TD0506035C2

Service Manual

Portable CD Tuner System

COMPACT disc DIGITAL AUDIO

SL-PH660EG

Colour

(A).....Blue Type

Specification

IRadio

Frequency rang:

FM: 87.5-108.0 MHz (50 kHz steps)

AM: 522-1629 kHz (9 kHz steps)

ICD player

Sampling frequency: 44.1 kHz

Decoding: 16 bit linear

Beam source: Semiconductor laserr wavelength 780 nm

Number of channels: 2 channel, stereo

Frequency response: 100 Hz-16 kHz (6 db down)

Wow and flutter: Less than measurable data

D/A converter: MASH (1 bit DAC)

IGeneral

Speakers: Full range 5cm, Round 4Ω x 2

Output power: 330 mW+330 mW (RMS...max.)

Power supply:

DC input (via included AC adaptor): DC 4.5V

Batteries: DC 3V Parallel (4 R6/LR6,AA batteries)

AC adaptor input; AC230V, 50 Hz

Power consumption: AC adaptor; 9 W

Dimensions (WxHxD): 234.5 x 180.5 x 70mm

Mass: 850 g (with batteries)
780 g (without batteries)

Waterproofing:

JIS (Japan Industrial Standards) splash-resistant specification*

*Splashing water from any direction shall have no harmful effect.

Play time:(Batteries used:4 alkaline batteries):

[Approximate times (at 25 °C,on a flat, stable surface,S-XBS is off)]

CD-DA disc: 22 hours

RADIO (FM BAND): 25 hours

・The play time may be less depending on the operating conditions.

・Play time will be considerably reduced when playing CD-RW.

AC adaptor power consumed in standby mode: 2W

Note:

Specifications are subject to change without notice.

Mss and dimensions are approximate.

⚠ WARNING

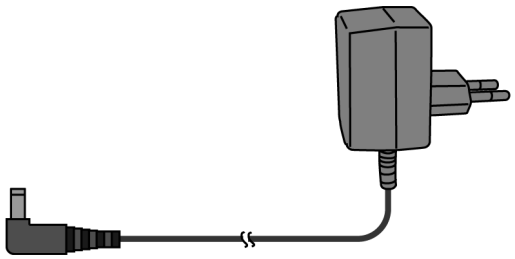
This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should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

Panasonic

CONTENTS

1 Accessories

・AC adaptor.....1 pc.
(RFEA455E-S)



2 Precaution of Laser Diode

CAUTION:

This unit utilizes a class 1 laser. Invisible laser radiation is emitted from the pickup lens when the unit is turned on:

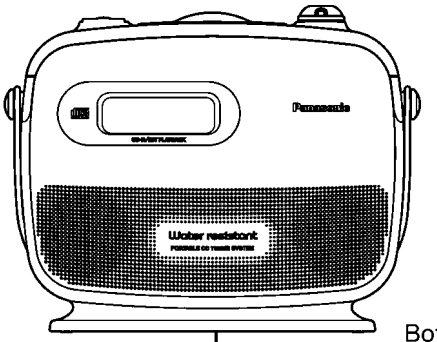
1. Do not look directly into the pickup lens.
2. Do not use optical instruments to look at the pickup lens.
3. Do not adjust the preset variable resistor on the optical pickup.
4. Do not disassemble the optical pickup unit.
5. If the optical pickup is replaced, use the manufactures specified replacement pickup only.
6. Use of control or adjustments or performance of procedures other than those specified herin may result in hazardous

radiation exposure.

CAUTION:

This product utilizes a laser diode with the unit turned “on”, invisible laser radiation is emitted from the pickup lens.
Wave length: 780nm
Maximum output wadiation power from pickup: 100 μW/VDE
Laser radiation from the pickup lens is safety level, but be sure the followings:

1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pickup lens for a long time.



Bottom of product

Inside of product

CAUTION	INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM. (IEC60825-1/Class 3b)
ATTENTION	RAYONNEMENT LASER INVISIBLE DANGEREUX EN CAS D'OUVERTURE ET. LORSQUE LA SÉCURITÉ EST NEUTRALISÉE. EXPOSITION DANGEREUSE AU FAISCEAU.
ADVARSEL	USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARO!	AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTÖNTÄ LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING	OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.
VORSICHT	UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET UND SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT. NICHT DEM STRAHL AUSSETZEN.
ADVARSEL	USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN. RQLXS0053

CAUTION!
THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.
DO NOT OPEN COVERS AND DO NOT REPAIR YOURSELF. REFER SERVICING TO QUALIFIED PERSONNEL.

CAUTION!
- **DO NOT INSTALL OR PLACE THIS UNIT IN A BOOKCASE, BUILT-IN CABINET OR IN ANOTHER CONFINED SPACE. ENSURE THE UNIT IS WELL VENTILATED. TO PREVENT RISK OF ELECTRIC SHOCK OR FIRE HAZARD DUE TO OVERHEATING, ENSURE THAT CURTAINS AND ANY OTHER MATERIALS DO NOT OBSTRUCT THE VENTILATION VENTS.**
- **DO NOT OBSTRUCT THE UNIT ' SVENTILATION OPENINGS WITH NEWSPAPERS, TABLECLOTHS, CURTAINS, AND SIMILAR ITEMS.**
- **DO NOT PLACE SOURCES OF NAKED FLAMES, SUCH AS LIGHTED CANDLES, ON THE UNIT.**
- **DISPOSE OF BATTERIES IN AN ENVIRONMENTALLY FRIENDLY MANNER.**

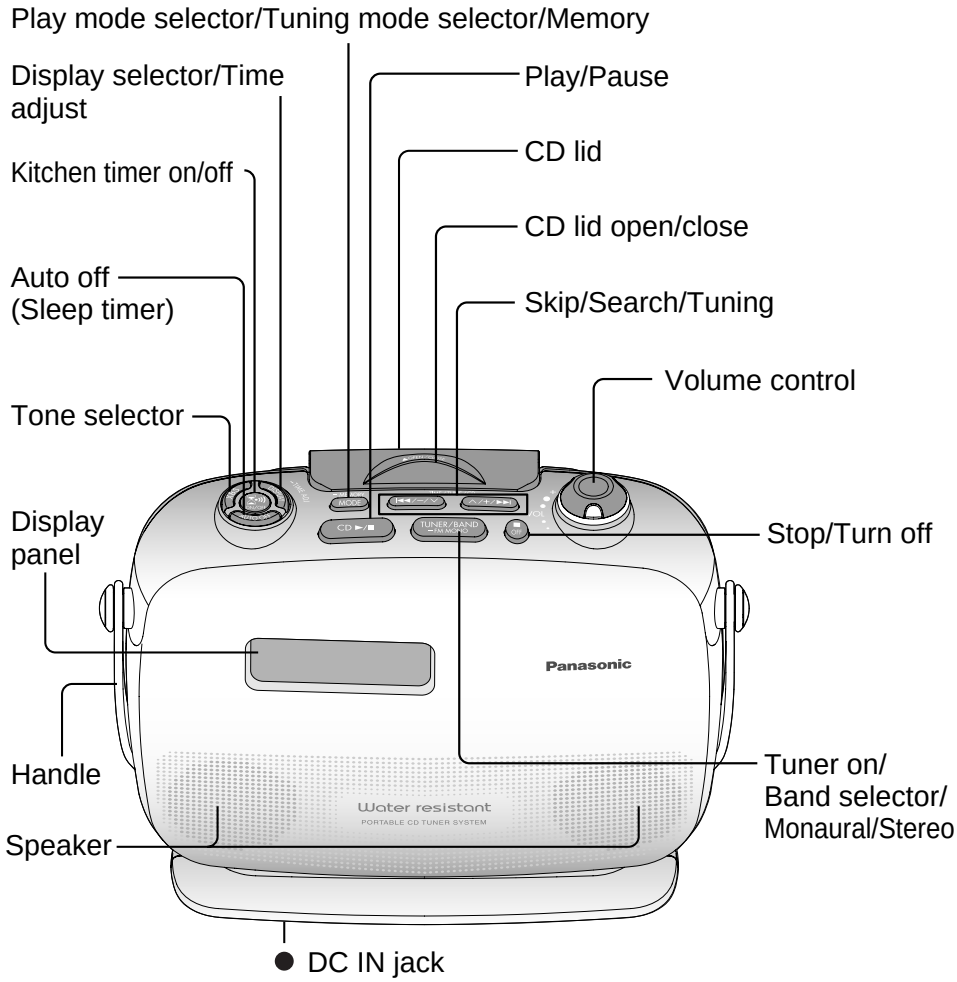
WARNING:
TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK OR PRODUCT DAMAGE, DO NOT EXPOSE THIS APPARATUS TO RAIN, MOISTURE, DRIPPING OR SPLASHING AND THAT NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS.

This product may receive radio interference caused by mobile telephones during use. If such interference is apparent, please increase separation between the product and the mobile telephone

THIS UNIT IS INTENDED FOR USE IN MODERATE CLIMATES.

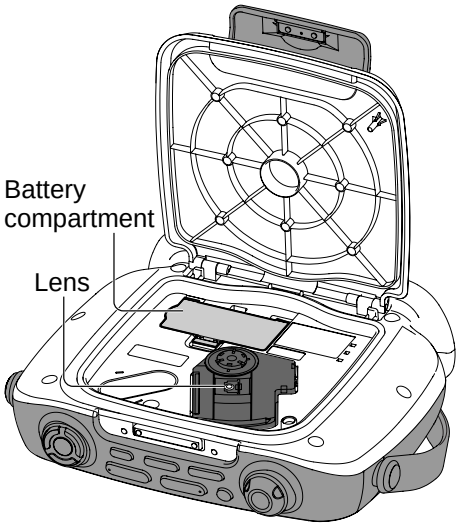
The socket outlet shall be installed near the equipment and easily accessible or the mains plug or an appliance coupler shall remain readily operable.

3 Location of Controls



Note

- These speakers do not have magnetic shielding. Do not place them near televisions, personal computers or other devices easily influenced by magnetism.
- Keep your speakers at least 10 mm (13/32") away from the system for proper ventilation.



4 Handling Precautions for Traverse Deck

The laser diode in the traverse deck (optical pick-up) may break down due to potential difference caused by static electricity of clothes or human body.

So, be careful of electrostatic breakdown during repair of the traverse deck (optical pick-up).

4.1. Handling of traverse deck (optical pick-up)

1. Do not subject the optical pick-up to static electricity as it is extremely sensitive to electrical shock.
2. To protect the laser diode against electrostatic breakdown, be sure that the short land of the flexible board (FFC board) should be short-circuit by solder before inserting a short pin or similar object into the tip of the flexible board. (Referto Fig. Fig.1.)
3. Take care not to apply excessive stress to the flexible board (FFC board).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted. (Refer to Fig.1.)

Handling Precautions for Traverse Deck

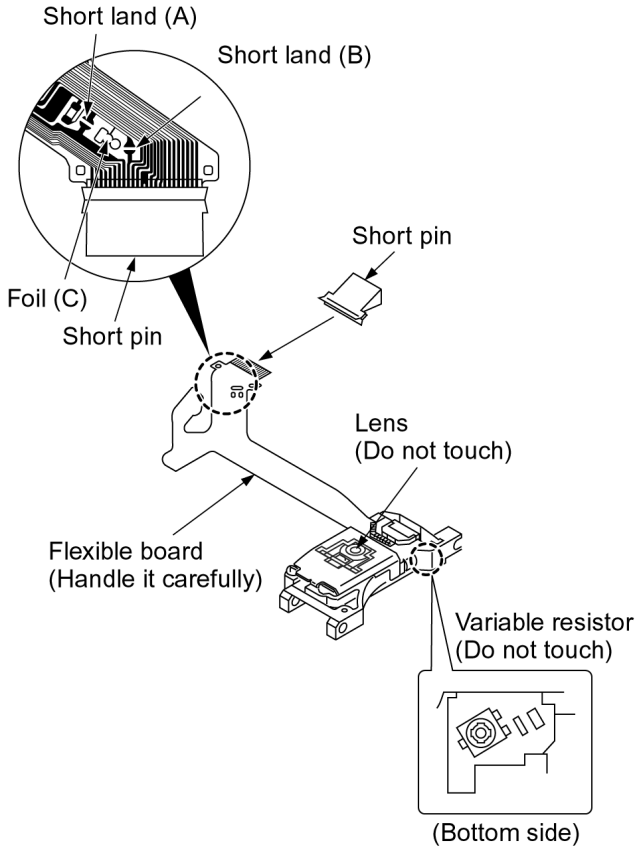


Fig. 1.

4.2. Caution when replacing traverse deck

The traverse deck short-circuits the foil (B) to protect the laser diode against electrostatic breakdown. Be sure to cut the foil (B) before making connection. Take care not to make contact with cutting point each other. (Refer to Fig.1.)

4.3. Grounding for electrostatic breakdown prevention

4.3.1. Human body grounding

Use the anti-static wrist strap to discharge the static electricity from your body. (Refer to Fig. 2.)

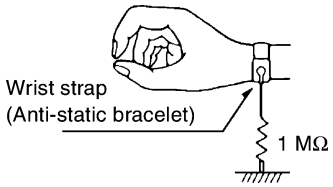


Fig. 2.

4.3.2. Work table grounding

Put a conductive material (sheet) or steel sheet on the area where the traverse deck (optical pick-up) is placed, and ground the sheet. (Refer to Fig. 3.)

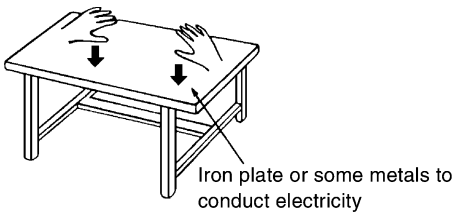


Fig. 3.

Caution:

The static electricity of your clothes will not be grounded through the wrist strap.

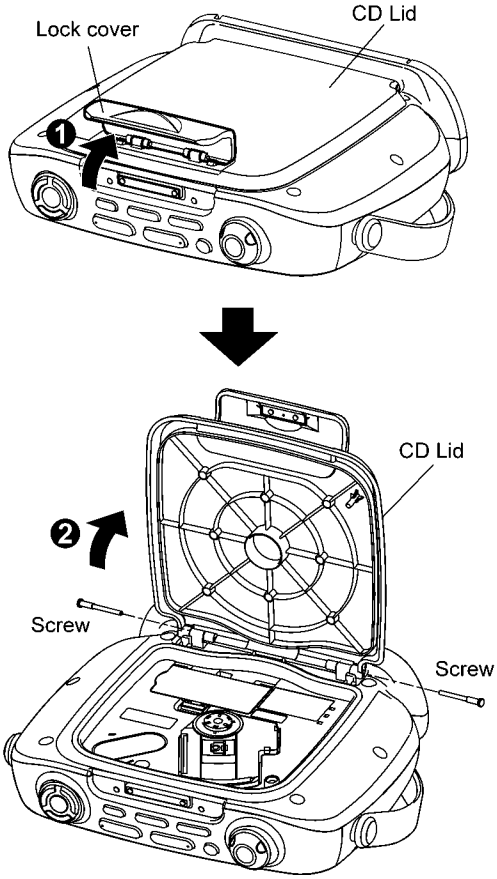
So take care not to let your clothes touch the traverse deck (optical pick-up).

5 Operation Checks and Component Replacement Procedures

- **This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.**
- **For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.**

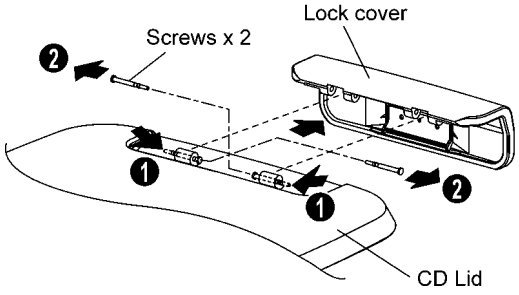
5.1. Remove of the CD Lid

1.Open the lock cover and CD lid in the direction of arrow ❶ and ❷.
2.Remove the screws x 2 and then remove the CD lid.



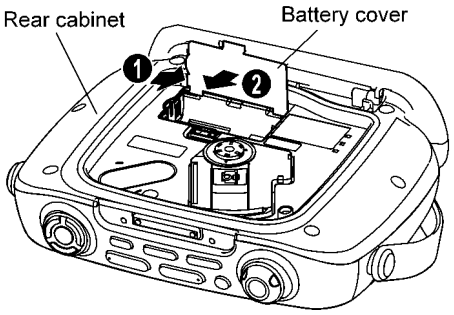
5.2. Remove of the Lock Cover

1.Remove the screws x 2 in the direction of arrow ❶ and ❷, and then remove the lock cover.



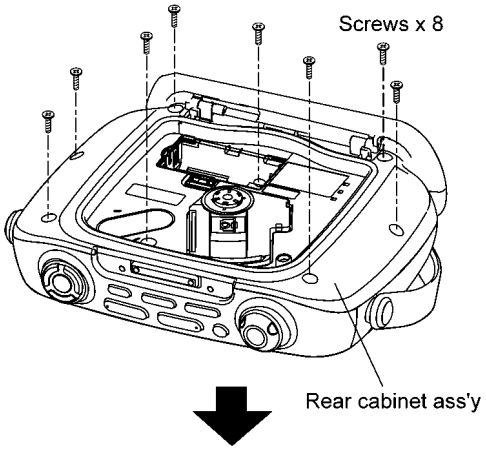
5.3. Removal of the Battery cover

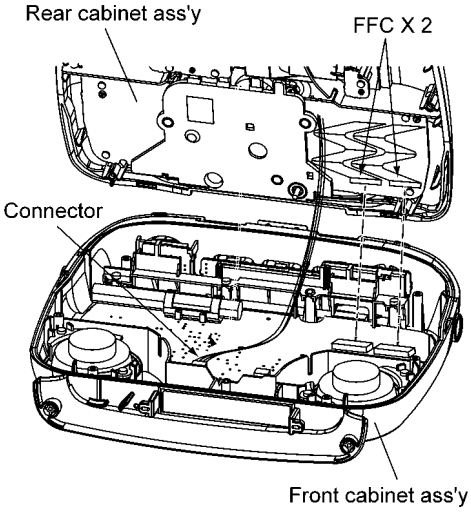
1.Open the battery cover.
2.Remove the battery cover in the direction of arrow ❶ and ❷, and then remove the battery cover.



5.4. Removal of the Rear cabinet ass'y

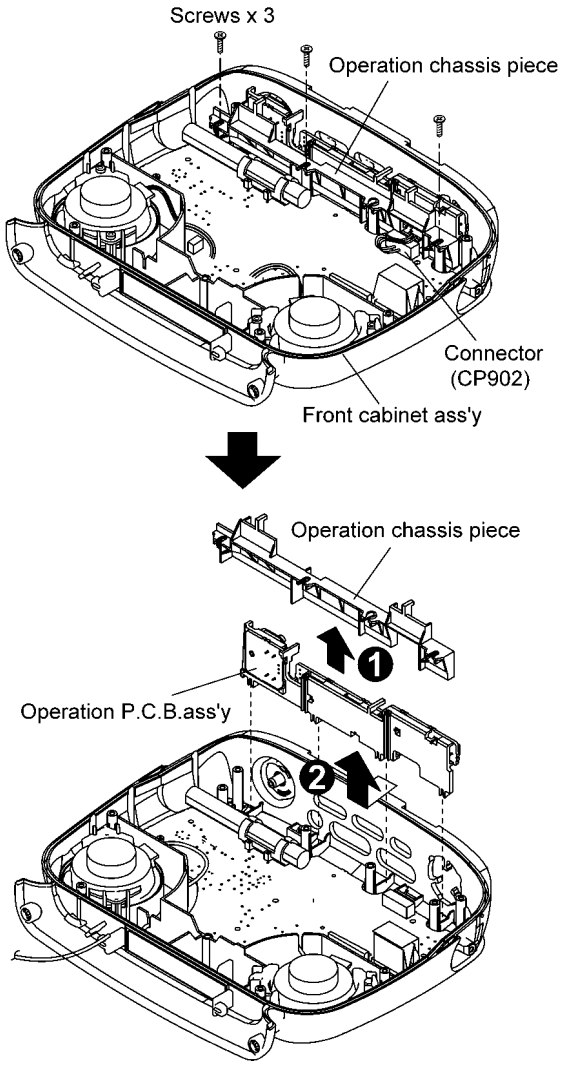
1.Remove the screws x 8 and then open the rear cabinet ass'y
2.Remove the FFC x 2 and connector.





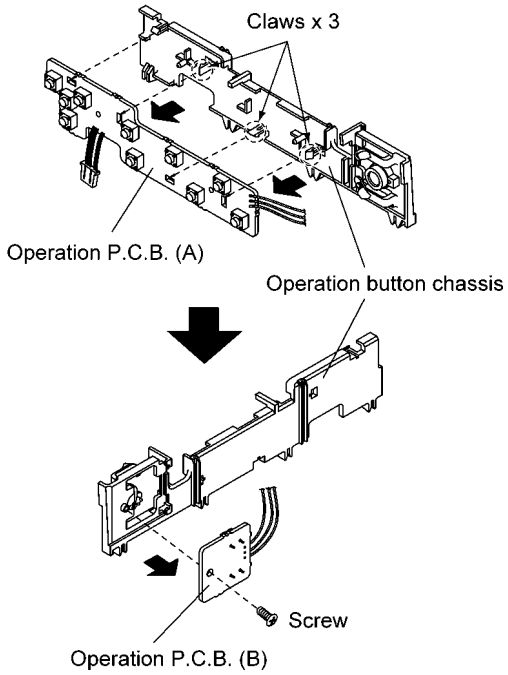
5.5. Removal of the Operation chassis piece and Operation P.C.B. ass'y

1.Remove the connector (CP902).
2.Remove the screws x 3.
3.Remove the operation chassis piece and operation P.C.B. in the direction of arrow ❶ and ❷.



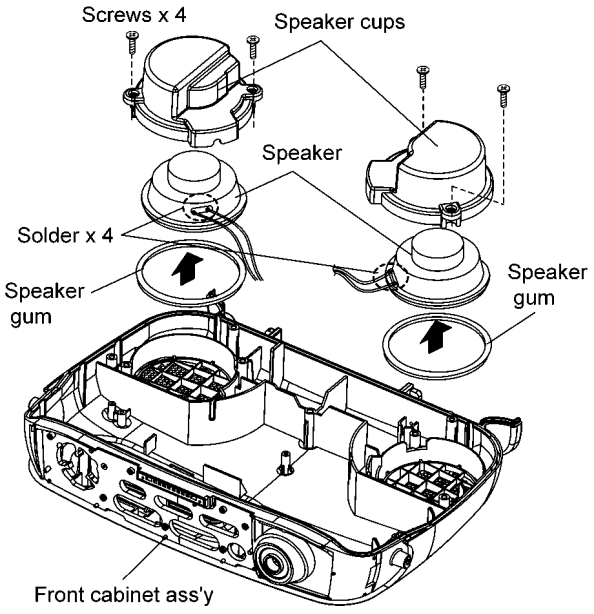
5.6. Removal of the Operation P.C.B. (A) and Operation P.C.B. (B)

1.Release the claws x 3.
2.Remove the operation P.C.B. (A) in the direction of arrow.
3.Remove the screw and then remove the operation P.C.B. (B).



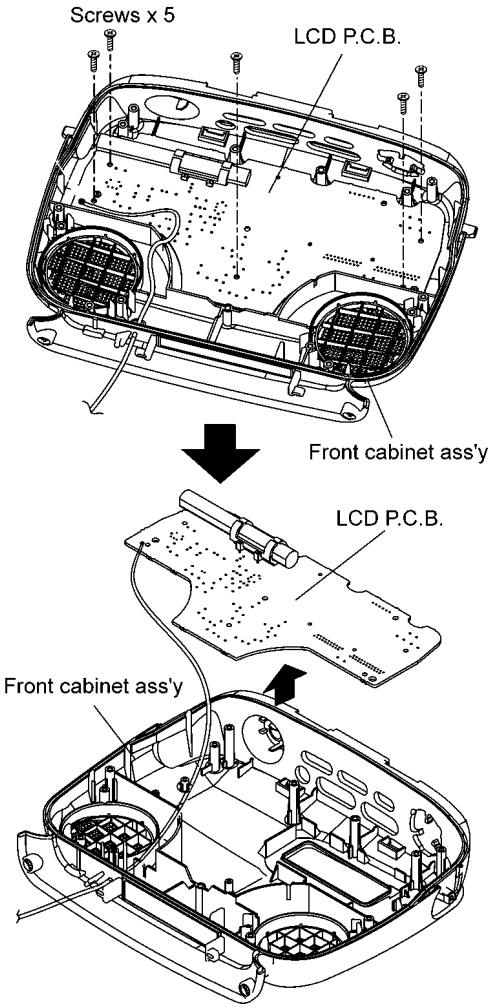
5.7. Removal of the Speaker cups and Speakers

1.Unsolder the speaker terminals. (4 points)
2.Remove the screws x 4.
3.Remove the speaker cups and speaker in the direction of arrow.
4.Remove the speaker gum.



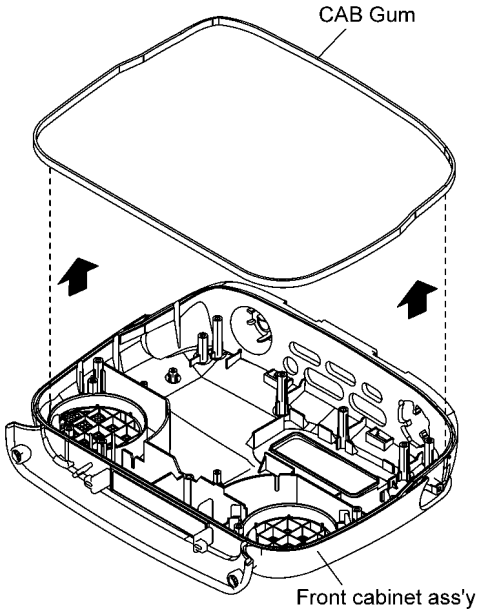
5.8. Removal of the LCD P.C.B.

1.Remove the screws x 5.
2.Remove the LCD P.C.B. in the direction of arrow.



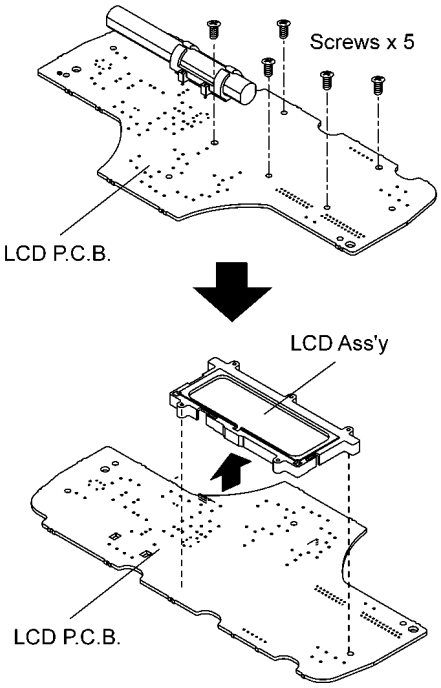
5.9. Removal of the CAB gum

1.Remove the CAB Gum in the direction of arrow.



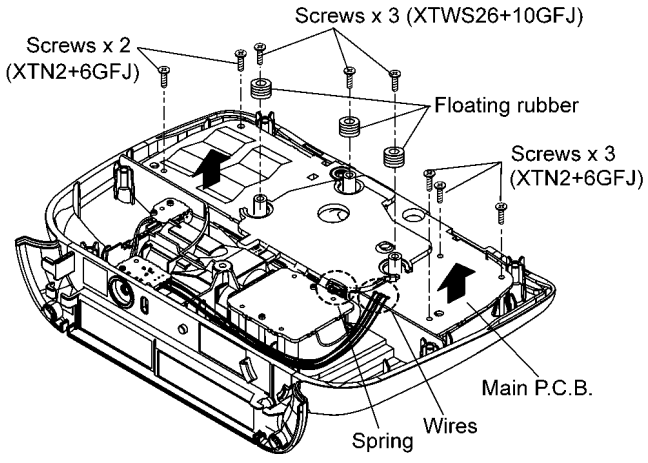
5.10. Removal of the LCD ass'y

1.Remove the screws x 5.
2.Remove the LCD ass'y in the direction of arrow.



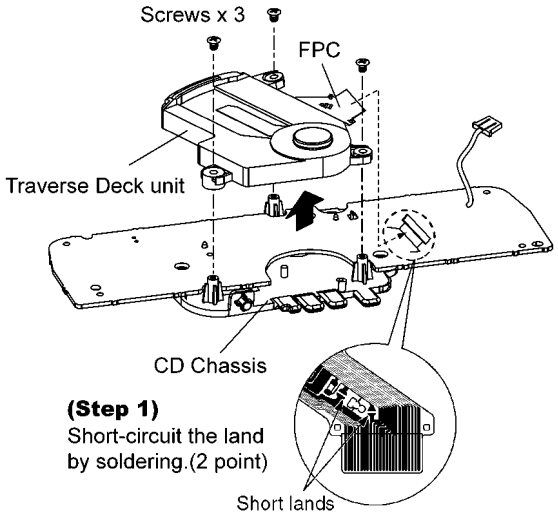
5.11. Removal of the Main P.C.B.

1.Remove the screws (XTWS26+10GFJ) x 3.
2.Remove the floating rubber x 3.
3.Remove the screws (XTN2+6GFJ) x 5.
4.Remove the Main P.C.B. in the direction of arrow.
5.Remove the spring.
6.Remove the wires.

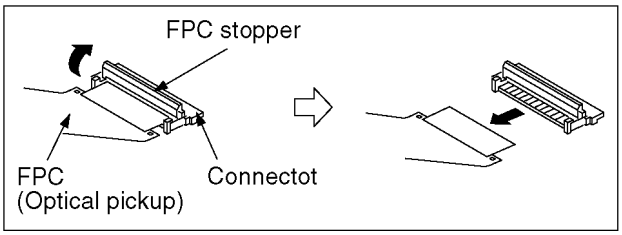


5.12. Removal of the Traverse Deck Unit

1.Remove the screws x 3.
2.Remove the traverse deck unit in the direction of arrow.



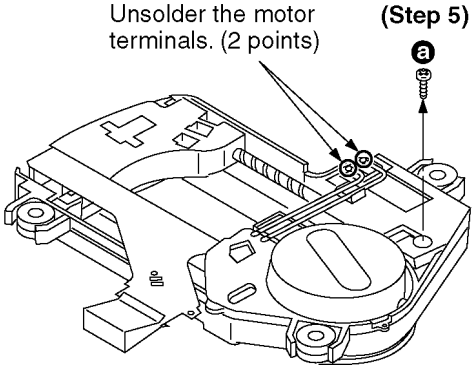
(Step 2)
Move the FPC stopper in the direction of arrow.
(Step 3)
Pull out the FPC from connector,
and then remove the traverse deck unit.

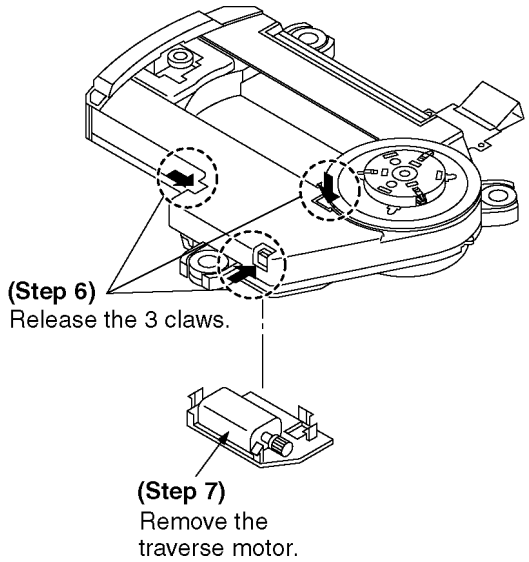


5.13. Replacement for the traverse motor

(Step 4)
Unsolder the motor
terminals. (2 points)

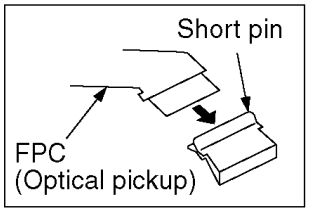
(Step 5)



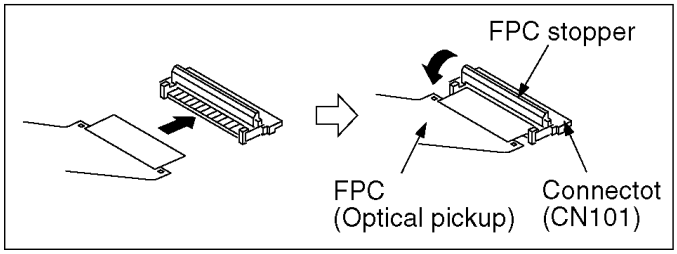


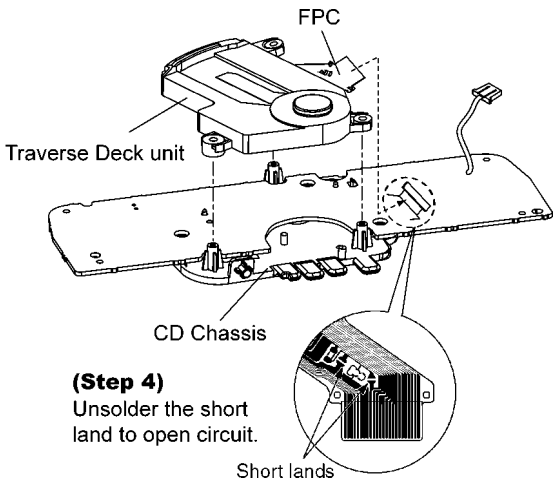
Notice for installation of traverse deck unit

(Step 1)
Remove a short pin from
traverse deck's FPC.

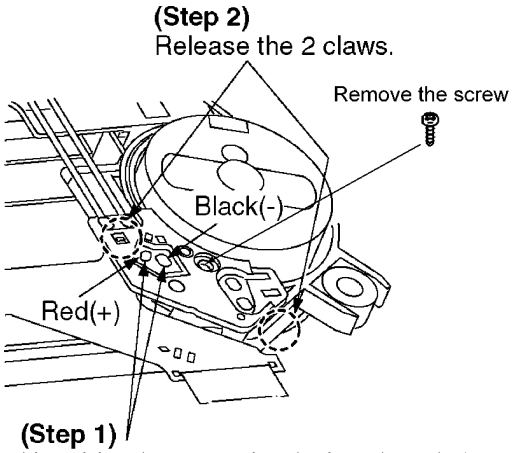


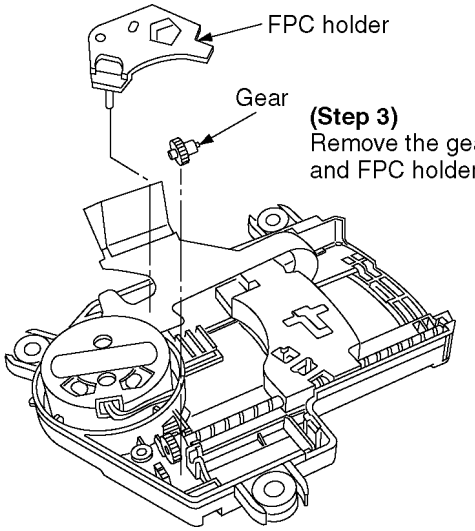
(Step 2)
Connect the FPC from connector (CN101).
(Step 3)
Move the FPC stopper in the direction of arrow.

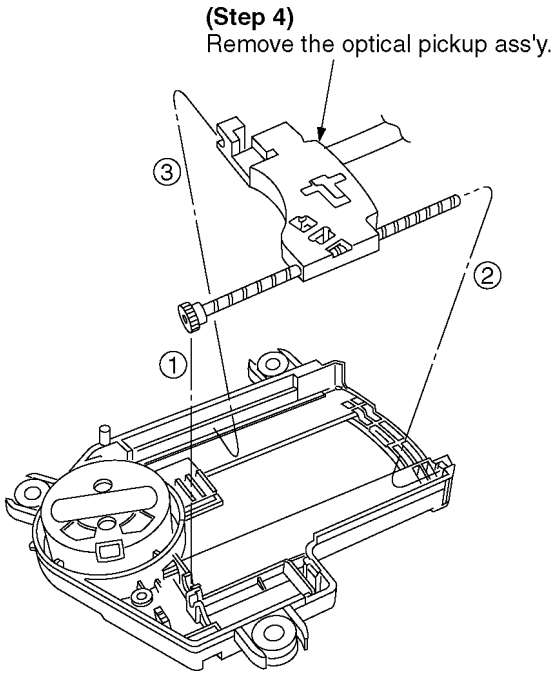


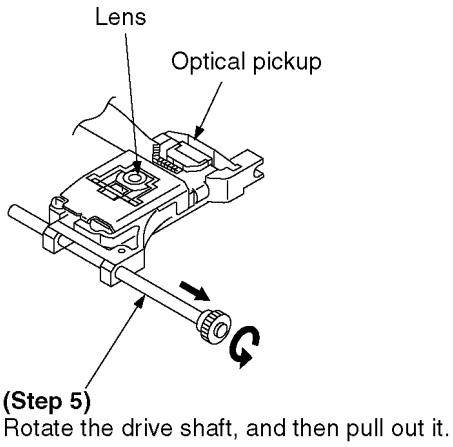


5.14. Replacement for the optical pickup







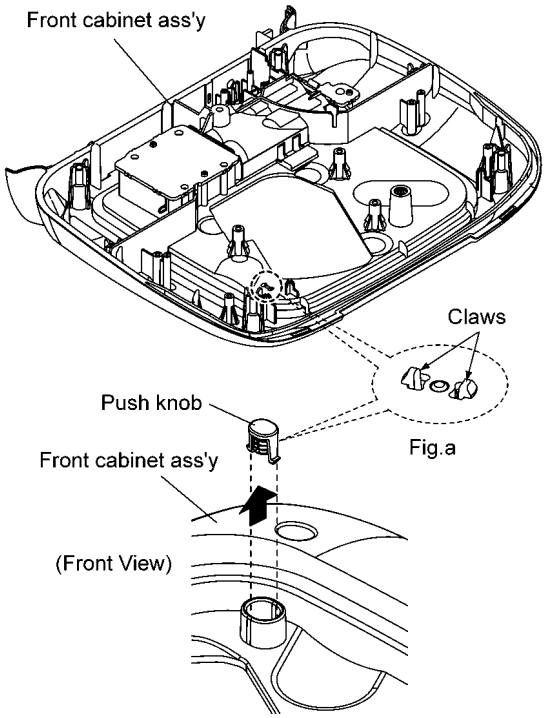


NOTE:

1. Use care to prevent damage the optical pickup, due to the precision construction.
2. Do not apply the grease on the lens of optical pickup.
3. Do not touch the lens of the optical pickup.

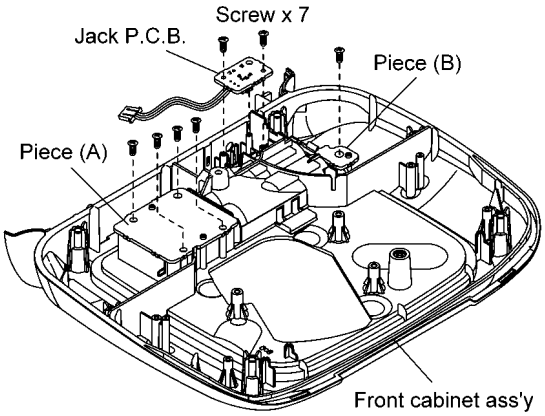
5.15. Removal of the Push knob

1.Release the claws (Fig.a) and then remove the push knob.



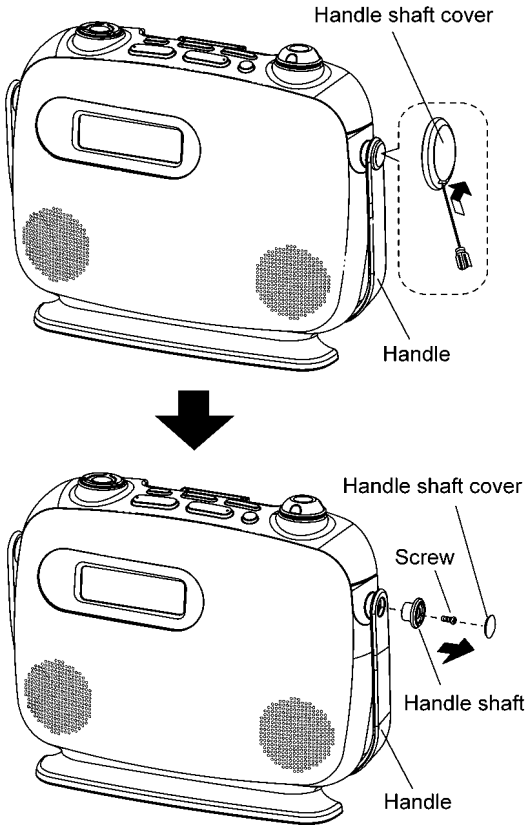
5.16. Removal of the Jack P.C.B. and Piece (A) and Piece (B)

1.Remove the screws x 7.
2.Remove the jack P.C.B. and piece (A) and piece (B).



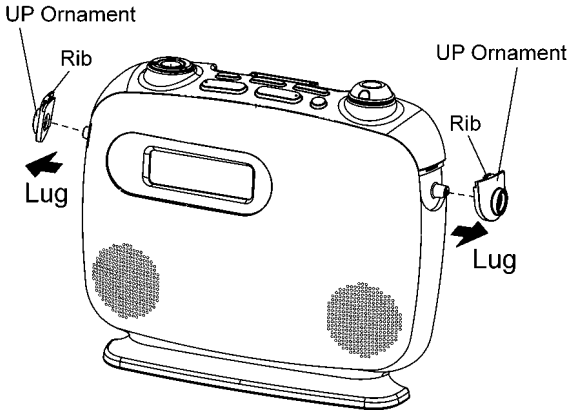
5.17. Removal of the Handle

1.Remove the handle shaft cover in the direction of arrow.
2.Remove the screw x 1.
3.Remove the handle shaft and handle.



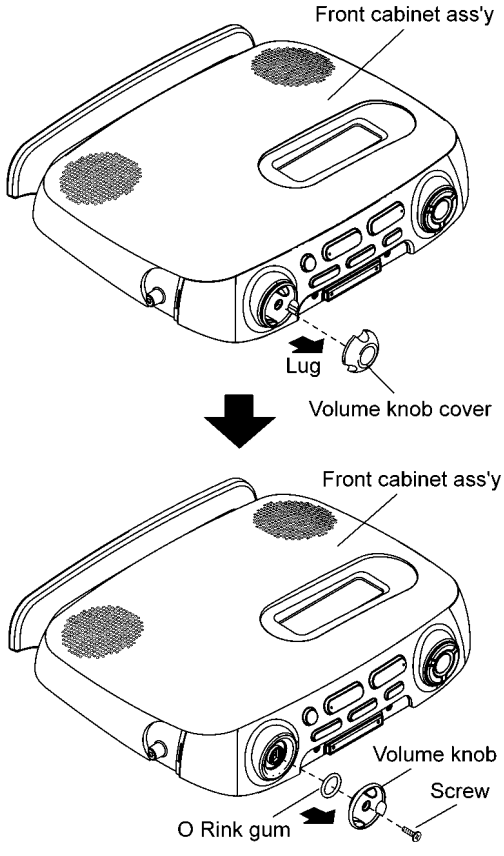
5.18. Removal of the up Ornament

1.Remove the handle shaft cover in the direction of arrow.
2.Remove the screw x 1.
3.Remove the handle shaft and handle.



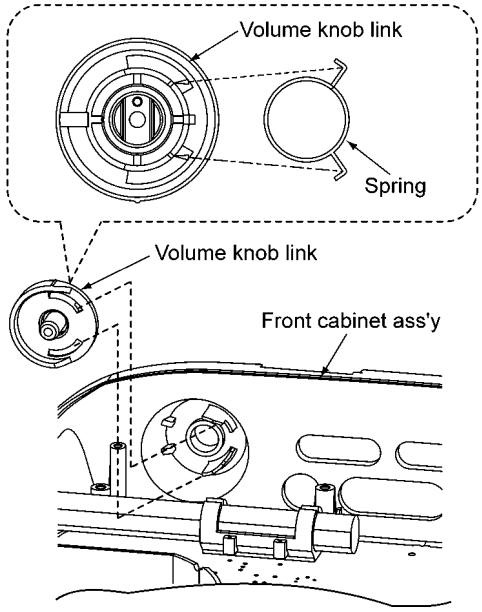
5.19. Removal of the Volume knob

1.Remove the volume knob cover in the direction of arrow.
2.Remove the screw x 1.
3.Remove the volume knob and O rink gum.



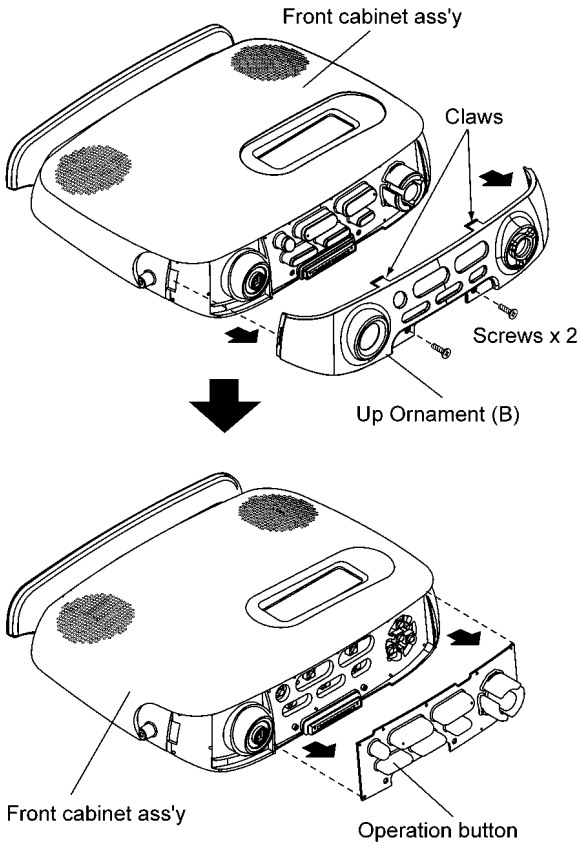
5.20. Notice for assembling the volume knob link

1. Insert the spring into the volume knob link.and then insert Volume knob link into Front cabinet ass'y as figure.



5.21. Remove of the Operation button

1.Remove the screws x 2.
2.Release the claws and then remove the up ornament (B).
3.Remove the operation button.



6 Troubleshooting guide

· **Before repairing the unit, make the below check.**

· **No play:**

– The batteries may be depleted.

– The disc isn't correctly set.

– The disc is scratched or dirty.

– There is moisture on the lens. Wait for about an hour and then try again.

– If there is no data between sessions on a multi-session disc, play may not be possible.

– If the disc contains data with different formats, sound may be muted and play may not be possible.

· **No sound or there is a lot of noise.:**

– Turn the volume up.

– Keep this unit away from mobile telephones.

– The elapsed play time disappears and sound is interrupted if bumps continue repeatedly.

· **Play doesn't start from the first track:**

– Random play modes may be on.

· **The unit stops working:**

– Disconnect and reconnect the AC adaptor or remove and reinsert the batteries.

· **The battery indicator fails to appear correctly:**

– The indicator does not appear when the AC adaptor is connected.

– The indicator may not appear correctly under certain conditions.

· **There is a lot of noise while listening to the radio:**

– Keep the unit away from other tunes and televisions.

– The AM antenna is in the unit, so noise may increase if you hold the unit.

· **NO DISC:**

– You haven't inserted a disc or it isn't inserted correctly.

– You have inserted a disc that this unit cannot play.

· **OPEN:**

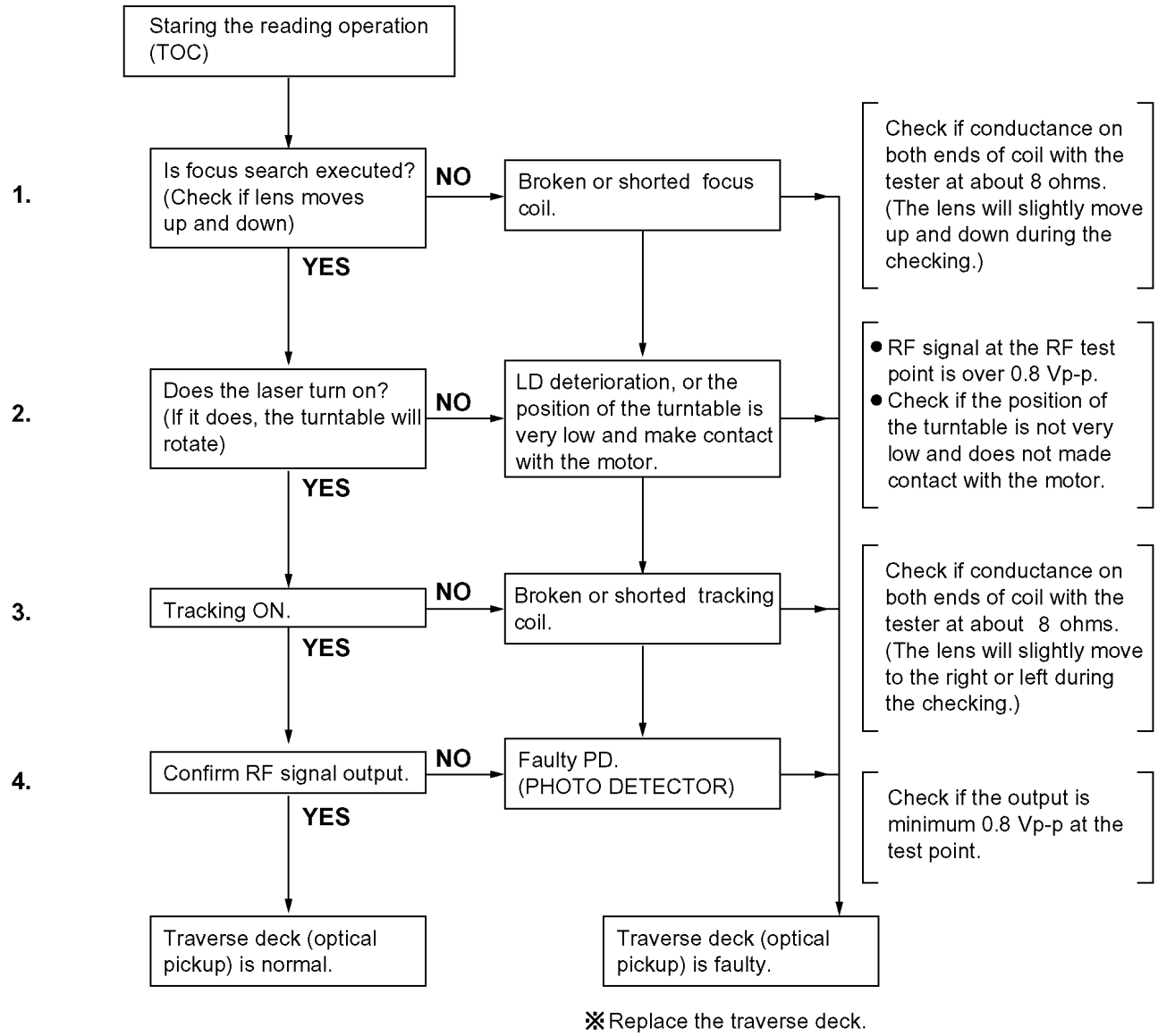
– The disc lid is open.

7 Checking the Operation Problems on the Traverse Deck (Optical Pickup)

Make sure to follow the procedures below to check the operation problems of the traverse deck (optical pickup) before replacing it.

Replace the traverse deck only after the problem is identified.

(Procedure No.) (Checking Points) (Cause) (Testing Procedure)



- Check electrical circuit.
- Check for flaws on disc or if it is warped or not centerd.

ICheck the operations described below on the traverse deck after replacing it.

*Checking Skip Search

1. Play an ordinary musical program disc.
2. Press the skip button to check for normal skip search operation (in both the forward and reverse directions).

*Checking Manual Search

1. Play an ordinary musical program disc.
2. Press the manual search button to check for smooth manual search operations at either low or high speed (in both the forward and reverse directions).

*Checking Playability

1. Play the 0.7 mm black dot and the 0.7 mm wedge on the playability test disc (SZZP1054C) and verify that no sound skip or noise occurs.
2. Play the middle tracks of the uneven test disc (SZZP1056C) and verify that no sound skip or noise occurs.

8 Automatic Adjustment Results Display Function (Self-check Function)

On these units (SL-PH660), each automatic adjustment results are displayed on the LCD. This function is convenient to check or identify which automatic adjustment circuit is incorrect. The followings are the contentsof the automaticadjustmentresultdisplays(self-check function).

8.1. How to display automatic adjustment results

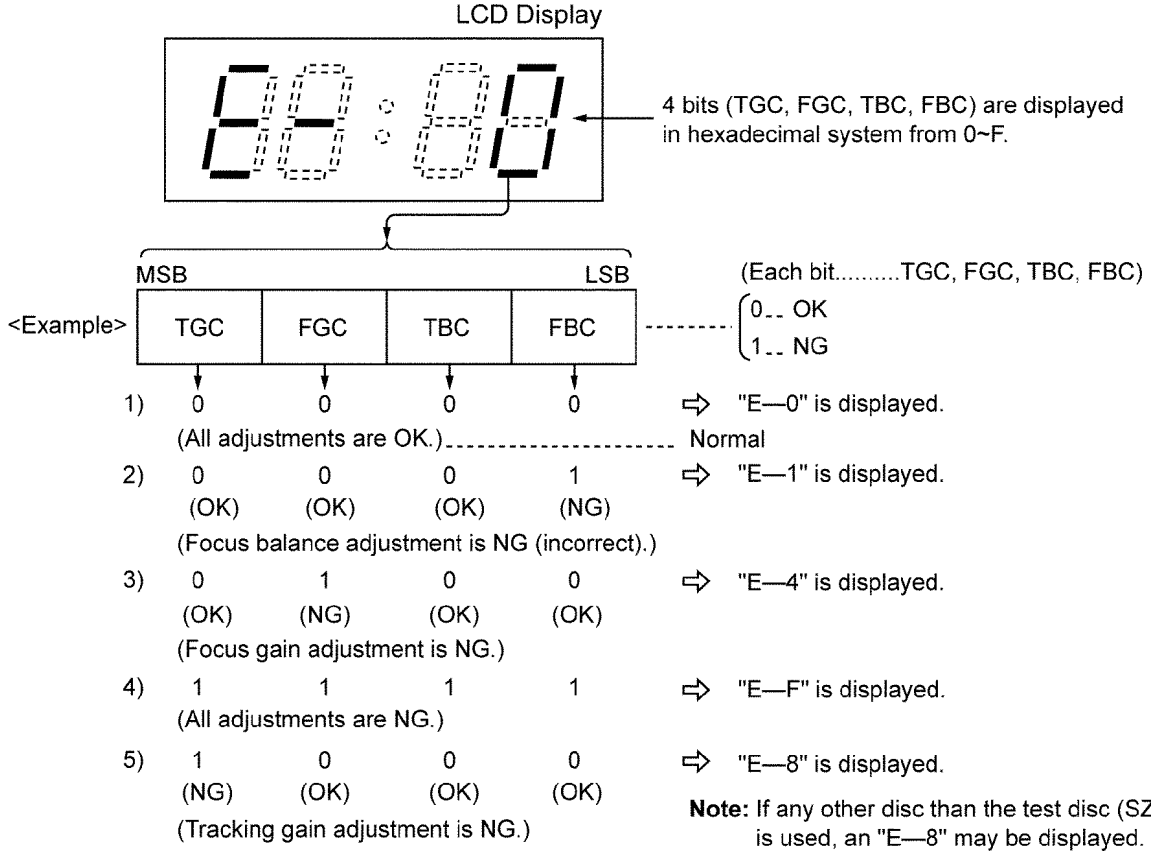
1.Load the test disc (SZZP1054C).

2.Press the |◀◀ (■ OFF) and ▶▶| (CD ▶/II) Buttons simultaneously and hold them, and additionally press the ▶/II (ON/OFF) Button.

3.Press the ■ (■ OFF) Button once.

4.An automatic adjustment result is displayed on the LCD.

8.2. Display of automatic adjustment results (self-check function)



Note: If any other disc than the test disc (SZZP1054C) is used, an "E—8" may be displayed.

<Example>

Follow the below steps when "E-1" is displayed.

(Cause: Focus balance (FBC) is set beyond the limit.)

l Check if

1. the waveform or voltage of the focus servo circuit is correct. (check the waveform or voltage.)
2. the optical pickup returns to the normal state by exchanging the traverse deck.

Follow the below steps when "E-4" is displayed.

(Cause: Focus gain (FGC) is set beyond the limit.)

l Check if

1. the waveform or voltage of the focus servo circuit is correct. (check the waveform or voltage.)
2. the focus coil of the optical pickup is correct (around 8 ohms).
3. the optical pickup returns to the normal state by exchanging the traverse deck.

Follow the below steps when "E-F" is displayed.

(Cause: All adjustments (TGC, FGC, TBC, FBC) are set beyond the limit.)

l Check if

1. the optical pickup returns to the normal state by exchanging the traverse deck.
2. the waveform or voltage of the servo IC's are correct. (check the waveform or voltage.)

Note:

It is not always necessary to exchange the traverse deck when an error message is displayed.

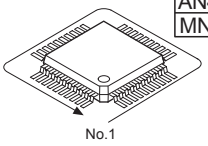
Be sure to check if the circuit is defective or not before exchanging the traverse deck.

Note:

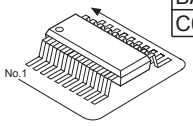
If any other disc than the test disc (SZZP1054C) is used, an error message may be displayed. This is not a malfunction.

9 Type Illustration of IC´s, Transistors and Diodes

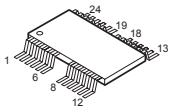
C2BBGF000772	80PIN
C3EBCG000100	8PIN
AN41507A-VB	48PIN
MN662788SD	100PIN



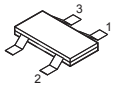
AN22003A-NF	32PIN
TB2132FNG	30PIN
BA5208AFT	16PIN
C0ZBZ0000829	20PIN



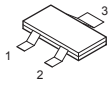
C3ABMB000043



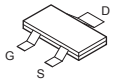
C0EBC0000033



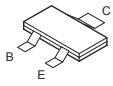
XC6206P212MR
C0CBAAB00038



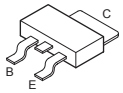
B1DHAC000002
B1CFHA000001



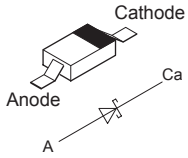
2SB0709A0L
B1DHAC000002
B1ADMB000003
B1ABJB000006
UNR521300L
UNR511300L
2SD1819ASL
2SD13280S2RA
UNR511600L

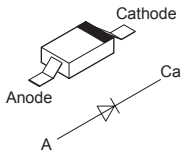


B1BDND000001

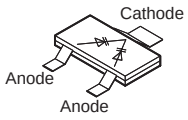


MAZ81200ML
B0BC2R100007



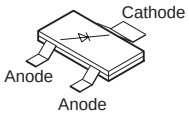


MA2J11100L
MA2Z74800L



KV1610STL2-0
B0CDBB000006

RB491DT146



10 Schematic Diagram Notes

Note:

- S202: Rest switch in "OFF" position. (It turns "ON" when optical pickup comes to innermost periphery.)
- S301: Open/Close switch in "OFF" position. (It turns "ON" with disc holder closed.)
- SW101: Stop/OFF (■ OFF) switch.
- SW102: Skip/search (＋／▶▶|) switch.
- SW103: Skip/search (|◀◀／－) switch.
- SW104: Volume control switch (VOL +).
- SW105: Volume control switch (VOL −).
- SW106: CD Play mode ➡Tuner Preser switch.
- SW107: XBS switch.
- SW108: AUTO OFF switch.
- SW111: DISPLAY/➡TIME ADJ switch.
- SW112: KITCHEN TIMER ON/OFF switch.
- SW113: TUNER/BAND, ➡FM/MONO switch.
- SW114: CD play/Pause (▶／II) switch.

・Components identified by ⚠ mark have special characteristics important for safety.

・When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

・The supply part number is described alone in the replacement parts.

・Signal line

・Voltage and signal line

: Positive voltage line

: CD Player signal line

: FM signal line

・The voltage value and waveforms are the reference voltage of this measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of GND terminal (DC IN Jack). Accordingly, there may arise some errors in the voltage valuesandwaveformsdepending upon the internal impedance of the tester or measuring unit.

Measurement conditions:

*( ).....CD playback mode (Test disc 1kHz, L+R, 0dB)

*No mark.....CD stop mode.

*[ ].....FM mode.

Caution!!

・IC and LSI are sensitive to static electricity.

・Secondary trouble can be prevented by taking care during repair.

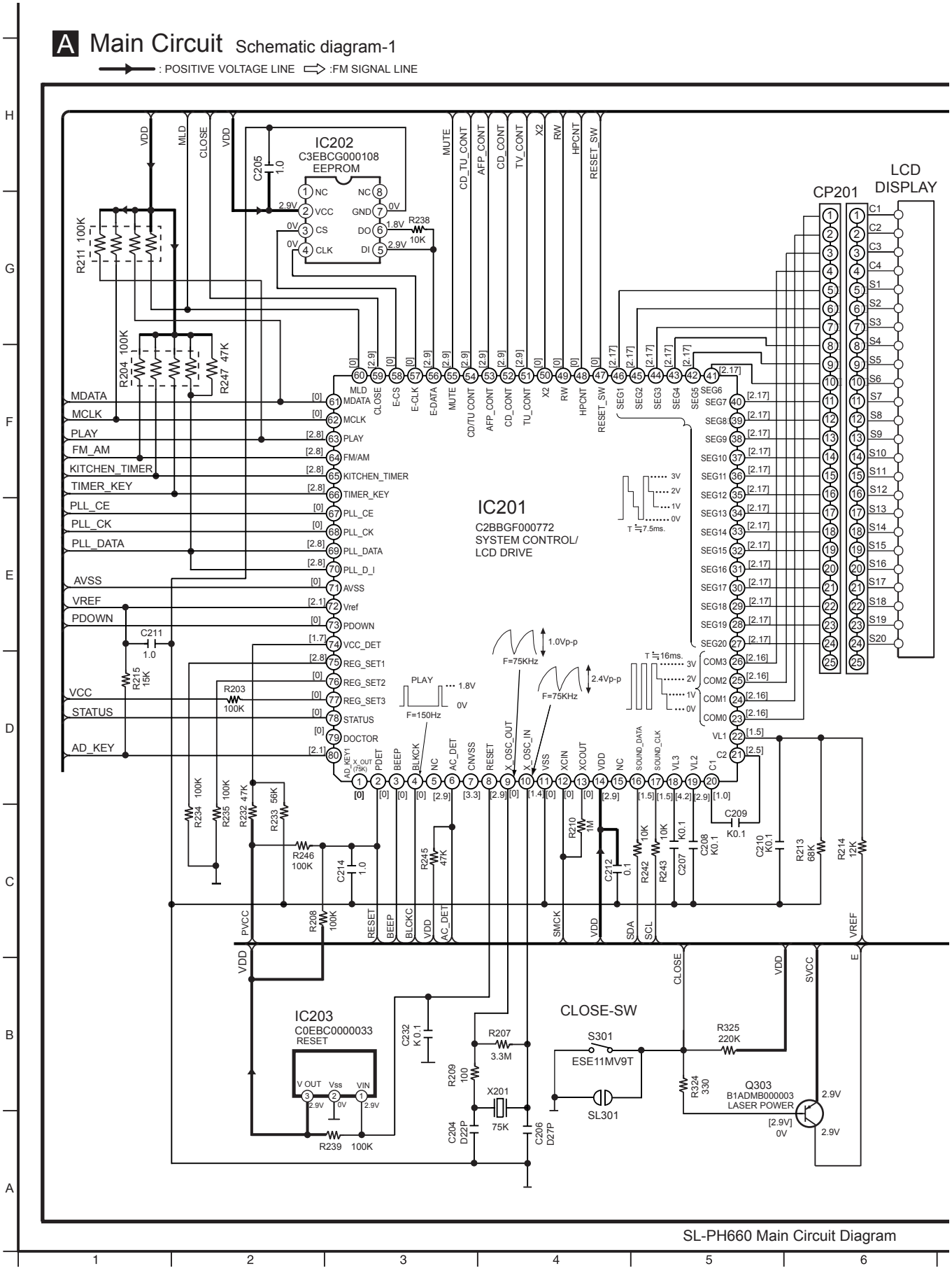
・Cover the parts boxes made of plastics with aluminum foil.

・Ground the soldering iron.

・Put a conductive mat on the work table.

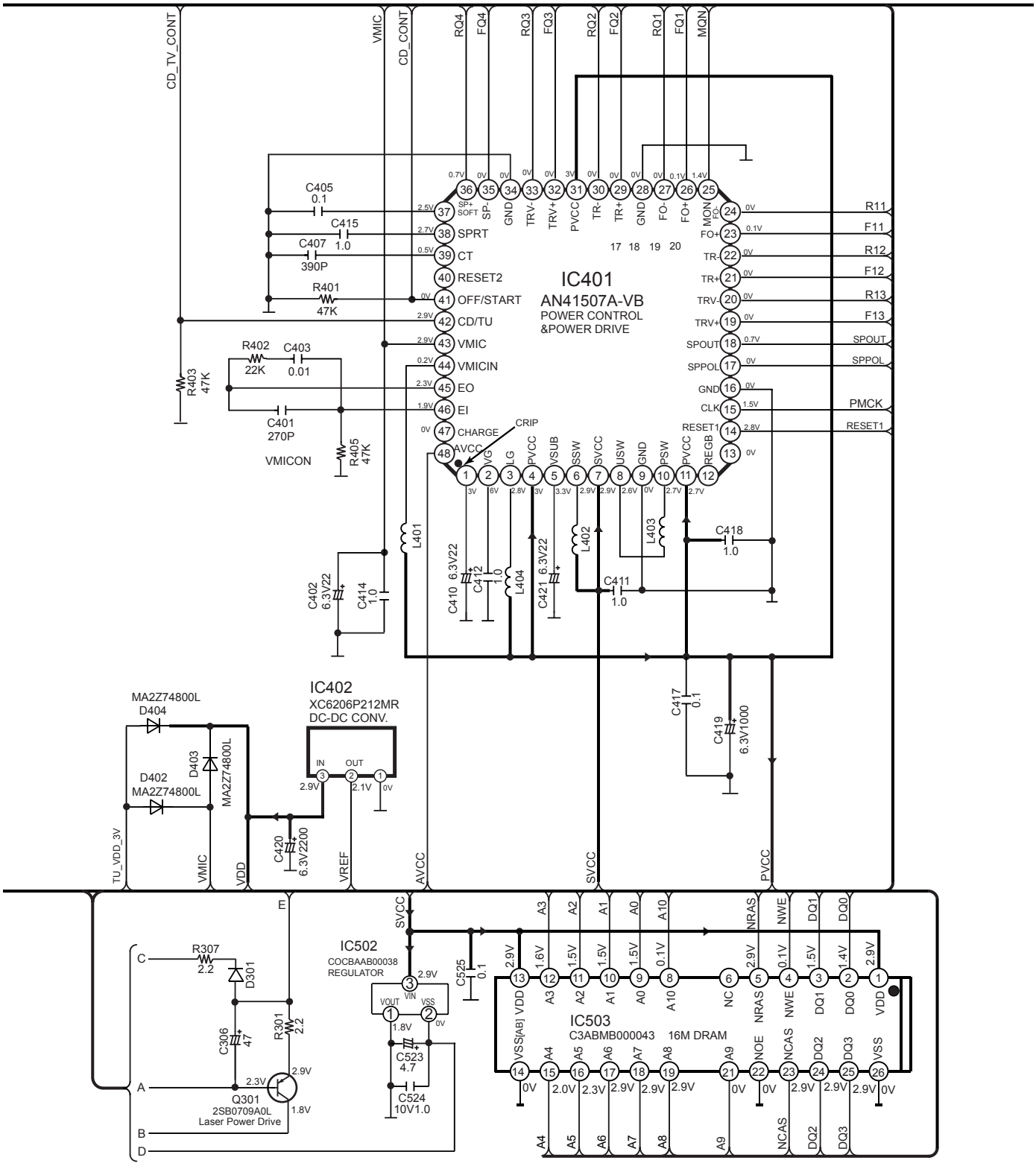
・Do not touch the pins of IC or LSI with fingers directly.

11 Schematic Diagram



A Main Circuit Schematic diagram-2

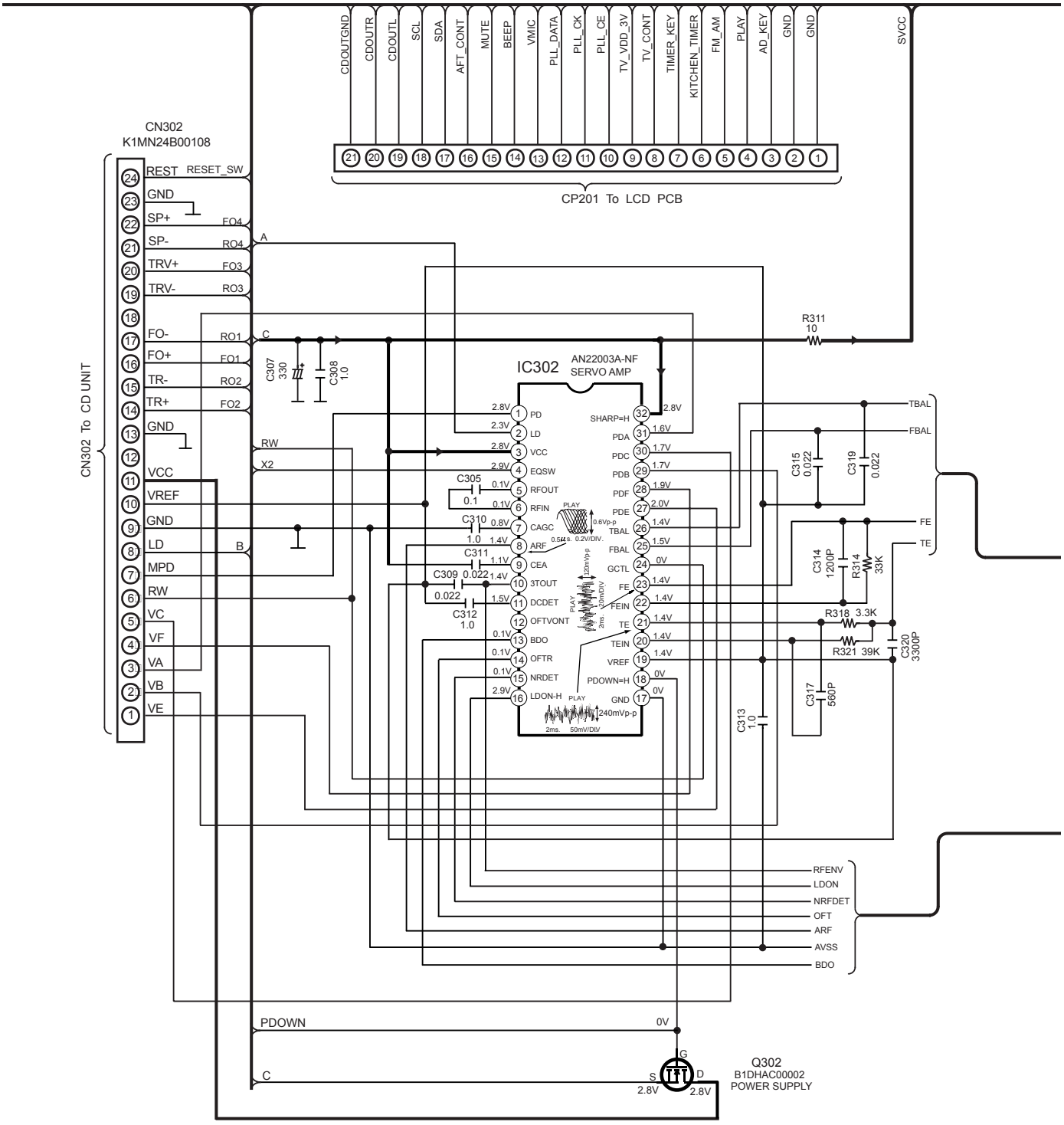
:POSITIVE VOLTAGE LINE :FM SIGNAL LINE



SL-PH660 Main Circuit Diagram

A Main Circuit Schematic diagram-3

:POSITIVE VOLTAGE LINE :FM SIGNAL LINE

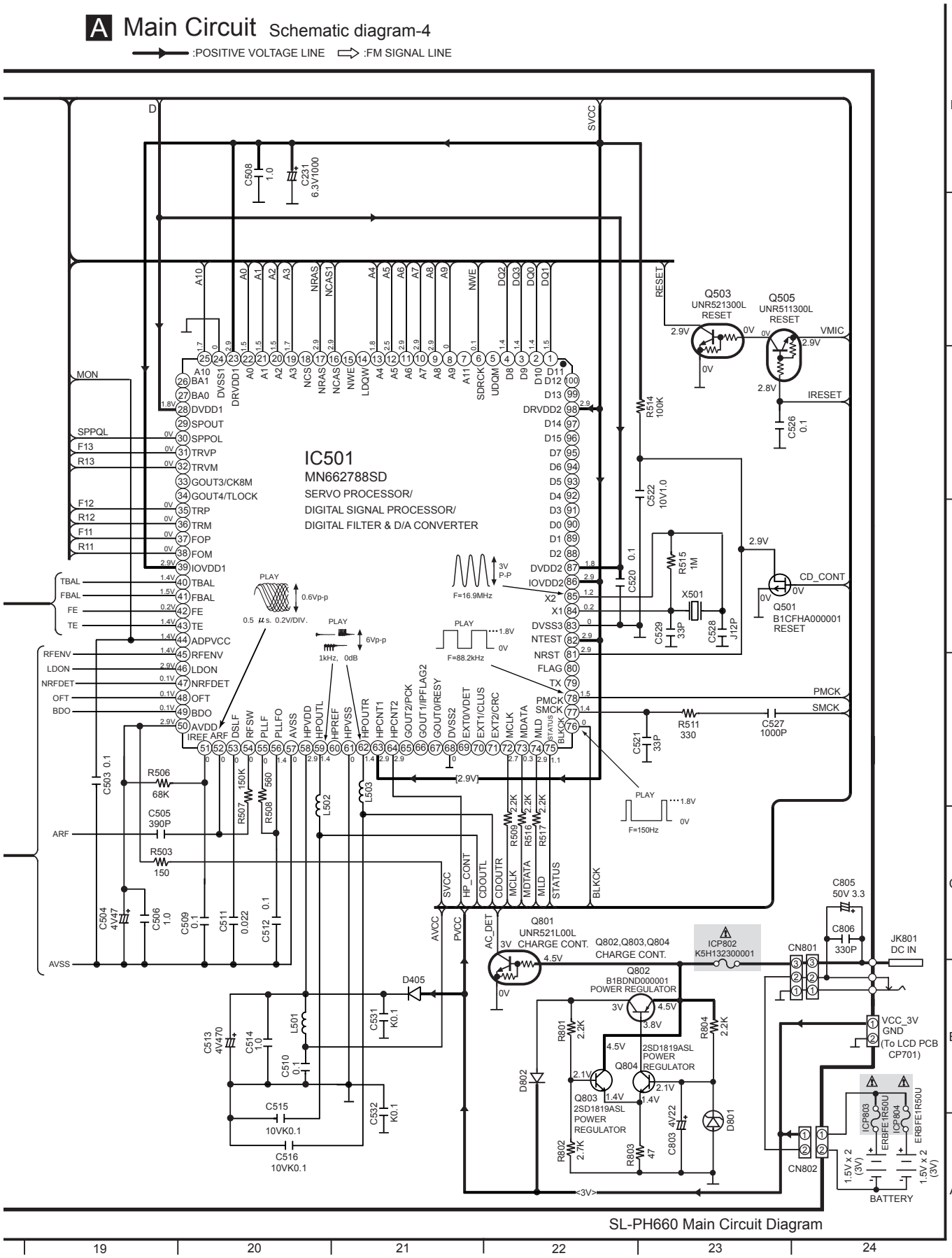


SL-PH660 Main Circuit Diagram

14 15 16 17 18 19

A Main Circuit Schematic diagram-4

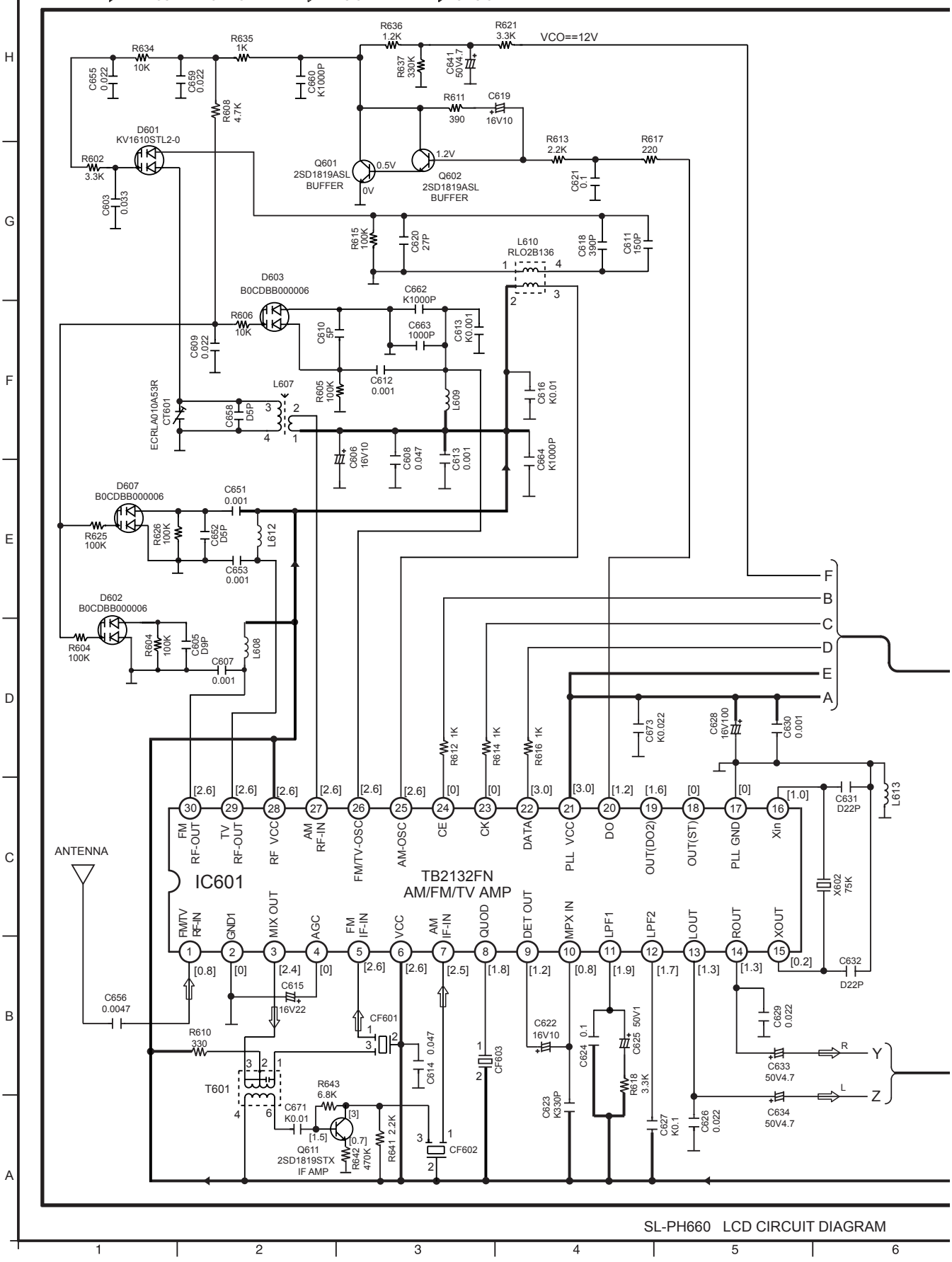
:POSITIVE VOLTAGE LINE :FM SIGNAL LINE



SL-PH660 Main Circuit Diagram

B LCD Circuit Schematic diagram-1

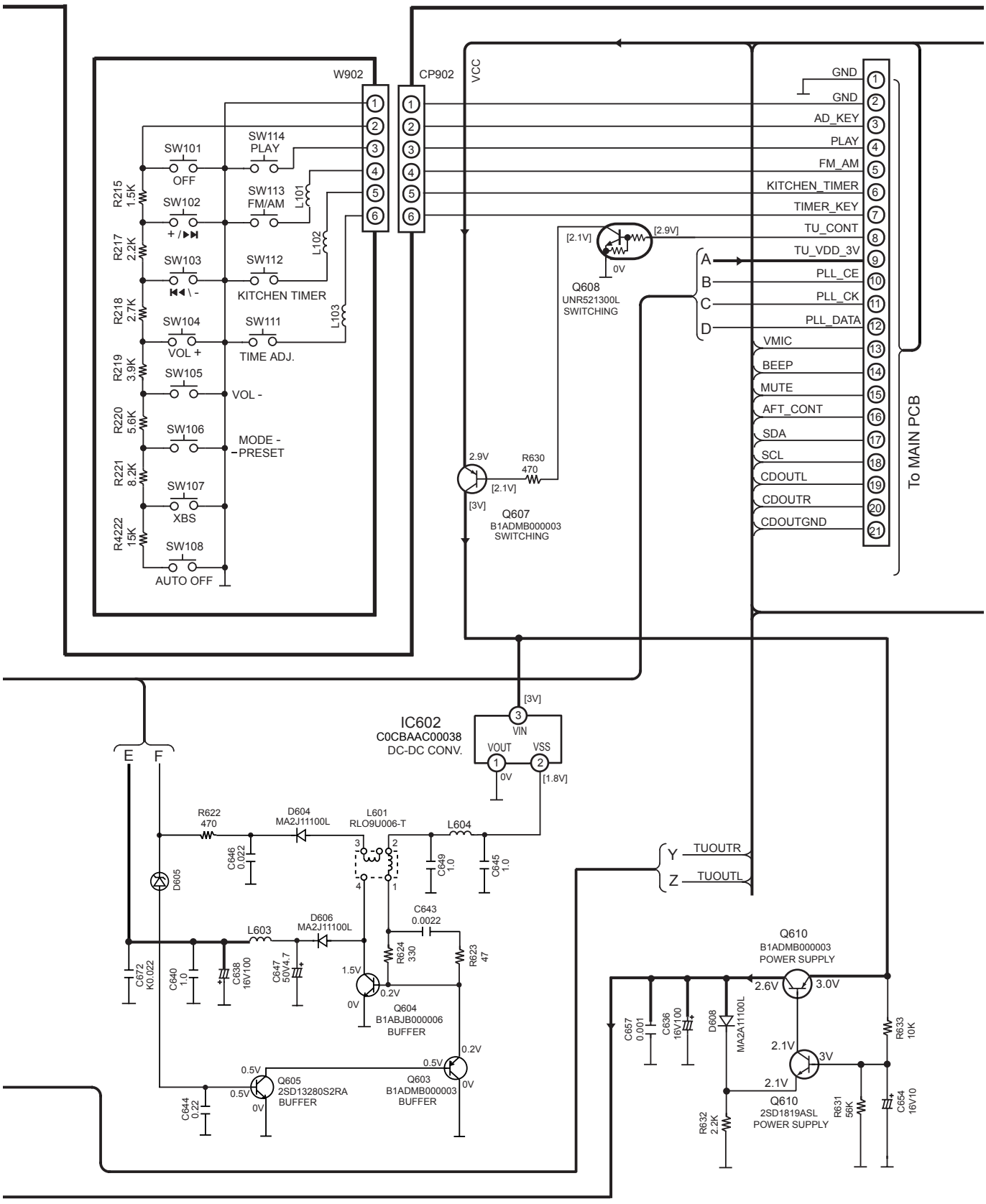
:POSITIVE VOLTAGE LINE :FM SIGNAL LINE :CD SIGNAL LINE



SL-PH660 LCD CIRCUIT DIAGRAM

B LCD Schematic diagram-2

:POSITIVE VOLTAGE LINE :FM SIGNAL LINE :CD SIGNAL LINE

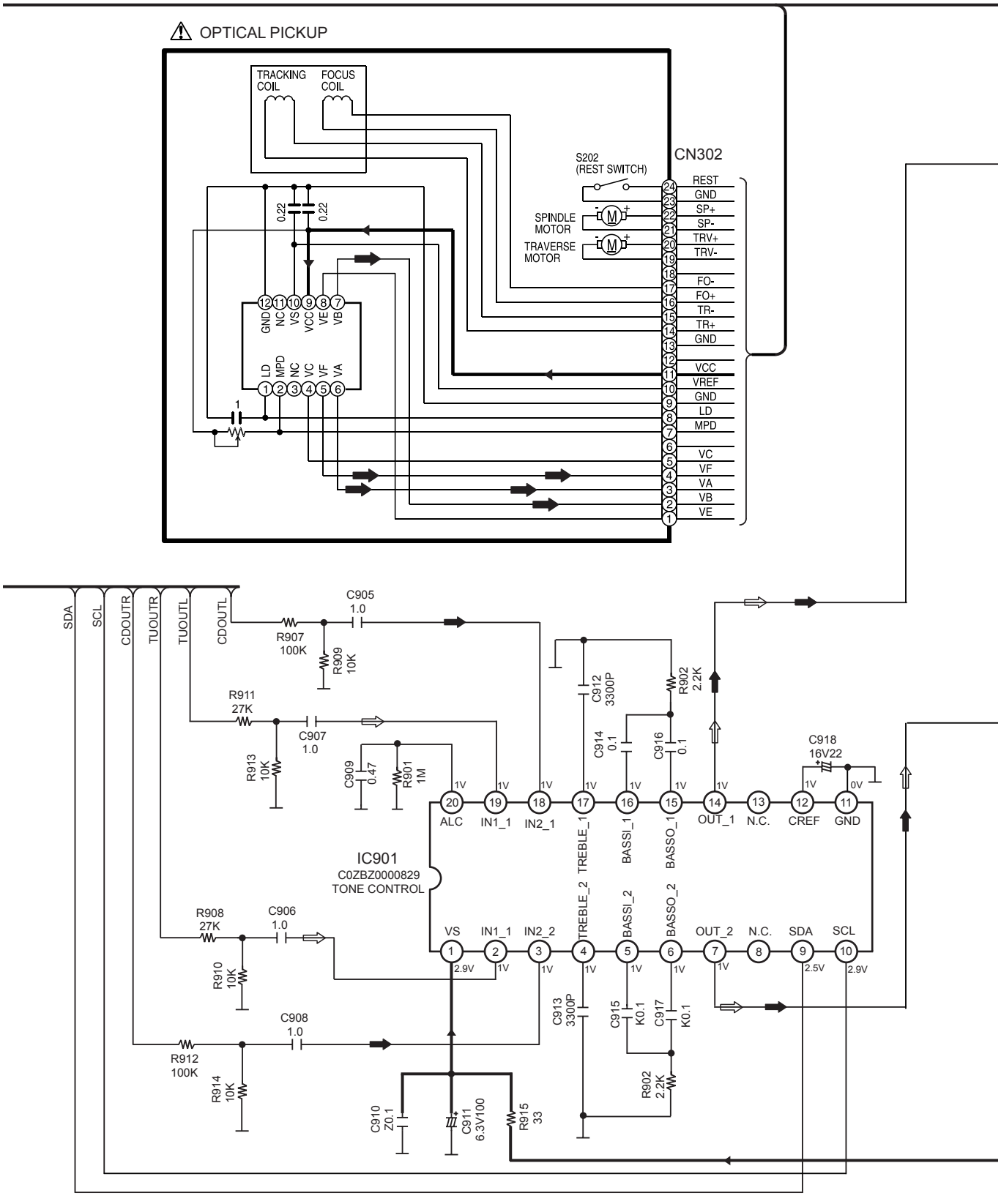


SL-PH660 LCD CIRCUIT DIAGRAM

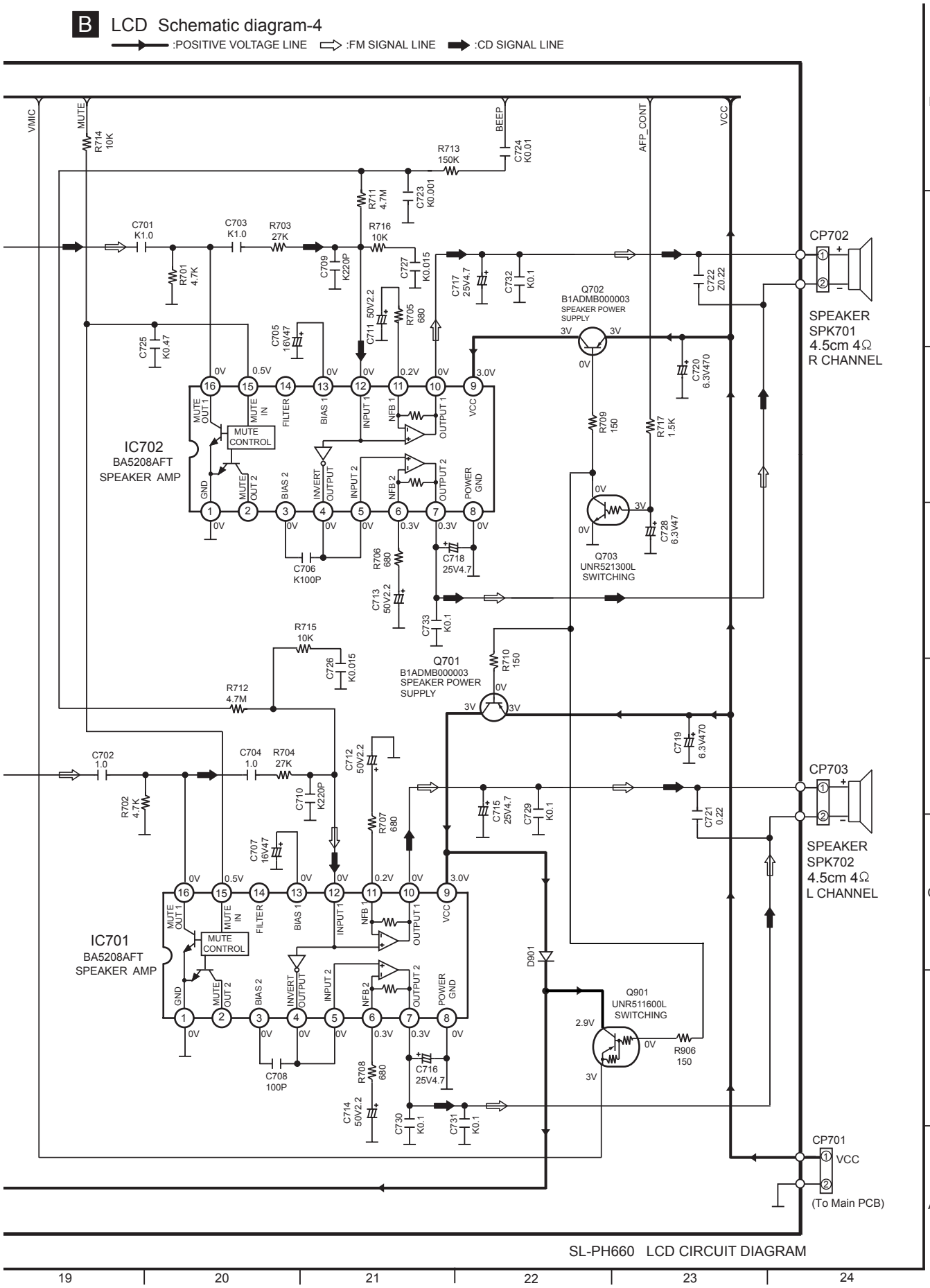
7 | 8 | 9 | 10 | 11 | 12

B LCD Schematic diagram-3

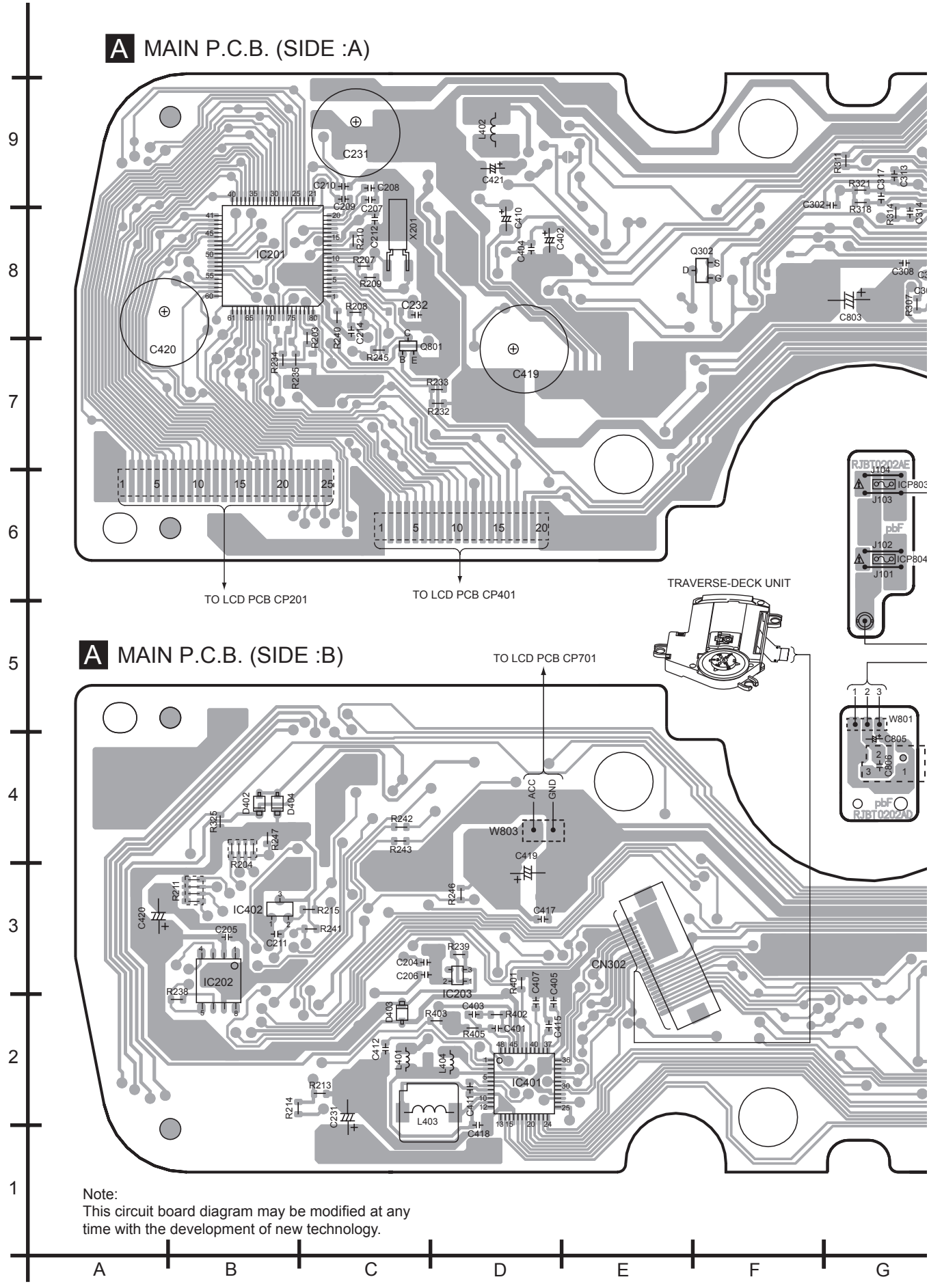
:POSITIVE VOLTAGE LINE :FM SIGNAL LINE :CD SIGNAL LINE



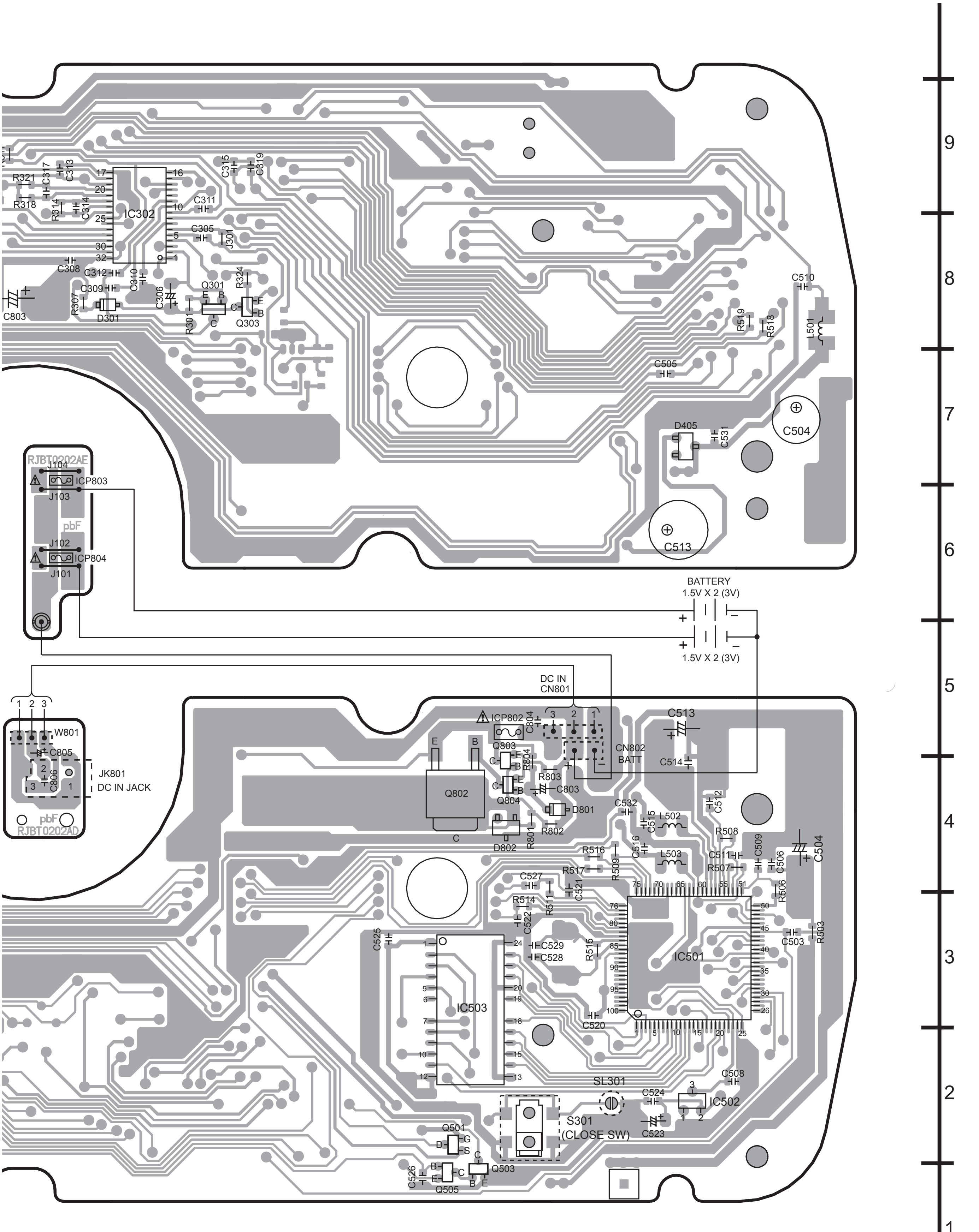
SL-PH660 LCD CIRCUIT DIAGRAM


B LCD Schematic diagram-4
:POSITIVE VOLTAGE LINE
:FM SIGNAL LINE
:CD SIGNAL LINE
VMIC
MUTE
R714 10K
R713 150K
BEEP
C724 K0.01
AFP_CONT
VCC
R711 4.7M
C723 K0.001
C701 K1.0
C703 K1.0
R703 27K
R716 10K
C709 K220P
C727 K0.015
C717 25V4.7
C732 K0.1
C722 Z0.22
CP702
SPEAKER
SPK701
4.5cm 4Ω
R CHANNEL
R701 4.7K
C725 K0.47
C705 16V47
C711 50V2.2
R705 680
Q702
B1ADMB000003
SPEAKER POWER SUPPLY
C720 6.3V470
R709 150
R717 1.5K
IC702
BA5208AFT
SPEAKER AMP
MUTE CONTROL
Q703
UNR521300L
SWITCHING
C728 6.3V47
C706 K100P
R706 680
C718 25V4.7
C713 50V2.2
C733 K0.1
R715 10K
C726 K0.015
Q701
B1ADMB000003
SPEAKER POWER SUPPLY
R710 150
R712 4.7M
C719 6.3V470
C702 1.0
C704 1.0
R704 27K
C712 50V2.2
R702 4.7K
C710 K220P
R707 680
C715 25V4.7
C729 K0.1
C721 0.22
CP703
SPEAKER
SPK702
4.5cm 4Ω
L CHANNEL
C707 16V47
IC701
BA5208AFT
SPEAKER AMP
MUTE CONTROL
D901
Q901
UNR511600L
SWITCHING
R906 150
C708 100P
R708 680
C716 25V4.7
C714 50V2.2
C730 K0.1
C731 K0.1
CP701
VCC
(To Main PCB)
SL-PH660 LCD CIRCUIT DIAGRAM
H
G
F
E
D
C
B
A
19
20
21
22
23
24

12 Printed Circuit Board and Wiring Connection Diagram

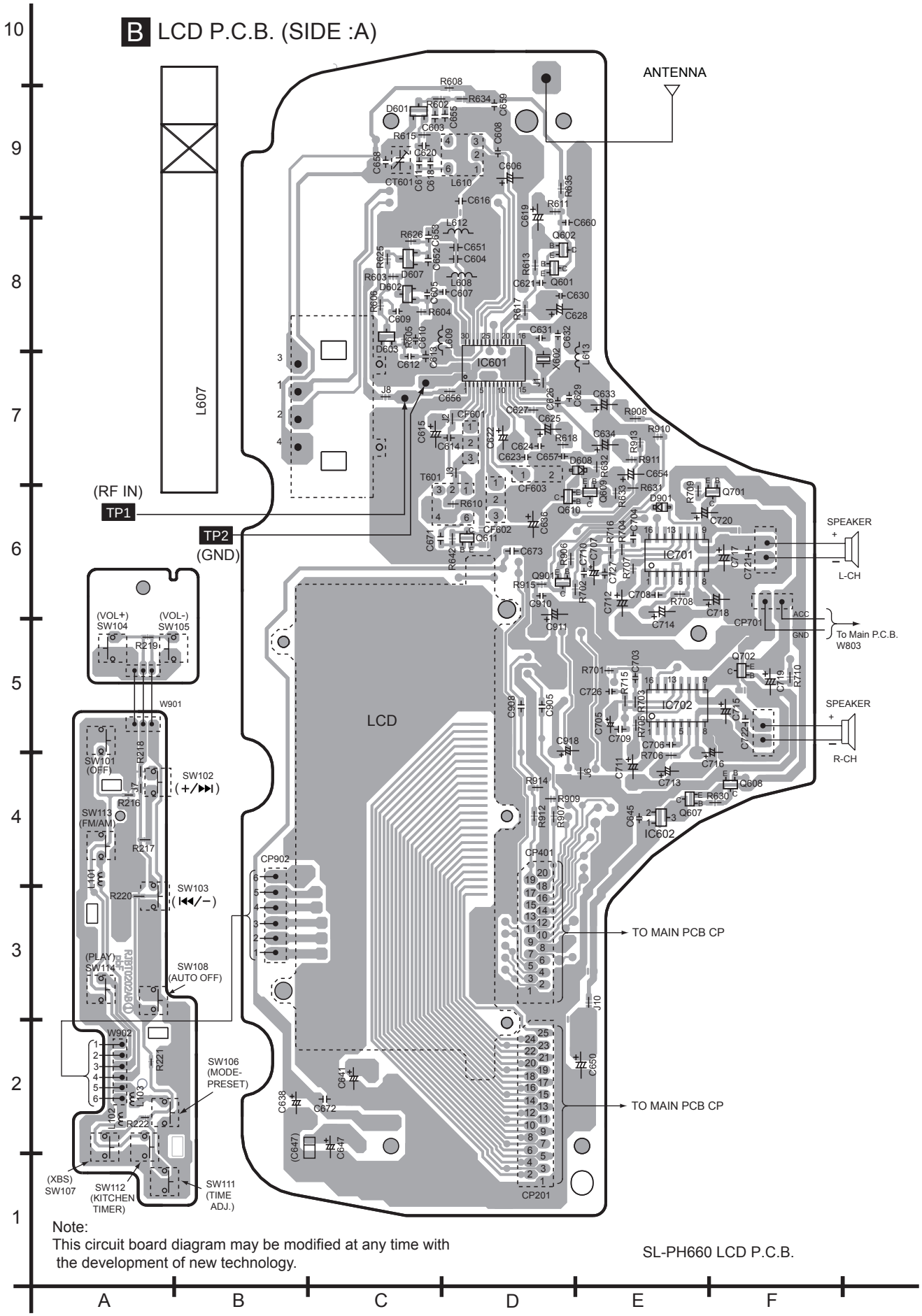


Note:
This circuit board diagram may be modified at any time with the development of new technology.



SL-PH660 MAIN P.C.B.

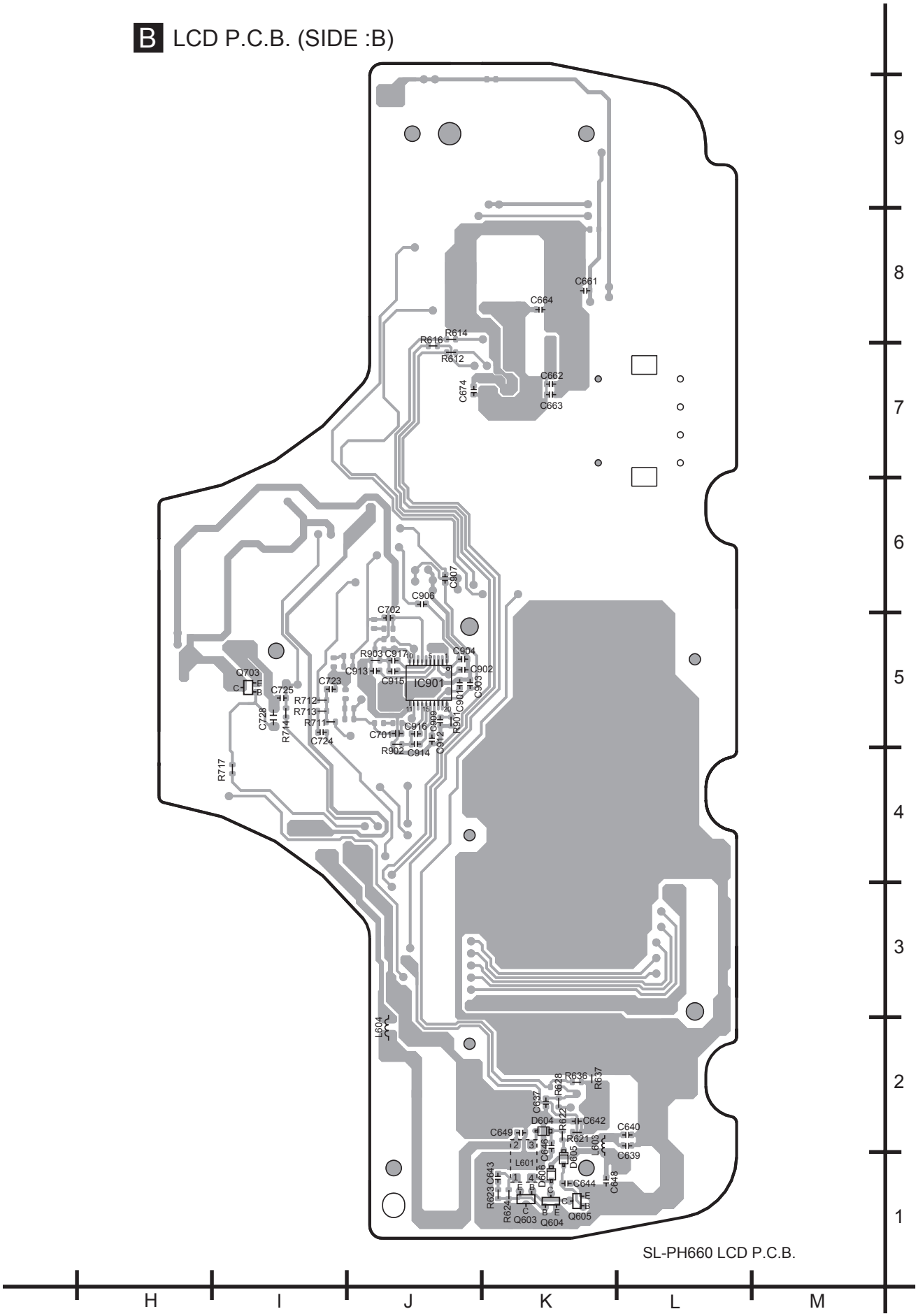
B LCD P.C.B. (SIDE :A)



Note:
This circuit board diagram may be modified at any time with the development of new technology.

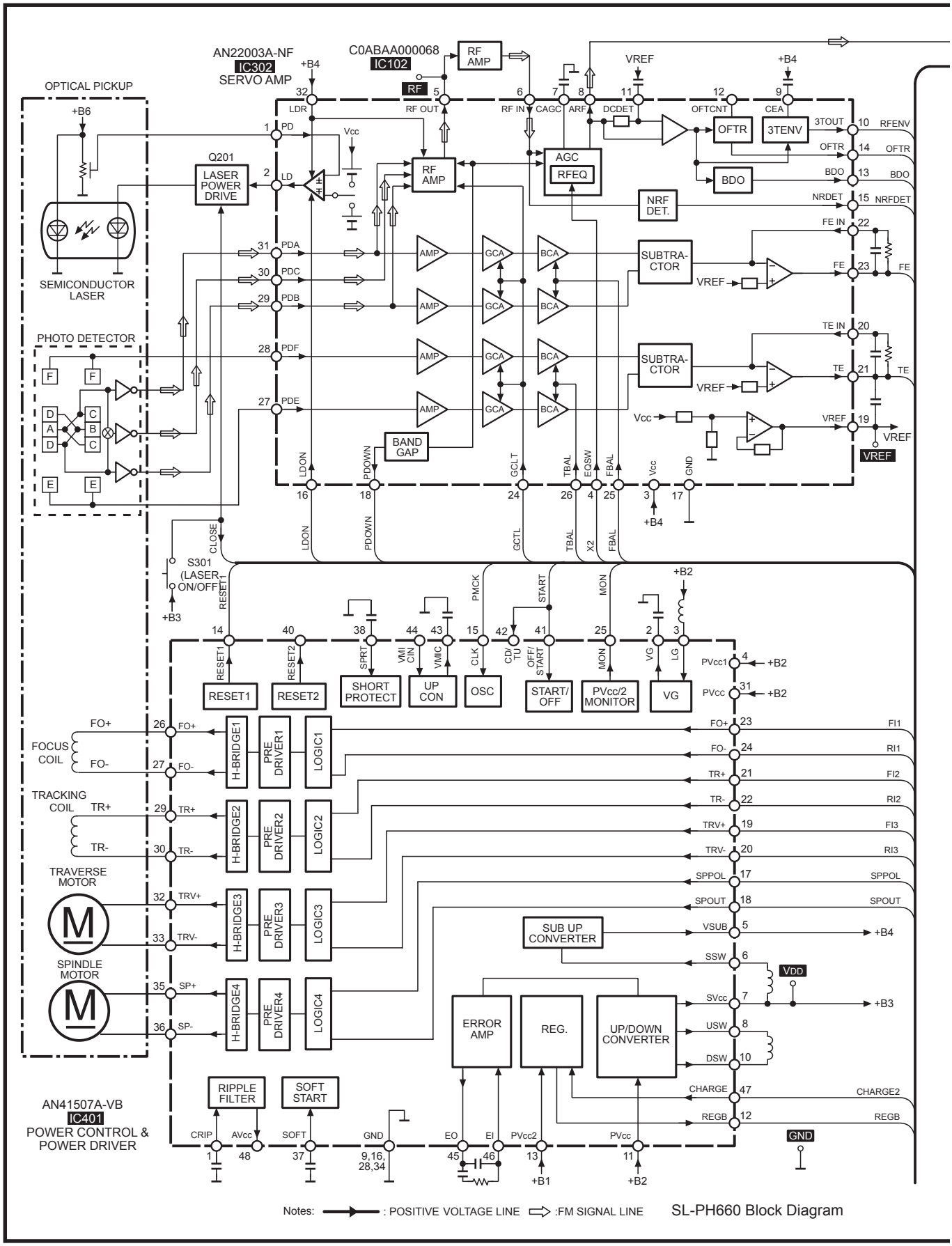
SL-PH660 LCD P.C.B.

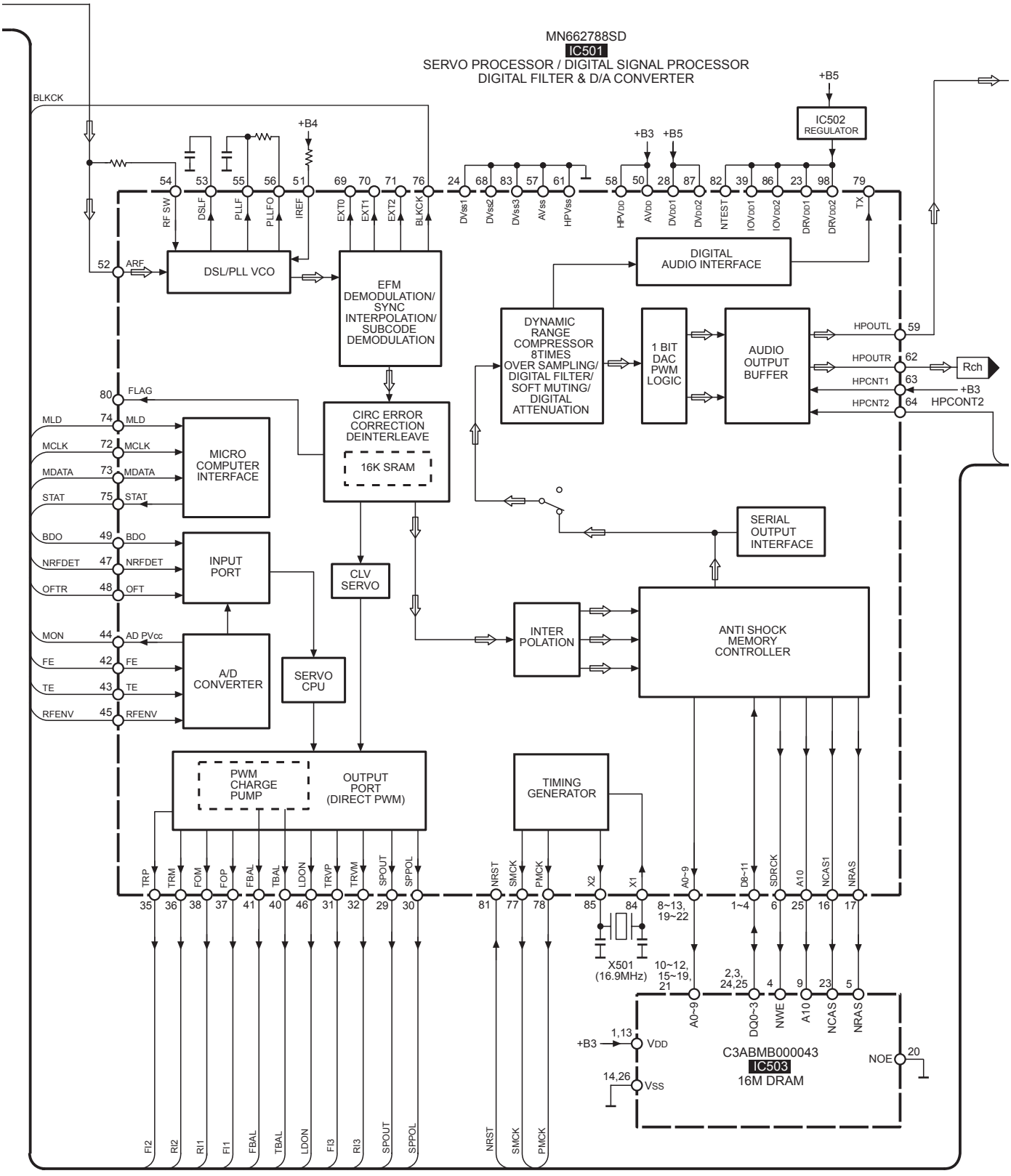
B LCD P.C.B. (SIDE :B)



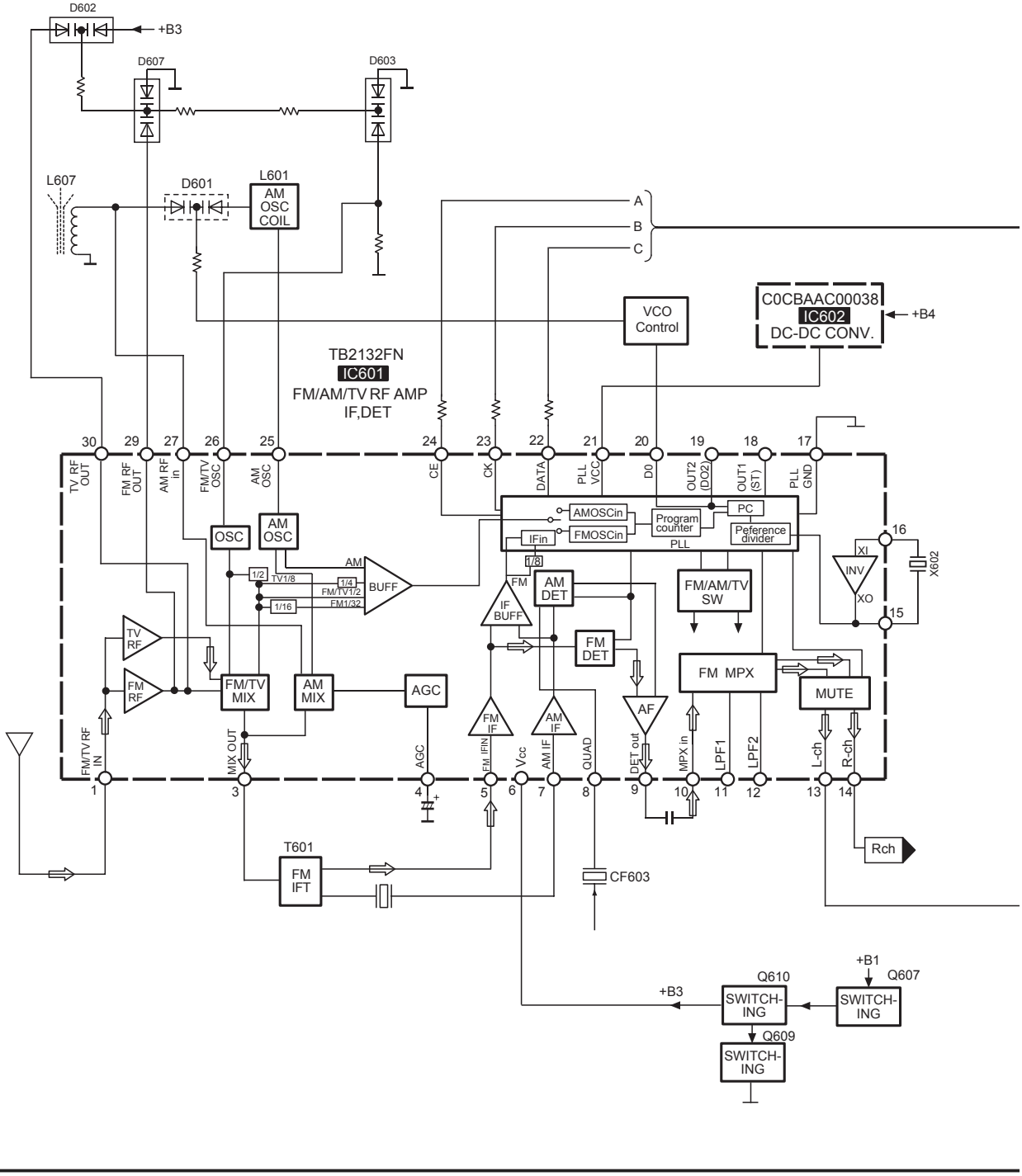
SL-PH660 LCD P.C.B.

13 Block Diagram

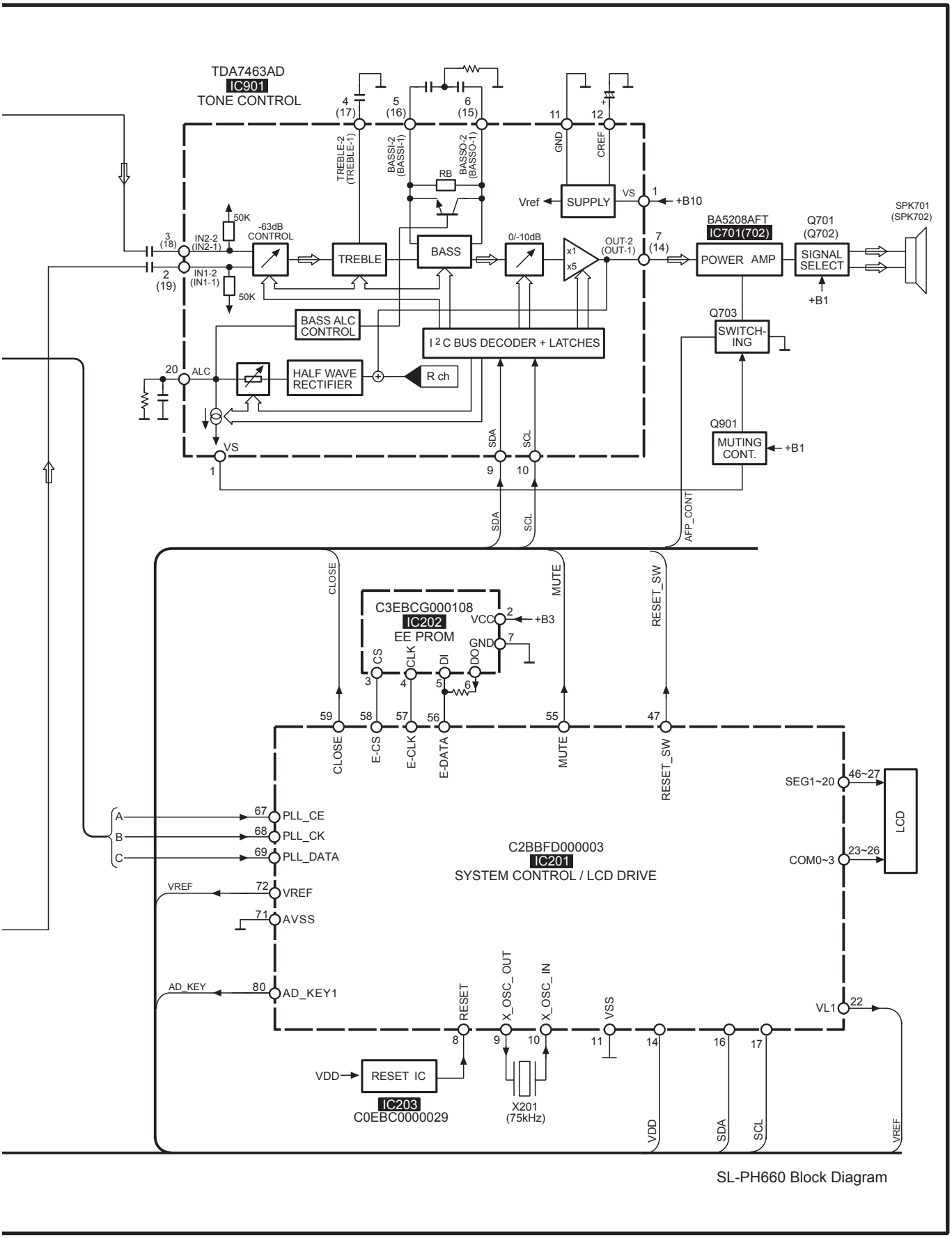




SL-PH660 Block Diagram

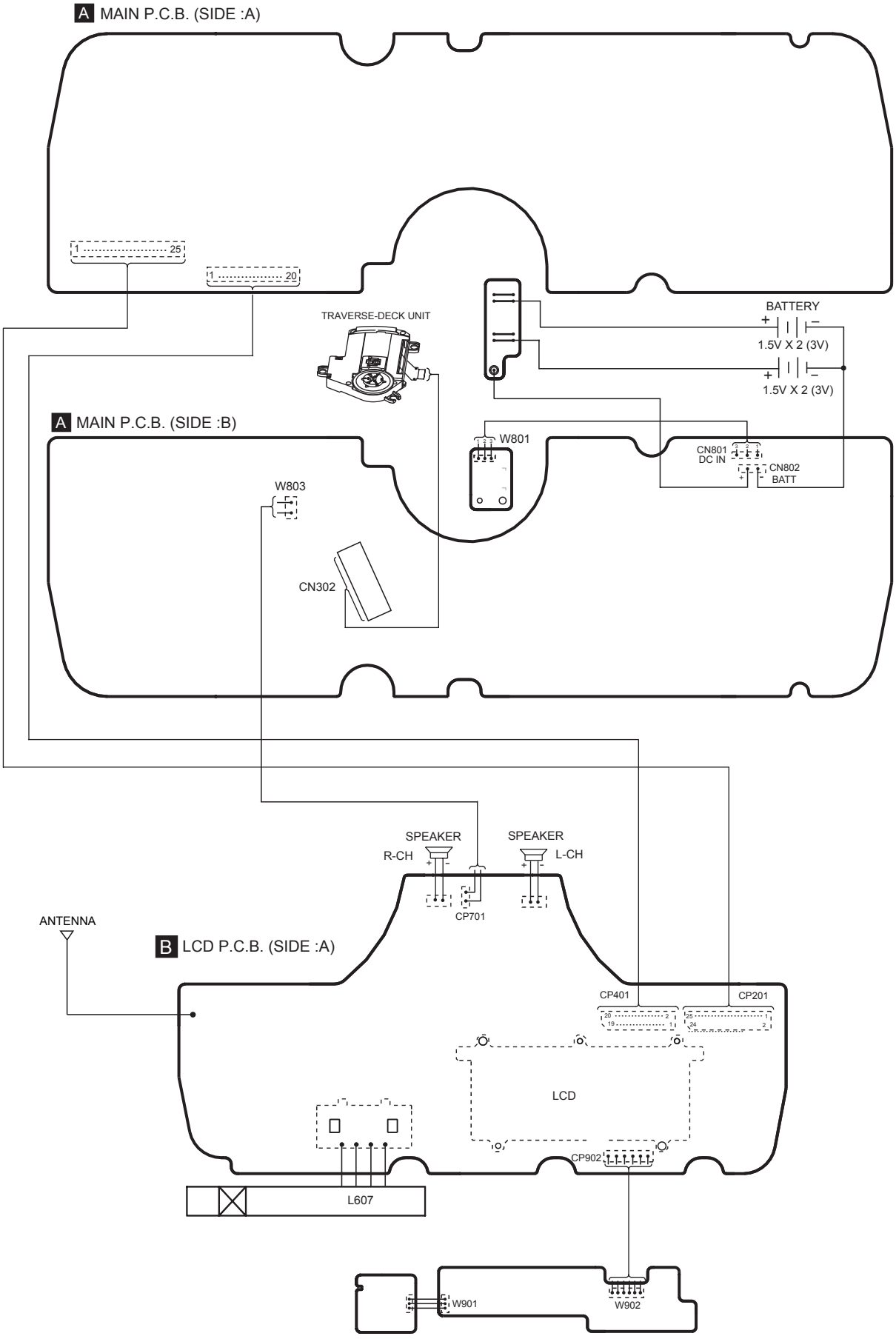


SL-PH660 Block Diagram



SL-PH660 Block Diagram

14 Wiring Connection Diagram



15 Measurements and Adjustments

15.1. Tuner Section

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT
1. Set volume control to maximum.
2. Set band selector switch to Radio AM or FM.
3. Output of signal generator should be no higher than necessary to obtain an output reading.

l AM-RF ALIGNMENT

Signal Generator or Sweep Generator		Radio Dial Setting	Indicator (Electronic Voltmeter or Oscilloscope)	Adjustment (Shown in Fig.1)	Remarks
Connections	Frequency				
Fashion a loop of several turns of wire and radiate signal into loop of receiver.	459 kHz 30% Mod. at 400Hz	Point of non-interference.(on/ about 600kHz)	Speaker terminal (+,-) (Rch or Lch) (4Ω) (Fig. 2 and Fig. 3)	T601 (AM IFT Coil)	Adjust for maximum output.
Fashion a loop of several turns of wire and radiate signal into loop of receiver.	522 kHz	Tuning capacitor fully closed.	Speaker terminal (+,-) (Rch or Lch) (4Ω) (Fig. 2)	L610 (AM OSC Coil)	Adjust for maximum output.
Fashion a loop of several turns of wire and radiate signal into loop of receiver.	1494 kHz	Tuning capacitor fully closed.	Speaker terminal (+,-) (Rch or Lch) (4Ω) (Fig. 2)	[*1]CT601 (AM ANT Trimmer)	Adjust for maximum output.
Fashion a loop of several turns of wire and radiate signal into loop of receiver.	603 kHz	Tuning capacitor fully closed.	Speaker terminal (+,-) (Rch or Lch) (4Ω) (Fig. 2)	L607 (AM ANT Trimmer)	Adjust for maximum output.

[*1] Fix antenna coil with wax after completing alignment.

l FM-RF ALIGNMENT

Signal Generator or Sweep Generator		Radio Dial Setting	Indicator (Electronic Voltmeter or Oscilloscope)	Adjustment (Shown in Fig.1)	Remarks
Connections	Frequency				
Connect to test point TP1 (RF IN) through FM dummy antenna. Negative side to test point TP2 (GND).	87.5 MHz	Tuning capacitor fully closed.	Speaker terminal (+,-) (Rch or Lch) (4Ω) (Fig. 2)	[*2] L609 (FM OSC Coil)	Adjust for maximum output.
	90.1 MHz	Tuning capacitor fully closed.	Speaker terminal (+,-) (Rch or Lch) (4Ω) (Fig. 2)	L608 (FM ANT Coil)	Adjust for maximum output.

[*2] Fix antenna coil with wax after completing alignment.

15.2. Alignment Points

- Please refer to Circuit Board and Wiring Connection Diagram to locate test points.

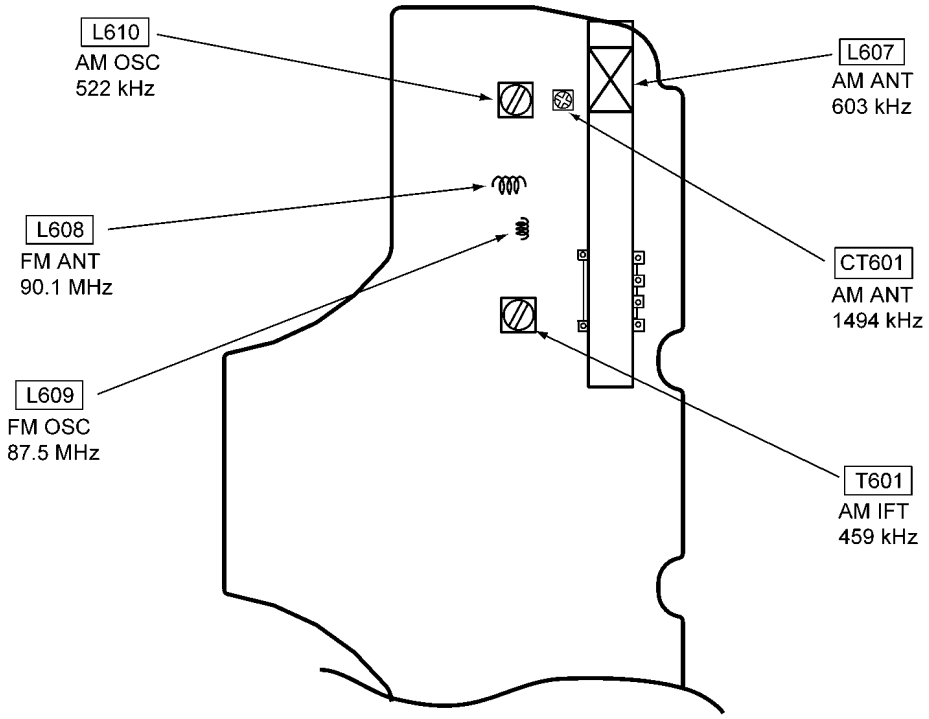


Fig.1

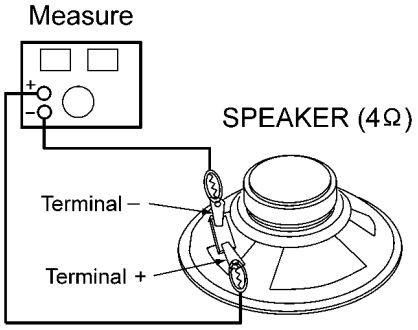
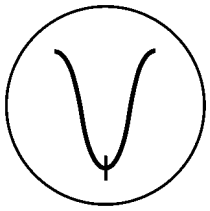


Fig.2



459 kHz

Fig.3

16 Terminal Function of ICs

16.1. IC201(C2BBGF000772): System Control/LCD Drive

Pin No.	Terminal Name	I/O	Function
1	NC	I	Not used, open
2	PDET	I	Power supply detect signal input
3	BEEP	O	BEEP Output (kitchen timer)
4	BLKCK	I	CD subcode block clock
5	E_SEL	I	L:2K EEPROM, OPEN: 1k EEPROM
6	AC DET	I	AC Power supply detect signal input
7	CNVSS	-	Not used, open
8	RESET	I	System RESET input
9	XCOUT (75K)	O	75K Xtal Sub clock
10	XCIN (75K)	I	75K Xtal Sub clock
11	VSS	-	GND
12	XIN	I	4.2336 MHz OSC I/P
13	XOUT	O	4.2336 MHz OSC O/P
14	VDD	-	2.9V POWER SUPPLY
15	NC	I	Not used, open
16	SOUND _D	O	Sound processor signal data
17	SOUND_ CL	O	Sound processor signal clock
18	VLCD3(H)	-	LCD BIAS (VL 3 = VLCD)
19	VLCD2(M)	-	LCD BIAS (VL 2 = 2 // 3VLCD)
20	C1	I	LCD dviver cap terminal
21	C2	I	LCD dviver cap terminal
22	VLCD1(L)	-	LCD BIAS (VL 1 = 1 // 3VLCD)
23 | 26	COM0 | COM3	O	LCD common signal output terminal
27 | 46	SEG20 | SEG1	O	LCD segment signal output
47	REST_ SW	I	CD limit SW input for the most inner point
48	HPCNT	O	H P AMP Control
49	RW	O	Output for CD-RW
50	X 2	O	R F Equalizer twice speed signal output
51	TU_ CONT	O	TUNER POWER AMP control output ACTIV : H
52	CD_ CONT	O	CD POWER AMP control output ACTIV : L
53	AFP_ CONT	O	POWER AMP control output ACTIV : H
54	CD/TU CONT	O	RADIO ACTIV : H
55	MUTE	O	MUTE : L
56	E-DATA	O	EEPROM DATA Select
57	E-CLK	O	EEPROM CLOCK Select
58	E-CS	O	EEPROM CHIP Select
59	CLOSE_ SW	I	CD close/open SW L : Close
60	MLD	O	CD signal processor control load out
61	MDATA	O	CD signal processor control data out
62	MCLK	O	CD signal processor control clock out
63	CD PLAY	I	CD PLAY KEY ACTIV : L
64	RADIO/ BAND	I	FM/AM BAND KEY ACTIV : L
65	KITCHEN TIMER	I	KITCHEN TIMER KEY INPUT ACTIV : L
66	TIMER KEY	I	TIMER KEY ACTIV : L
67	PLL_CE	O	TU PLL_CE output
69	PLL_DO	O	TU PLL_DATA output
70	PLL_DI	I	TU PLL_DATA input
71	AVSS	-	AD CONV.GND
72	VREF	-	Reference Voltage input
73	PDOWN	I/O	HEAD AMP POWER OGG Signal output
74	VCC_DET	I	BATTERY Voltage power supply detect signal input
75	REG_ SET1	I	Region Settinal 1
76	REG_ SET2	I	Region Settinal 2
77	REG_ SET3	I	Region Settinal 3
78	STATUS	I	CD status input
79	NC	I	Not used,open
80	AD_KEY1	I	Key input terminal

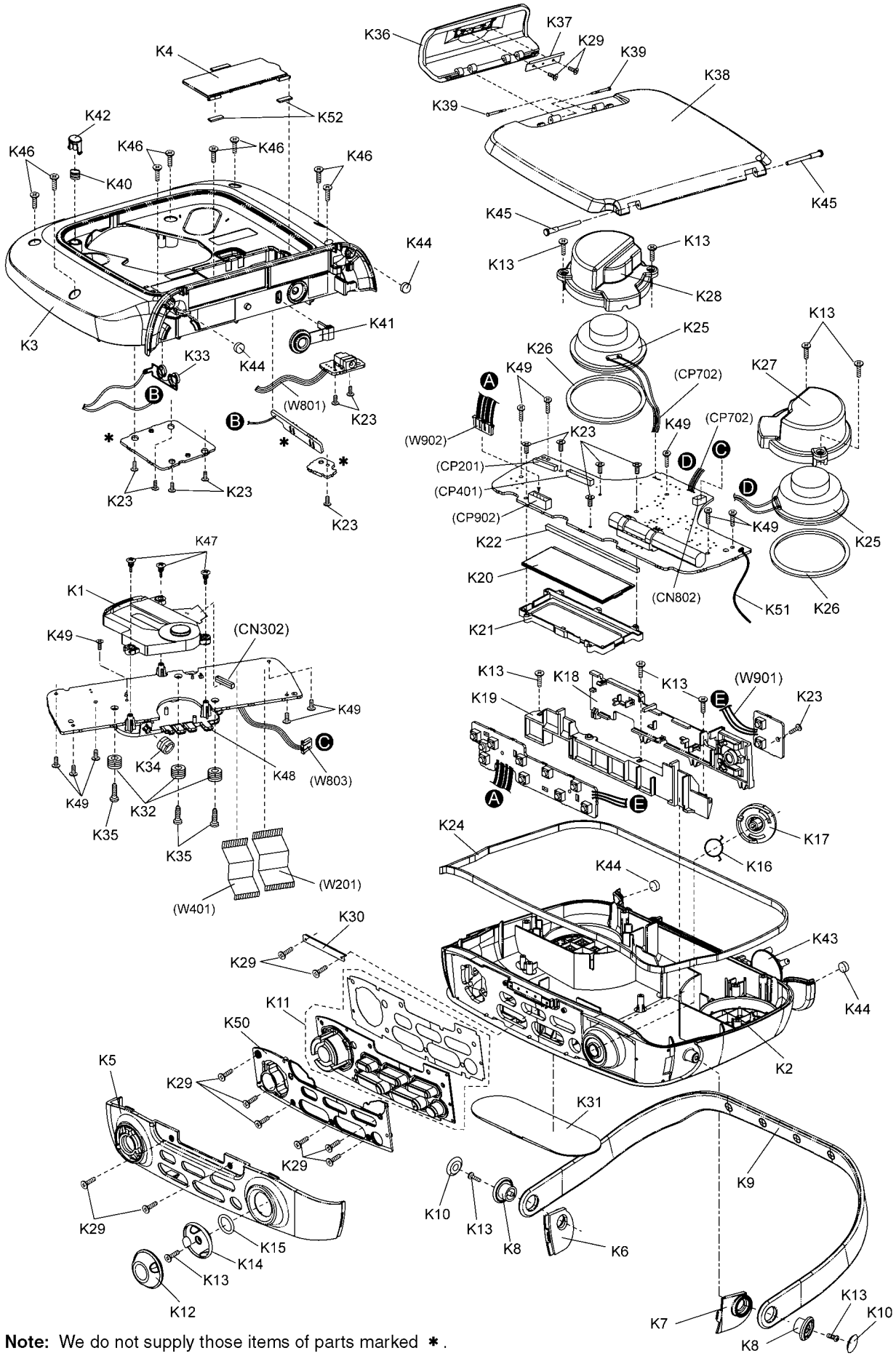
16.2. IC302(AN22003A-NF): Servo Amplifier

Pin No.	Terminal Name	I/O	Function
1	PD	I	APC amplifier input terminal
2	LD	O	Laser power drive signal output
3	V_{CC}	I	Power supply terminal
4	EQSW	I	EQ characteristic drive signal input
5	RFOUT	O	RF addition output terminal
6	RF IN	I	RF signal input terminal
7	CAGC	O	AGC loop filter capacity connection terminal
8	ARF	O	RF signal output terminal
9	CEA	I	H.P.F. Capacitor connection terminal
10	3TOUT	O	RF envelope signal output terminal
11	DCDET	O	The H.P.F. capacitor connection terminal for detection systems
12	OFTCONT	-	Not used, open
13	BDO	O	Dropout signal output terminal
14	OFTR	O	Off-track signal output terminal
15	NRFDET	O	RF detection signal output terminal
16	LDON	I	Laser ON signal input terminal
17	GND	-	GND
18	PDOWN	I/O	Reduced voltage detection signal input
19	VREF	O	Reference voltage output terminal
20	TEIN	I	Tracking error amplifier input terminal
21	TE	O	Tracking error amplifier output terminal
22	FEIN	I	Focus error amplifier input terminal
23	FE	O	Focus error amplifier output terminal
24	GCTL	I	RF/FE/TE gain control signal output terminal
25	FBAL	I	Focus balance signal input terminal
26	TBAL	I	Tracking balance signal input terminal
27	PDE	I	Tracking signal input terminal
28	PDF	I	Tracking signal input terminal
29	PDB	I	Focus signal input terminal
30	PDC	I	RF addition amplifier input terminal
31	PDA	I	Focus signal input terminal
32	SHARP = H	I	LD reference voltage input terminal

16.3. IC501(MN662788SD): Servo Processor, Digital Signal Processor, Digital Filter & D/A Converter

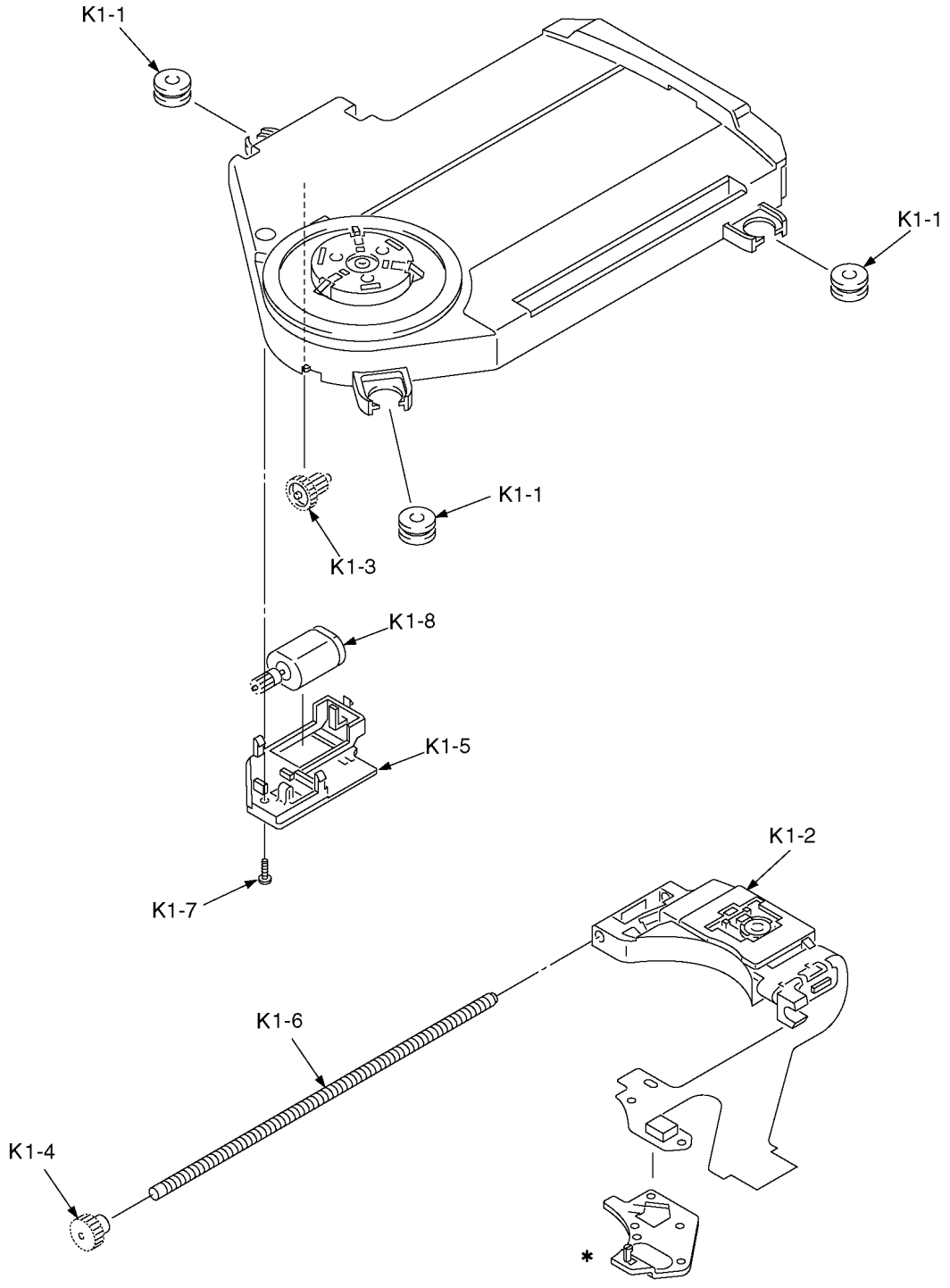
Pin No.	Terminal Name	I/O	Function
1 | 4	D11 | D8	I/O	DRAM data I/O signal 11 - 8
5	UDQM	-	Not use, open
6	SDRCK	O	SDRAM clock signal input
7	A11	-	Not used, open
8 | 13	A9 | A4	O	DRAM address signal output 9 - 4
14	LDQM	-	Not used, open
15	NWE	-	Not used, open
16	NCAS	O	DRAM CAS control signal output
17	NRAS	O	DRAM RAS control signal output
18	NCS	-	Not used, open
19 | 22	A3 | A0	O	DRAM address signal output 3 - 0
23	DRVDD1	I	Power supply 1 for DRAM interface
24	DVSS1	-	GND1 for digital circuits
25	A10	O	DRAM address signal output 10
26	BA1	-	Not used, open
27	BA0	-	Not used, open
28	DVDD1	I	Power supply 1 for digital circuits
29	SPOUT	O	Spindle motor drive signal output
30	SPPOL	O	Spindle motor drive signal output
31	TRVP	O	Traverse drive signal output (+)
32	TRVM	O	Traverse drive signal output (-)
33	GOUT3 /CK8M	-	TP512
34	GOUT4 /TLOCK	-	TP511
35	TRP	O	Tracking drive signal output (+)
36	TRM	O	Tracking drive signal output (-)
37	FOP	O	Focus drive signal output (+)
38	FOM	O	Focus drive signal output (-)
39	IOVDD1	I	Power supply1 for digital I/O
40	TBAL	O	Tracking balance adjustment output
41	FBAL	O	Focus balance adjustment output
42	FE	I	Focus error signal input
43	TE	I	Tracking error signal input
44	ADPVCC	I	Voltage input for supply voltage monitor
45	RFENV	I	RF envelope signal input
46	LDON	O	Laser ON signal output
47	NRFDET	I	RF detection signal input
48	OFT	I	Off-track signal input
49	BDO	I	Dropout signal input
50	AVDD1	I	Power supply1 for analog circuits
51	IREF	I	Reference current input for analog
52	ARF	I	RF signal input
53	DSLF	I	DSL loop filter
54	RFSW	I	DSL loop filter
55	PLLF	O	PLL loop filter
56	PLLFO	O	PLL loop filter
57	AVSS1	-	GD1 for analog circuits
58	HPVDD	I	Power supply for headphone out
59	HPOUTL	O	L-ch audio output
60	HPREF	-	Not used, open
61	HPVSS	-	GND for headphone out
62	HPOUTR	O	R-ch audio output
63	HPCNT1	I	Headphone out control signal input1
64	HPCNT2	I	Headphone out control signal input2
65	GOUT2 /PCK	-	TP513
66	GOUT1 /IPFLAG2	-	TP514
67	GOUT0 /RESY	-	TP515
68	DVSS2	-	GND2 for digital circuits
69	EXT0 /VDET	-	TP516
70	EXT1 /CLUS	-	TP517
71	EXT2/ CRC	-	TP518
72	MCLK	I	Microcontroller command clock signal output
73	MDATA	I	Microcontroller command data signal output
74	MLD	I	Microcontroller command load signal output
75	STAT	O	Status signal output
76	BLKCK	O	Sub-code block clock signal output
77	SMCK	O	Clock signal output
78	PMCK	O	Clock signal output (F=88.2kHz)
79	TX	O	TP504
80	FLAG	O	TP503
81	NRST	I	LSI reset signal input
82	NTEST	I	Test input pin
83	DVSS3	-	GND3 for digital circuits
84	X1	I	Crystal oscillator connected (F=16.9 MHz)
85	X2	O	
86	IOVDD2	I	Power supply2 for digital I/O
87	DVDD2	I	Power supply2 for digital circuits
88	D2	-	Not used, open
89	D1	-	Not used, open
90	D0	-	Not used, open
91 | 95	D3 | D7	-	Not used, open
96	D15	-	Not used, open
97	D14	-	Not used, open
98	DRVDD2	I	Power supply2 for DRAM interface I/O
99	D13	-	Not used, open
100	D12	-	Not used, open

17 Cabinet Parts Location



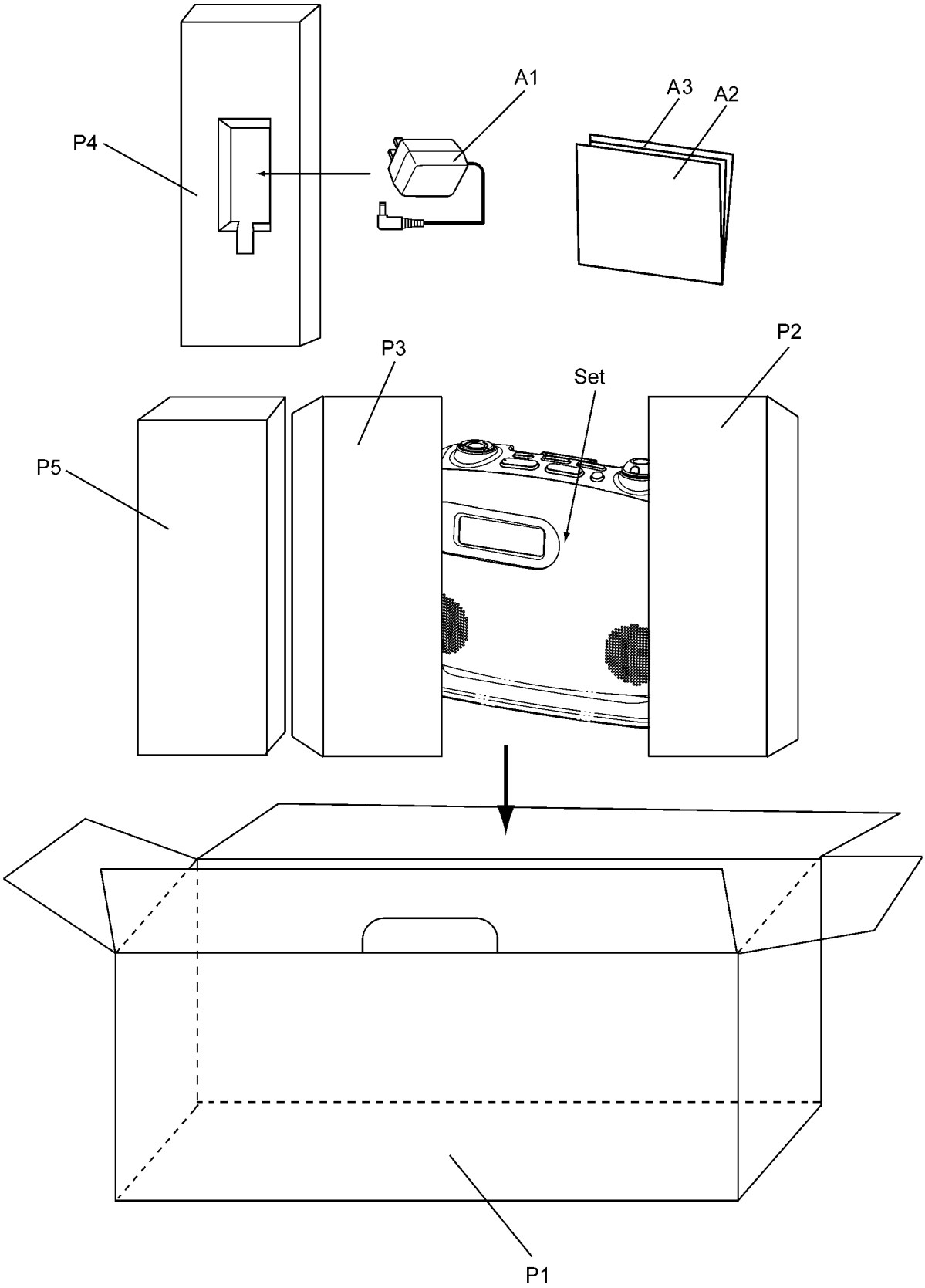
Note: We do not supply those items of parts marked ✱.

18 Traverse Parts Location



Note: We do not supply those items of parts marked ✱.

19 Packaging



20 Replacement Parts List

Notes:

・Important safety notice:

Components identified by ⚠ mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufactures specified parts shown in the parts list.

1. (M) Indicates parts that are supplied **PAVCSG**
2. The reference number SA represent the grease tool usea for unit.
3. The marking (RTL) indicates that Retention Time is Limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependent on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

Ref. No.	Part No.	Part Name & Description	Remarks
CABINET PARTS			
K1	RAE0240Z-5X	TRV UNIT	(M)
K1-1	RMG0648-K	FLOATING RUBBER A	(M)
K1-2	RAF0240A	PICK-UP 240A	(M)
K1-3	RDG0554	RELAY GEAR	(M)
K1-4	RDG0555	DRIVER GEAR	(M)
K1-5	RMQ1125	MOTOR SUPPORT	(M)
K1-6	RMS0782	DRIVER SHAFT	(M)
K1-7	XQN17+BG45FJ	SCREW	(M)
K1-8	RXQ0971-4	TRV MOTOR ASSY	(M)
K2	RKMT0071B-W1	FRONT CAB	(M)
K3	RYKW0083C-W	REAR CAB ASSY	(M)
K4	RKKT0062-W1	BATTERY COVER	(M)
K5	RGKT0134A-A2	UP ORNAMENT(B)	(M)
K6	RGKT0133-A	UP ORNAMENT(A)	(M)
K7	RGKT0135-A	UP ORNAMENT(C)	(M)
K8	RMST0040-A	HANDLE SHAFT	(M)
K9	RKHT0018-A	HANDLE	(M)
K10	RGQT0057-A	HANDLE SHAFT COVER	(M)
K11	RGUT0219-A	OPERATION BUTTON ASSY	(M)
K12	RGQT0054-A	VOLUME KNOB COVER	(M)
K13	XTN26+10GFJ	SCREW	(M)
K14	RGWT0050-W	VOLUME KNOB	(M)
K15	RMGT0074-K1	VOL 0-RINK GUM	(M)
K16	RMBT0058	VOL KNOB SPRING	(M)
K17	RMQT0229	VOL KNOB LINK	(M)
K18	RMKT0017-2	OPER BUTTON CHASSIS	(M)
K19	RMKT0018-1	OPER CHASSIS PIECE	(M)
K20	L5ACAHD00006	LCD	(M)
K21	RKWT0111-W	LCD HOLDER	(M)
K22	RSQT0028	LCD ELECTRIC GUM	(M)
K23	RHD006TZA-1	DECK SCREW	(M)
K24	RMGT0068-W	CAB GUM	(M)
K25	L0AA05A00060	SPEAKER	(M)
K26	RMGT0075-K	SPEAKER GUM	(M)
K27	RMVT0046	SPEAKER CAP(R)	(M)
K28	RMVT0047	SPEAKER CAP (L)	(M)
K29	XTN14+3.5GFJ	SCREW	(M)
K30	RMCT0037	LOCK PLATE	(M)
K31	RKWT0110-Q	LCD PANEL	(M)
K32	RMG0649-A	FLOATING RUBBER B	(M)
K33	RJCT70037	BATTERY SPRING(-)	(M)
K34	RMBT0061	SPRING	(M)
K35	XTWS26+10GFJ	SCREW	(M)
K36	RGQT0059-A1	LOCK COVER	(M)
K37	RMCT0036	LOCK SPRING	(M)
K38	RKFT0067A-W2	CD LID	(M)
K39	RHDW40001	SCREW	(M)
K40	RMBT0059	CD SWITCH SPRING	(M)
K41	RGQT0055-W	DC IN COVER	(M)
K42	RGUT0220-W	PUSH KNOB	(M)
K43	RGQT0056-Q2	SUCKER	(M)
K44	RMGT0076-A	CUSHION	(M)
K45	RHDT0010-S	CD LID SCREW	(M)
K46	XTN26+20GFJ	SCREW	(M)
K47	RHD20064-1	SCREW	(M)
K48	RMKT0016-2	CD CHASSIS	(M)
K49	XTN2+6GFJ	MECHA CHASSIS PCB SCREW	(M)
K50	RMQT0227	BUTTON PIECE	(M)
K51	REET0015	FM WIRE	(M)
K52	RMVW0028	SHEET	(M)
ACCESSORIES			
A1	RFEA455E-S	AC ADAPTOR ⚠	(M)
A2	RQTT0699-1E	O/I BOOK	(M)
A3	RQCST0003	GOST SHEET	(M)
PACKING MATERIALS			
P1	RPKT0805	GIFT BOX	(M)
P2	RPNT0566	POLYFOAM	(M)
P3	RPNT0567	POLYFOAM	(M)
P4	RPNT0568	PAD	(M)
P5	RPNT0569	PAD	(M)
P.C.B. ASS'Y			
PCB1	REPT0020C	MAIN PCB UNIT	(M)
PCB2	REPT0019C	LCD PCB UNIT (WITH OPERATION PCB)	(M)
INTEGRATED CIRCUITS TRANSISTORS AND DIODES			
IC201	C2BBGF000772	MICOM	(M)
IC202	C3EBCG000100	EEPROM	(M)
IC203	C0EBC0000033	IC	(M)
IC302	AN22003A-NF	RF AMP IC	(M)
IC401	AN41507A-VB	POWER CONTROL IC	(M)
IC402	XC6206P212MR	IC	(M)
IC501	MN662788SD	DSP IC	(M)
IC502	C0CBAAB00038	VOLTAGE REGULATOR	(M)
IC503	C3ABMB000043	DRAM IC	(M)
IC601	TB2132FNG	TUNER IC	(M)
IC602	C0CBAAB00038	VOLTAGE REGULATOR	(M)
IC701	BA5208AFT	POWER AMP IC	(M)
IC702	BA5208AFT	POWER AMP IC	(M)
IC901	C0ZBZ0000829	INTEGRATED CIRCUIT	(M)
Q301	2SB0709A0L	TRANSISTOR	(M)
Q302	B1DHAC000002	FET	(M)
Q303	B1ADMB000003	SILICON TRANSISTOR	(M)
Q501	B1CFHA000001	NCH-MOS-FET	(M)
Q503	UNR521300L	TRANSISTOR	(M)
Q505	UNR511300L	TRANSISTOR	(M)
Q601	2SD1819ASL	CHIP TRANSISTOR	(M)
Q602	2SD1819ASL	CHIP TRANSISTOR	(M)
Q603	B1ADMB000003	SILICON TRANSISTOR	(M)
Q604	B1ABJB000006	CHIP TRANSISTOR	(M)
Q605	2SD13280S2RA	CHIP TRANSISTOR	(M)
Q607	B1ADMB000003	SILICON TRANSISTOR	(M)
Q608	UNR521300L	TRANSISTOR	(M)
Q609	2SD1819ASL	CHIP TRANSISTOR	(M)
Q610	B1ADMB000003	SILICON TRANSISTOR	(M)
Q701	B1ADMB000003	SILICON TRANSISTOR	(M)
Q702	B1ADMB000003	SILICON TRANSISTOR	(M)
Q703	UNR521300L	TRANSISTOR	(M)
Q801	UNR521L00L	TRANSISTOR	(M)
Q802	B1BDND000001	CHIP TRANSISTOR	(M)
Q803	2SD1819ASL	CHIP TRANSISTOR	(M)
Q804	2SD1819ASL	CHIP TRANSISTOR	(M)
Q901	UNR511600L	TRANSISTOR	(M)
D301	MA2J11100L	CHIP DIODE	(M)
D402	MA2Z74800L	CHIP DIODE	(M)
D403	MA2Z74800L	CHIP DIODE	(M)
D404	MA2Z74800L	CHIP DIODE	(M)
D405	RB491DT146	DIODE	(M)
D601	B0CDBB000015	DIODE (VARI-CAP)	(M)

Ref. No.	Part No.	Part Name & Description	Remarks
D602	B0CDBB000006	FM VARIALBEL CAPACITOR	(M)
D603	B0CDBB000006	FM VARIALBEL CAPACITOR	(M)
D604	MA2J11100L	CHIP DIODE	(M)
D605	MAZ81200ML	REGURATION DIODE	(M)
D606	MA2J11100L	CHIP DIODE	(M)
D608	MA2J11100L	CHIP DIODE	(M)
D801	B0BC2R100007	ZENER DIODE	(M)
D802	RB491DT146	DIODE	(M)
D901	MA2Z74800L	CHIP DIODE	(M)
L101	J0JBC0000019	COIL	(M)
L102	J0JBC0000019	COIL	(M)
L103	J0JBC0000019	COIL	(M)
L401	G1C101K00008	COIL	(M)
L402	G1C101K00008	COIL	(M)
L403	G1A101D00009	COIL	(M)
L404	G1C331K00008	COIL	(M)
L501	G1C471K00007	COIL	(M)
L502	G1C101K00008	COIL	(M)
L503	G1C101K00008	COIL	(M)
L601	RL09U006-M	COIL	(M)
L603	ELJPA121KF	SPRING COIL	(M)
L607	G2CAEB000006	BAR ANT	(M)
L608	G0ZZ00002485	SPRING COIL	(M)
L609	G0ZZ00002518	TV ANT	(M)
L610	RL02B136	AM OSC COIL	(M)
L612	G0ZZ00002484	SPRING COIL	(M)
L613	RLL500050T-Y	COIL	(M)
CERAMIC FILTERS			
CF601	J0B1075A0101	FM CERAMIC FILTER	(M)
CF602	RLFCFA450L4B	AM FILTER	(M)
CF603	J0B1075A0112	DISCRIMINATOR	(M)
CONNECTOR			
CP201	RJS2A5625-1	CONNECTOR	(M)
CP401	RJS2A5621	CONNECTOR	(M)
CP701	RJP2G4YA	CONNECTOR	(M)
CP702	RWJ9502085ES	SPEAKER WIRE	(M)
CP703	RWJ9502085ES	SPEAKER WIRE	(M)
CP902	RJP6G4YA	6 PIN CONNECTOR	(M)
CN302	K1MN24B00108	CONNECTOR	(M)
TRIMMER CAPACITOR			
CT601	ECRLA010A53R	TRIMMER CAPACITOR	(M)
FUSE PROTECTOR			
ICP802	K5H132300001	IC PROTECTOR ⚠	(M)
ICP803	ERBSE1R50U	IC PROTECTOR ⚠	(M)
ICP804	ERBSE1R50U	IC PROTECTOR ⚠	(M)
CERAMIC RESONATOR			
X201	H0A750200021	XTAL OSC	(M)
X501	H2A169500008	CRYSTAL OSC	(M)
X602	H0A750200021	XTAL OSC	(M)
SWITCH			
SW101	EVQ21405R	TACK SWITCH	(M)
SW102	EVQ21405R	TACK SWITCH	(M)
SW103	EVQ21405R	TACK SWITCH	(M)
SW104	EVQ21405R	TACK SWITCH	(M)
SW105	EVQ21405R	TACK SWITCH	(M)
SW106	EVQ21405R	TACK SWITCH	(M)
SW107	EVQ21405R	TACK SWITCH	(M)
SW108	EVQ21405R	TACK SWITCH	(M)
SW111	EVQ21405R	TACK SWITCH	(M)
SW112	EVQ21405R	TACK SWITCH	(M)
SW113	EVQ21405R	TACK SWITCH	(M)
SW114	EVQ21405R	TACK SWITCH	(M)
WIRES			
W201	REET0010	PCB CONNECTOR FFC(24)	(M)
W401	REET0011	PCB CONNECTOR FFC(20)	(M)
W801	RWJ9503170SS	DC IN WIRE	(M)
W803	REXT0016-1	PCB POWER WIRE	(M)
W901	RWJ9503030BB	OPR.WIRE	(M)
W902	REXT0019	POR.WIRE	(M)
JACK			
JK801	K2EB2B000017	DC IN JACK	(M)
RESISTORS			
R203	ERJ3GEYJ104V	CHIP RESISTOR	(M)
R204	EXBV8V104JV	CHIP CONNECTED RESISTOR	(M)

Ref. No.	Part No.	Part Name & Description	Remarks
R207	ERJ3GEYJ335V	CHIP RESISTOR	(M)
R209	ERJ3GEYJ101V	CHIP RESISTOR	(M)
R210	ERJ3GEYJ105V	CHIP RESISTOR	(M)
R211	EXBV8V104JV	CHIP CONNECTED RESISTOR	(M)
R213	ERJ3GEYJ683V	CHIP RESISTOR	(M)
R214	ERJ3GEYJ123V	CHIP RESISTOR	(M)
R215	ERJ3GEYJ153V	THICK FILM CHIP RESISTOR	(M)
R216	ERJ3GEYJ152V	CHIP RESISTOR	(M)
R217	ERJ3GEYJ222V	CHIP RESISTOR	(M)
R218	ERJ3GEYJ272V	CHIP RESISTOR	(M)
R219	ERJ3GEYJ392V	CHIP RESISTOR	(M)
R220	ERJ3GEYJ562V	CHIP RESISTOR	(M)
R221	ERJ3GEYJ822V	CHIP RESISTOR	(M)
R222	ERJ3GEYJ153V	THICK FILM CHIP RESISTOR	(M)
R232	ERJ3GEYJ473V	CHIP RESISTOR	(M)
R233	ERJ3GEYJ563V	CHIP RESISTOR	(M)
R234	ERJ3GEYJ104V	CHIP RESISTOR	(M)
R235	ERJ3GEYJ104V	CHIP RESISTOR	(M)
R238	ERJ3GEYJ103V	CHIP RESISTOR	(M)
R239	ERJ3GEYJ104V	CHIP RESISTOR	(M)
R240	ERJ3GEYJ104V	CHIP RESISTOR	(M)
R241	ERJ3GEYJ104V	CHIP RESISTOR	(M)
R242	ERJ3GEYJ103V	CHIP RESISTOR	(M)
R243	ERJ3GEYJ103V	CHIP RESISTOR	(M)
R245	ERJ3GEYJ473V	CHIP RESISTOR	(M)
R246	ERJ3GEYJ473V	CHIP RESISTOR	(M)
R247	ERJ3GEYJ473V	CHIP RESISTOR	(M)
R301	ERJ3GEYJ2R2V	CHIP RESISTOR	(M)
R307	ERJ3GEYJ2R2V	CHIP RESISTOR	(M)
R311	ERJ3GEYJ100V	CHIP RESISTOR	(M)
R314	ERJ3GEYJ333V	CHIP RESISTOR	(M)
R318	ERJ3GEYJ332V	CHIP RESISTOR	(M)
R321	ERJ3GEYJ393V	CHIP RESISTOR	(M)
R324	ERJ3GEYJ331V	CHIP RESISTOR	(M)
R325	ERJ3GEYJ224V	CHIP RESISTOR	(M)
R401	ERJ3GEYJ473V	CHIP RESISTOR	(M)
R402	ERJ3GEYJ223V	CHIP RESISTOR	(M)
R403	ERJ3GEYJ473V	CHIP RESISTOR	(M)
R405	ERJ3GEYJ473V	CHIP RESISTOR	(M)
R503	ERJ3GEYJ151V	CHIP RESISTOR	(M)
R506	ERJ3GEYJ683V	CHIP RESISTOR	(M)
R507	ERJ3GEYJ154V	CHIP RESISTOR	(M)
R508	ERJ3GEYJ561V	CHIP RESISTOR	(M)
R509	ERJ3GEYJ222V	CHIP RESISTOR	(M)
R511	ERJ3GEYJ331V	CHIP RESISTOR	(M)
R514	ERJ3GEYJ104V	CHIP RESISTOR	(M)
R515	ERJ3GEYJ105V	CHIP RESISTOR	(M)
R516	ERJ3GEYJ222V	CHIP RESISTOR	(M)
R517	ERJ3GEYJ222V	CHIP RESISTOR	(M)
R518	ERJ3GEY0R00V	CHIP RESISTOR	(M)
R519	ERJ3GEY0R00V	CHIP RESISTOR	(M)
R602	ERJ3GEYJ332V	CHIP RESISTOR	(M)
R603	ERJ3GEYJ104V	CHIP RESISTOR	(M)
R604	ERJ3GEYJ104V	CHIP RESISTOR	(M)
R605	ERJ3GEYJ104V	CHIP RESISTOR	(M)
R606	ERJ3GEYJ103V	CHIP RESISTOR	(M)
R608	ERJ3GEYJ472V	CHIP RESISTOR	(M)
R610	ERJ3GEYJ331V	CHIP RESISTOR	(M)
R611	ERJ3GEYJ391V	CHIP RESISTOR	(M)
R612	ERJ3GEYJ102V	CHIP RESISTOR	(M)
R613	ERJ3GEYJ222V	CHIP RESISTOR	(M)
R614	ERJ3GEYJ102V	CHIP RESISTOR	(M)
R615	ERJ3GEYJ104V	CHIP RESISTOR	(M)
R616	ERJ3GEYJ102V	CHIP RESISTOR	(M)
R617	ERJ3GEYJ221V	CHIP RESISTOR	(M)
R618	ERJ3GEYJ332V	CHIP RESISTOR	(M)
R621	ERJ3GEYJ332V	CHIP RESISTOR	(M)
R622	ERJ3GEYJ471V	CHIP RESISTOR	(M)
R623	ERJ3GEYJ470V	CHIP RESISTOR	(M)
R624	ERJ3GEYJ331V	CHIP RESISTOR	(M)
R626	ERJ3GEYJ104V	CHIP RESISTOR	(M)
R630	ERJ3GEYJ471V	CHIP RESISTOR	(M)
R631	ERJ3GEYJ563V	CHIP RESISTOR	(M)
R632	ERJ3GEYJ222V	CHIP RESISTOR	(M)

Ref. No.	Part No.	Part Name & Description	Remarks
R633	ERJ3GEYJ103V	CHIP RESISTOR	(M)
R634	ERJ3GEYJ103V	CHIP RESISTOR	(M)
R635	ERJ3GEYJ102V	CHIP RESISTOR	(M)
R636	ERJ3GEYJ122V	CHIP RESISTOR	(M)
R637	ERJ3GEYJ334V	CHIP RESISTOR	(M)
R701	ERJ3GEYJ104V	CHIP RESISTOR	(M)
R702	ERJ3GEYJ104V	CHIP RESISTOR	(M)
R703	ERJ3GEYJ273V	CHIP RESISTOR	(M)
R704	ERJ3GEYJ273V	CHIP RESISTOR	(M)
R705	ERJ3GEYJ681V	CHIP RESISTOR	(M)
R706	ERJ3GEYJ681V	CHIP RESISTOR	(M)
R707	ERJ3GEYJ681V	CHIP RESISTOR	(M)
R708	ERJ3GEYJ681V	CHIP RESISTOR	(M)
R709	ERJ3GEYJ151V	CHIP RESISTOR	(M)
R710	ERJ3GEYJ151V	CHIP RESISTOR	(M)
R711	ERJ3GEYJ475V	CHIP RESISTOR	(M)
R712	ERJ3GEYJ475V	CHIP RESISTOR	(M)
R713	ERJ3GEYJ154V	CHIP RESISTOR	(M)
R714	ERJ3GEYJ103V	CHIP RESISTOR	(M)
R715	ERJ3GEYJ103V	CHIP RESISTOR	(M)
R716	ERJ3GEYJ103V	CHIP RESISTOR	(M)
R801	ERJ3GEYJ222V	CHIP RESISTOR	(M)
R802	ERJ3GEYJ272V	CHIP RESISTOR	(M)
R803	ERJ3GEYJ470V	CHIP RESISTOR	(M)
R804	ERJ3GEYJ222V	CHIP RESISTOR	(M)
R901	ERJ3GEYJ105V	CHIP RESISTOR	(M)
R902	ERJ3GEYJ222V	CHIP RESISTOR	(M)
R903	ERJ3GEYJ222V	CHIP RESISTOR	(M)
R906	ERJ3GEYJ151V	CHIP RESISTOR	(M)
R907	ERJ3GEYJ104V	CHIP RESISTOR	(M)
R908	ERJ3GEYJ273V	CHIP RESISTOR	(M)
R909	ERJ3GEYJ103V	CHIP RESISTOR	(M)
R910	ERJ3GEYJ103V	CHIP RESISTOR	(M)
R911	ERJ3GEYJ273V	CHIP RESISTOR	(M)
R912	ERJ3GEYJ104V	CHIP RESISTOR	(M)
R913	ERJ3GEYJ103V	CHIP RESISTOR	(M)
R914	ERJ3GEYJ103V	CHIP RESISTOR	(M)
R915	ERJ3GEYJ330V	THICK FILM CHIP RESISTOR	(M)
CHIP JUMPERS			
J1	ERJ3GEY0R00V	CHIP RESISTOR	(M)
J2	ERJ3GEY0R00V	CHIP RESISTOR	(M)
J3	ERJ3GEY0R00V	CHIP RESISTOR	(M)
J6	ERJ3GEY0R00V	CHIP RESISTOR	(M)
J7	ERJ3GEY0R00V	CHIP RESISTOR	(M)
J8	ERJ3GEY0R00V	CHIP RESISTOR	(M)
J10	ERJ3GEY0R00V	CHIP RESISTOR	(M)
J301	ERJ3GEY0R00V	CHIP RESISTOR	(M)
CAPACITOR			
C1	F1H1A105A028	CHIP CAPACITY	(M)
C2	F1H1A224A028	CHIP CAPACITY	(M)
C3	F1G0J224A001	CHIP CAPACITY	(M)
C204	ECUV1H220JCV	CHIP CAP.	(M)
C205	ECUV1A105KBV	CHIP CAP	(M)
C206	ECUV1H270JCV	CHIP CAP	(M)
C207	ECUV1C104KBV	CHIP CAP	(M)
C208	ECUV1C104KBV	CHIP CAP	(M)
C209	ECUV1C104KBV	CHIP CAP	(M)
C210	ECUV1C104KBV	CHIP CAP	(M)
C211	ECUV1A105KBV	CHIP CAP	(M)
C212	ECUV1C104ZFV	CHIP CAP.	(M)
C214	ECUV1A105KBV	CHIP CAP	(M)
C231	ECA0JM471B	E-CAP	(M)
C232	ECUV1C104KBV	CHIP CAP	(M)
C305	ECUV1C104KBV	CHIP CAP	(M)
C306	F3F0G4760001	CHIP TANTALUM CAPACITOR	(M)
C307	EEE0JA331P	E-CAP	(M)
C308	ECUV1A105KBV	CHIP CAP	(M)
C309	ECUV1C223KBV	CHIP CAPACITOR	(M)
C310	ECUV1A105KBV	CHIP CAP	(M)
C311	ECUV1C223KBV	CHIP CAPACITOR	(M)
C312	ECUV1A105KBV	CHIP CAP	(M)
C313	ECUV1A105KBV	CHIP CAP	(M)
C314	ECUV1H122KBV	CHIP CAPACITOR	(M)
C315	ECUV1C223KBV	CHIP CAPACITOR	(M)

Ref. No.	Part No.	Part Name & Description	Remarks
C317	ECUV1H561KBV	CHIP CAPACITOR	(M)
C319	ECUV1C223KBV	CHIP CAPACITOR	(M)
C320	ECUV1H332KBV	CHIP CAPACITOR	(M)
C401	ECUV1H271JCV	CHIP CAP	(M)
C402	F3F0J226A004	CHIP CAP	(M)
C403	ECUV1H103KBV	CHIP CAPACITOR	(M)
C404	ECUV1A105KBV	CHIP CAP	(M)
C405	ECUV1C104ZFV	CHIP CAP.	(M)
C407	ECUV1H391KBV	CHIP CAPACITOR	(M)
C410	F3F0J226A004	CHIP CAP	(M)
C411	ECUV1A105KBV	CHIP CAP	(M)
C412	ECUV1A105KBV	CHIP CAP	(M)
C415	ECUV1A105KBV	CHIP CAP	(M)
C417	ECUV1C104ZFV	CHIP CAP.	(M)
C418	ECUV1A105KBV	CHIP CAP	(M)
C419	ECA0JM102B	ELECTROLYTIC CAP	(M)
C420	ECA0JM222E	E-CAP	(M)
C421	F3F0J226A004	CHIP CAP	(M)
C503	ECUV1C104KBV	CHIP CAP	(M)
C504	ECA1AM470BV	ELECTROLYTIC CAP	(M)
C505	ECUV1H391KBV	CHIP CAPACITOR	(M)
C506	ECUV1A105KBV	CHIP CAP	(M)
C508	ECUV1A105KBV	CHIP CAP	(M)
C509	ECUV1C104KBV	CHIP CAP	(M)
C510	ECUV1C104KBV	CHIP CAP	(M)
C511	ECUV1C223KBV	CHIP CAPACITOR	(M)
C512	ECUV1C104KBV	CHIP CAP	(M)
C513	ECA0JM471B	E-CAP	(M)
C514	ECUV1A105KBV	CHIP CAP	(M)
C515	ECUV1C104KBV	CHIP CAP	(M)
C516	ECUV1C104KBV	CHIP CAP	(M)
C520	ECUV1C104ZFV	CHIP CAP.	(M)
C521	ECUV1H330JCV	CHIP CAPACITOR	(M)
C522	ECUV1A105KBV	CHIP CAP	(M)
C523	F3F0G475A007	CHIP TANTALUM CAPACITOR	(M)
C524	ECUV1A105KBV	CHIP CAP	(M)
C525	ECUV1C104KBV	CHIP CAP	(M)
C526	ECUV1C104KBV	CHIP CAP	(M)
C527	ECUV1H102KBV	CHIP CAP	(M)
C528	ECUV1H120JCV	CHIP CAPACITOR	(M)
C529	ECUV1H120JCV	CHIP CAPACITOR	(M)
C531	ECUV1C104ZFV	CHIP CAP.	(M)
C603	ECUV1C333KBV	CHIP CAPACITOR	(M)
C605	ECUV1H070DCV	CHIP CAPACITOR	(M)
C606	ECA1CM100B	ELECTROLYTIC CAP	(M)
C607	ECUV1H102KBV	CHIP CAP	(M)
C608	ECUV1C473KBV	CHIP CAP.	(M)
C609	ECUV1C223KBV	CHIP CAPACITOR	(M)
C610	ECUV1H050DCV	CHIP CAP.	(M)
C611	ECUV1H151JCV	CHIP CAP	(M)
C612	ECUV1H102KBV	CHIP CAP	(M)
C613	ECUV1H102KBV	CHIP CAP	(M)
C614	ECUV1C473KBV	CHIP CAP.	(M)
C615	ECA1CM220B	ELECTROLYTIC CAP	(M)
C616	ECUV1E103KBV	CHIP CAP.	(M)
C618	ECUV1H391JCV	CHIP CAPACITOR	(M)
C619	ECA1CM100B	ELECTROLYTIC CAP	(M)
C620	ECUV1H270JCV	CHIP CAP	(M)
C621	ECUV1C104ZFV	CHIP CAP.	(M)
C622	ECA1CM100B	ELECTROLYTIC CAP	(M)
C623	ECUV1H331KBV	CHIP CAP	(M)
C624	ECUV1C104KBV	CHIP CAP	(M)
C625	ECEA1HKA010B	ELECTROLYTIC CAPACITOR	(M)
C626	ECUV1C223KBV	CHIP CAPACITOR	(M)
C627	ECUV1C104KBV	CHIP CAP	(M)
C628	ECA1CM101B	ELECTROLYTIC CAP.	(M)
C629	ECUV1C223KBV	CHIP CAPACITOR	(M)
C630	ECUV1H102KBV	CHIP CAP	(M)
C631	ECUV1H220JCV	CHIP CAP.	(M)
C632	ECUV1H220JCV	CHIP CAP.	(M)
C633	ECA1HM4R7BV	E-CAP	(M)
C634	ECA1HM4R7BV	E-CAP	(M)
C636	ECA1HM101B	E-CAP	(M)
C638	ECA1HM101B	E-CAP	(M)

Ref. No.	Part No.	Part Name & Description	Remarks
C640	ECUV1A105KBV	CHIP CAP	(M)
C641	ECA1HM4R7BV	E-CAP	(M)
C643	ECUV1H222KBV	CHIP CAPACITOR	(M)
C644	ECUV1C224ZFV	CHIP CAP.	(M)
C645	ECUV1A105KBV	CHIP CAP	(M)
C646	ECUV1C223KBV	CHIP CAPACITOR	(M)
C647	ECA1HM4R7BV	E-CAP	(M)
C649	ECUV1A105KBV	CHIP CAP	(M)
C651	ECUV1H050DCV	CHIP CAP	(M)
C652	ECUV1H270JCV	CHIP CAP	(M)
C653	ECUV1H102KBV	CHIP CAP	(M)
C654	ECA1CM100B	ELECTROLYTIC CAP	(M)
C655	ECUV1C223KBV	CHIP CAPACITOR	(M)
C656	ECUV1H472KBV	CHIP CAPACITOR	(M)
C657	ECUV1H102KBV	CHIP CAP	(M)
C658	ECUV1H050DCV	CHIP CAP.	(M)
C659	ECJ1VB1C223K	CHIP CAP	(M)
C660	ECUV1H102KBV	CHIP CAP	(M)
C661	ECUV1H102KBV	CHIP CAP	(M)
C662	ECUV1H102KBV	CHIP CAP	(M)
C663	ECUV1H102KBV	CHIP CAP	(M)
C664	ECUV1H102KBV	CHIP CAP	(M)
C672	ECBT1H223KBV	CHIP CAP	(M)
C673	ECBT1H223KBV	CHIP CAP	(M)
C701	ECUV1A105KBV	CHIP CAP	(M)
C702	ECUV1A105KBV	CHIP CAP	(M)
C703	ECUV1A105KBV	CHIP CAP	(M)
C704	ECUV1A105KBV	CHIP CAP	(M)
C705	ECA1CM470BV	ELECTROLYTIC CAP	(M)
C706	ECUV1H101KCV	CHIP CAP	(M)
C707	ECA1CM470BV	ELECTROLYTIC CAP	(M)
C708	ECUV1H101KCV	CHIP CAP	(M)
C709	ECUV1H221KBV	CHIP CAP.	(M)
C710	ECUV1H221KBV	CHIP CAP.	(M)
C711	ECA1HM2R2B	E-CAP	(M)
C712	ECA1HM2R2B	E-CAP	(M)
C713	ECA1HM2R2B	E-CAP	(M)
C714	ECA1HM2R2B	E-CAP	(M)
C715	ECA1HM4R7BV	E-CAP	(M)
C716	ECA1HM4R7BV	E-CAP	(M)
C717	ECA1HM4R7BV	E-CAP	(M)
C718	ECA1HM4R7BV	E-CAP	(M)
C719	ECA0JM471B	E-CAP	(M)
C720	ECA0JM471B	E-CAP	(M)
C721	ECUV1C224ZFV	CHIP CAP.	(M)
C722	ECUV1C224ZFV	CHIP CAP.	(M)
C723	ECUV1H102KBV	CHIP CAP	(M)
C724	ECUV1E103KBV	CHIP CAP.	(M)
C725	ECUV1A474KBV	CHIP CAPACITOR	(M)
C726	ECUV1C153KBV	CHIP CAP.	(M)
C727	ECUV1C153KBV	CHIP CAP.	(M)
C729	ECUV1C104KBV	CHIP CAP	(M)
C730	ECUV1C104KBV	CHIP CAP	(M)
C731	ECUV1C104KBV	CHIP CAP	(M)
C732	ECUV1C104KBV	CHIP CAP	(M)
C733	ECUV1C104KBV	CHIP CAP	(M)
C803	F3F0J226A004	CHIP CAP	(M)
C805	ECST1AY335R	TANTALUM CAP.	(M)
C806	ECUV1H331KBV	CHIP CAP	(M)
C905	ECUV1A105KBV	CHIP CAP	(M)
C906	ECUV1A105KBV	CHIP CAP	(M)
C907	ECUV1A105KBV	CHIP CAP	(M)
C908	ECUV1A105KBV	CHIP CAP	(M)
C909	ECUV1A474KBV	CHIP CAPACITOR	(M)
C910	ECUV1C104ZFV	CHIP CAP.	(M)
C911	ECA0JM101BV	ELECTROLYTIC CAPACITOR	(M)
C912	ECUV1H332KBV	CHIP CAPACITOR	(M)
C913	ECUV1H332KBV	CHIP CAPACITOR	(M)
C914	ECUV1C104KBV	CHIP CAP	(M)
C915	ECUV1C104KBV	CHIP CAP	(M)
C916	ECUV1C104KBV	CHIP CAP	(M)
C917	ECUV1C104KBV	CHIP CAP	(M)
C918	ECA1CM220B	ELECTROLYTIC CAP	(M)

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