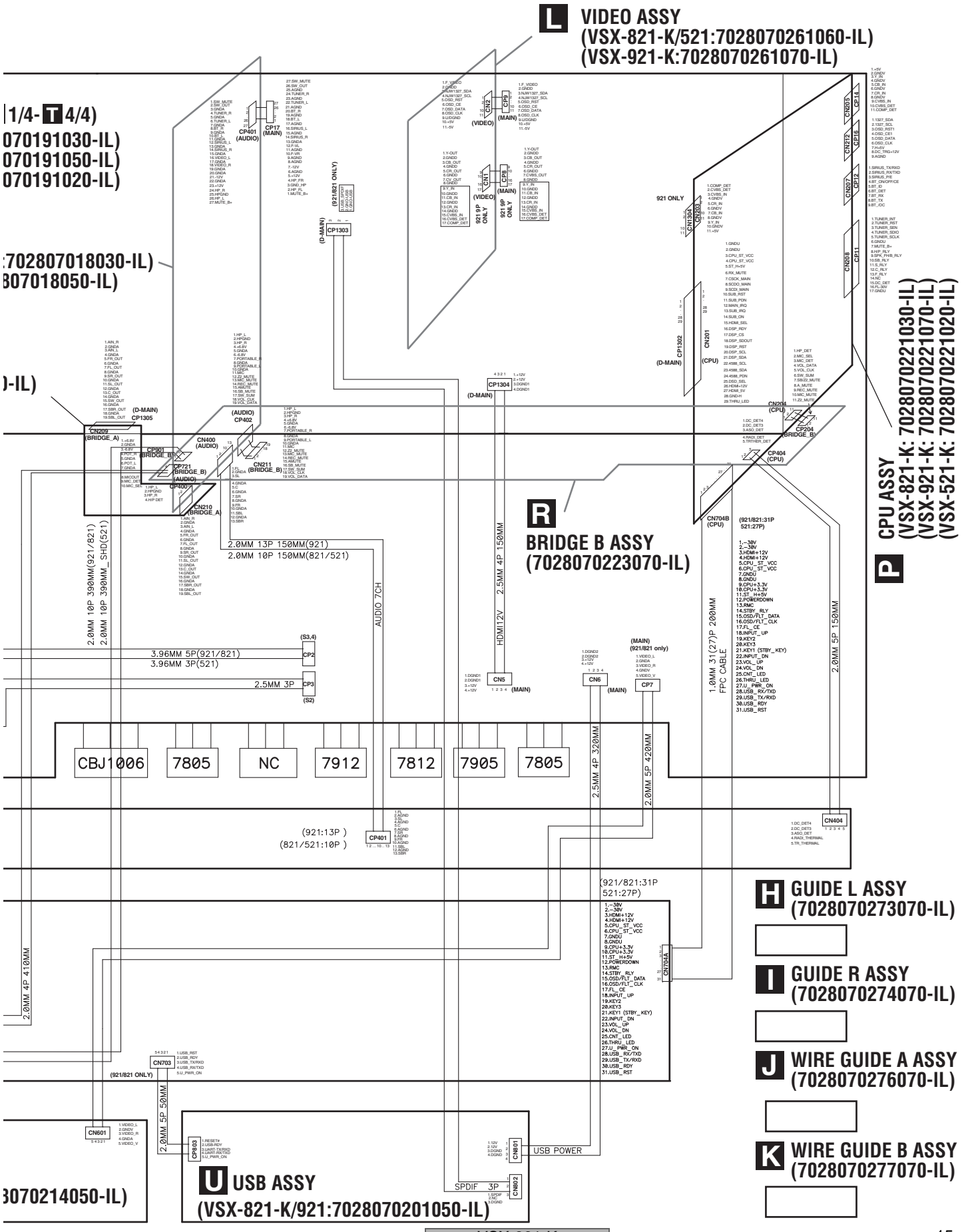
E

F

4. BLOCK DIAGRAM
4.1 OVERALL WIRING DIAGRAM

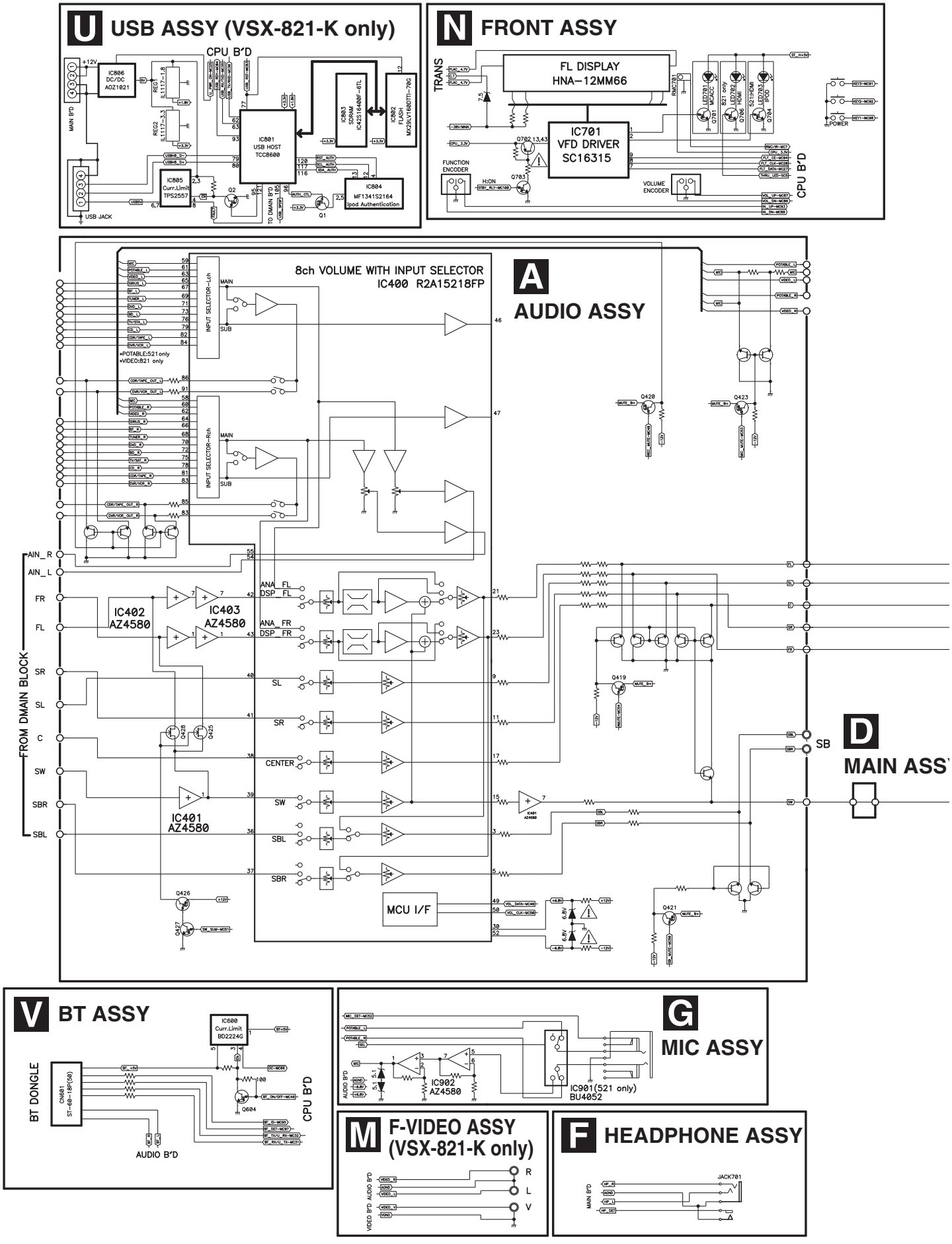
- When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

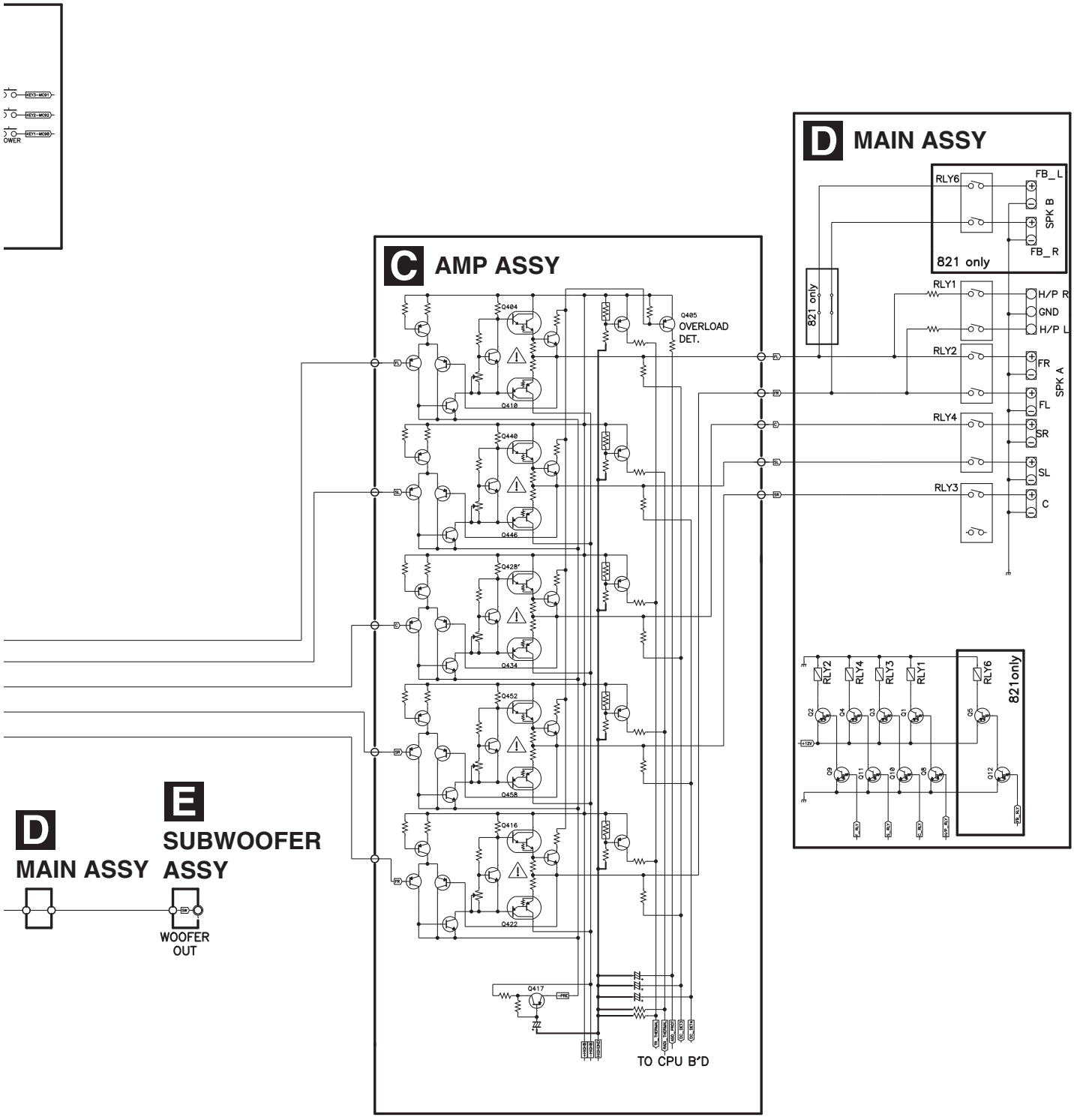



L VIDEO ASSY
(VSX-821-K/521:7028070261060-IL)
(VSX-921-K:7028070261070-IL)
P CPU ASSY
(VSX-821-K: 7028070221030-IL)
(VSX-921-K: 7028070221070-IL)
(VSX-521-K: 7028070221020-IL)
R BRIDGE B ASSY
(7028070223070-IL)
H GUIDE L ASSY
(7028070273070-IL)
I GUIDE R ASSY
(7028070274070-IL)
J WIRE GUIDE A ASSY
(7028070276070-IL)
K WIRE GUIDE B ASSY
(7028070277070-IL)
U USB ASSY
(VSX-821-K/921:7028070201050-IL)
CBJ1006
7805
NC
7912
7812
7905
7805
921 ONLY
(D-MAIN)
(MAIN)
(CPU)
(BRIDGE_A)
(BRIDGE_B)
(AUDIO)
(VIDEO)
(921/821 ONLY)
USB POWER
SPDIF 3P
2.0MM 13P 150MM(921)
2.0MM 10P 150MM(821/521)
2.0MM 10P 390MM(921/821)
2.0MM 10P 390MM_SHD(521)
2.5MM 4P 150MM
HDMI12V
AUDIO 7CH
3.96MM 5P(921/821)
3.96MM 3P(521)
2.5MM 3P
2.5MM 4P 320MM
2.0MM 5P 420MM
2.0MM 5P 150MM
1.0MM 31(27)P 200MM
FPC CABLE
2.0MM 4P 410MM
2.0MM 5P 50MM
(921:13P)
(821/521:10P)
(921/821:31P
521:27P)

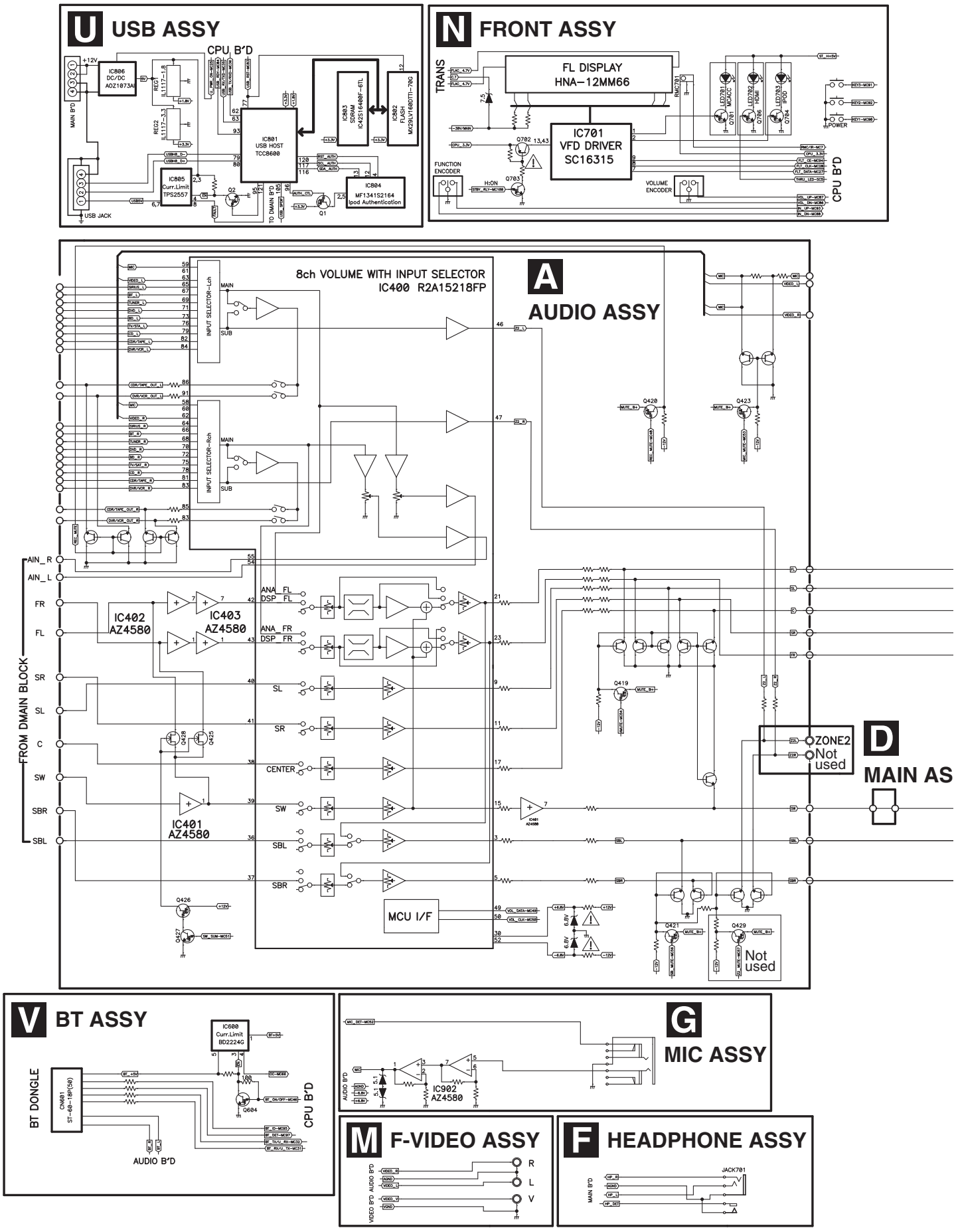
VSX-821-K

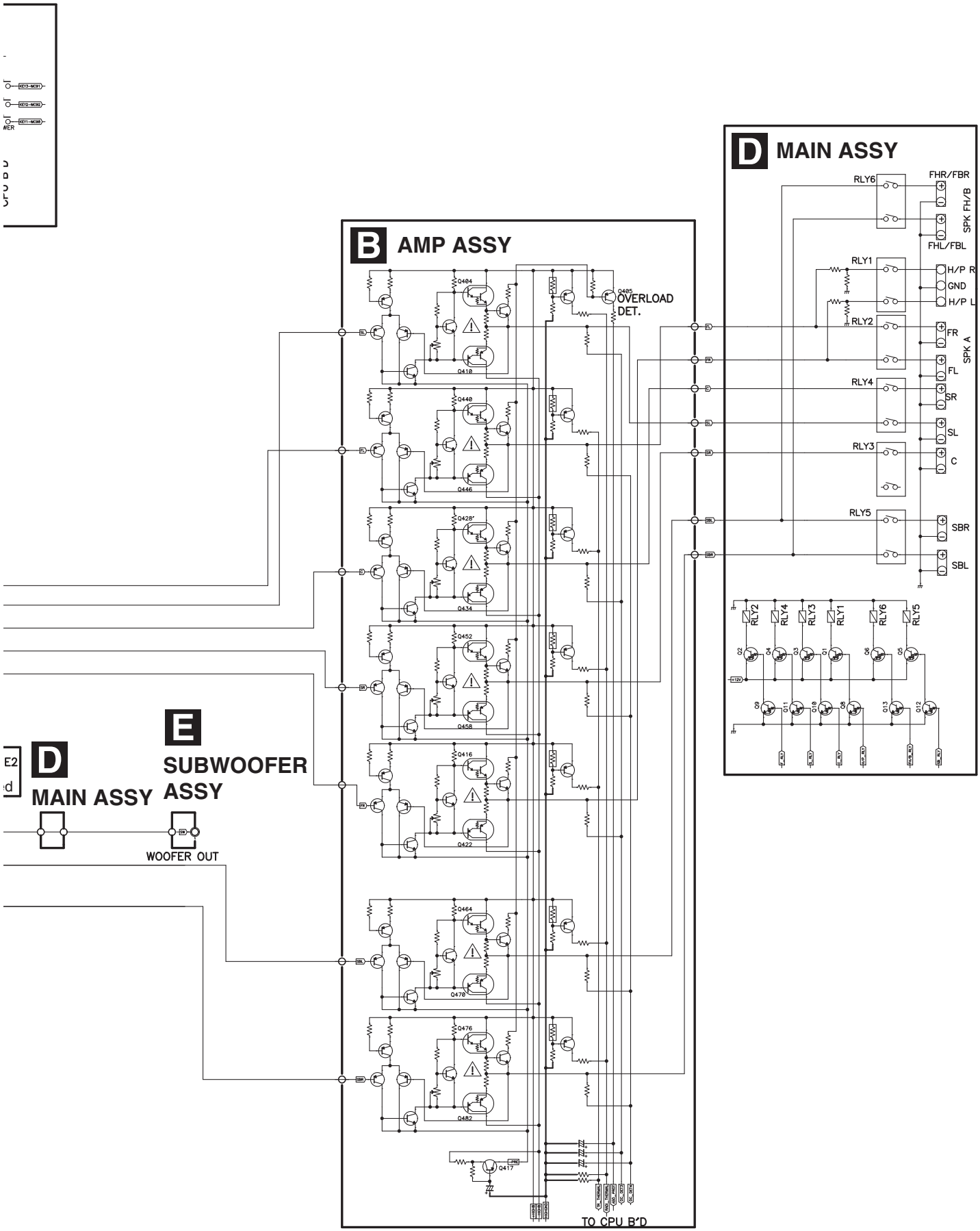
4.2 AUDIO BLOCK DIAGRAM (for VSX-821-K, VSX-521-K)



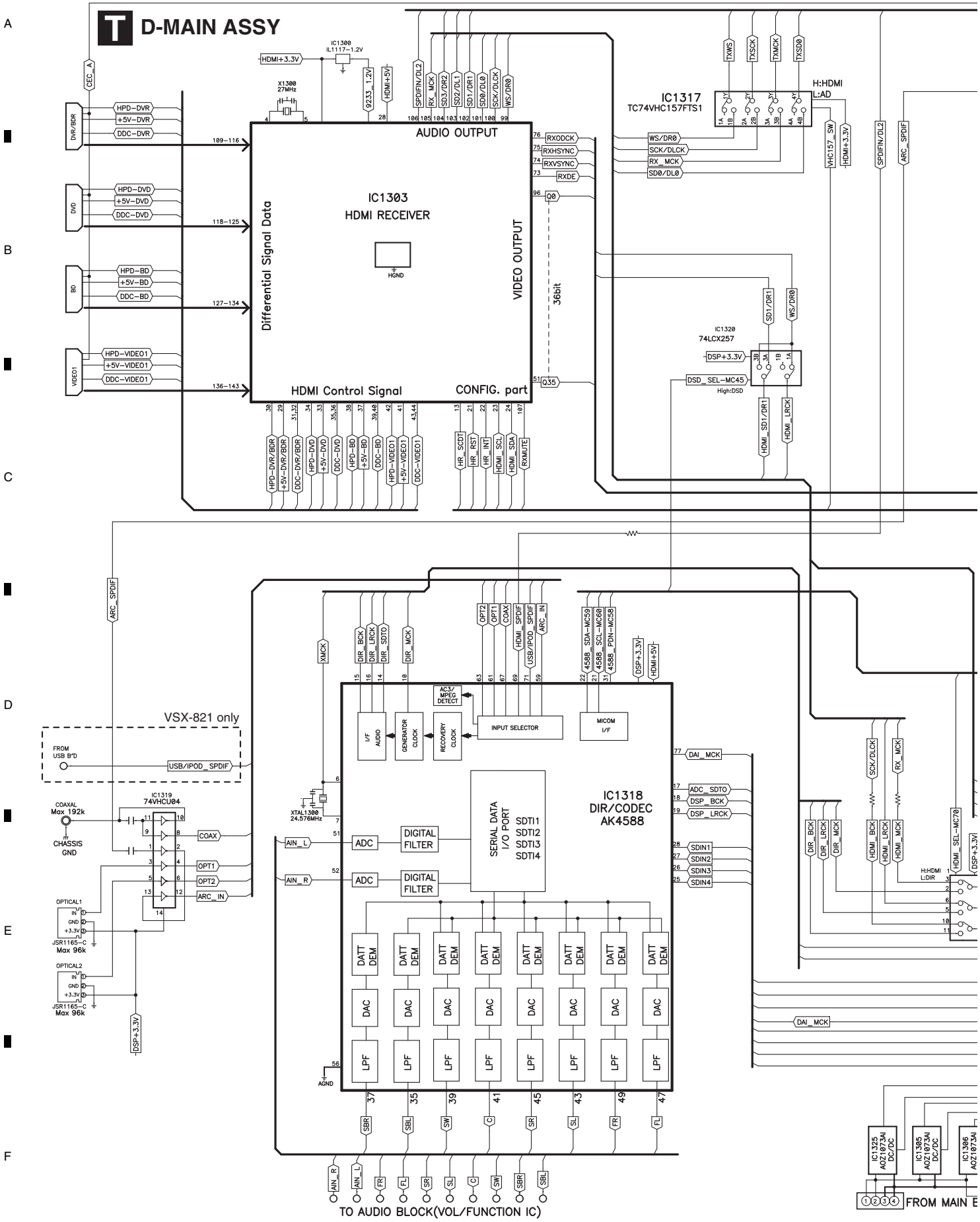

D MAIN ASSY
RLY6
FB_L
SPK B
FB_R
821 only
RLY1
H/P R
GND
H/P L
RLY2
FR
SPK A
FL
RLY4
SR
SL
RLY3
C
821only
RLY2
RLY4
RLY3
RLY1
RLY6
C AMP ASSY
Q404
Q405
OVERLOAD
DET.
Q410
Q440
Q446
Q428
Q434
Q452
Q458
Q416
Q422
Q417
TO CPU B'D
D
MAIN ASSY
E
SUBWOOFER
ASSY
WOOFER
OUT

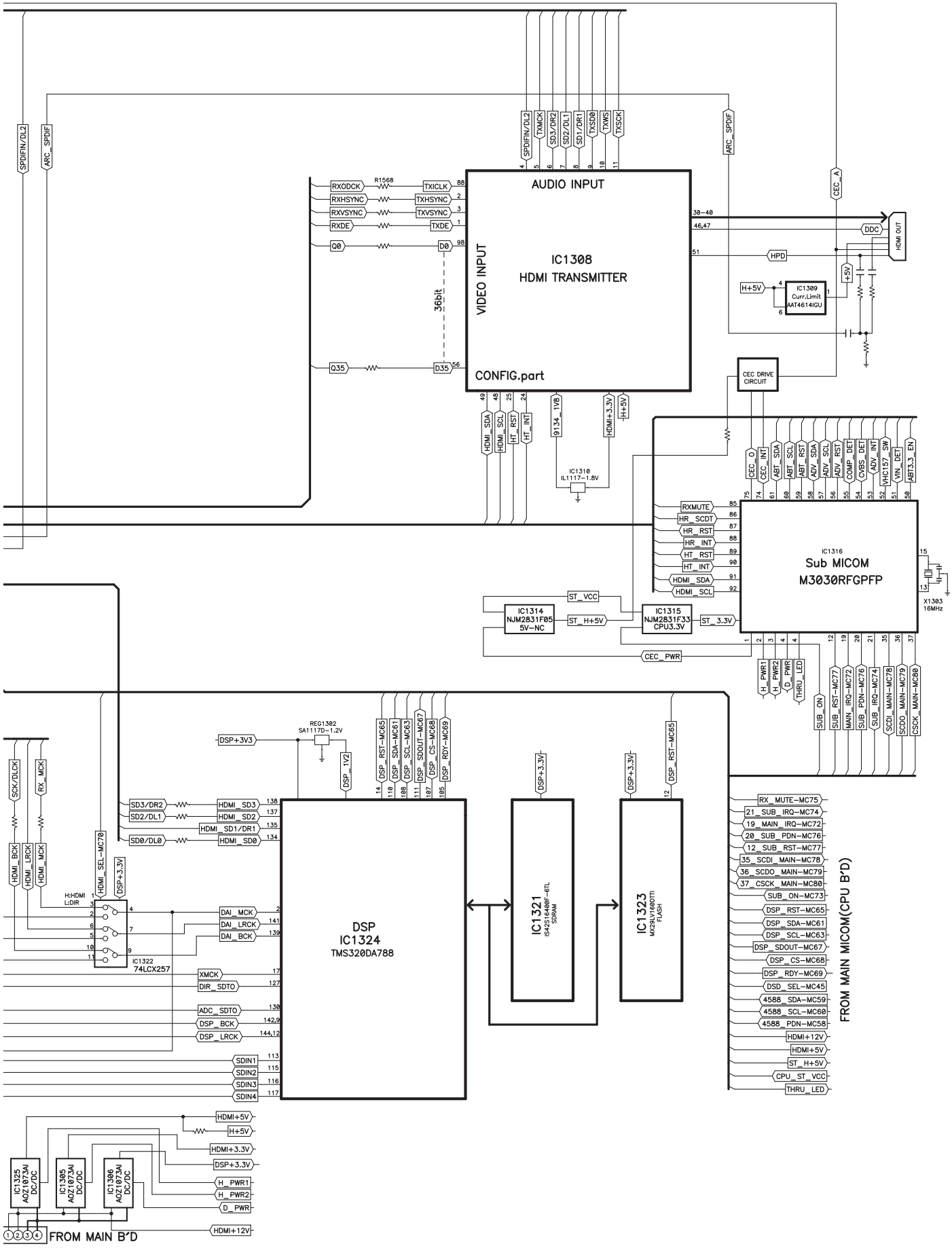
4.3 AUDIO BLOCK DIAGRAM (for VSX-921-K)



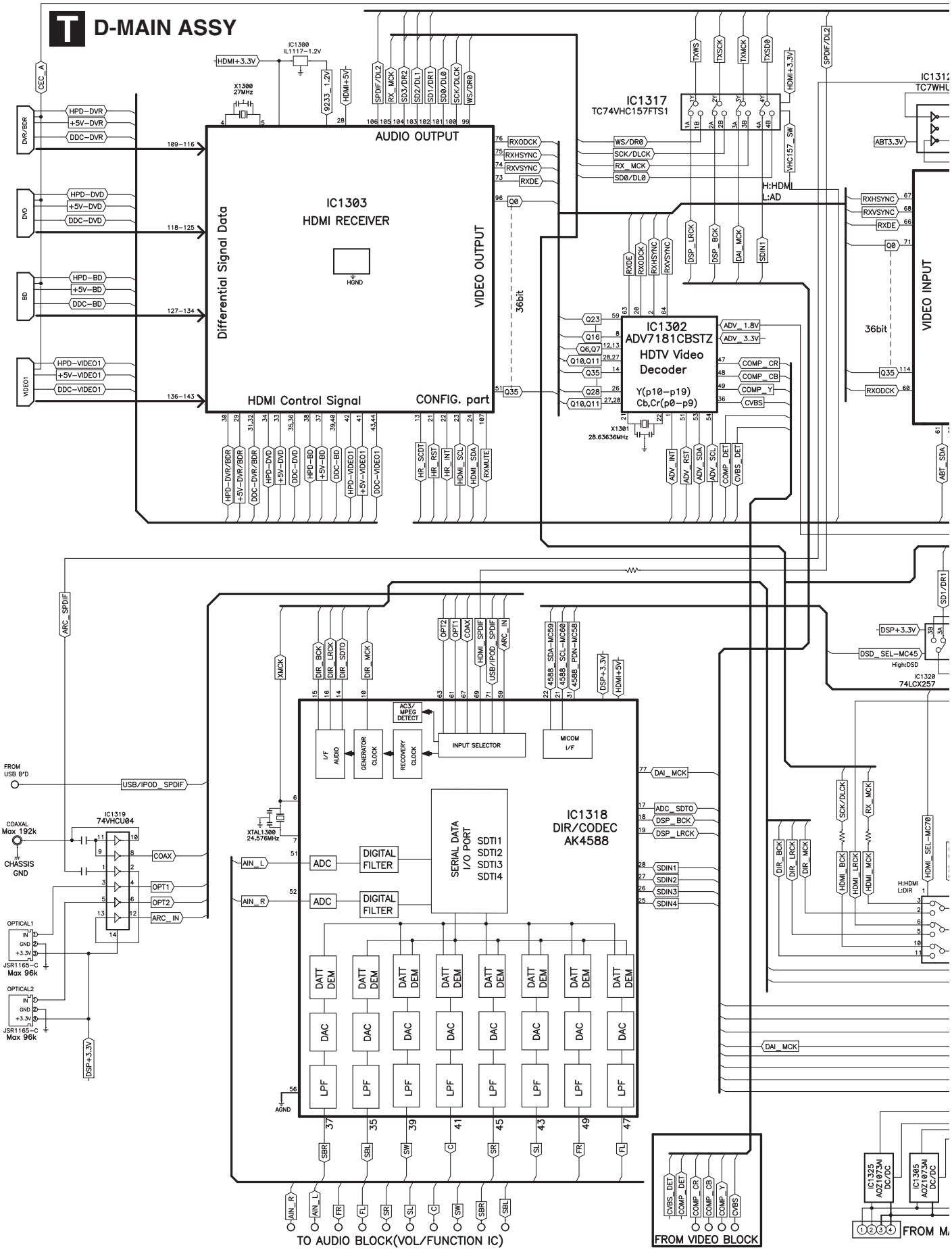

D MAIN ASSY
RLY6
FHR/FBR
SPK FH/B
FHL/FBL
RLY1
H/P R
GND
H/P L
RLY2
FR
SPK A
FL
RLY4
SR
SL
RLY3
C
RLY5
SBR
SBL
RLY2
RLY4
RLY3
RLY1
RLY6
RLY5
B AMP ASSY
Q405
OVERLOAD
DET.
Q404
Q410
Q440
Q446
Q428
Q434
Q452
Q458
Q416
Q422
Q464
Q470
Q476
Q482
Q417
TO CPU B'D
E
SUBWOOFER
ASSY
D
MAIN ASSY
WOOFER OUT

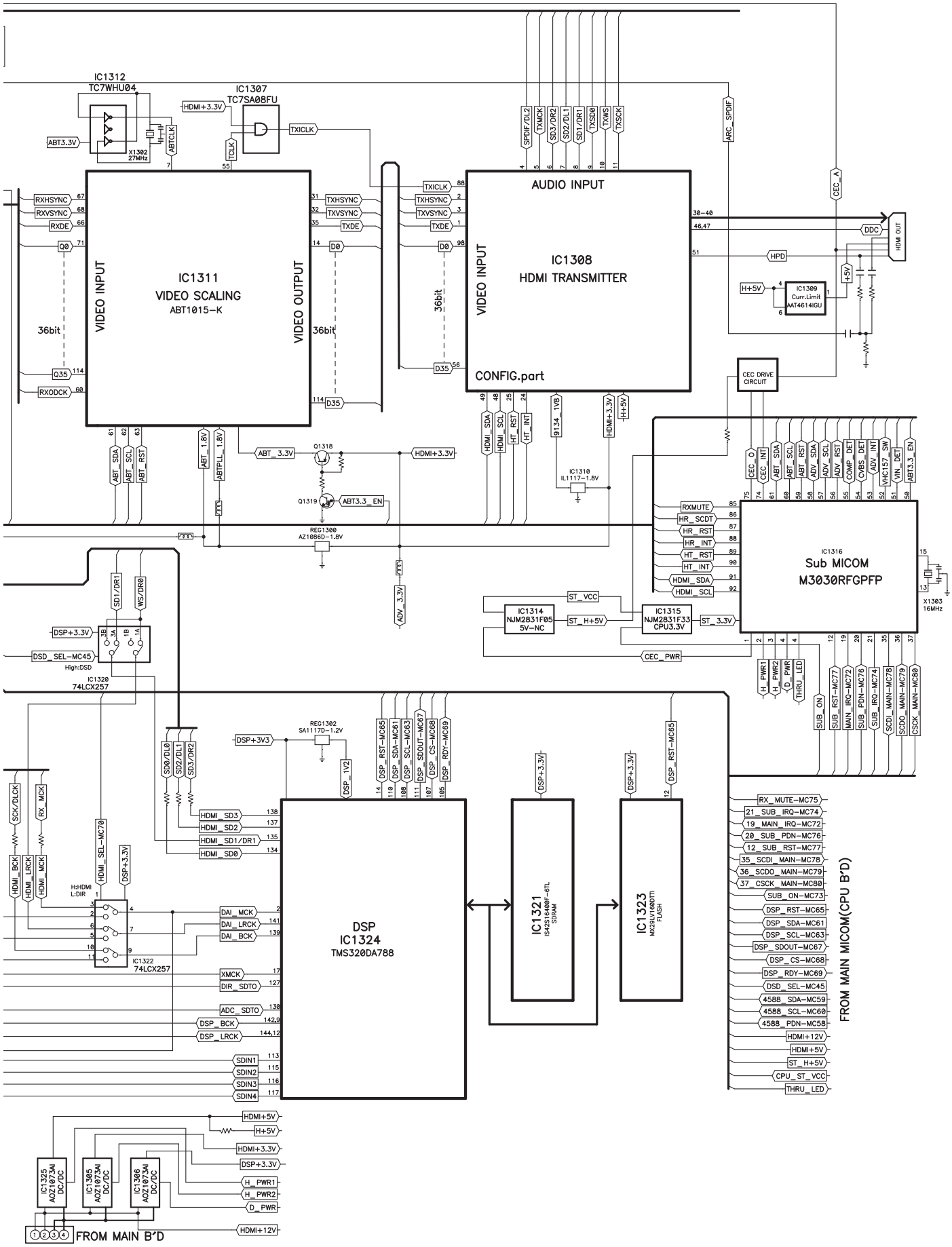
4.4 D-MAIN BLOCK DIAGRAM (for VSX-821-K, VSX-521-K)



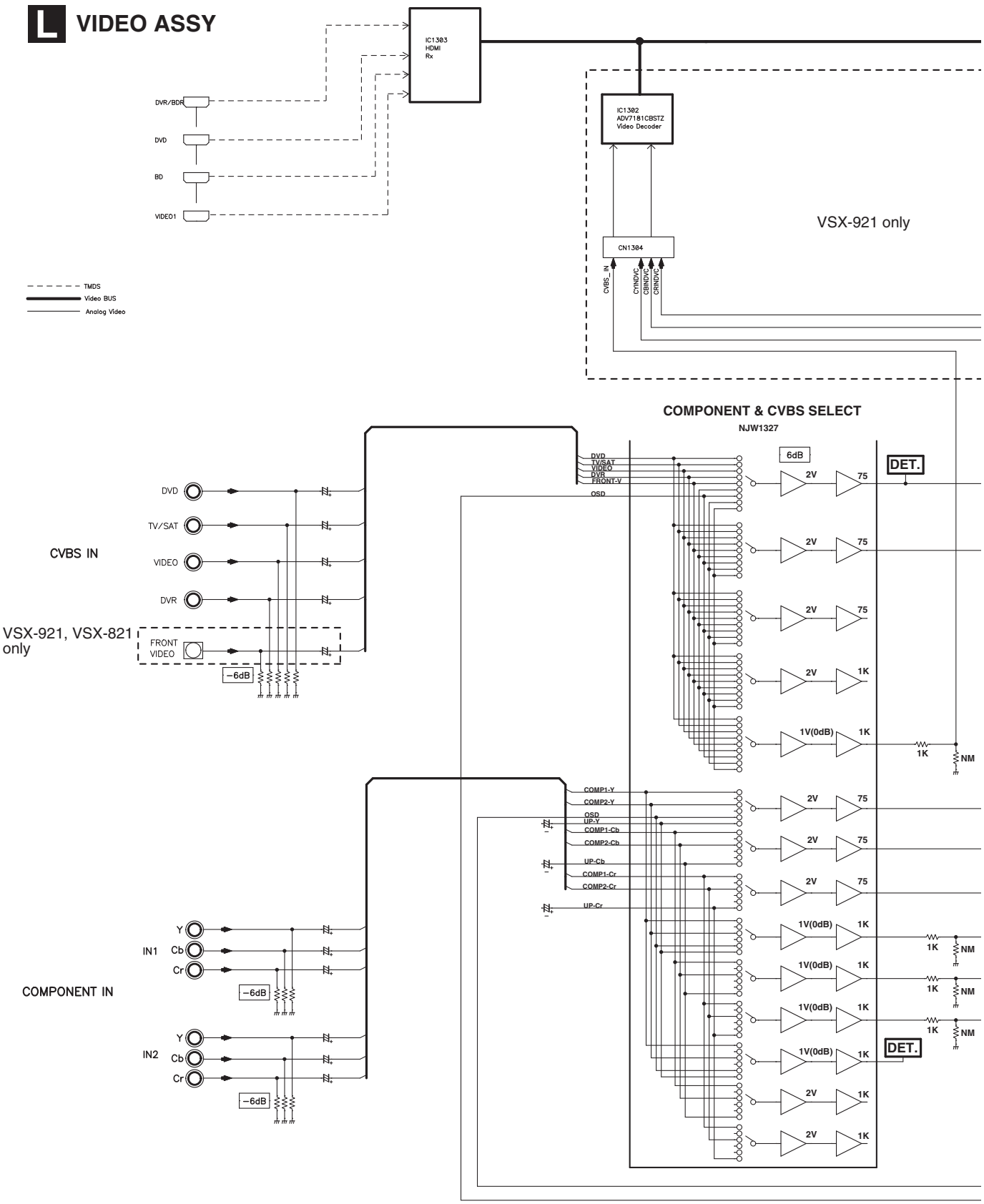

AUDIO INPUT
VIDEO INPUT
IC1308
HDMI TRANSMITTER
CONFIG.part
36bit
R1568
IC1309
Curr.Limit
AAT4614IGU
IC1310
IL1117-1.8V
CEC DRIVE CIRCUIT
IC1316
Sub MICOM
M3030RFGPFP
X1303
16MHz
IC1314
NJM2831F05
5V-NC
IC1315
NJM2831F33
CPU3.3V
REG1302
SA1117D-1.2V
DSP
IC1324
TMS320DA788
IC1321
IS42S16400F-6TL
SDRAM
IC1323
MX29LV160DTTI
FLASH
IC1322
74LCX257
IC1325
AOZ1073AI
DC/DC
IC1305
AOZ1073AI
DC/DC
IC1306
AOZ1073AI
DC/DC
FROM MAIN B'D
FROM MAIN MICOM(CPU B'D)

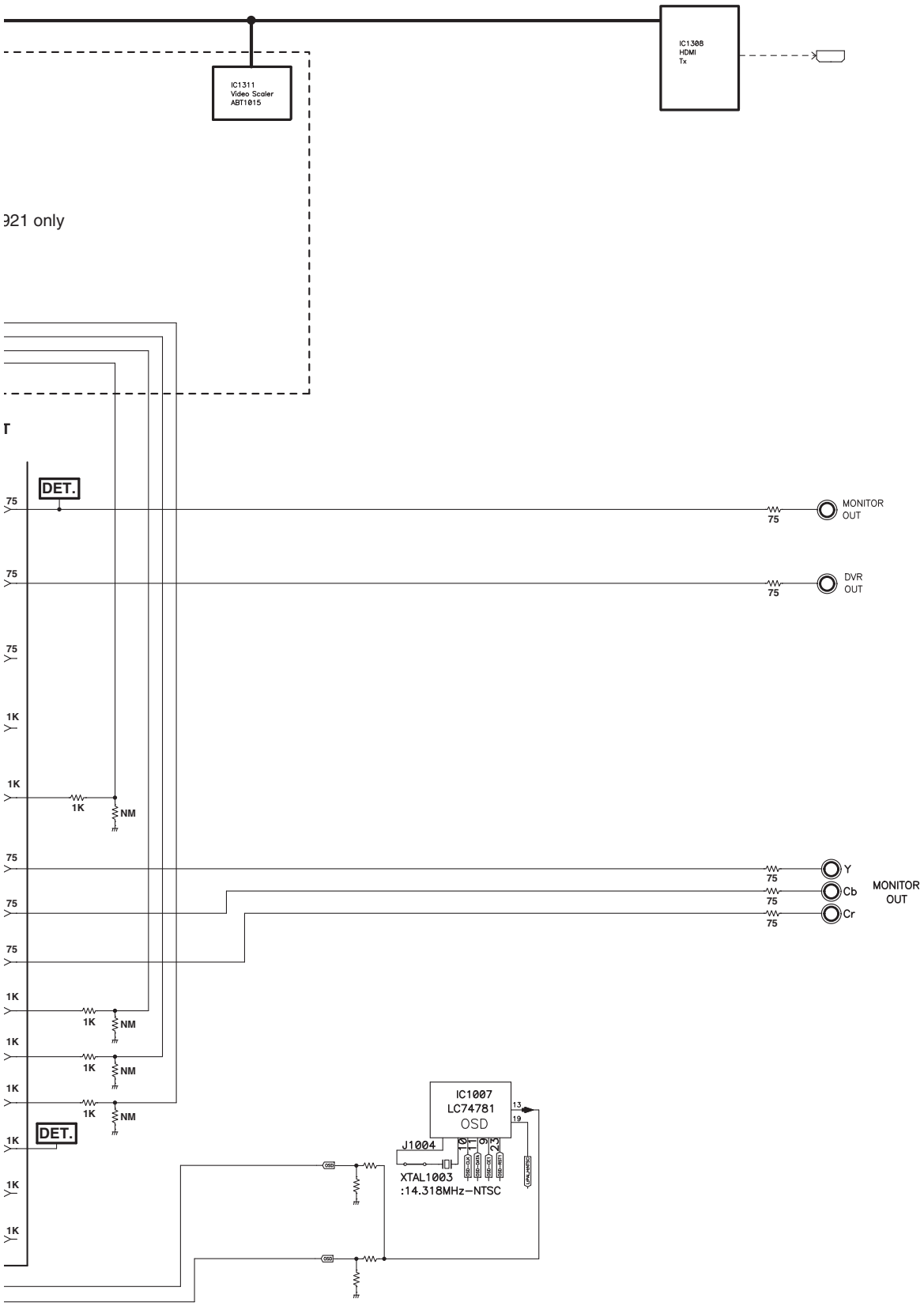
4.5 D-MAIN BLOCK DIAGRAM (for VSX-921-K)



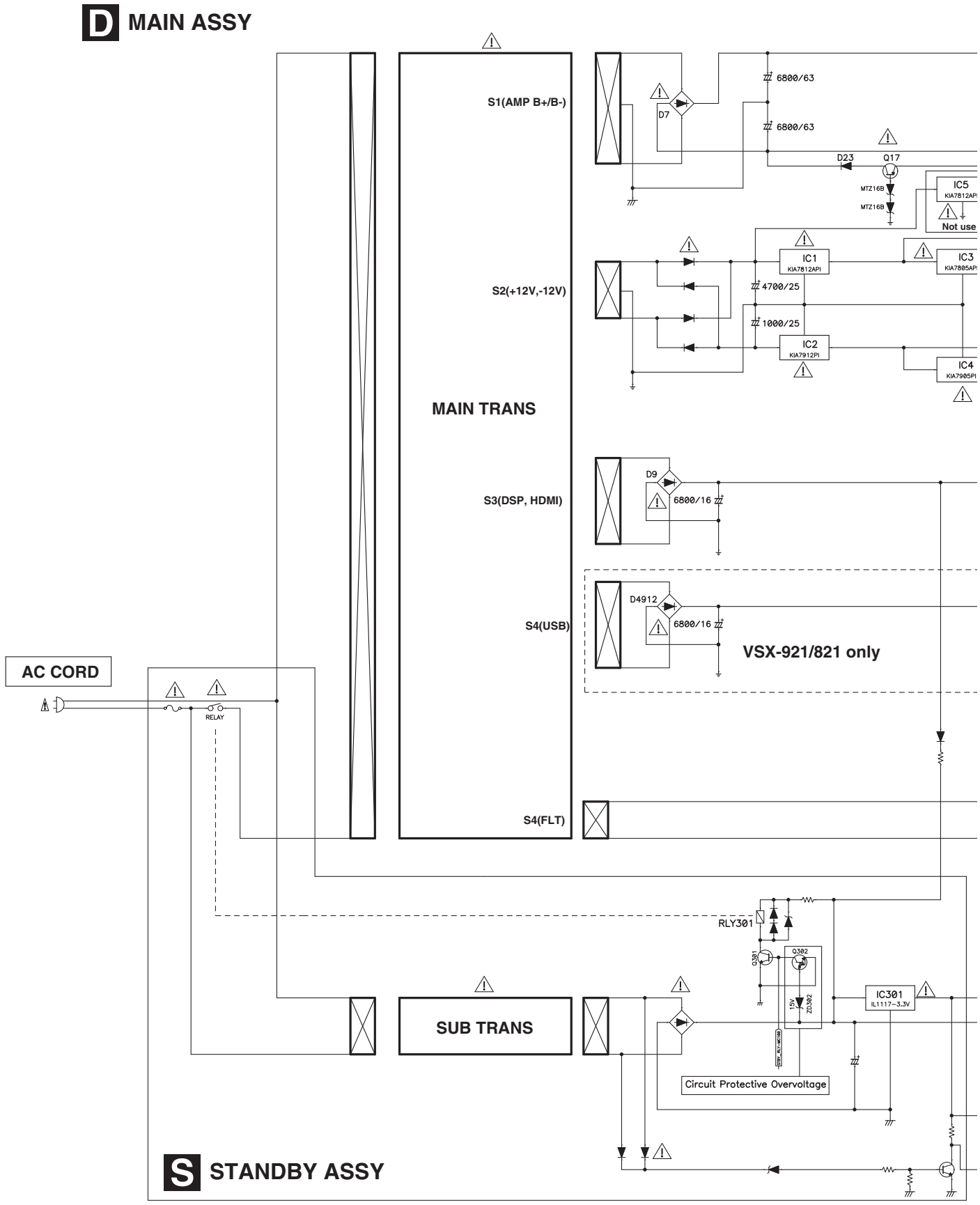

IC1312
TC7WHU04
IC1307
TC7SA08FU
HDMI+3.3V
ABT3.3V
X1302
27MHz
ABTCLK
TCLK
TXICLK
SPDIF/DL2
TXMCK
SD3/DR2
SD2/DL1
SD1/DR1
TXSD0
TXWS
TXSCK
ARC_SPDIF
AUDIO INPUT
IC1308
HDMI TRANSMITTER
CONFIG.part
VIDEO INPUT
IC1311
VIDEO SCALING
ABT1015-K
VIDEO OUTPUT
36bit
RXHSYNC
RXVSYNC
RXDE
RXODCK
TXHSYNC
TXVSYNC
TXDE
D0
D35
Q0
Q35
CEC_A
DDC
HDMI OUT
HPD
H+5V
+5V
IC1309
Curr.Limit
AAT4614IGU
CEC DRIVE CIRCUIT
HDMI_SDA
HDMI_SCL
HT_RST
HT_INT
9134_1V8
HDMI+3.3V
ABT_SDA
ABT_SCL
ABT_RST
ABT_1.8V
ABTPLL_1.8V
ABT_3.3V
Q1318
Q1319
ABT3.3_EN
REG1300
AZ1086D-1.8V
IC1310
IL1117-1.8V
ADV_3.3V
CEC_O
CEC_INT
ADV_SDA
ADV_SCL
ADV_RST
COMP_DET
CVBS_DET
ADV_INT
VHC157_SW
VIN_DET
RXMUTE
HR_SCDT
HR_RST
HR_INT
HT_RST
HT_INT
IC1316
Sub MICOM
M3030RFGPFP
X1303
16MHz
ST_VCC
IC1314
NJM2831F05
5V-NC
ST_H+5V
IC1315
NJM2831F33
CPU3.3V
ST_3.3V
CEC_PWR
H_PWR1
H_PWR2
D_PWR
THRU_LED
SUB_ON
SUB_RST-MC77
MAIN_IRQ-MC72
SUB_PDN-MC76
SUB_IRQ-MC74
SCDI_MAIN-MC78
SCDO_MAIN-MC79
CSCK_MAIN-MC80
DSP+3.3V
DSD_SEL-MC45
High:DSD
IC1320
74LCX257
REG1302
SA1117D-1.2V
DSP+3V3
DSP_1V2
SD0/DL0
SD1/DR1
SD2/DL1
SD3/DR2
WS/DR0
SCK/DLCK
RX_MCK
HDMI_BCK
HDMI_LRCK
HDMI_MCK
HDMI_SEL-MC70
H:HDMI
L:DIR
IC1322
74LCX257
HDMI_SD3
HDMI_SD2
HDMI_SD1/DR1
HDMI_SD0
DAI_MCK
DAI_LRCK
DAI_BCK
XMCK
DIR_SDTO
ADC_SDTO
DSP_BCK
DSP_LRCK
SDIN1
SDIN2
SDIN3
SDIN4
DSP_RST-MC65
DSP_SDA-MC61
DSP_SCL-MC63
DSP_SDOUT-MC67
DSP_CS-MC68
DSP_RDY-MC69
DSP
IC1324
TMS320DA788
IC1321
IS42S16400F-6TL
SDRAM
IC1323
MX29LV160DTTI
FLASH
RX_MUTE-MC75
21_SUB_IRQ-MC74
19_MAIN_IRQ-MC72
20_SUB_PDN-MC76
12_SUB_RST-MC77
35_SCDI_MAIN-MC78
36_SCDO_MAIN-MC79
37_CSCK_MAIN-MC80
SUB_ON-MC73
DSP_RST-MC65
DSP_SDA-MC61
DSP_SCL-MC63
DSP_SDOUT-MC67
DSP_CS-MC68
DSP_RDY-MC69
DSD_SEL-MC45
4588_SDA-MC59
4588_SCL-MC60
4588_PDN-MC58
HDMI+12V
HDMI+5V
ST_H+5V
CPU_ST_VCC
THRU_LED
FROM MAIN MICOM(CPU B'D)
IC1325
AOZ1073AI
DC/DC
IC1305
AOZ1073AI
DC/DC
IC1306
AOZ1073AI
DC/DC
H_PWR1
H_PWR2
D_PWR
HDMI+12V
FROM MAIN B'D

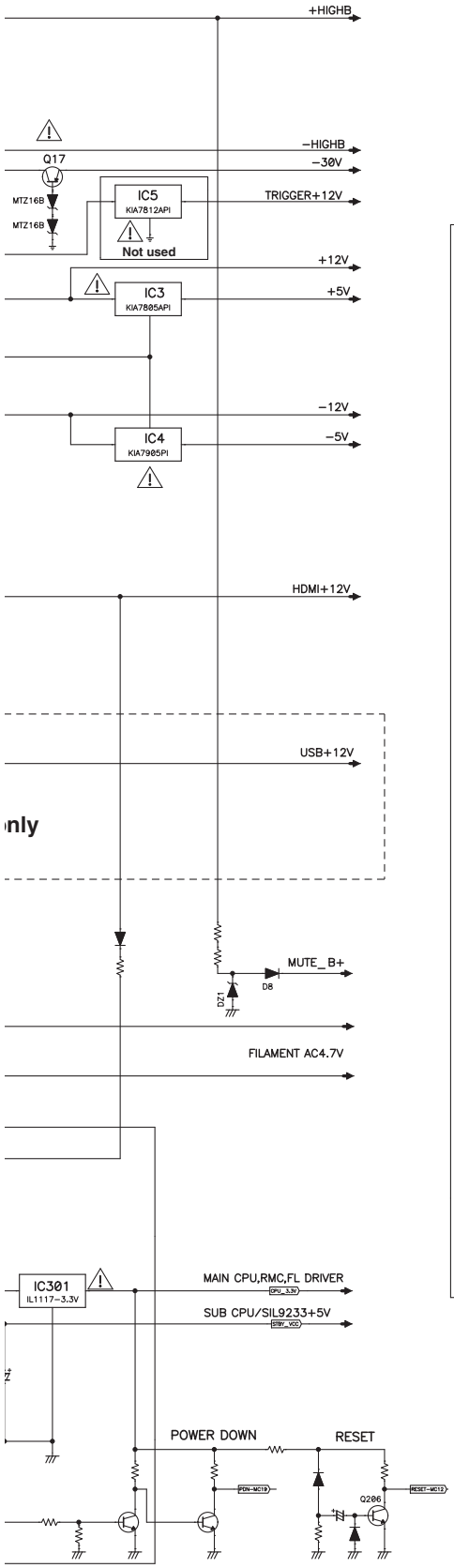
4.6 VIDEO BLOCK DIAGRAM

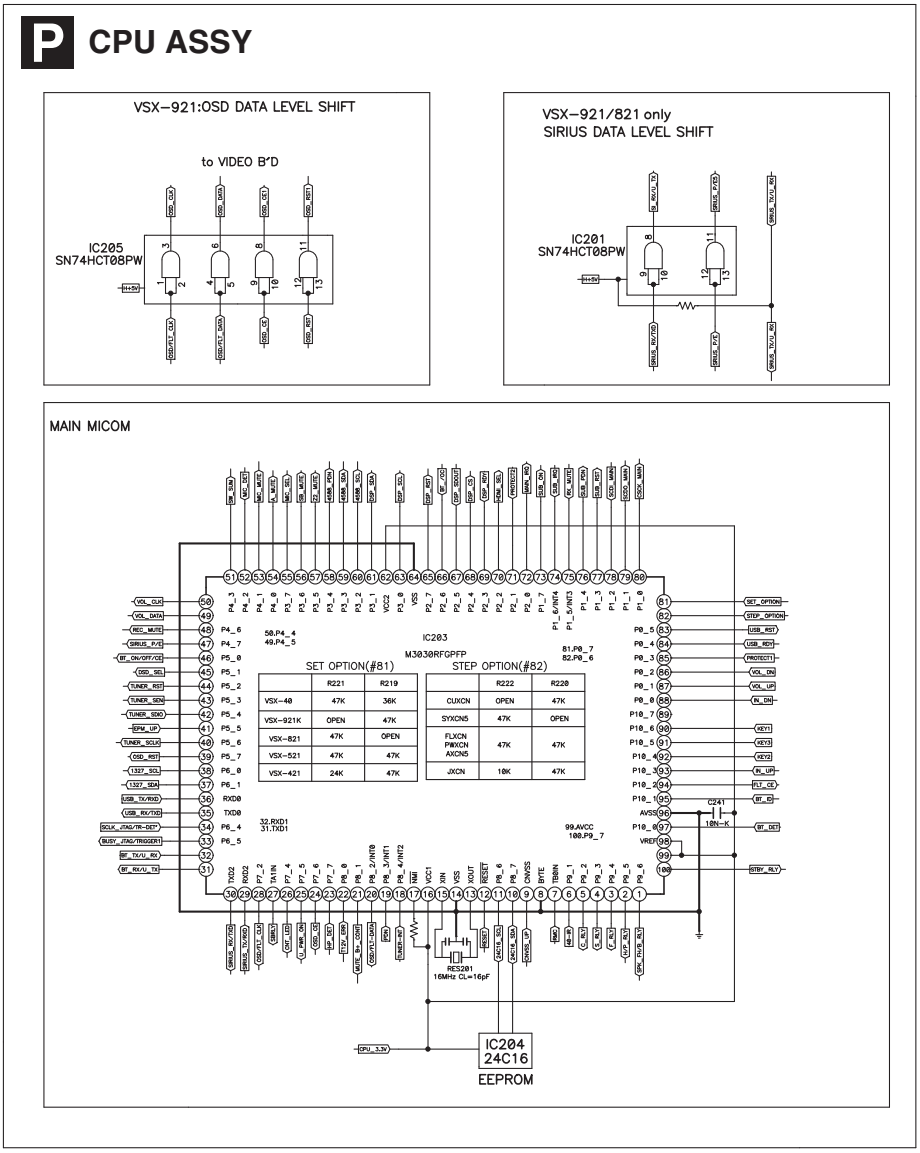



IC1311
Video Scaler
ABT1015
IC1308
HDMI
Tx
921 only
DET.
75
1K
NM
MONITOR
OUT
DVR
OUT
Y
Cb
Cr
MONITOR
OUT
IC1007
LC74781
OSD
J1004
XTAL1003
:14.318MHz–NTSC
13
19

4.7 POWER SUPPLY and MAIN UCOM BLOCK DIAGRAM







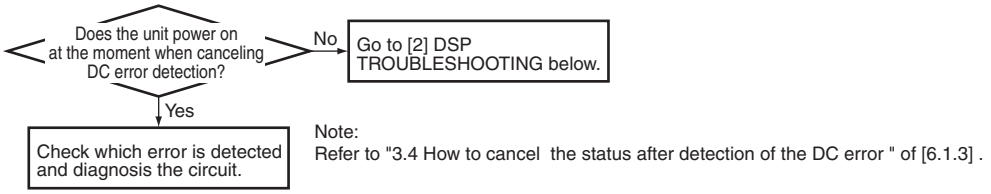
	R221	R219
VSX−40	47K	36K
VSX−921K	OPEN	47K
VSX−821	47K	OPEN
VSX−521	47K	47K
VSX−421	24K	47K

	R222	R220
CUXCN	OPEN	47K
SYXCN5	47K	OPEN
FLXCN PWXCN AXCN5	47K	47K
JXCN	10K	47K

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

5. DIAGNOSIS
5.1 TROUBLESHOOTING

[1] No Power

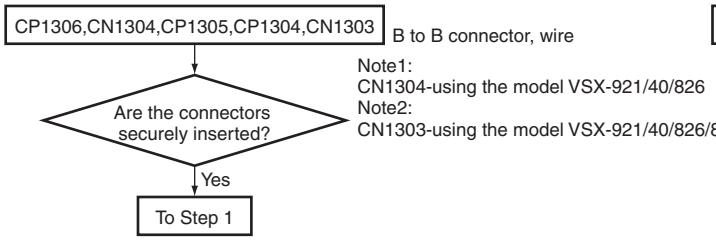


Note:
Refer to "3.4 How to cancel the status after detection of the DC error " of [6.1.3] .

[2] DSP TROUBLESHOOTING

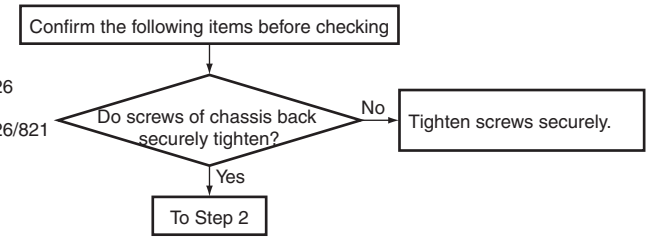
■ TROUBLESHOOTING FOR ALL DESTINATION

Step 0: Preliminary confirmation

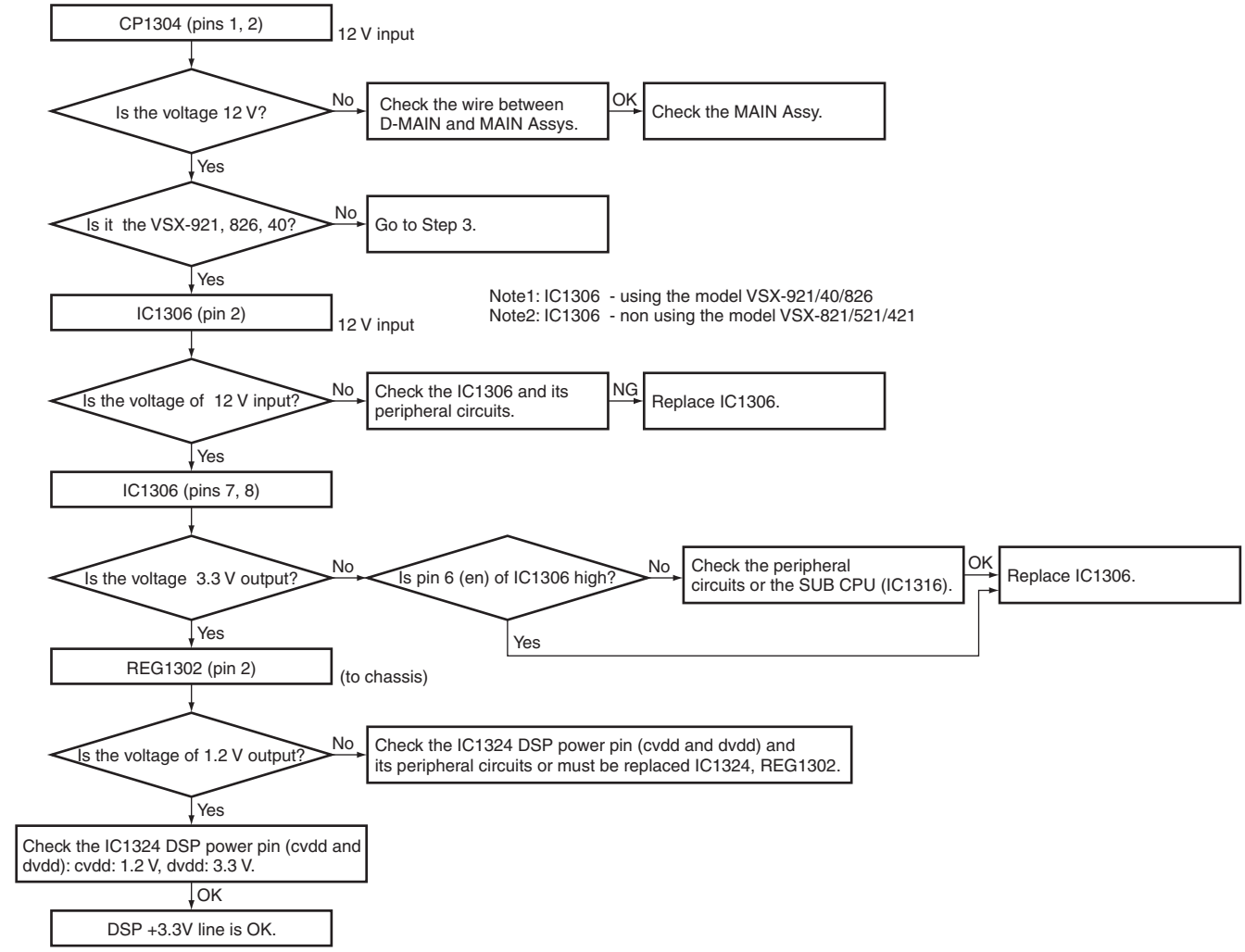


Note1:
CN1304-using the model VSX-921/40/826
Note2:
CN1303-using the model VSX-921/40/826/821

Step 1: Fixed board

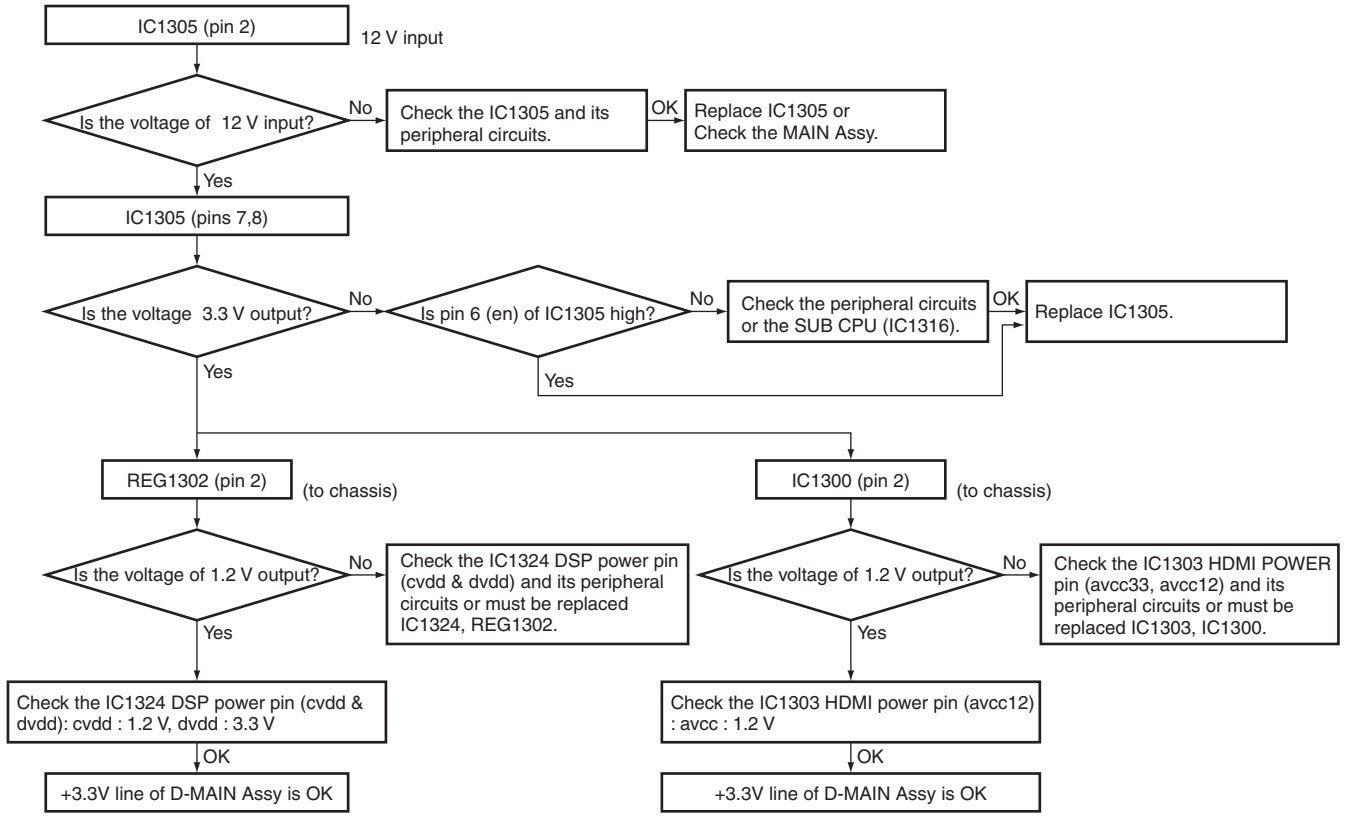


Step 2: Power supply

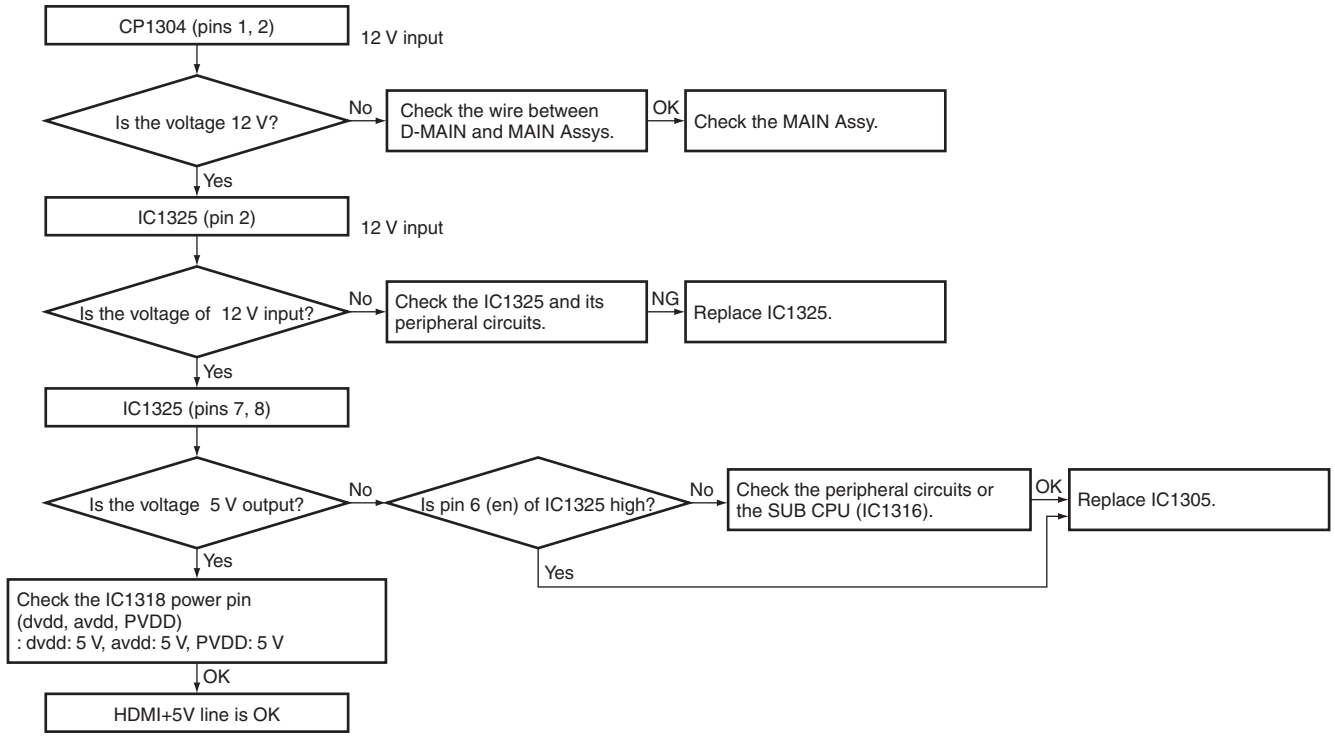


Note1: IC1306 - using the model VSX-921/40/826
Note2: IC1306 - non using the model VSX-821/521/421

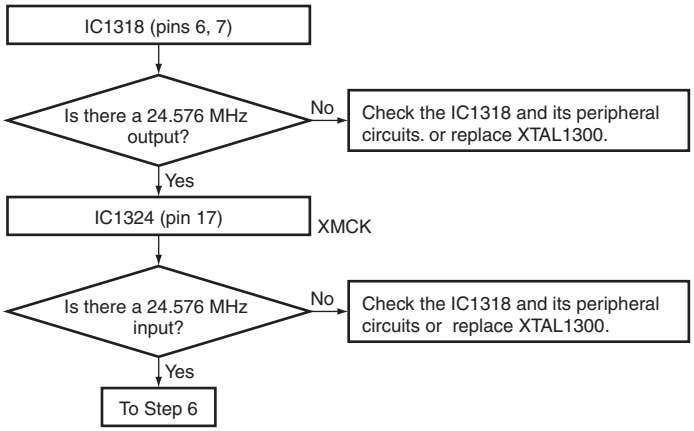
Step 3: Power supply



Step 4: Power supply

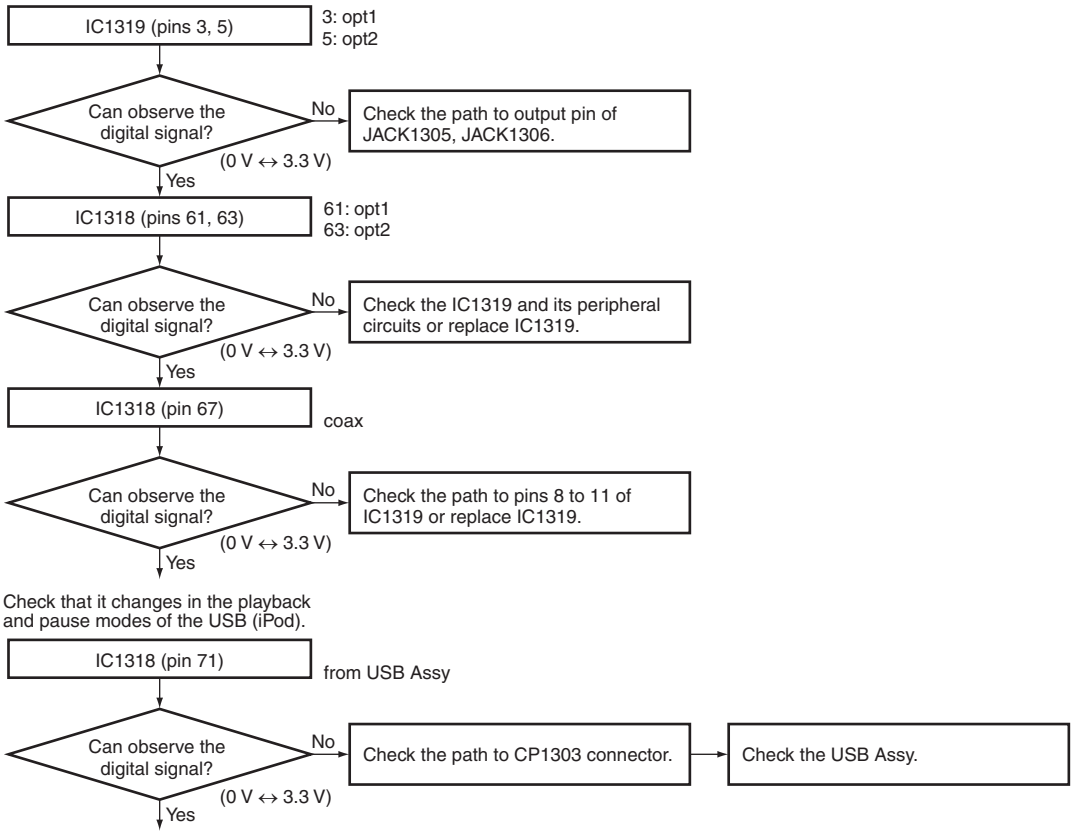


Step 5: X'tal



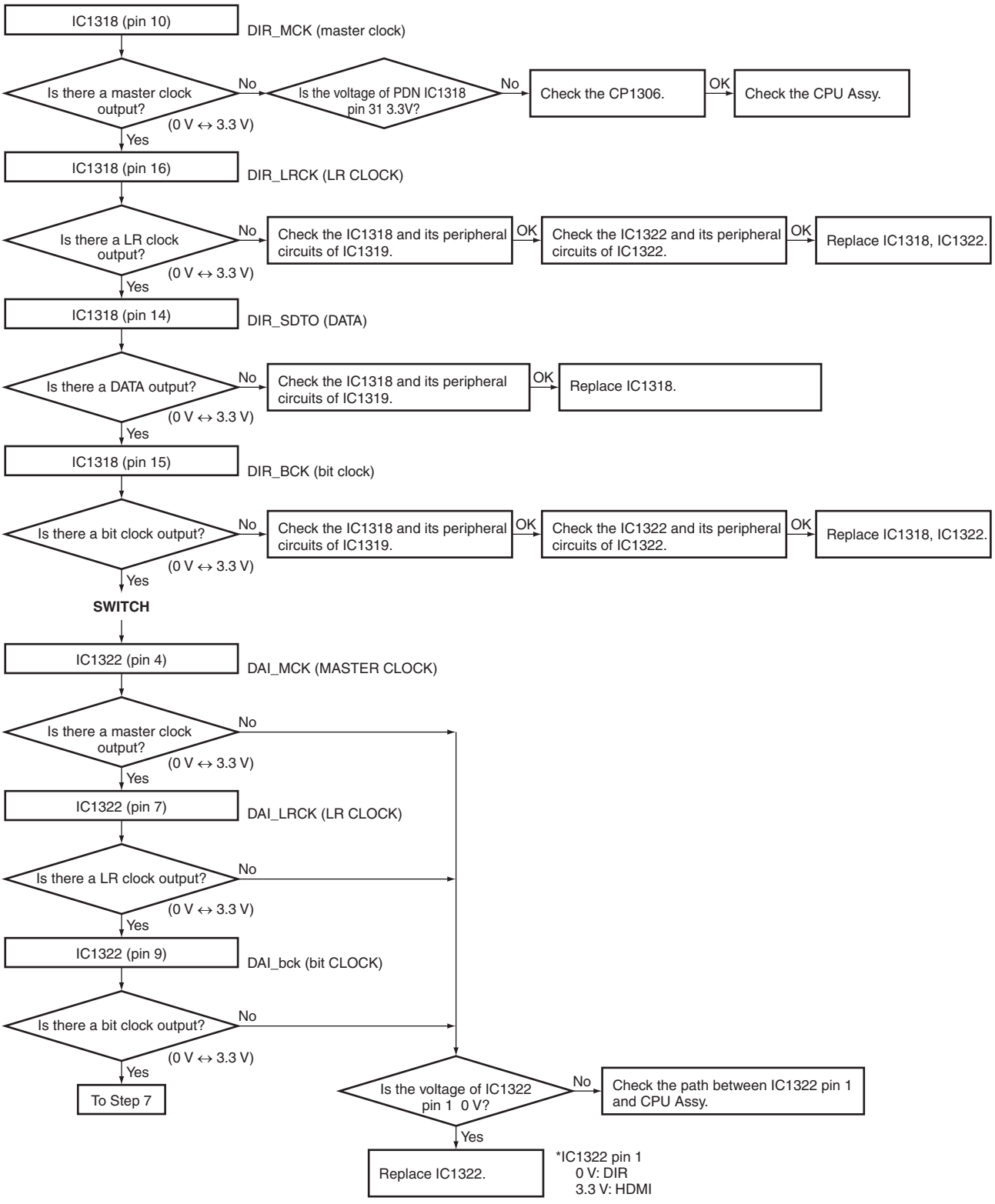
Step 6: DIR

Check that the S/PDIF signal is output.
Check that changes by pulling out and inserting the digital input lines.



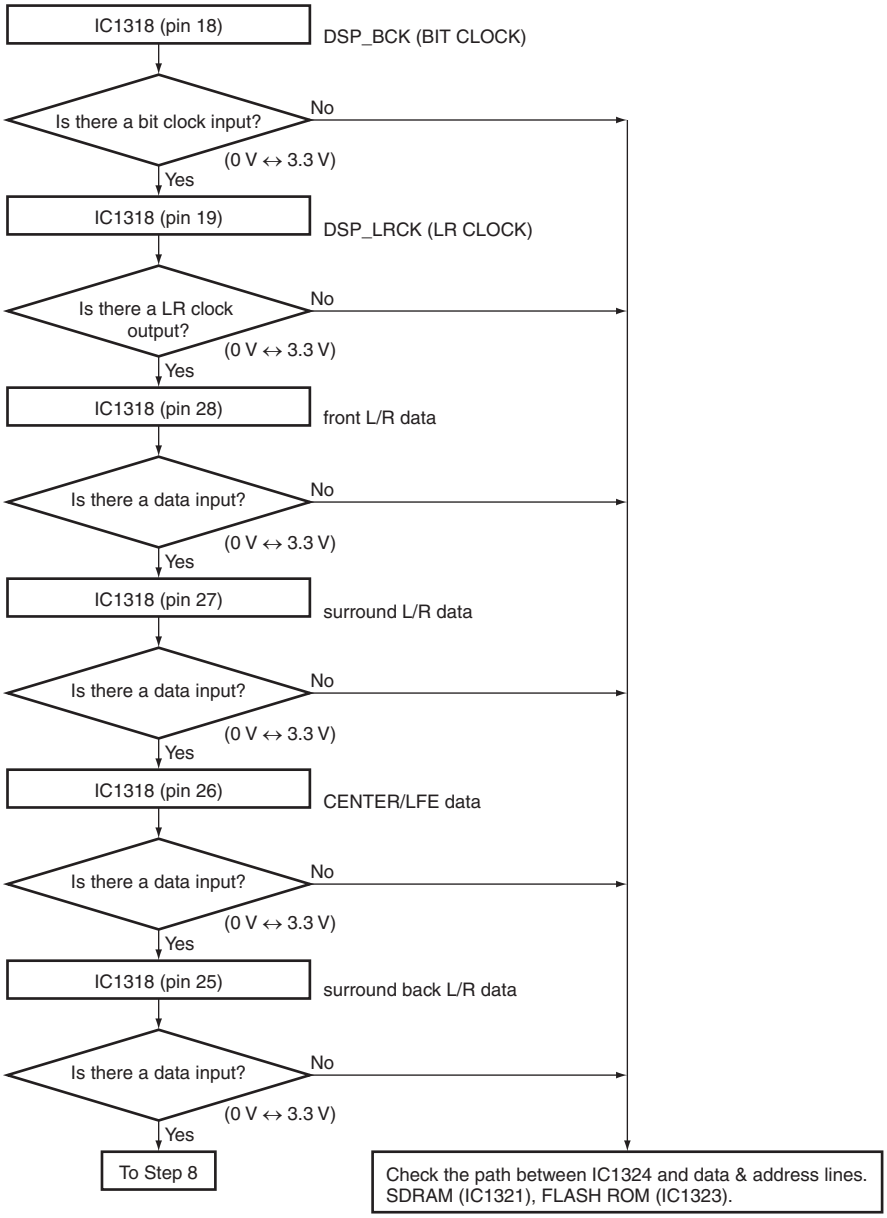
Check that it changes in the playback and pause modes of the USB (iPod).

Check that the data and clock signals are output.

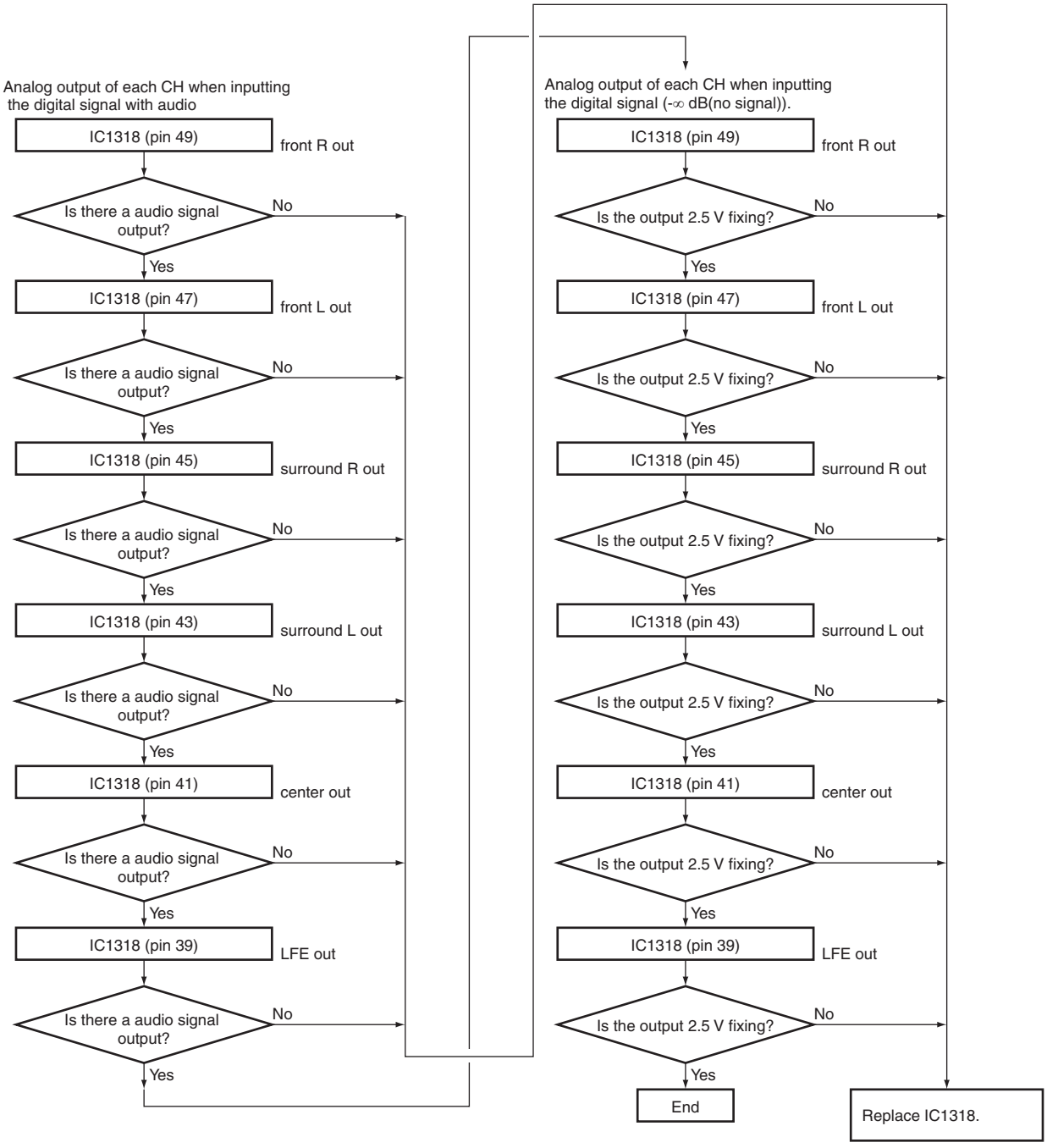

IC1318 (pin 10)
DIR_MCK (master clock)
Is there a master clock output?
(0 V ↔ 3.3 V)
No
Is the voltage of PDN IC1318 pin 31 3.3V?
No
Check the CP1306.
OK
Check the CPU Assy.
Yes
IC1318 (pin 16)
DIR_LRCK (LR CLOCK)
Is there a LR clock output?
(0 V ↔ 3.3 V)
No
Check the IC1318 and its peripheral circuits of IC1319.
OK
Check the IC1322 and its peripheral circuits of IC1322.
OK
Replace IC1318, IC1322.
Yes
IC1318 (pin 14)
DIR_SDTO (DATA)
Is there a DATA output?
(0 V ↔ 3.3 V)
No
Check the IC1318 and its peripheral circuits of IC1319.
OK
Replace IC1318.
Yes
IC1318 (pin 15)
DIR_BCK (bit clock)
Is there a bit clock output?
(0 V ↔ 3.3 V)
No
Check the IC1318 and its peripheral circuits of IC1319.
OK
Check the IC1322 and its peripheral circuits of IC1322.
OK
Replace IC1318, IC1322.
Yes
SWITCH
IC1322 (pin 4)
DAI_MCK (MASTER CLOCK)
Is there a master clock output?
(0 V ↔ 3.3 V)
No
Yes
IC1322 (pin 7)
DAI_LRCK (LR CLOCK)
Is there a LR clock output?
(0 V ↔ 3.3 V)
No
Yes
IC1322 (pin 9)
DAI_bck (bit CLOCK)
Is there a bit clock output?
(0 V ↔ 3.3 V)
No
Yes
To Step 7
Is the voltage of IC1322 pin 1 0 V?
No
Check the path between IC1322 pin 1 and CPU Assy.
Yes
Replace IC1322.
*IC1322 pin 1
0 V: DIR
3.3 V: HDMI

Step 7: DSP output (digital)

Digital output of each CH when inputting the digital signal with audio.



Step 8: CODEC output (ANALOG)



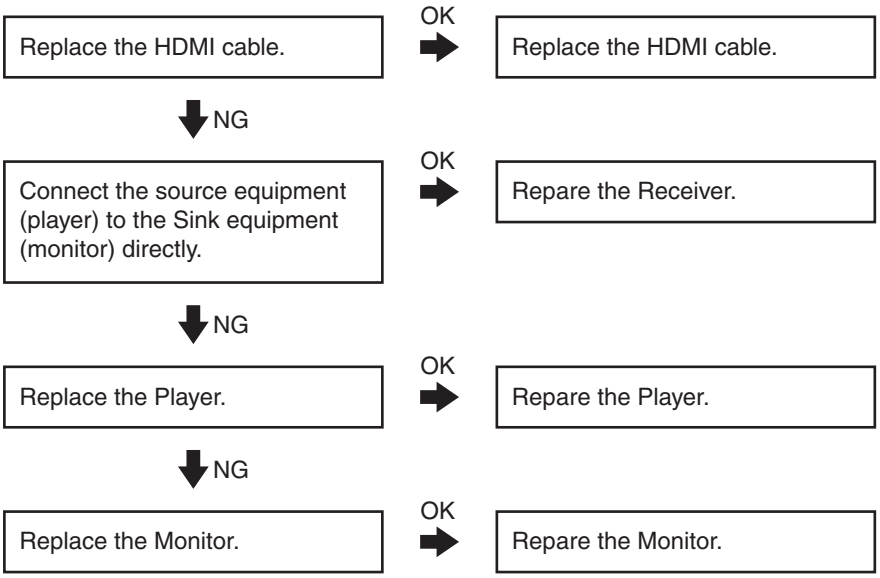
[3] HDMI TROUBLESHOOTING

HDMI Troubleshooting

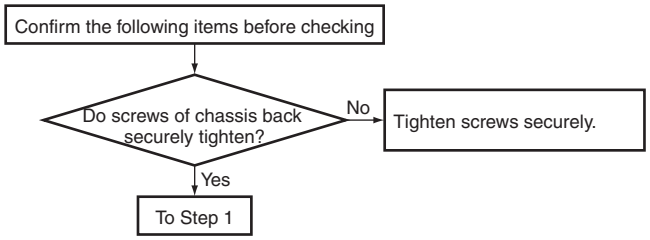
Cause for noncomplection of HDMI authentication between the source equipment and this unit.
(the HDMI indicator is unlit or flasher)

HDMI Simple Diagnosis

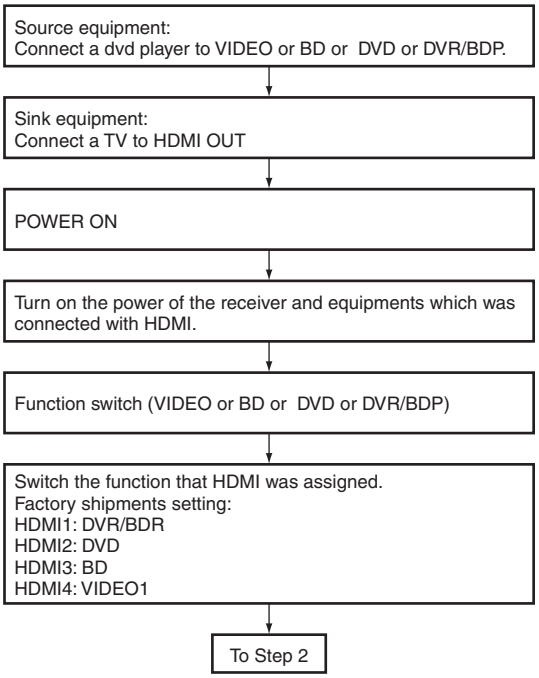
Causes for no display or sound from the monitor



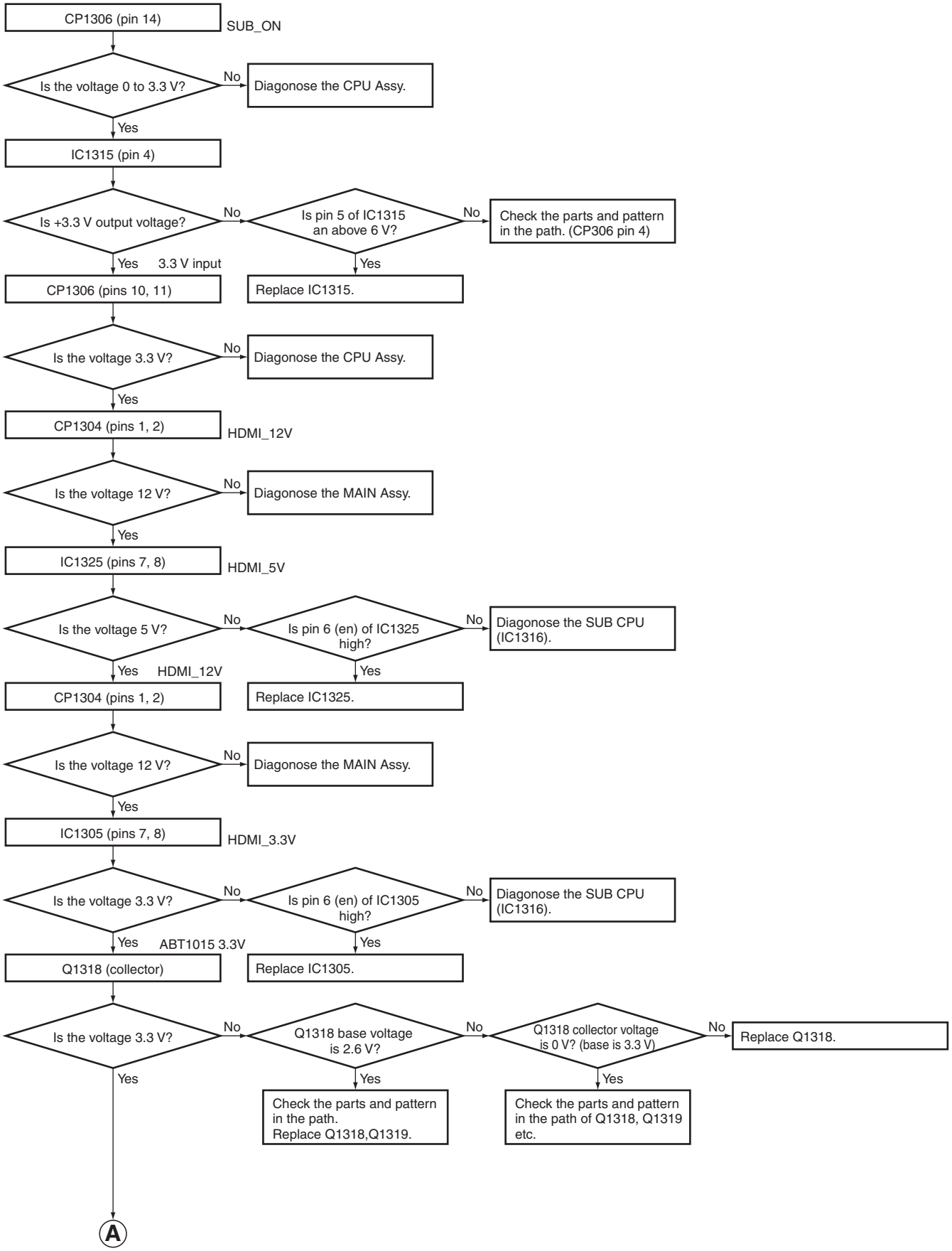
Step 0: Preliminary confirmation

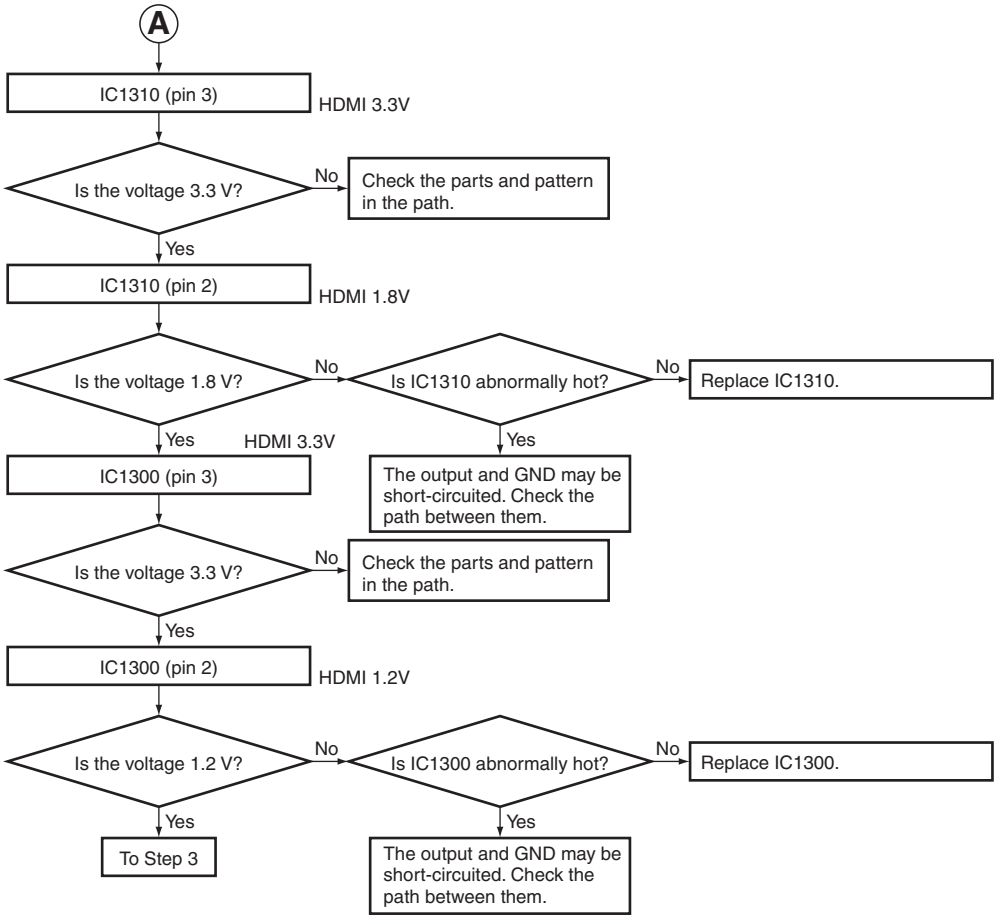


Step 1: Connect the HDMI equipment



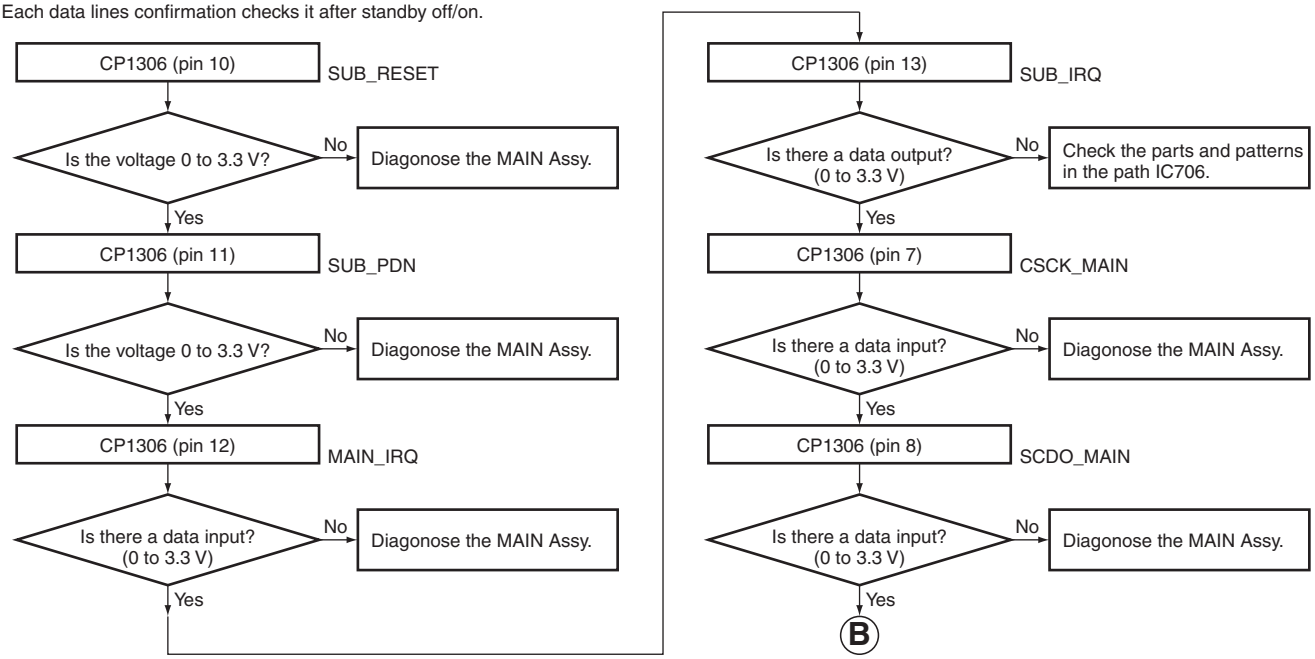
Step 2: Power supply

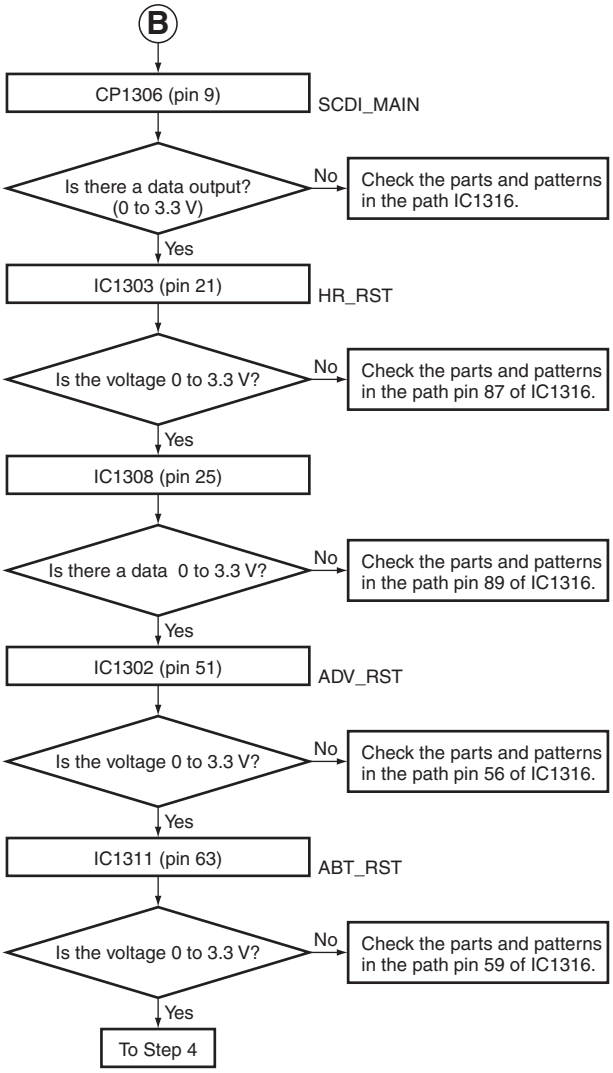




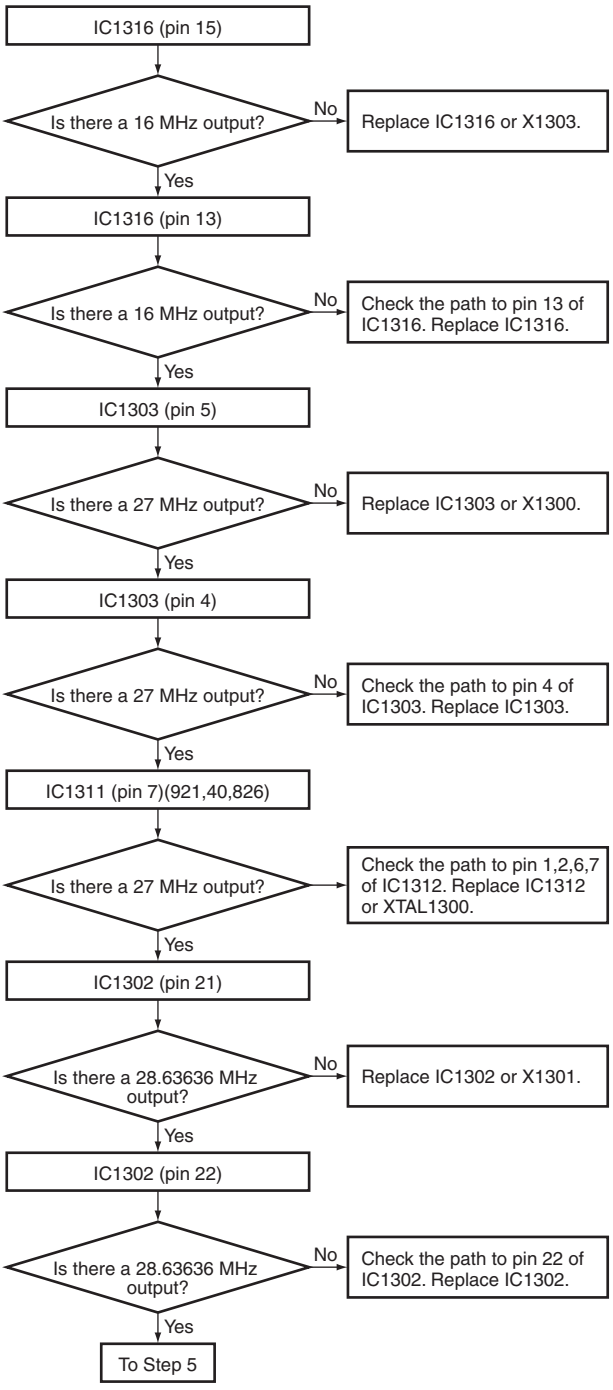
Step 3: Diagnosis

Each data lines confirmation checks it after standby off/on.

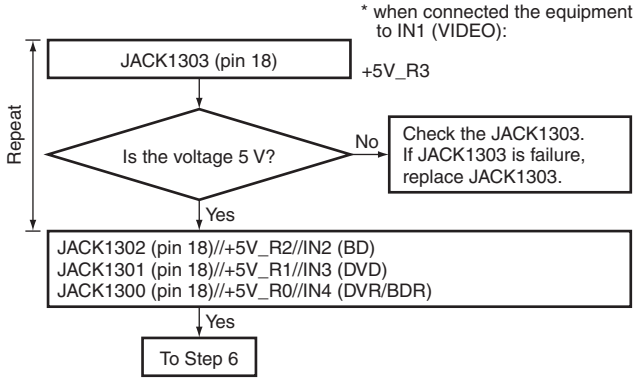



B
CP1306 (pin 9)
SCDI_MAIN
Is there a data output? (0 to 3.3 V)
No
Check the parts and patterns in the path IC1316.
Yes
IC1303 (pin 21)
HR_RST
Is the voltage 0 to 3.3 V?
No
Check the parts and patterns in the path pin 87 of IC1316.
Yes
IC1308 (pin 25)
Is there a data 0 to 3.3 V?
No
Check the parts and patterns in the path pin 89 of IC1316.
Yes
IC1302 (pin 51)
ADV_RST
Is the voltage 0 to 3.3 V?
No
Check the parts and patterns in the path pin 56 of IC1316.
Yes
IC1311 (pin 63)
ABT_RST
Is the voltage 0 to 3.3 V?
No
Check the parts and patterns in the path pin 59 of IC1316.
Yes
To Step 4

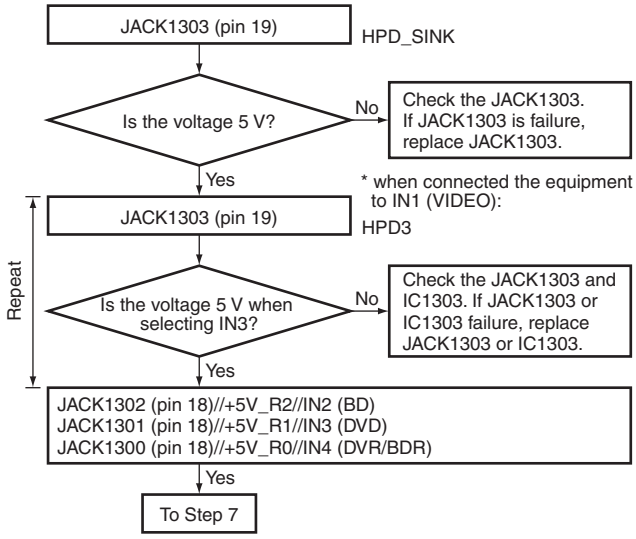
Step 4: X'TAL


IC1316 (pin 15)
Is there a 16 MHz output?
No
Replace IC1316 or X1303.
Yes
IC1316 (pin 13)
Is there a 16 MHz output?
No
Check the path to pin 13 of IC1316. Replace IC1316.
Yes
IC1303 (pin 5)
Is there a 27 MHz output?
No
Replace IC1303 or X1300.
Yes
IC1303 (pin 4)
Is there a 27 MHz output?
No
Check the path to pin 4 of IC1303. Replace IC1303.
Yes
IC1311 (pin 7)(921,40,826)
Is there a 27 MHz output?
Check the path to pin 1,2,6,7 of IC1312. Replace IC1312 or XTAL1300.
Yes
IC1302 (pin 21)
Is there a 28.63636 MHz output?
No
Replace IC1302 or X1301.
Yes
IC1302 (pin 22)
Is there a 28.63636 MHz output?
No
Check the path to pin 22 of IC1302. Replace IC1302.
Yes
To Step 5

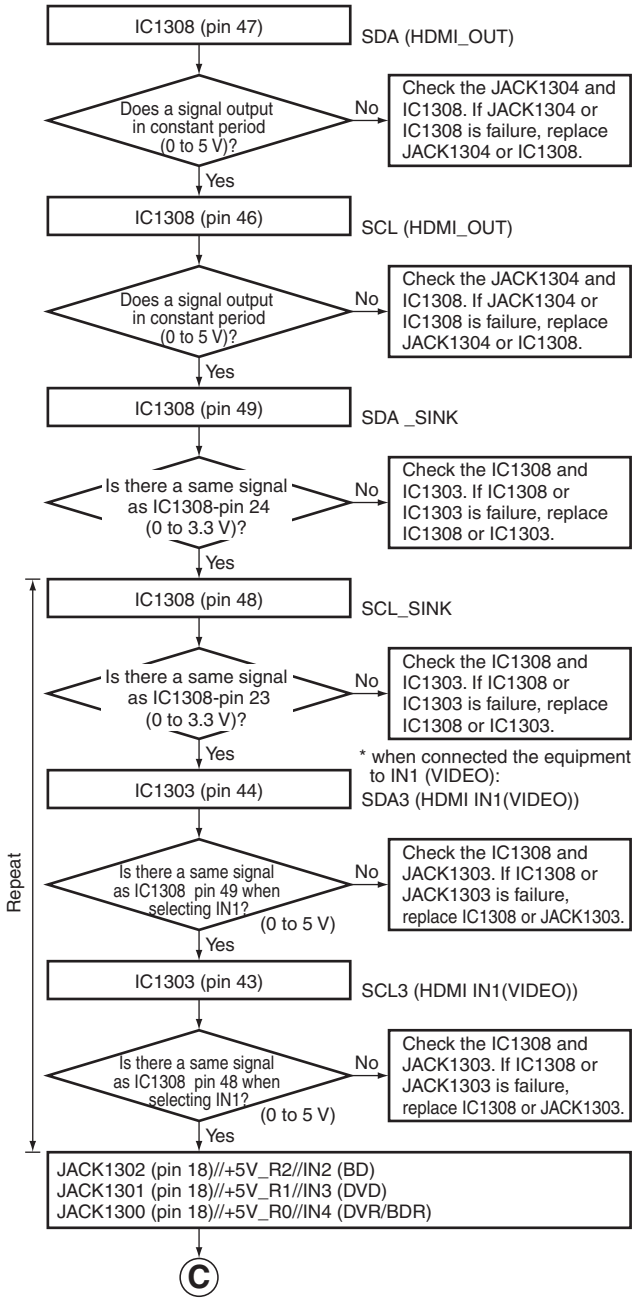
Step 5: INPUT/OUTPUT Diagnosis

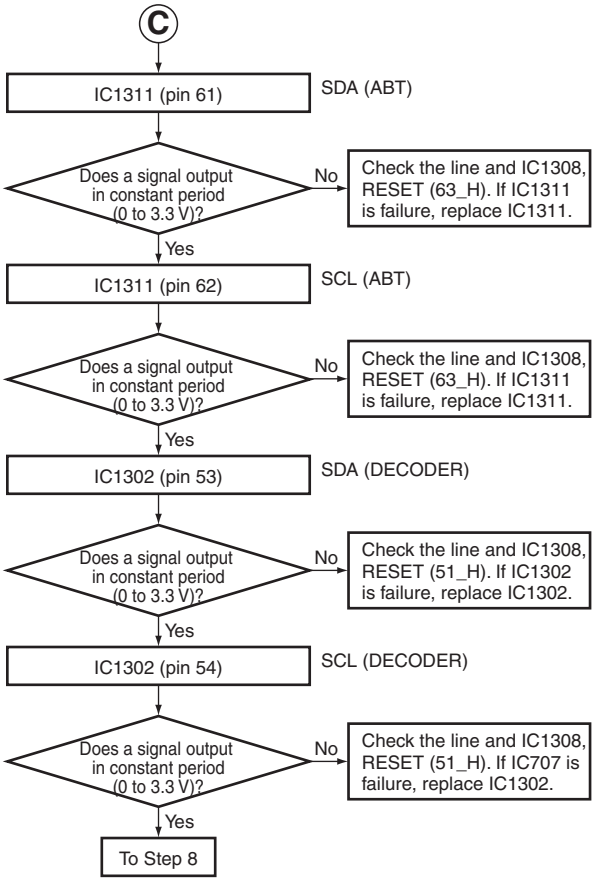


Step 6: Hot Plug Detect

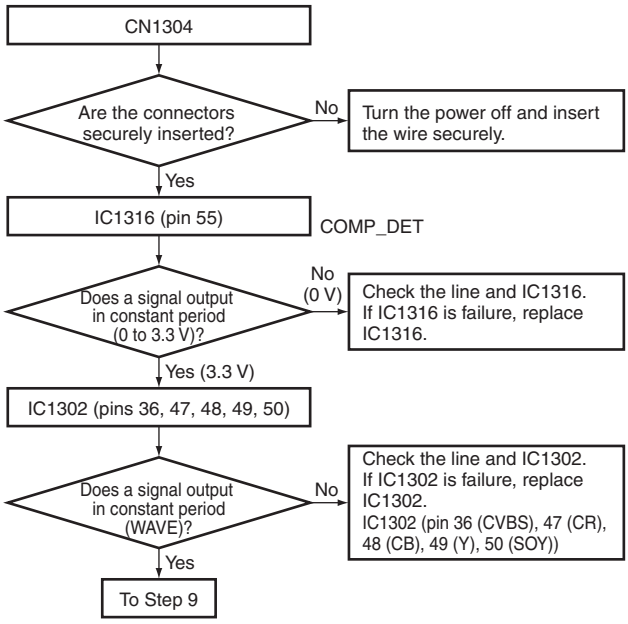


Step 7: SDA /SCL

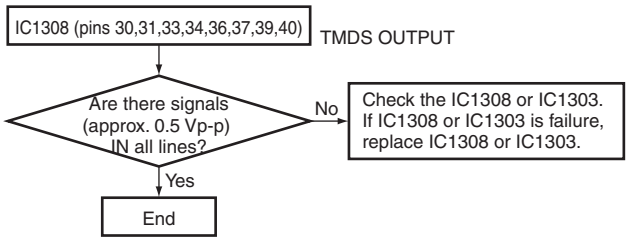




Step 8: ANALOG UP

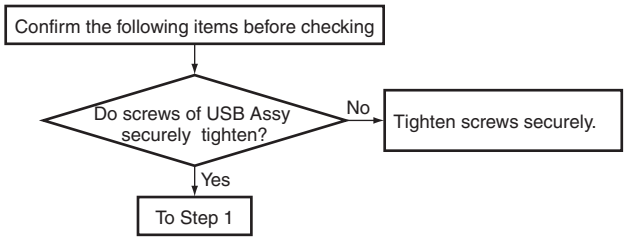


Step 9: TMDS

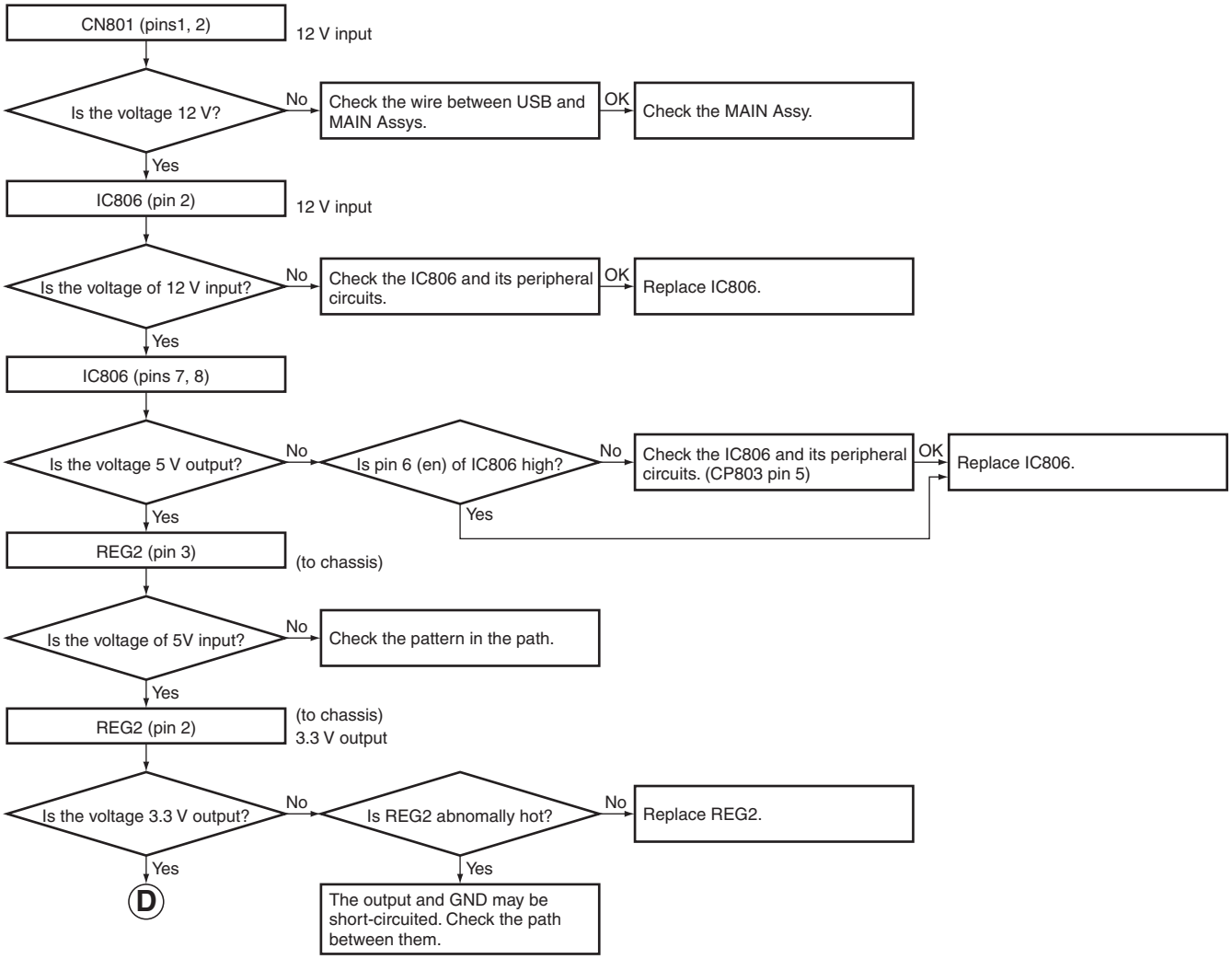


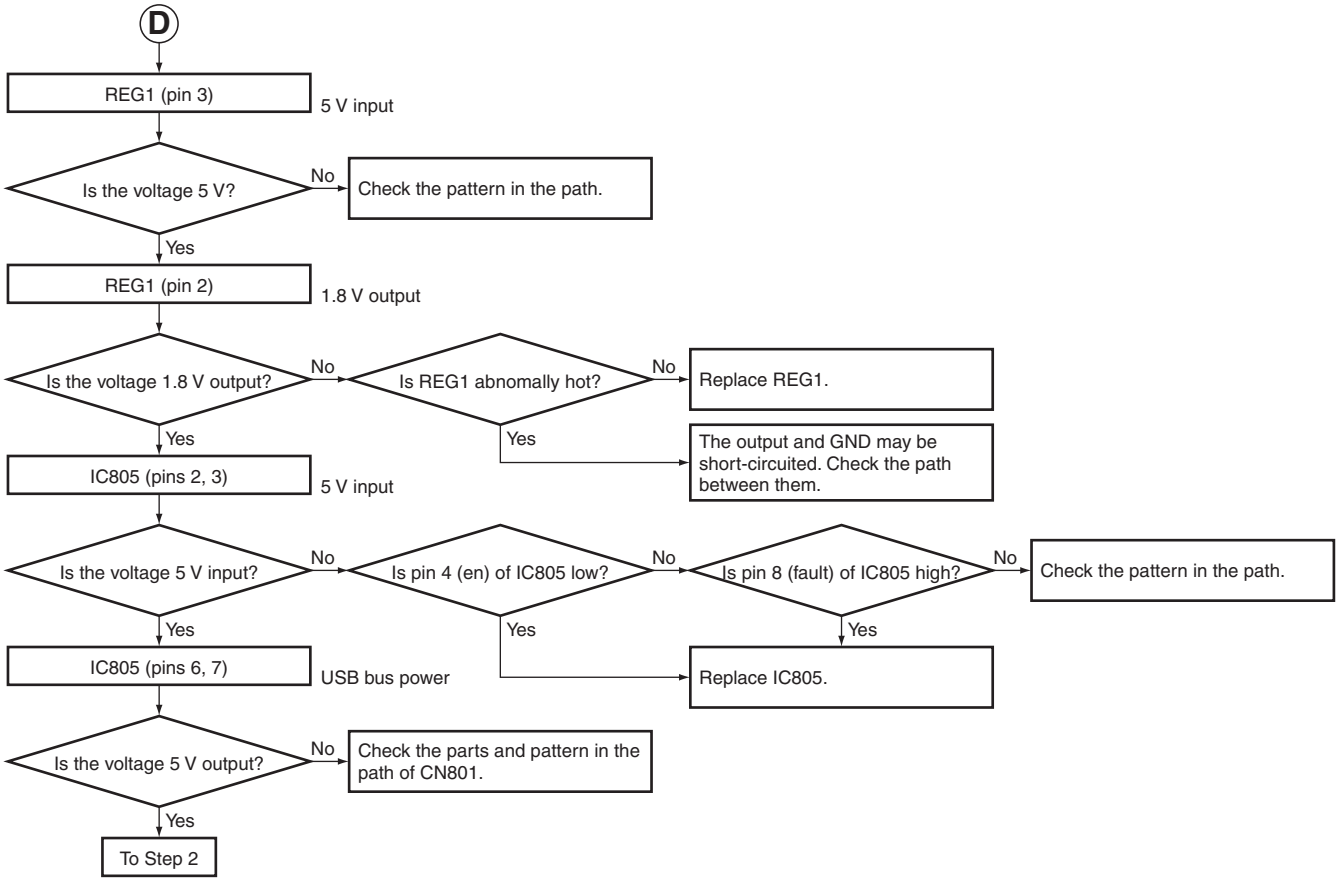
[4] iPod TROUBLESHOOTING

Step 0: Preliminary confirmation

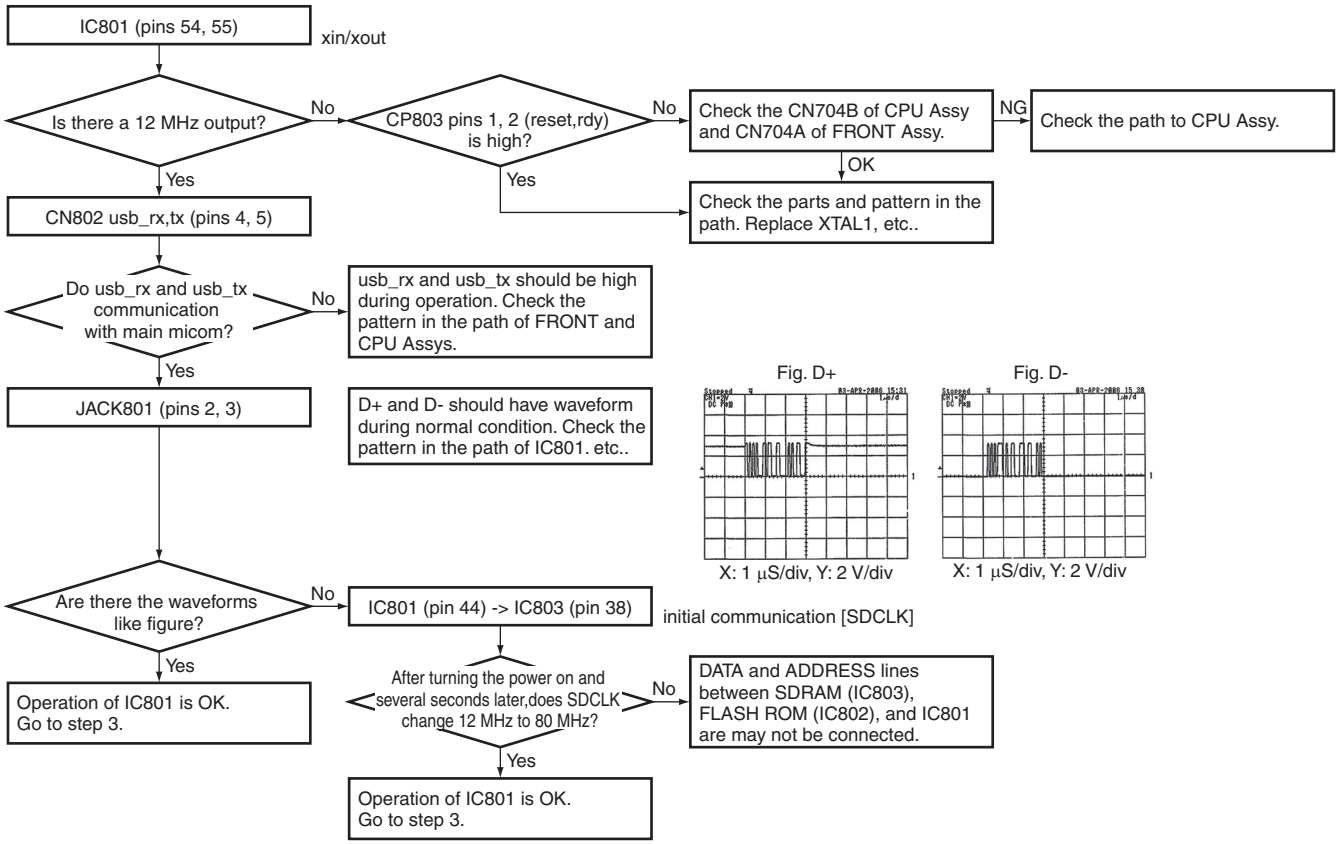


Step 1: Power supply

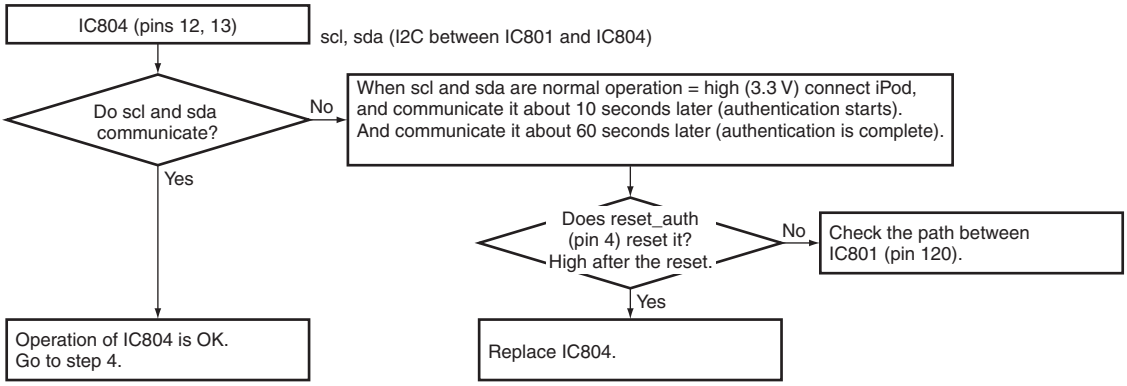




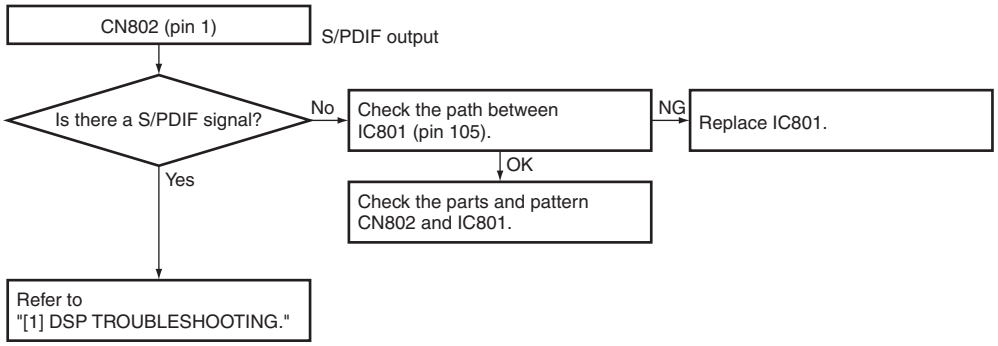
Step 2: Operation of USB Media Control IC



Step 3: Operation of iPod (Authentication process)

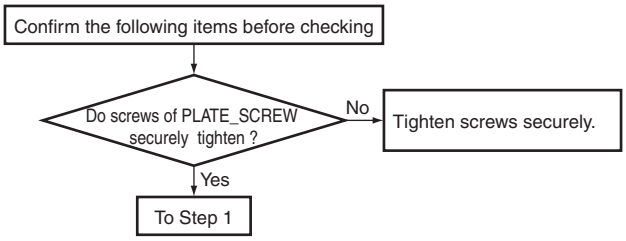


Step 4: Audio out check

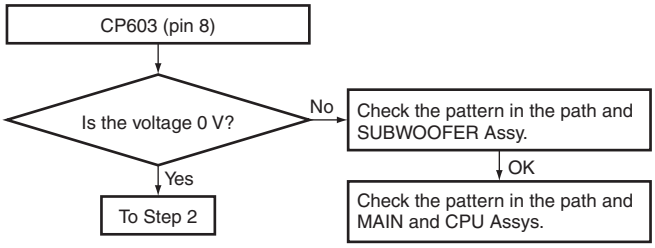


[5] BT (Bluetooth) TROUBLESHOOTING

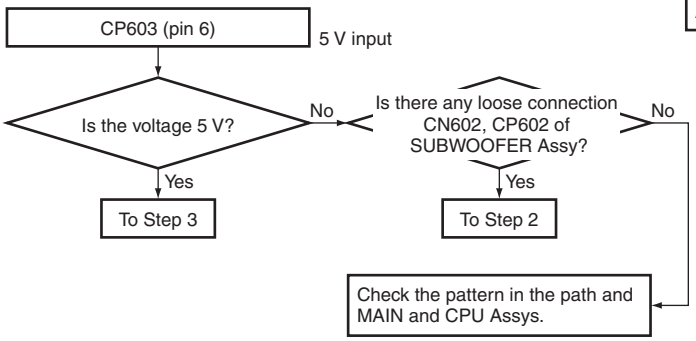
Step 0: Preliminary confirmation



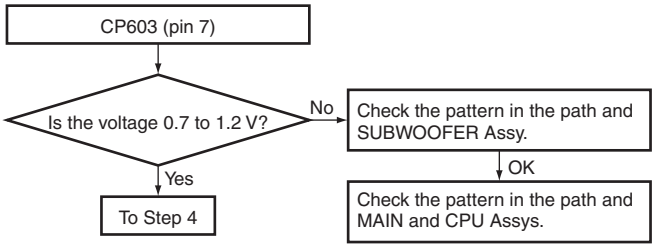
Step 1: BT_DET



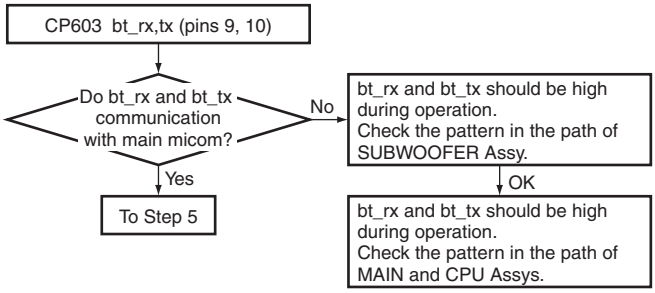
Step 2: Power supply



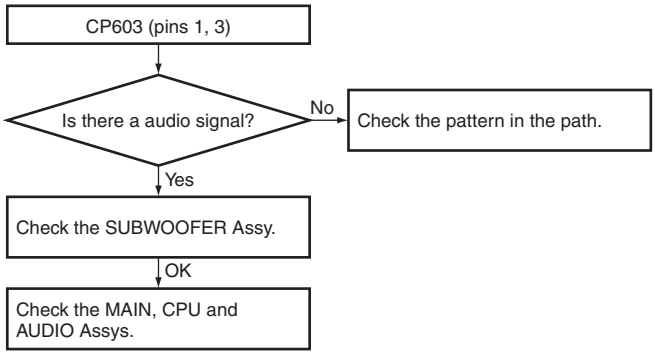
Step 3: BT_ID



Step 4: Communication



Step 5: Audio out check



5.2 ADAPTER ERROR MESSAGE

Functional Name
Adapter port overcurrent detection

Outline
When the BT adapter is inserted in Adapter port, turn off the power of the Adapter port forcibly when it detects an overcurrent. And display ERROR state in FL.

Basic Operation

Front Key Sequence Change	Character Display	Time (sec.)	Icon Display (FL)	LED Display
When the overcurrent is detected	1 2 3 4 5 6 7 8 : A D P E R R 1 2 : *1 Check it after turning the power once off then back on again, and it becomes the normal operation if normal.	The display continues until the power is turned off.	—	—

*1 Return the "ADP ERR" display to the normal display if you change it into other FUNCTION only in the APAPTER PORT FUNCTION.
Also display "ADP ERR" if the ADAPTER PORT FUNCTION is ERROR state.

Explain Operation Detail
For detection method
- Confirm a detection port at intervals of 20 msec to 50 msec (*2), and judge it as an overcurrent when you detected an error consecutively three times.

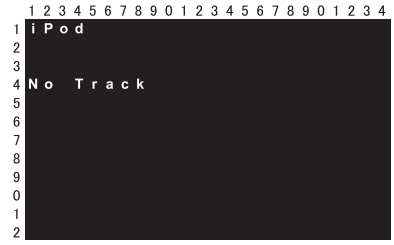
*2 It is assumed that it is fixed value of the 20 msec to 50 msec degree.

5.3 USB / iPod ERROR MESSAGE

Functional Name
iPod ERROR MESSAGE

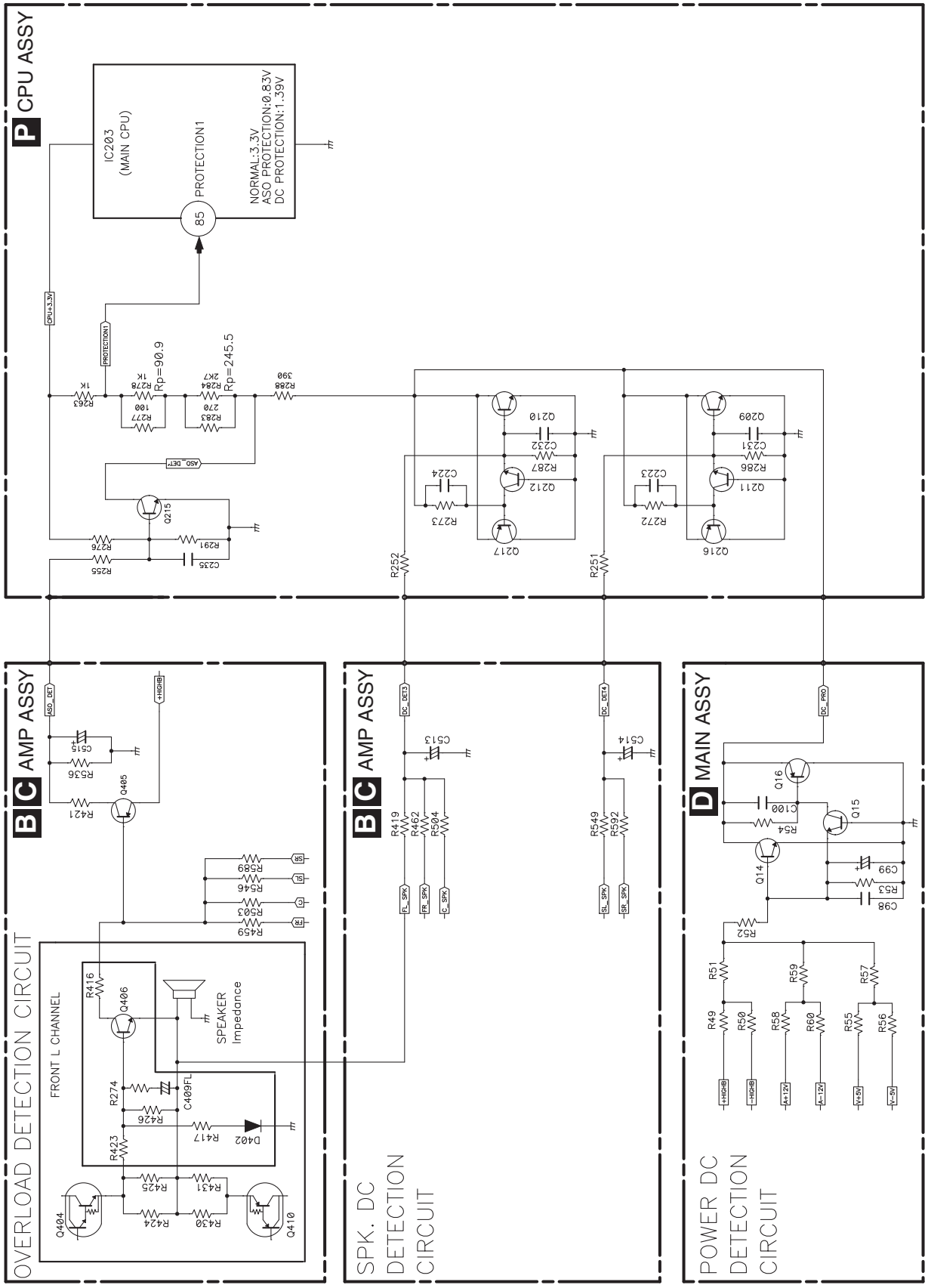
Outline
Error message is displayed at abnormality time.

Basic Operation

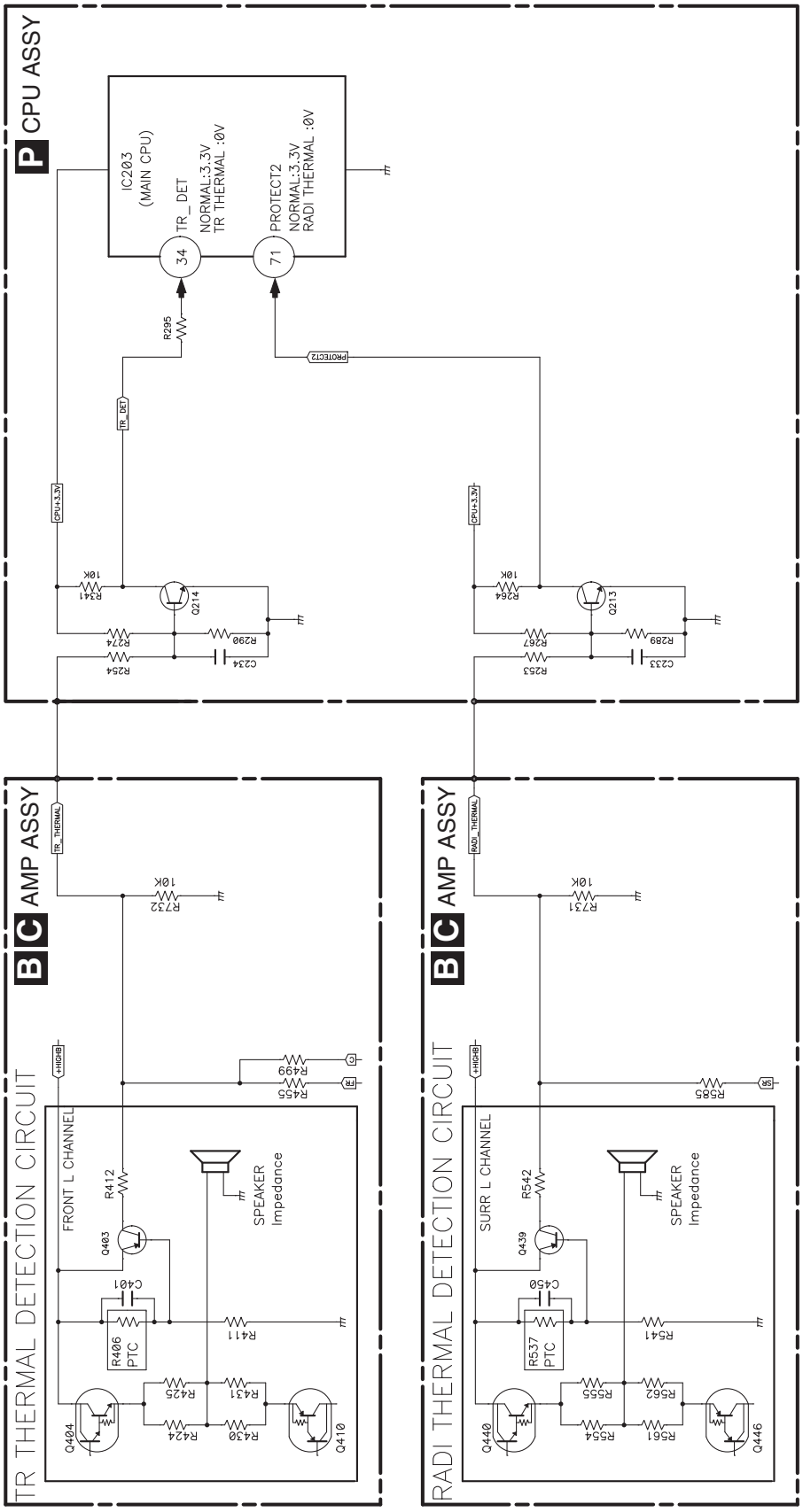
Front Key Sequence Change	OSD display	Time (sec)	FL Display
The communication error iPod/USB communication error			I/U ERR1
Generation error			I/U ERR2
Loading error			I/U ERR3
OverHeat error			I/U ERR4
No Track Caution			NO TRACK

5.4 DETECTION CIRCUIT

[1] Overload and DC Protection Circuit



[2] TEMP Protection Circuit



6. SERVICE MODE
6.1 SERVICE MODE

[1] Display mode for numbers of protection detections

[Purpose]

The numbers of detections for various protection processes are displayed.

[How to enter/exit]

During Standby mode, simultaneously press and hold the [PRESET –] and [STANDBY/ON] keys for 2 seconds to enter this mode.
The display will return to the normal indication when no key operation is performed for 5 seconds.

[Basic operations]

Key Operation	FL Display	Time (sec.)	Description of Indications
(STANDBY state)			
[PRESET –] + [STANDBY/ON] keys (Initial display)	DC 005 *2 → Counter	5 (-> normal) *1	Number of DC error detections
[ENTER] key			
[ENTER] key	OVER 003 *2 → Counter	5 (-> normal) *1	Number of OVERLOAD error detections
[ENTER] key	TEMP 007 *2 → Counter	5 (-> normal) *1	Number of abnormal-temperature error detections
(Initial display)			

*1 "5 (-> normal)" denotes that the display will return to the normal indication when no key operation is performed for 5 seconds.
*2 Variable range: 0 to 255

The above-mentioned Display mode is available only when the product operates properly.

If any protection function is activated while the product is in use, the product cannot be turned ON and enter the above Display mode. In such a case, cancel the protection function, referring to “3.4 How to cancel the status after detection of the DC error." If a protection function is activated immediately after the previous protection function is canceled, cancel that protection function again then enter STBY mode immediately. You can then see the error logs, following the above procedures, until a next protection function is activated.

[2] Reset mode for numbers of protection detections

[Purpose]

For clearing all the counts of protection detections.
(This mode resets the counts of protection detections.)

[How to enter/exit]

During Standby mode, simultaneously press and hold the [ALC/STANDARD SURR] and [STANDBY/ON] keys for 10 seconds to enter this mode.
The display will return to the normal indication when no key operation is performed for 5 seconds.

[Basic operations]

Key Operation	FL Display	Time (sec.)	Description of Indications
(STANDBY state)			
[ALC/STANDARD SURR] + [STANDBY/ON] keys (press and hold the keys for 10 seconds.)	CLEAR?	5 (-> normal) *1	
[ENTER] key ↓	↓		
(Counter Clear end)	0 K	5 (-> normal) *1	
(Normal display)	BD *2	usually	

*1 "5 (-> normal)" denotes that the display will return to the normal indication when no key operation is performed for 5 seconds.
*2 Indication when the BD function is selected

[Detailed explanations]

1. When the procedures for Reset mode for numbers of protection detections are completed, all the counters will be reset to "000."
2. Prohibitions:
   The protection detection counts cannot be cleared (reset to 000) with the MEMORY CLEAR process.
   They can only be cleared when the procedures of Reset mode are completed.

[3] The unit's operation when a error is detected

[Purpose]

- The unit's operation when a DC/OVER/TEMP error is detected is described here.
- How to cancel the status after detection of a DC error is described here, because no key input will be accepted after a DC error detection.

[Basic operations]

3.1 DC (AMP is abnormality) error detection

Key Operation	FL Display	Time (sec.)	Description of Indications
(Normal display)	B D	usually	Normal display
(DC detection)	B D		
↓ (Auto)			
(RECEIVER POWER OFF) *1, *2			

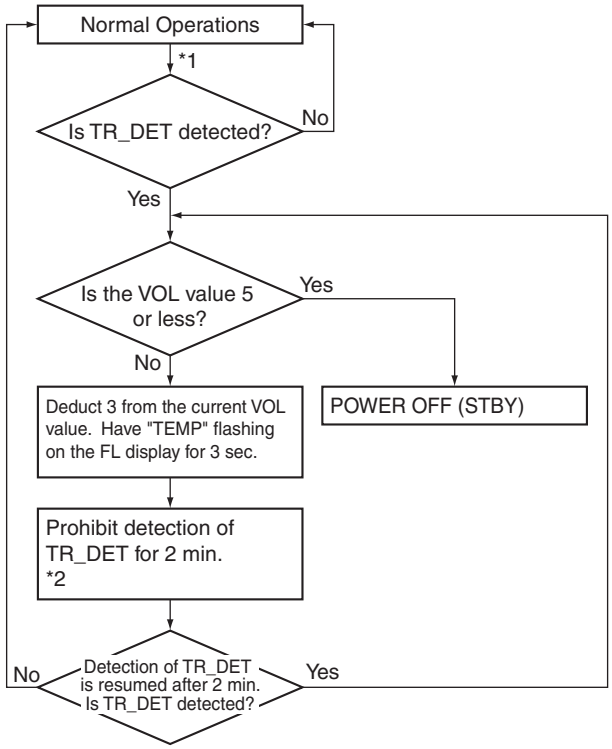
3.2 OVERLOAD (overcurrent) error detection

Key Operation	FL Display	Time (sec.)	Description of Indications
(Normal display)	B D	usually	Normal display
(OVERLOAD detection)	B D		
↓ (Auto)			
(RECEIVER POWER OFF) *1			

3.3 TEMP (AMP overheat) error detection

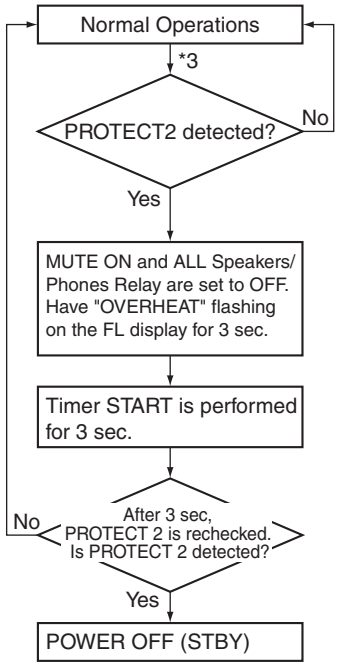
For detection of a TEMP error, the unit monitors both the TR_DET and PROTECT2 signals. If a TEMP error is detected, the processes shown below will be performed. The processes shown below are rough operational specifications and are not the actual commands from the mounted components.
After a TEMP error is detected, the count of protection activation detections will be updated.

Counter: Temp2 TR_DET
P6_4 (34 pin)
(TRTHER_DET from AMP Assy)



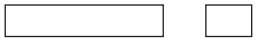
*1: The detection interval must be 1 sec or less.
*2: If PROTECT 2 is detected while TR_DET detection is prohibited for 2 min, the PROTECT 2 function will be activated.

Counter: Temp1 PROTECT2
PL2_1 (71 pin)
(RADI_DET from AMP Assy)



*3: The detection interval must be 1 sec or less.

3.4 How to cancel the status after detection of the DC error

Key Operation	FL Display	Time (sec.)	Description of Indications
(STANDBY state) [ADVANCED SURROUND] + [STANDBY/ON] keys (press and hold the keys for 2 seconds.) ↓ (Normal display)	 	 usually	 Normal display

[Detailed explanations] Simultaneously holding the [ADVANCD SURROUND] and [STANDBY/ON] keys on the front panel pressed for 2 seconds will cancel Key Input Inhibition mode after a DC error detection and turn the unit ON.

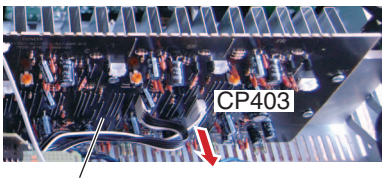
7. DISASSEMBLY

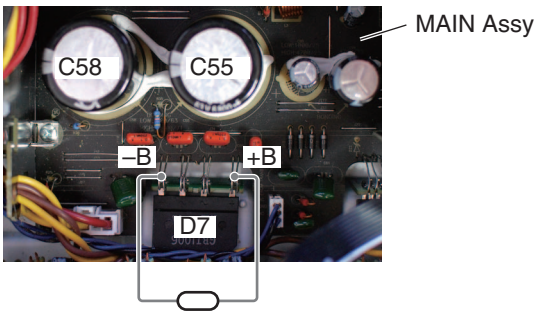
Note:
(1) Even if the unit shown in the photos and illustrations in this manual may differ from your product, the procedures described here are common.
(2) For performing the diagnosis shown below, the following jigs for service is required:
- Board to board extension jig cable (GGD1733)
- Board to board extension jig cable (GGD1734)
- 31P extension jig FFC (GGD1738)
- 9P extension jig cable (GGD1739)
- 13P extension jig cable (GGD1740)

1. Discharging

[1] MAIN Assy Capacitor (C55, C58)

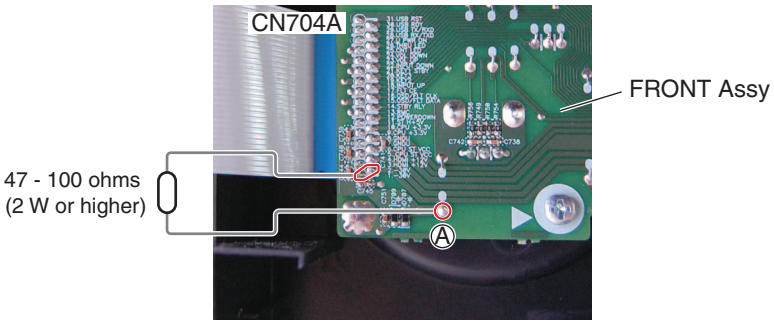
[Procedures]
(1) Unplug the power cord.
(2) Disconnect the 10P connector from CP403 of the AMP Assy between CN3 of the MAIN Assy.
(3) Connect +B and –B terminal of the D7, using resistor leads with 47 - 100 ohms (2 W or higher), for discharging.
∗ Discharging time: 30 - 60 seconds, depending on the level of resistance.
(4) Check that the voltage between the +B and –B terminals is less than 1 V, using a tester.
∗ Be sure to connect the GND terminal of the tester to the chassis.
∗ If the voltage is still 1 V or higher, repeat Step (3).





[2] FL-30 V Capacitor

[Procedures]
(1) Unplug the power cord.
(2) Connect CN704A pins 1 or 2 (–30V) of the FRONT Assy and GND terminal Ⓐ, using resistor leads with 47-100 ohms (2 W or higher), for discharging.
∗ Discharging time: 5 - 10 seconds, depending on the level of resistance.
(3) Check that the voltage between the –30V terminal is less than 1 V, using a tester.
∗ Be sure to connect the GND terminal of the tester to the chassis.
∗ If the voltage is still 1 V or higher, repeat Step (2).

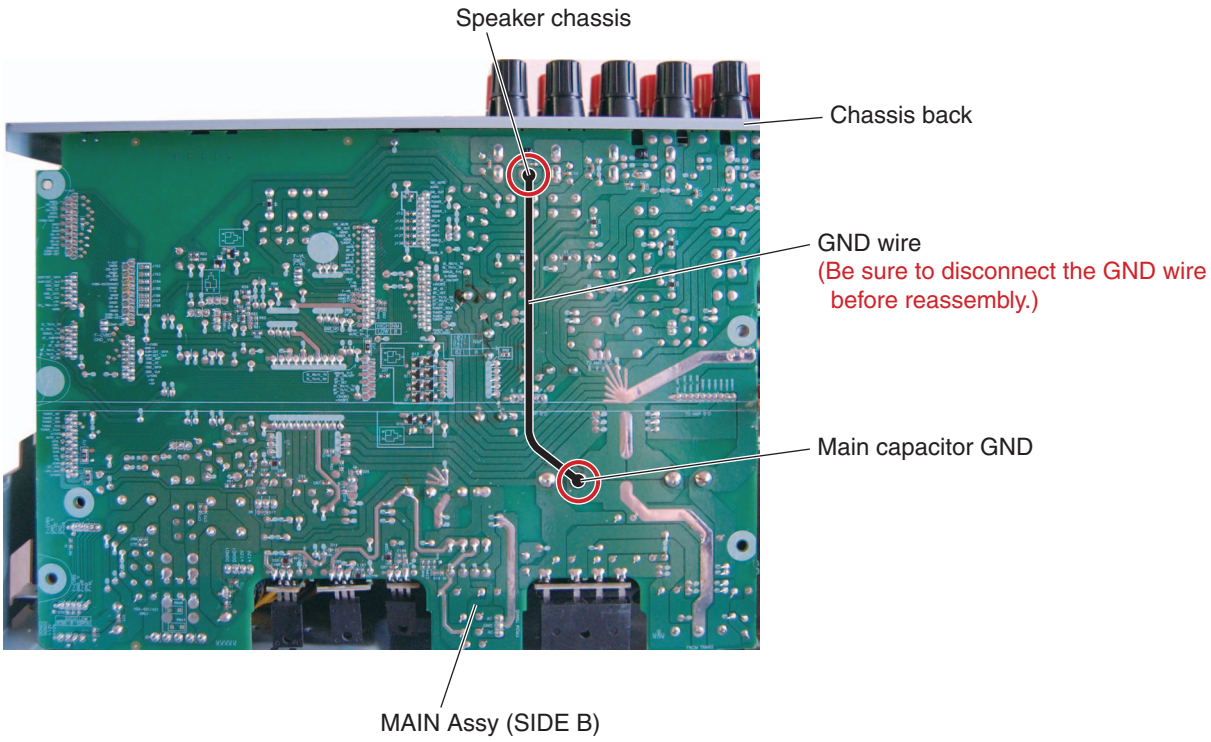


2. Notes on Ground Points Connection

[Note]

During repair, before checking the MAIN Assy, etc., with the rear chassis removed, be sure to connect the GND terminal of the main capacitor to the chassis back (speaker chassis), as shown below, then connect the power cord.

Without grounding connection, the protection circuit will be activated.
After repairing, be sure to remove the ground wire before reassembling.



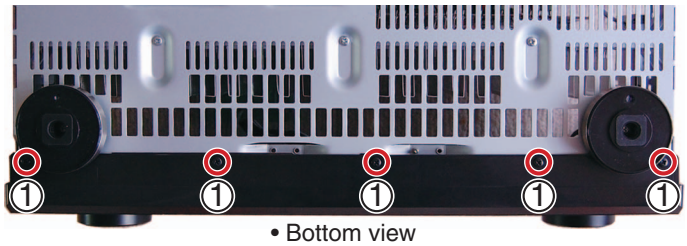
3. Disassembly

Note: The photo. without the explanatory note is VSX-821-K.

[1] Front Panel Section

Remove the cabinet by removing the 10 screws.

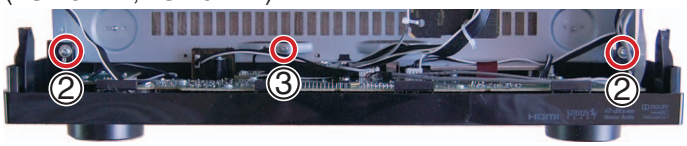
(1) Remove the five screws. (BBZ30P080FTB)



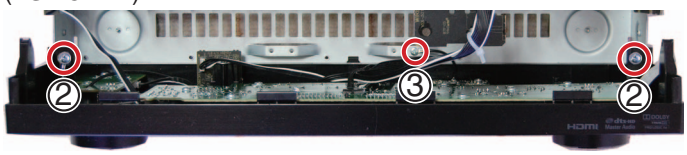
• Bottom view

(2) Remove the two screws. (1500001206010-IL)
(3) Remove the one screw. (BBZ30P080FTC)

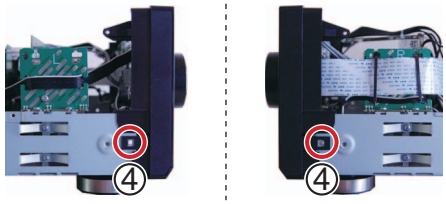
(VSX-821-K, VSX-921-K)



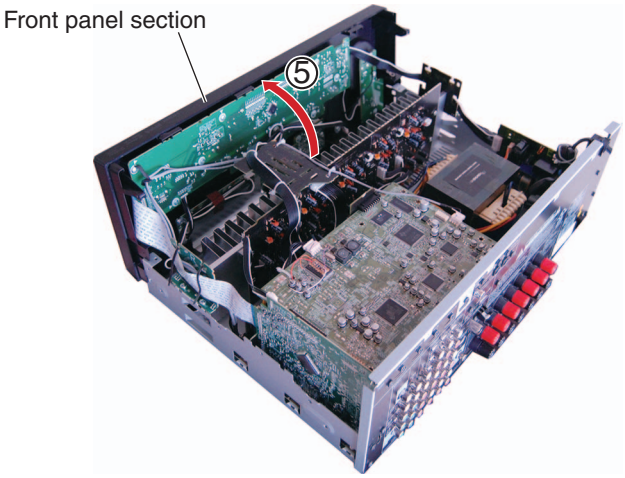
(VSX-521-K)



(4) Unhook the two hooks.



(5) Arrange the front panel section as shown in the photo below.

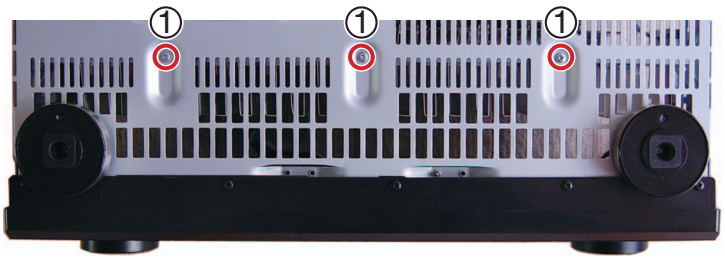


[2] Heatsink Section

Caution: Heatsink section in work becomes hot, and be careful with it.

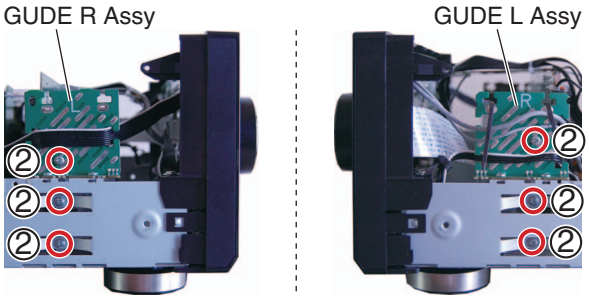
Remove the cabinet by removing the 10 screws.

(1) Remove the three screws. (BBZ30P080FTC)

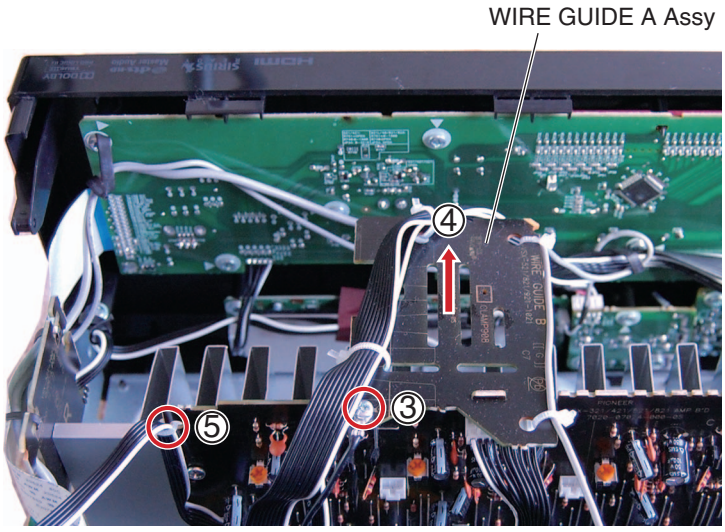


• Bottom view

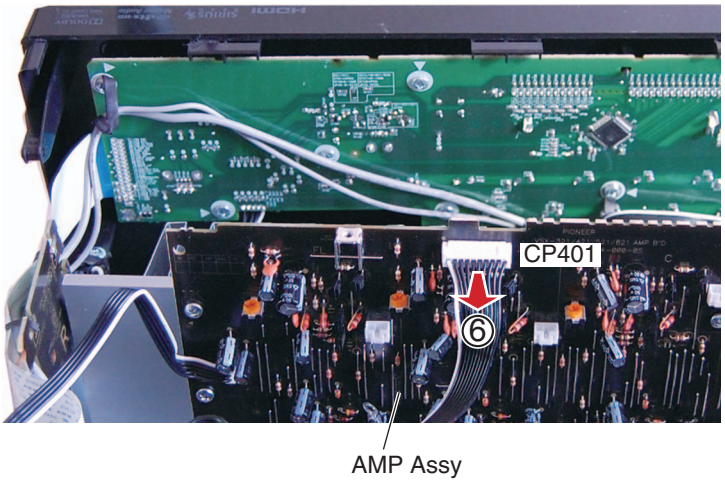
(2) Remove the six screws. (BBZ30P080FTC)



(3) Remove the one screw. (BBZ30P080FTC)
(4) Remove the WIRE GUIDE A Assy.
(5) Cut the binder.

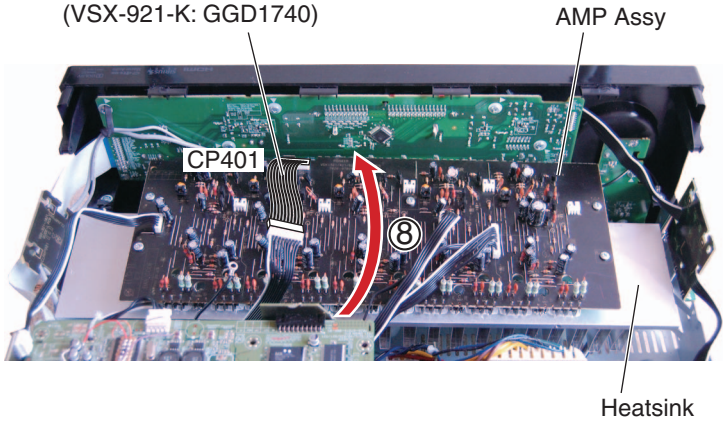


(6) Disconnect the one connector. (CP401)



(7) Connect the extension jig cable.
(8) Rotate the heatsink section in the direction of the arrow.

⑦ Extension jig cable
(VSX-821-K, VSX-521-K: GGD1739)
(VSX-921-K: GGD1740)

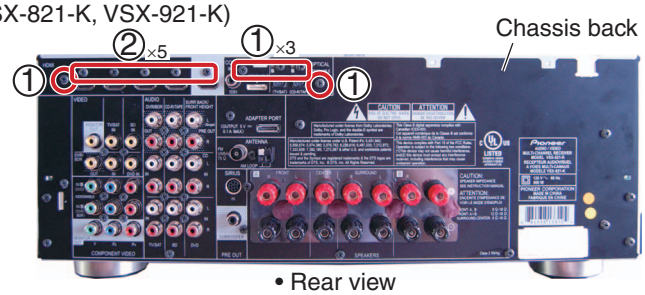


[3] D-MAIN Assy

Remove the cabinet by removing the 10 screws.

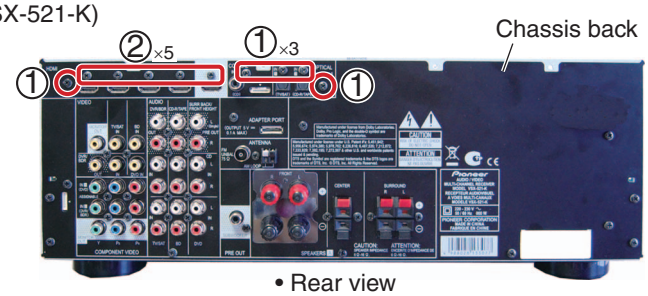
(1) Remove the five screws. (BBT30P100FTB)
(2) Remove the five screws. (BSZ30P040FTB)

(VSX-821-K, VSX-921-K)



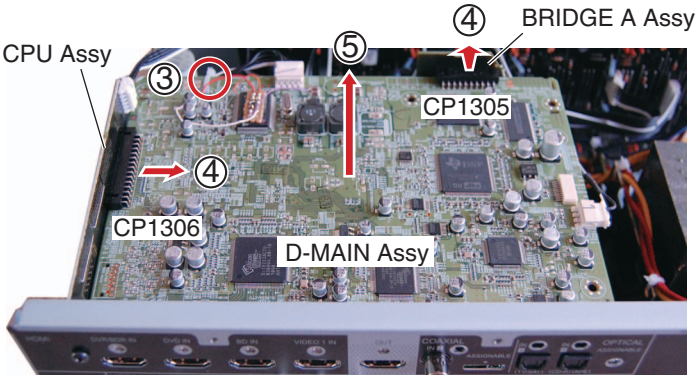
• Rear view

(VSX-521-K)



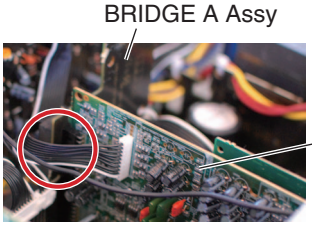
• Rear view

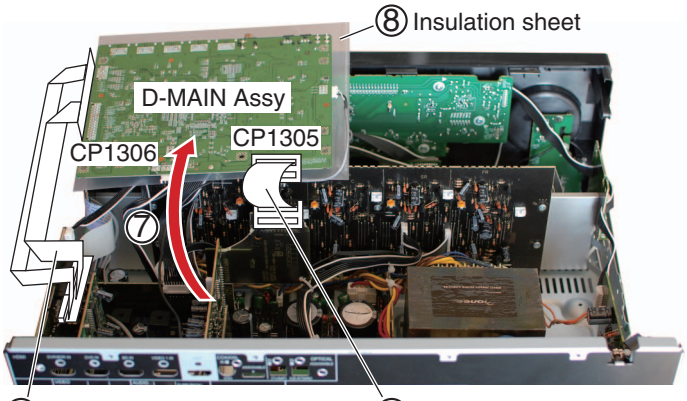
(3) Cut the binder.
(4) Disconnect the two B to B connectors. (CP1305, CP1306)
(5) Remove the D-MAIN Assy.



(6) Connect the two extension jig cables.
(7) Arrange the D-MAIN Assy in the photo below.
(8) Insert any insulation sheet.

Note:
Confirm that a B to B connector of BRIDGE A Assy is connected to AUDIO Assy tightly.





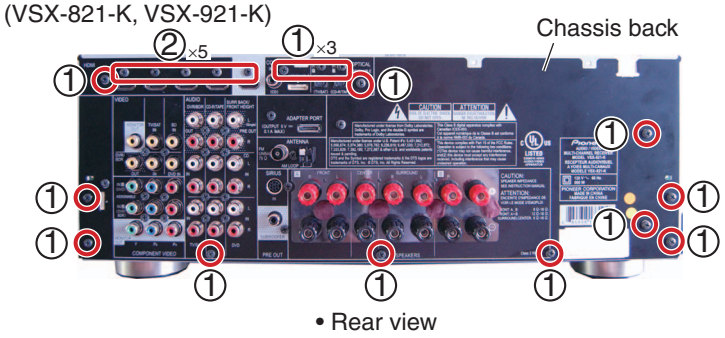
[4] MAIN Assy

Remove the cabinet by removing the 10 screws.

[4-1] Chassis back, D-MAIN Assy

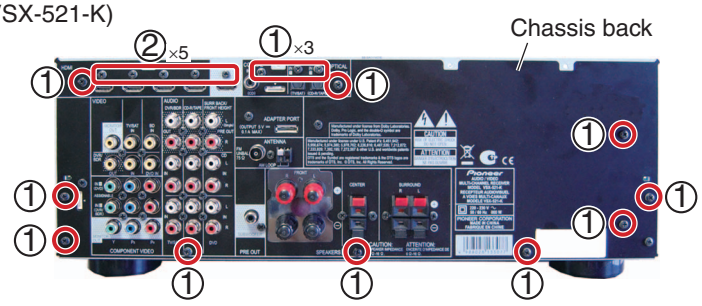
(1) Remove the 14 screws. (BBT30P100FTB)
(2) Remove the five screws. (BSZ30P040FTB)
(3) Remove the D-MAIN Assy.
(See procedure [3].)

(VSX-821-K, VSX-921-K)



• Rear view

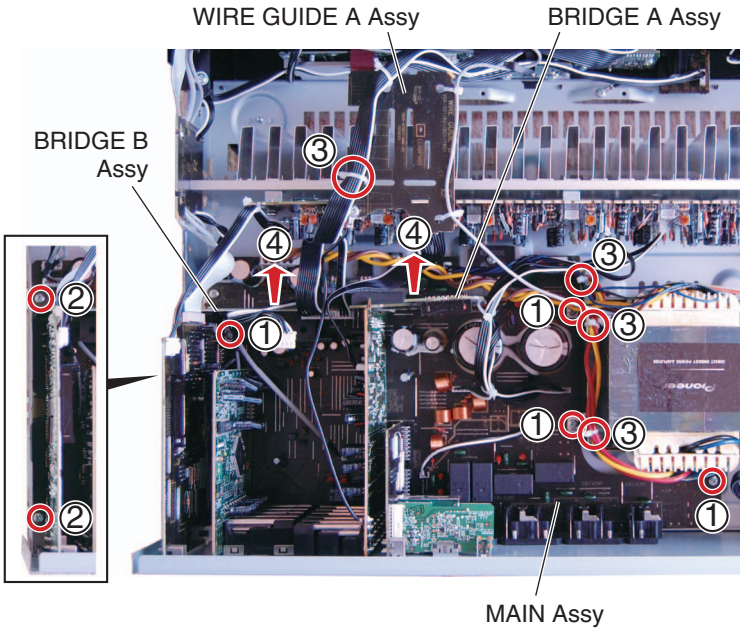
(VSX-521-K)



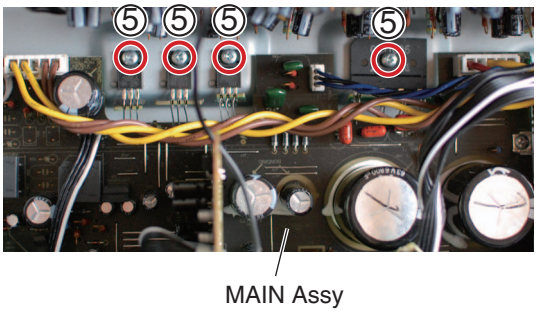
• Rear view

[4-2] MAIN Assy

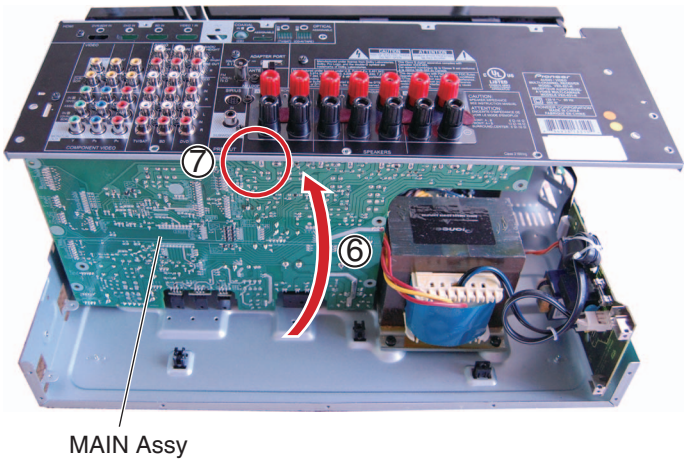
(1) Remove the four screws. (BBZ30P180FTC)
(2) Remove the two screws. (BBZ30P080FTC)
(3) Cut the four binders.
(4) Remove the BRIDGE A and B Assys.



(5) Remove the four screws. (BBZ30P080FTC)

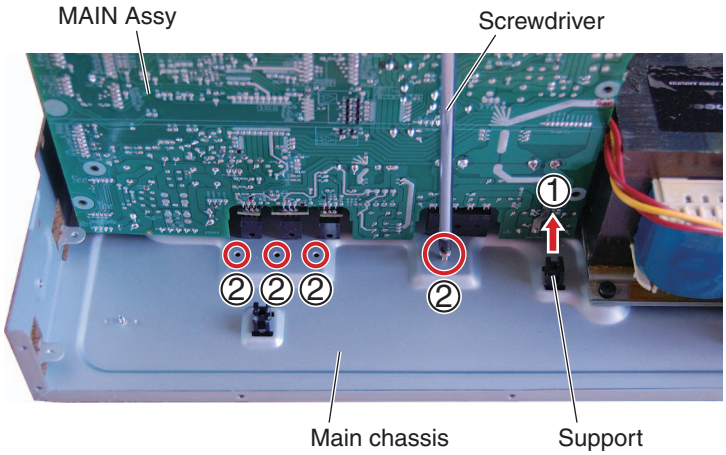


(6) Arrange the unit as shown in the photo below.
(7) Connect the chassis ground.
See “2. Notes on Ground Points Connection”.

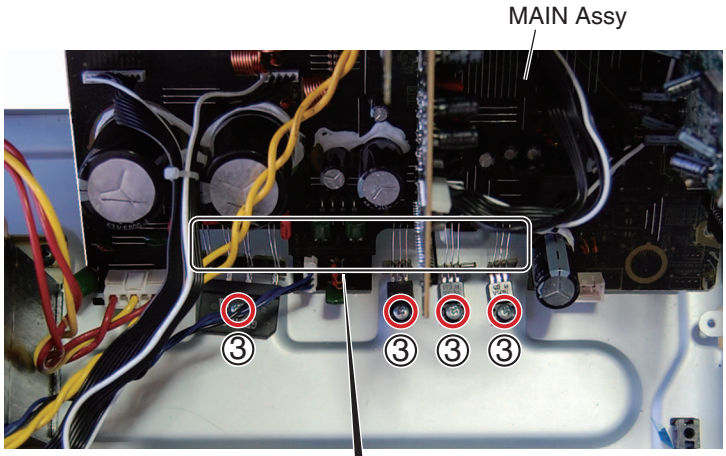


[4-3] Regulator ICs and Recifier diode

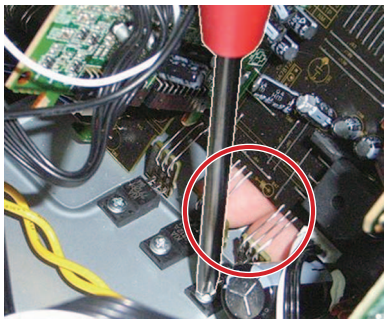
(1) Remove the support.
(2) Tighten then loosen the screw in each of the four holes for temporary joining that are located on the rear side of the main chassis. (This is for shaving the thread grooves to facilitate attachment in the next step.)



(3) Attach the three regulator ICs and a rectifier diode to the holes tapped in Step (2). Be sure to place them in a direction perpendicular to the board and take care that the jumper wires will not become distorted.

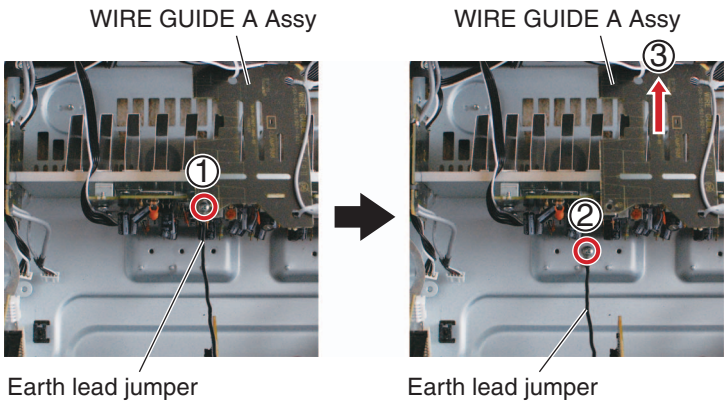


Note:
While securing the regulator ICs and rectifier diode to the holes for temporary joining, tighten the screws while holding the regulator ICs and rectifier diode with your fingers so that the jumper wires will not become distorted.

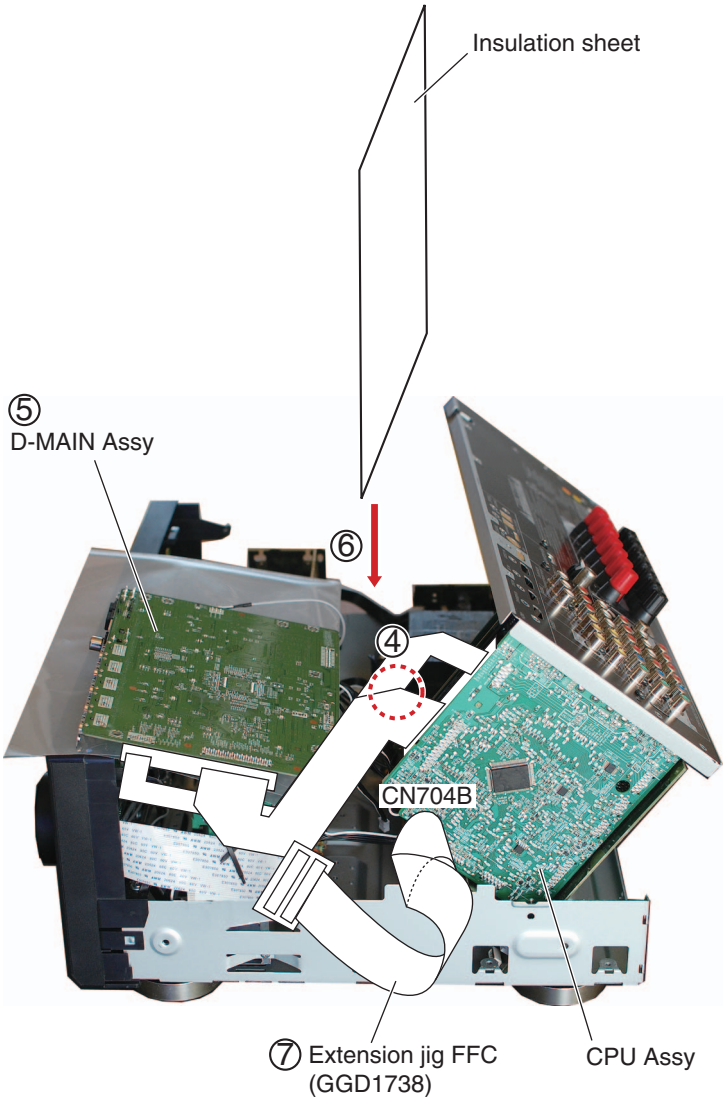


[4-4] Diagnosis

(1) Remove the one screw and remove the earth lead jumper. (BBZ30P080FTC)
(2) Reassemble the earth lead jumper.
(3) Remove the WIRE GUIDE A Assy.



(4) Reassemble the BRIDGE A and BRIDGE B Assys.
(5) Reassemble the D-MAIN Assy with extension jig cables. (See procedure [3].)
(6) Insert any insulation sheet between D-MAIN Assy and MAIN Assy.
(7) Connect the extension jig FFC.



8. EACH SETTING AND ADJUSTMENT

- If the adjustment is shifted or if it becomes necessary to readjust because of part replacement, etc., perform the adjustment as described below.
- Any value changed in Adjustment mode will be stored in memory as soon as it is changed. Before readjustment, take note of the original values for reference in case you need to restore the original settings.
- Use a stable AC power supply.

8.1 ADJUSTMENT REQUIRED WHEN THE UNIT IS REPAIRED OR REPLACED

■ When any of the following assemblies is replaced

AMP Assy	➡	"8.3 IDLE CURRENT ADJUSTMENT" (All channel)
Other assemblies	➡	No adjustment required

■ When any of the following parts is replaced

AMP Assy	➡	"8.3 IDLE CURRENT ADJUSTMENT" (Only channel of replacement parts)
Other assemblies	➡	No adjustment required

8.2 UPDATING OF THE FIRMWARE

[Purpose]

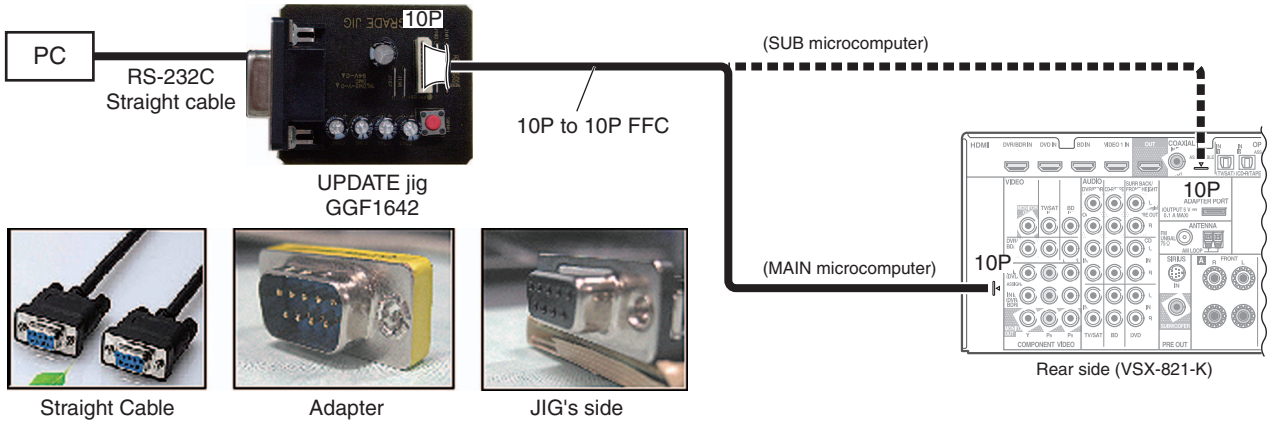
Refer to this section when updating the firmware of each microcomputer is required by the service information, etc.

[Necessary Tools]

- PC with a serial port
- RS-232C cable (9-pin to 9-pin, straight cable)
- RS-232C UPDATE jig: GGF1642 (Use FFC of GGF1642. (10P to 10P FFC))
- Firmware

[Connections]

Connect as shown in the figure below.
Insert the FFC with its contact surface facing the △ mark.

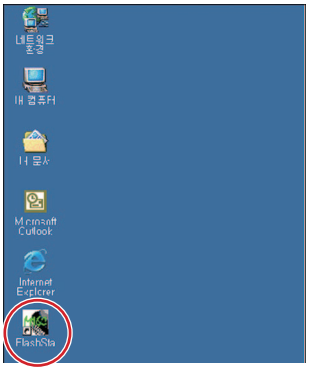


(1) MAIN and SUB microcomputers update

[Procedures]

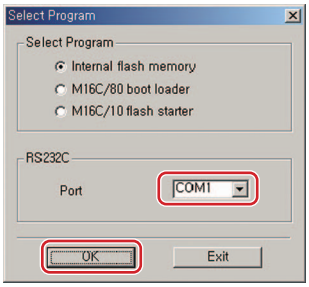
■ for MAIN microcomputer

1. Unplug the AC cord.
   Connect the FFC cable. (MAIN microcomputer)
   Start up application FlashSta on the PC.



2. Plug the AC cord. (STANDBY mode)
   For updating of the MAIN microcomputer, proceed with the following steps in STANDBY mode.

3. Press the OK button.

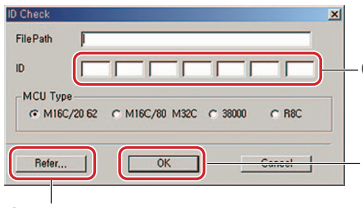


Select for COM port.

[if the following messages are displayed]

Please push the cancel button and press the JIG's RESET button.
And confirm a connection of FFC.
Please return to procedure 1.

4. Select the update file and enter ID.

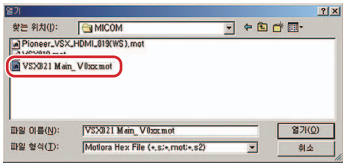


② Enter ID.
Enter "ff" in all field.

③ Press OK button to go to next step.

① Selection of upgrade file

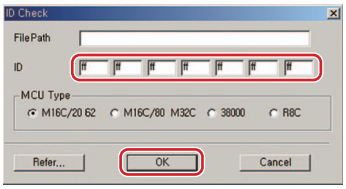
① Select the update file



Select "VSX821 Main V0xx.mot" file to update the MCU.

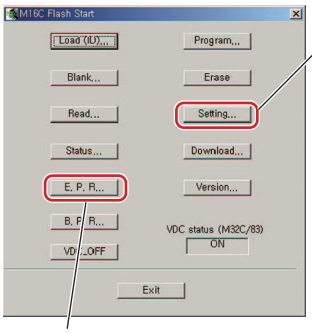
Press the OK button.

② Enter ID.



Press the OK button.

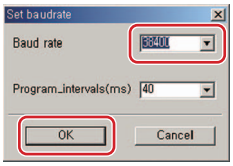
5. Set speed update and update the MCU.



① Set speed of update.

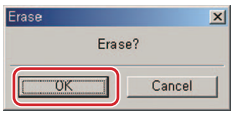
② Update the MCU.
E.P.R=>Erase+Program+Read

① Set speed of update.
Set Baud rate to 38400.
(Default Baud rate is 9600)

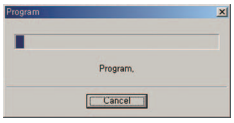


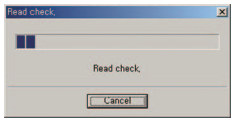
Press the OK button.

② Update the MCU
Press the E.P.R … button

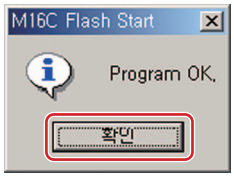


Press OK button.

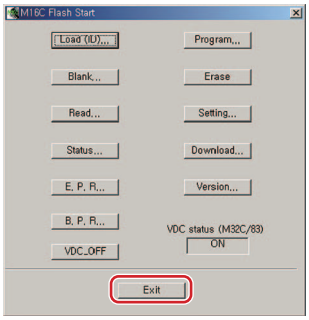




6. Update Finished MAIN microcomputer.



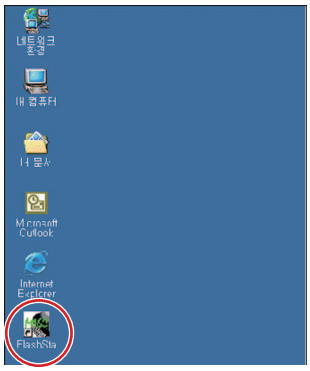
Press the OK button.



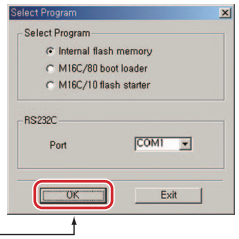
Press the Exit button.
Please wait for until this window disappears.

■ for SUB microcomputer

7. Unplug the AC cord.
Disconnect the FFC cable.
Connect the FFC cable. (SUB microcomputer)
Plug the AC cord. (STANDBY mode)
Turn the main unit on.
For updating of the SUB microcomputer, proceed with the following steps in POWER ON mode.
Push the (reset) button on the JIG's Board.
Start up application on the PC.



Press the OK button.

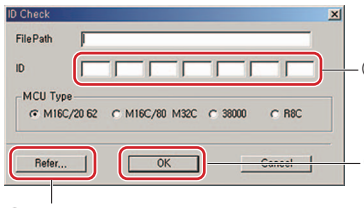


Press the OK button.

[if the following messages are displayed]

Please push the cancel button and press the JIG's RESET button.
And confirm a connection of FFC.
Please return to procedure 7.

8. Select the update file and enter ID.

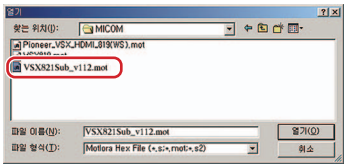


② Enter ID.
Enter "ff" in all field.

③ Press OK button to go to next step.

① Selection of upgrade file

① Select the update file

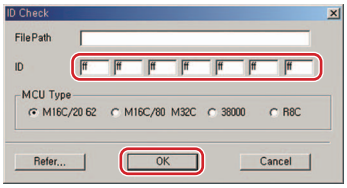


Select "VSX821Sub_v112.mot" file to update MCU.

Press the OK button.

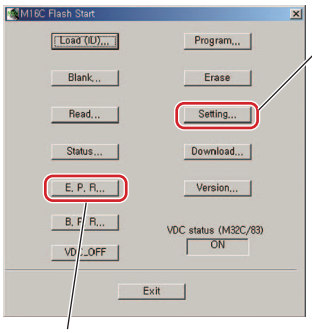
821 & 521 & 421: Select "VSX-x21Sub_v0xx.mot" file to update the MCU.
921/K & 40 & 826: Select "VSX-921Sub_v0zz.mot" file to update the MCU.

② Enter ID.



Press the OK button.

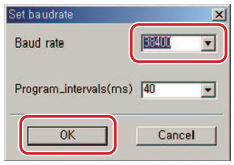
9. Set speed update and update the MCU.



① Set speed of update.

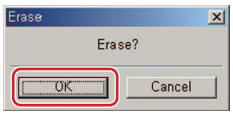
② Update the MCU.
E.P.R=>Erase+Program+Read

① Set speed of update.
Set Baud rate to 38400.
(Default Baud rate is 9600)

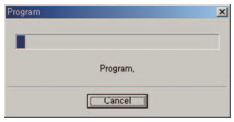


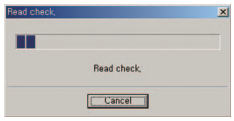
Press the OK button.

② Update the MCU
Press the E.P.R … button

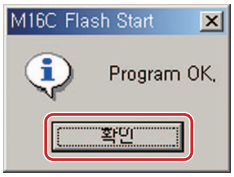


Press OK button.

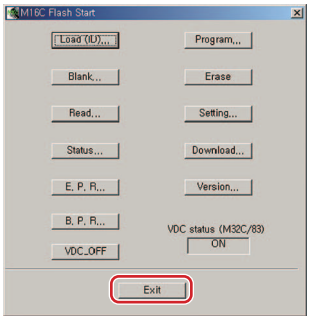




10. Update Finished SUB microcomputer.



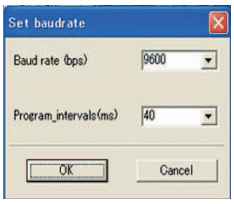
Press the OK button.



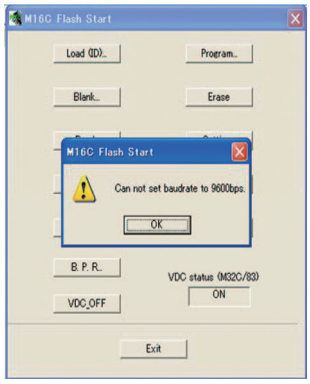
Press the Exit button.
Please wait for until this window disappears.

If the following messages are displayed, shut the update program down, and start the update again from step 1.

Push the (reset) button during 1sec on the JIG's Board.
Press the OK button.



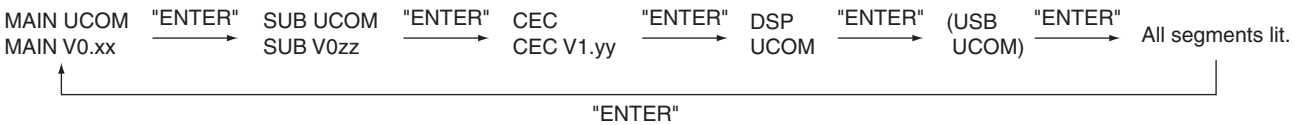
Select the 9600 of the Board rate then press the OK button



11. Turn the main unit off. (STANDBY mode)
Disconnect the FFC cable.

■ Check to the software VER of MAIN & Sub microcomputers.

12. Make sure that the main unit is in STANDBY mode.
    Press and hold the "ENTER" and "STANDBY/ON" keys, then press the "ENTER" key to display each UCOM version.
    Each time the "ENTER" key is pressed, then indications on the FL display change as follows:



* The version of the USB UCOM is displayed only when USB/iPod FUNCTION is selected. (Except for VSX-521 & 421)

13. Turn the main unit off.

(2) How to Update the USB Microcomputer (VSX-821-K, VSX-921-K ONLY)

[Procedures]

1. Copy the "VSX_USB.rom" file to the root directory of a USB memory device.
2. Press the iPod USB key on the remote control unit to select iPod/USB function then connect the USB memory device.
3. After accessing the USB memory device, "UPG? NO" is displayed on the FL display and "UPDATE? NO" is displayed as an On-Screen display.
4. Press the iPod USB key on the remote control unit.
5. Send either iPod/USB Cursor Left or iPod/USB Cursor Right code.
6. "UPG? YES" is displayed on the FL display and "UPDATE? YES" is displayed as an On-Screen display.
7. After sending the iPod/USB Enter code, updating starts. ("UPDATE" is displayed on the FL display.)
8. When "UPG? NO" is displayed on the FL display and "UPDATE? NO" is displayed as the On-Screen display, updating is completed.
9. Disconnect the USB memory device then turn the unit off.

[How to Confirm the Version of the USB Microcomputer]

1. Select the iPod/USB function then turn the unit off.
2. While holding the ENTER key on the front panel pressed, press the STNADBY/ON key.
3. When the receiver is turned on, press the ENTER key on the main unit three times.
   (Each time the ENTER key is pressed, the indications on the FL display change as follows:
   Main -> Sub -> DSP -> USB -> All segments lit.)
4. The version is displayed on the FL display, as "USB:***."

Notes on updating

- If you perform updating of the same software twice, it may fail.
- If the indication "UPDATE" on the FL display does not change, let it sit for a few minutes.
  If the indication on the FL display changes to one other than "UPDATE," the unit becomes operable.
  Turn the unit off after it becomes operable.

(3) How to update the DSP Microcomputer

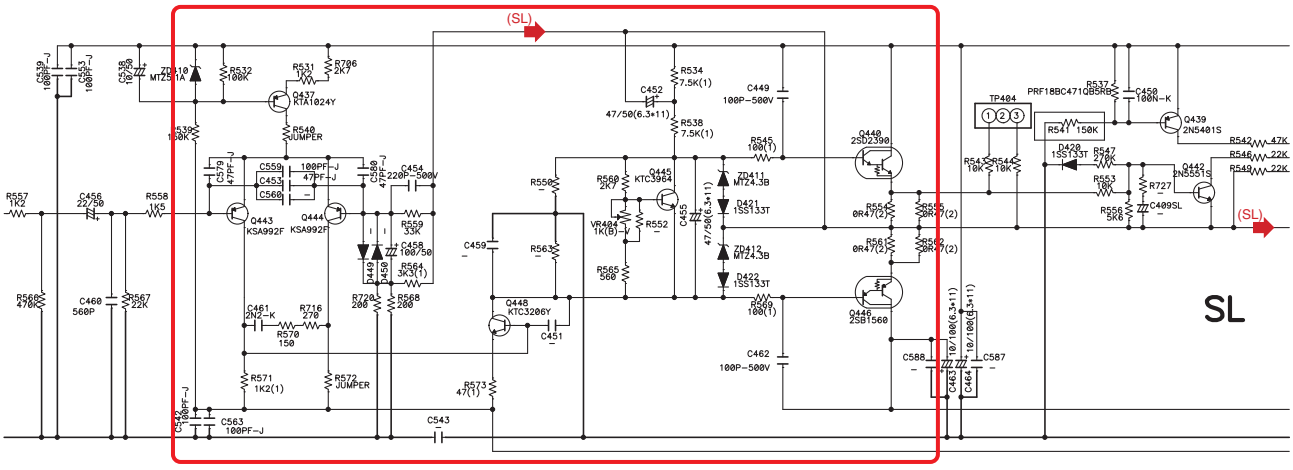
[Procedures]

1. Select an Input Function that allows reception via Optical input 1 or 2 then set the unit to STBY_Off mode.
2. Press the SPEAKERS and STANDBY/ON keys simultaneously to enter DSP UpDate mode. ("DSP UP" is displayed.)
3. When "PLAY" is displayed, playback of the .wav file starts. (Play the file only once. NEVER repeat playback.)
   ("PLAY" is displayed.)
4. After playback is finished and "ENTER" is displayed, press the ENTER key on the front panel. ("ENTER" is displayed.)
5. "WRITING" is automatically displayed.
6. After writing is completed, "COMPLETE" is displayed.
7. Turn the unit off then confirm that the version has been updated.

8.3 IDLE CURRENT ADJUSTMENT

■ for VSX-821-K, VSX-521-K

When any component parts which are within the red square on the following circuit diagram are replaced, the idle current adjustment of that channel is required. (Idle current adjustment for another channel is not required.)
However, when any capacitors are replaced, the adjustment is not required.
(The following circuit diagram is for SL channel, but another channel also has same circuit diagram and same adjustment is required)



Channel	Measurement Points	Adjustment Points	Procedure
FL	TP401 pin 1 (+) TP401 pin 3 (–)	VR401	① Turn on the power. ② Perform aging for one minute. ③ Connect a digital voltmeter to the measurement point. ④ Turn the adjustment VR so that the voltage becomes in 2.0 mV ± 0.2 mV. (Condition : No signal and no load)
FR	TP402 pin 1 (+) TP402 pin 3 (–)	VR402	
C	TP403 pin 1 (+) TP403 pin 3 (–)	VR403	
SL	TP404 pin 1 (+) TP404 pin 3 (–)	VR404	
SR	TP405 pin 1 (+) TP405 pin 3 (–)	VR405	

• Adjustment points and measurement points.... see fig.1.

C AMP ASSY

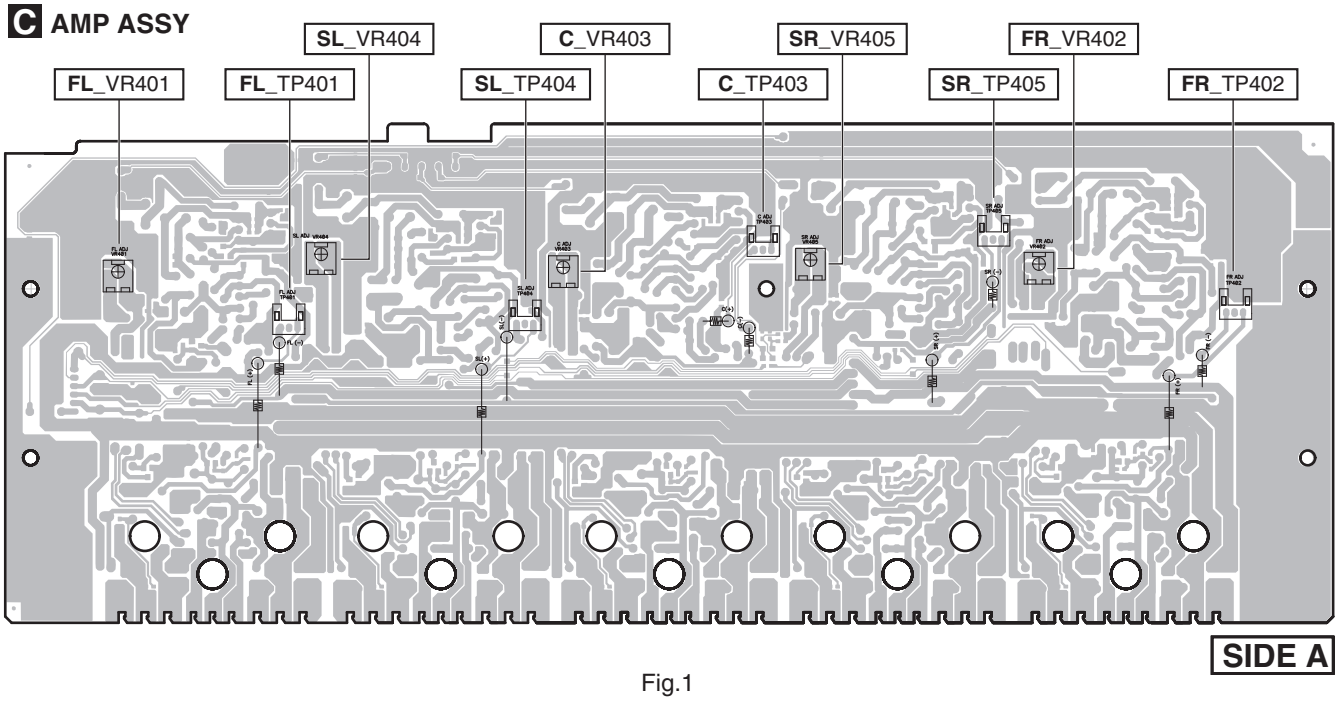
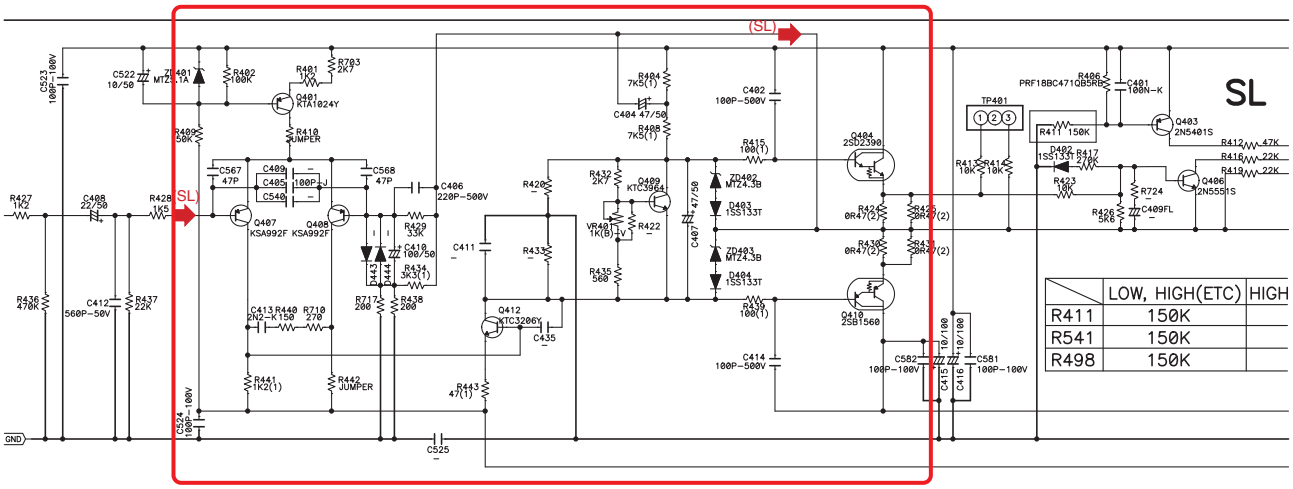


Fig.1

■ for VSX-921-K

When any component parts which are within the red square on the following circuit diagram are replaced, the idle current adjustment of that channel is required. (Idle current adjustment for another channel is not required.)
However, when any capacitors are replaced, the adjustment is not required.
(The following circuit diagram is for SL channel, but another channel also has same circuit diagram and same adjustment is required)



Channel	Measurement Points	Adjustment Points	Procedure
FL	TP404 pin 1 (+) TP404 pin 3 (–)	VR404	① Turn on the power. ② Perform aging for one minute. ③ Connect a digital voltmeter to the measurement point. ④ Turn the adjustment VR so that the voltage becomes in 2.0 mV ± 0.2 mV. (Condition : No signal and no load)
FR	TP402 pin 1 (+) TP402 pin 3 (–)	VR402	
C	TP403 pin 1 (+) TP403 pin 3 (–)	VR403	
SL	TP401 pin 1 (+) TP401 pin 3 (–)	VR401	
SR	TP405 pin 1 (+) TP405 pin 3 (–)	VR405	
SBL	TP406 pin 1 (+) TP406 pin 3 (–)	VR406	
SBR	TP407 pin 1 (+) TP407 pin 3 (–)	VR407	

• Adjustment points and measurement points.... see fig.2.

B AMP ASSY **SIDE A**

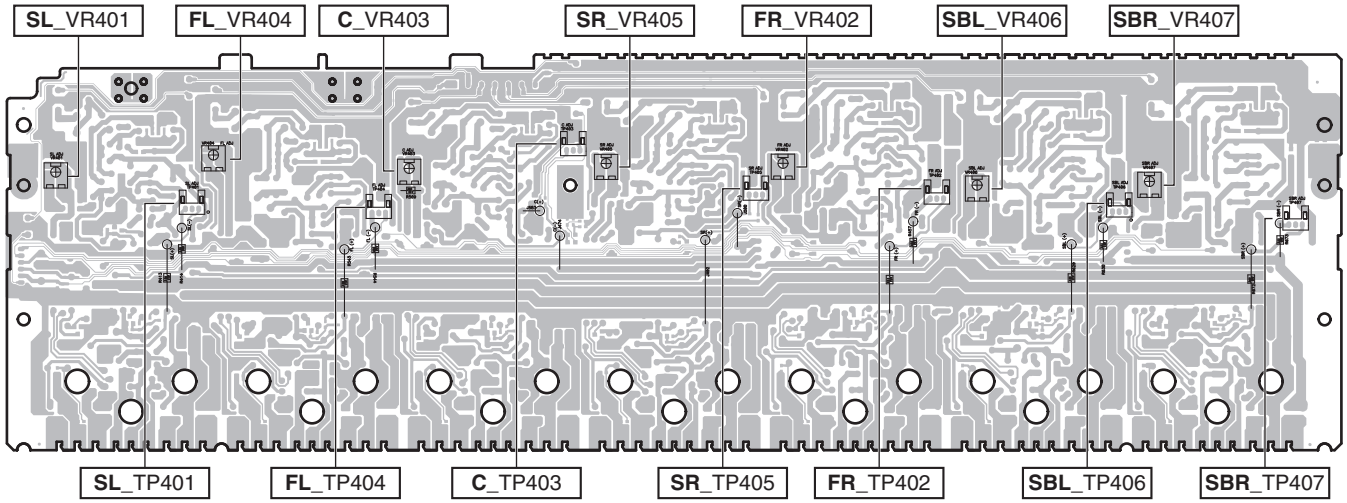


Fig.2

A

B

C

D

E

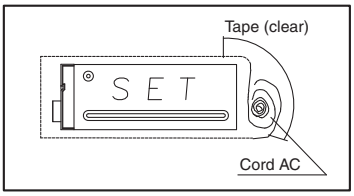
F

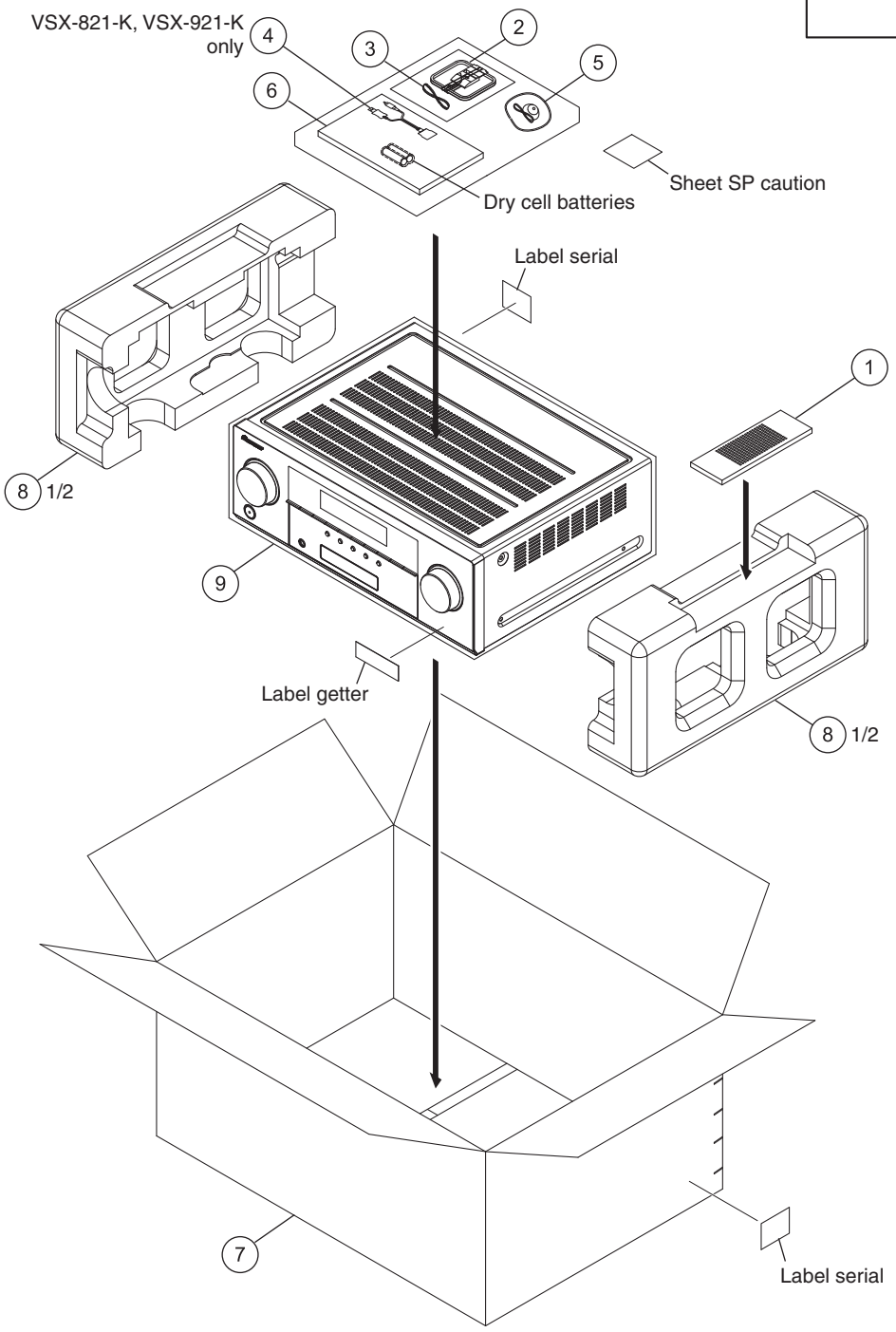
9. EXPLODED VIEWS AND PARTS LIST

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.)*

9.1 PACKING SECTION

Poly bag packing style





(1) PACKING SECTION PARTS LIST

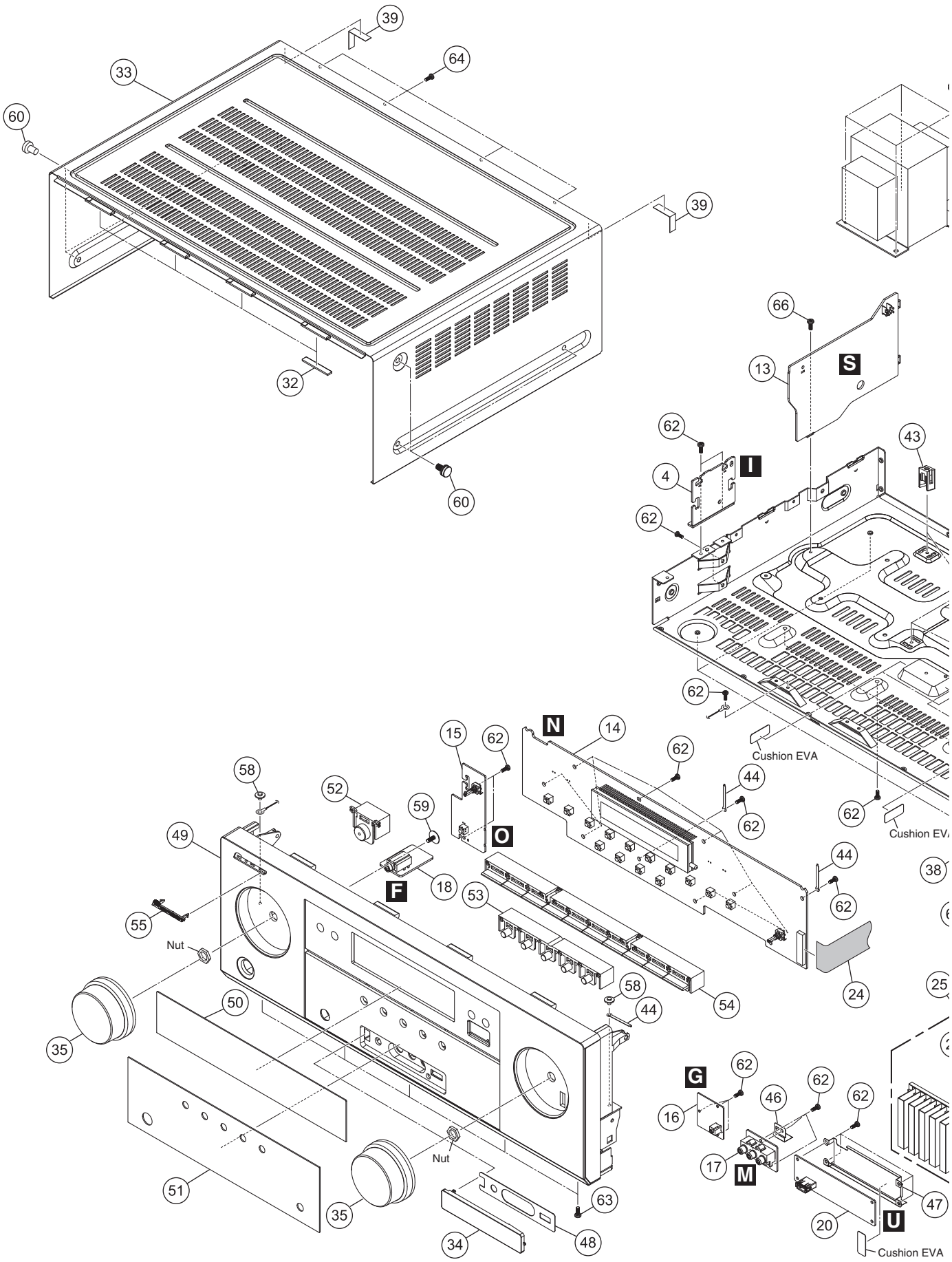
Mark	No.	Description	Part No.
	1	Remote Control	See Contrast table (2)
	2	AM Loop Antenna	E601019000010-IL
	3	FM Wire Antenna	E605010140010-IL
	4	iPod Cable	See Contrast table (2)
	5	Microphone (for Auto MCACC setup)	APM7008
	6	Operating Instructions (En, Frca, Es)	See Contrast table (2)
	7	Box, Gift	See Contrast table (2)
	8	Cushion, Snow	6230212914000-IL
	9	PE, Sheet	6327040059000-IL

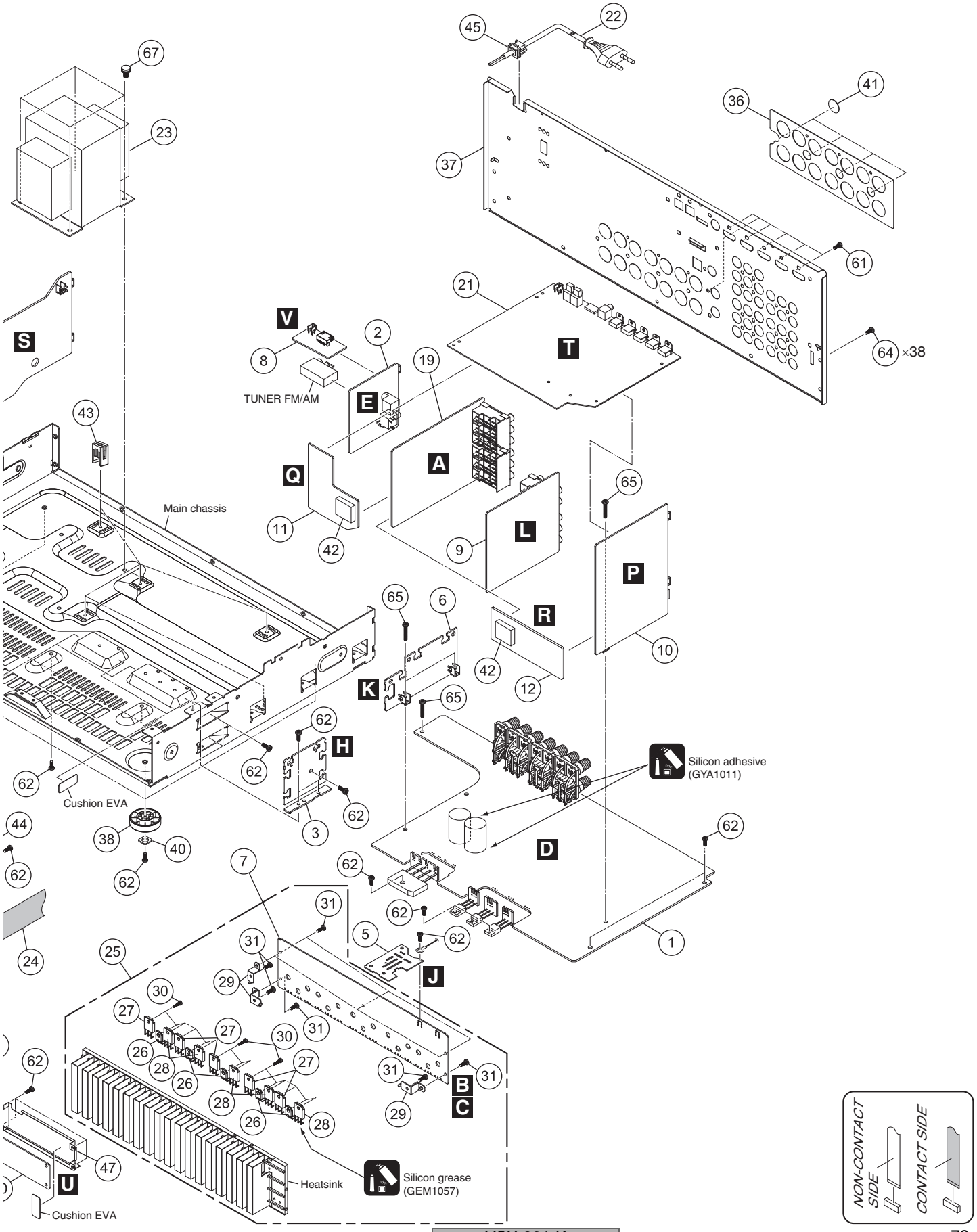
(2) CONTRAST TABLE

VSX-821-K/CUXCNSM, VSX-921-K/UXCNCB and VSX-521-K/CUXCNSM are constructed the same except for the following:

Mark	No.	Symbol and Description	VSX-821-K /CUXCNSM	VSX-921-K /UXCNCB	VSX-521-K /CUXCNSM
	1	Remote Control	8300762100010-IL	8300762100010-IL	8300761900010-IL
	4	iPod Cable	L308102013020-IL	L308102013020-IL	Not used
	6	Operating Instructions (En, Frca, Es)	5707000004990-IL	5707000004970-IL	5707000005040-IL
	7	Box, Gift	60072118200G0-IL	6007211820090-IL	60072118200P0-IL

9.2 EXTERIOR SECTION (for VSX-821-K, VSX-921-K)




TUNER FM/AM
Main chassis
Cushion EVA
Silicon adhesive (GYA1011)
Heatsink
Silicon grease (GEM1057)
Cushion EVA
NON-CONTACT SIDE
CONTACT SIDE

(1) EXTERIOR SECTION (for VSX-821-K, VSX-921-K) PARTS LIST

Mark	No.	Description	Part No.
	1	MAIN Assy	See Contrast table (2)
	2	SUBWOOFER Assy	7028070272070-IL
	3	GUIDE L Assy	7028070273070-IL
	4	GUIDE R Assy	7028070274070-IL
	5	WIRE GUIDE A Assy	7028070276070-IL
	6	WIRE GUIDE B Assy	7028070277070-IL
	7	AMP Assy	See Contrast table (2)
	8	BT Assy	7028070231010-IL
	9	VIDEO Assy	See Contrast table (2)
	10	CPU Assy	See Contrast table (2)
	11	BRIDGE A Assy	7028070222070-IL
	12	BRIDGE B Assy	7028070223070-IL
	13	STANDBY Assy	See Contrast table (2)
	14	FRONT Assy	7028070211050-IL
	15	POWER Assy	7028070212050-IL
	16	MIC Assy	7028070213050-IL
	17	F-VIDEO Assy	7028070214050-IL
	18	HEADPHONE Assy	7028070215050-IL
	19	AUDIO Assy	See Contrast table (2)
	20	USB Assy	7028070201050-IL
	21	D-MAIN Assy	See Contrast table (2)
⚠	22	Cord Assy	L068125101710-IL
⚠	23	Power Trans	See Contrast table (2)
	24	Cable, Flat Card 1.0 MM	N711312022480-IL
	25	Heatsink Assy	See Contrast table (2)
⚠	26	Semi, TR/GE PNP 2SB	J5011560Y0000-IL
⚠	27	Semi, TR/GE NPN 2SC	J502396400010-IL
⚠	28	Semi, TR/GE NPN 2SD	J5032390Y0000-IL
	29	Bracket	4010056906010-IL
	30	Screw, Tapping Assy	B018230141H11-IL
	31	Screw, Tap Tite	B020030081B10-IL
	32	Sheet	1210210235000-IL
	33	Cabinet	3007211846000-IL
	34	Cover	4317215111000-IL
	35	Knob	5080212431000-IL
	36	Sheet	1210211482000-IL
	37	Chassis Back	See Contrast table (2)
	38	Foot	4007210391000-IL
	39	Cushion	4050211385000-IL
	40	Cushion	4050211605000-IL
	41	Cushion	4050211745000-IL
	42	Cushion	4050212685100-IL
	43	Support	4070001601010-IL
	44	Clamp	4330000310000-IL
	45	Stopper	4380040162010-IL

Mark	No.	Description	Part No.
	46	Plate	4470212096000-IL
	47	Plate	4470212066000-IL
	48	Sheet	1217211472000-IL
	49	Panel	See Contrast table (2)
	50	Window	5077213113020-IL
	51	Window	5077213123050-IL
	52	Button	5090213741100-IL
	53	Button	5090214561000-IL
	54	Button	5090214571000-IL
	55	Badge	XAM3006
	56	•••••	
	57	•••••	
	58	Screw	1500001206010-IL
	59	Screw	1500001456010-IL
	60	Screw	BBT40P080FTB
	61	Screw, Tap Tite	BSZ30P040FTB
	62	Screw, Tap Tite	BBZ30P080FTC
	63	Screw, Tap Tite	BBZ30P080FTB
	64	Screw, Tap Tite	BBT30P100FTB
	65	Screw, Tap Tite	BBZ30P180FTC
	66	Screw, Tap Tite	B020230063B10-IL
	67	Screw, Tap Tite Assy	B028940101B11-IL

(2) CONTRAST TABLE

VSX-821-K/CUXCNSM and VSX-921-K/UXCNCB are constructed the same except for the following:

Mark	No.	Symbol and Description	VSX-821-K /CUXCNSM	VSX-921-K /UXCNCB
	1	MAIN ASSY	70280702710H0-IL	70280702710G0-IL
	7	AMP ASSY	7028070241030-IL	7028070251040-IL
	9	VIDEO ASSY	7028070261060-IL	7028070261070-IL
	10	CPU ASSY	7028070221030-IL	7028070221070-IL
	13	STANDBY ASSY	7028070225030-IL	7028070225070-IL
	19	AUDIO ASSY	7028070181030-IL	7028070181050-IL
	21	D-MAIN ASSY	7028070191030-IL	7028070191050-IL
⚠	23	Power Trans	8200960610850-IL	8200960610960-IL
	25	Heatsink Assy	2128211908000-IL	2128211918000-IL
	37	Chassis Back	3207213736000-IL	3207213746000-IL
	49	Panel	3067215091000-IL	3067215091010-IL

9.3 EXTERIOR SECTION (for VSX-521-K)