

BeoSound 5

Type 2900

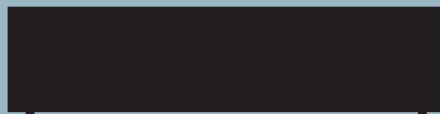
BeoMaster 5

Type 1753, 1754, 1755

Service Manual

English

German, French, Italian, Spanish, Danish, Dutch, Japanese, Korean and Simplified Chinese versions are available in the Retail System



*This Service Manual must be returned
with the defective parts/back-up suitcase !*

BANG & OLUFSEN

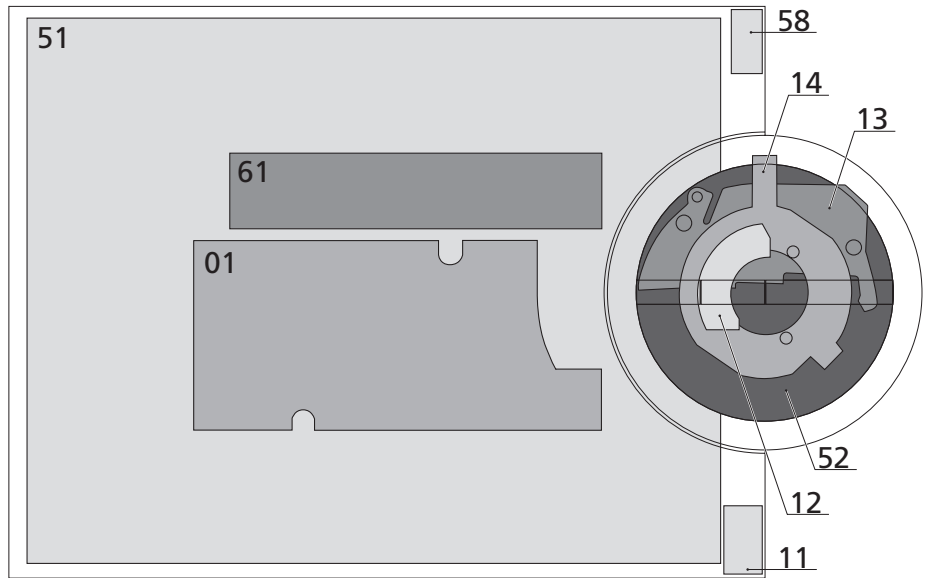


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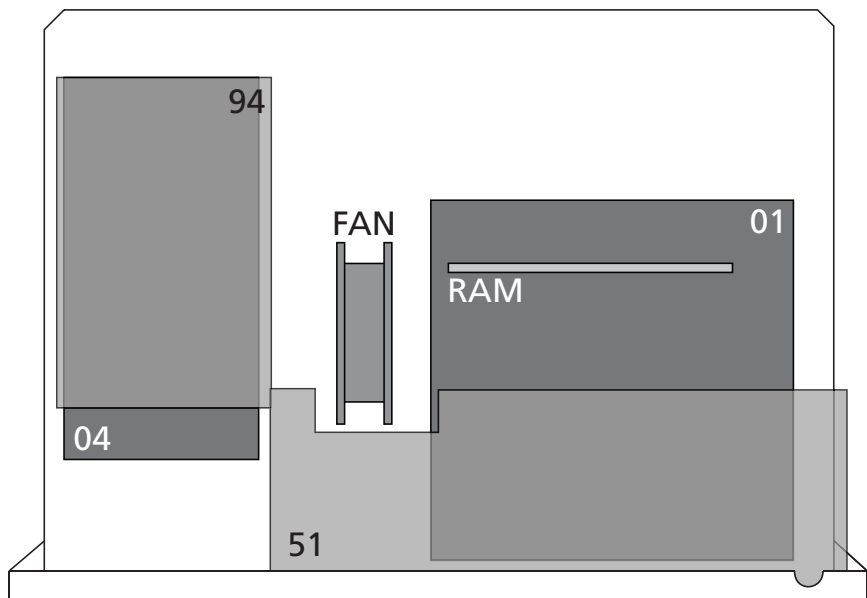
Survey of modules

BeoSound 5



- PCB01 Mainboard
- PCB11 IR
- PCB12 Navigator
- PCB13 Input
- PCB14 Volume (not for sale)
- PCB51 LCD
- PCB52 Keyboard (not for sale)
- PCB58 Standby
- PCB61 Backlight Inverter

BeoMaster 5



- PCB01 Motherboard
- RAM
- PCB04 Power Supply
- PCB51 ML-PL
- PCB94 HDD

How to service

Strategy

The product is to be serviced in the customer's home.

The repair involves replacement of the module(s). The replaced modules must be returned for repair at the Bang & Olufsen Module Repair department. Error codes as well as an adequate fault description must be returned with each replaced part. For this purpose, use the Module Repair form or the form in the Retail System under Exchange Module.

To help the Bang & Olufsen Module Repair department it is very important to answer the following questions:

1. Which products are in the setup?
2. Which software versions are used in these products?
3. How are the products linked together?
4. What happens in the actual situation?

Fault explanation and demonstration

Before troubleshooting is initiated, let the customer demonstrate the fault, if possible.

Preparations before service

Always remember to download the latest version of the Service Manual from BeoWise. Use also an updated version of ServiceTool MKII to update the BeoMaster 5 ServiceTool (placed on a USB pen drive).

Servicing

The BeoMaster 5 and BeoSound 5 must be serviced by qualified technical personnel only.

If it is not possible to determine the location of the fault or if replacing spare parts does not clear the fault, please contact your national Service Center for technical support.

Handling

Like any other electronic equipment, this product must be handled with care. Particularly the BeoMaster 5 which contains a HDD (Hard Disc Drive), must be handled carefully. Otherwise, there is a major risk of damaging the HDD. Generally, there are 4 main items (described on the next page) which require great attention, when handling the product:

- Handling when the product is disassembled (ESD, lithium battery).
- Lithium battery.
- Cleaning.
- Transport and handling.

Replacement of modules



If it is necessary to replace modules in BeoSound 5 or BeoMaster 5, there are 3 modules which require an adjustment after replacement as the serial number has to be transferred into the new module. The modules are:

- PCB01, Mainboard (BeoSound 5)
- PCB01, Motherboard (BeoMaster 5)
- PCB94, HDD (serial number backup for BeoMaster 5 and BeoSound 5)

Please refer to adjustments for further information.

Warnings

Static electricity, ESD

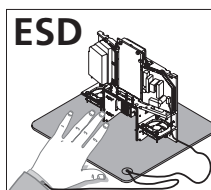


Static electricity may damage the product. In BeoSound 5/BeoMaster 5 there are integrated circuits which operate with 1.8 volt, and that makes the product extremely sensitive to static electricity.

Static-protective field service kit.

A static-protective field service kit must always be used when the product is disassembled or modules are handled.

Follow the instructions in this Service Manual and use the ESD-mat for both old and new modules.



Please note:

When mains voltage on the product is required, remove the connection between the product and the ESD-mat.

The chassis or modules must always be connected to the static-protective field service kit or placed in an ESD-proof bag.

Lithium battery



WARNING!

Short-circuit and overcharging of some types of lithium batteries may result in a violent explosion.

CAUTION!

Danger of explosion if battery is incorrectly replaced:

Replace only with the same or equivalent type.

Cleaning

Never use alcohol or other solvents to clean any part of the product!

Wipe dust off the surfaces using a dry, soft cloth or a micro fibre cloth. Remove grease stains or persistent dirt with a soft, lint-free, firmly wrung cloth, dipped in a solution of water containing only a few drops of mild detergent, such as washing-up liquid.

To retain the optimum performance of the screen, make sure that no streaks or traces are left on the screen.

Use white gloves to avoid smudging the front glass.

Transport and handling

When transportation is required, it is recommended to:

- Place BeoSound 5 in the original packing.
- Use product cover on BeoMaster 5 to prevent scratching the surface.

Recommended tools for service

B&O ServiceTool and a PC.

White gloves.

Shoe covers.

Soft lint-free cloth (micro fibre cloth) for cleaning.

Product cover for transportation.

ServiceTool

General

The BeoMaster 5 ServiceTool is required in several service situations, e.g. update of firmware after replacement of certain modules. It is important that the BeoMaster 5 ServiceTool (placed on a USB pen drive) always is updated to the latest version. Please use an updated version of ServiceTool MKII remember to update the BeoMaster 5 ServiceTool.

The BeoMaster 5 ServiceTool is also used to restore the serial number in the following modules, if they are replaced:

- PCB01, Mainboard (BeoSound 5).
- PCB01, Motherboard (BeoMaster 5).

If it is not possible 'restore' the serial number from the one of the modules, e.g. if both the HDD and the Motherboard are damaged, a new pre-programmed PCB01, Motherboard can be ordered from Bang & Olufsen Retail System under Daily Use and Master Code.

Furthermore, the ServiceTool is necessary to flash update the firmware on the following modules, if they are replaced:

- PCB01, Mainboard (BeoSound 5).
- PCB51, ML-PL.
- PCB01 Motherboard (BIOS).

This update is important to ensure correct functions in the product and optimal performance for the customer.

Additional

Beside the mandatory elements mentioned above, the ServiceTool also contains the opportunity to perform the following services:

- Clone System drives/Clone entire HDD (clones the drives on a present HDD).
- Backup/Restore (to a new HDD).
- Reboot of the system.

Please refer to adjustment/ServiceTool for a fully detailed description of the features in the ServiceTool.

Service mode

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Service Menus

General

This section describes the accessibility of the following three service menus in BeoSound 5/BeoMaster 5:

- 'Customer Configuration Menu'
- 'Service Configuration Menu'
- **SERVICE MENU**

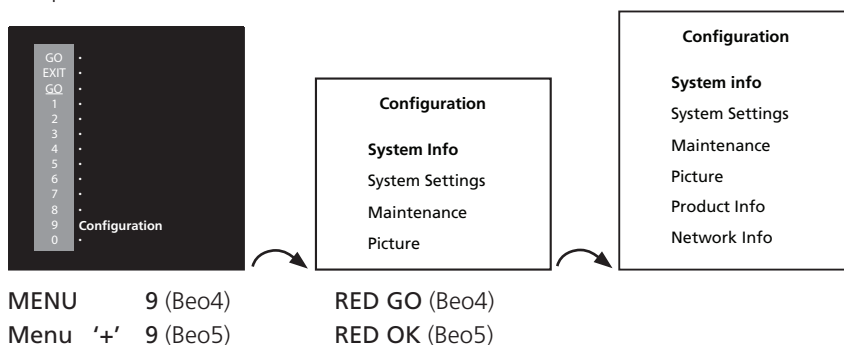
The service menus can be accessed on BeoSound 5 or from the tv connected to BeoMaster 5. Both scenarios are described.

Access to 'Customer Configuration Menu'

BeoMaster 5

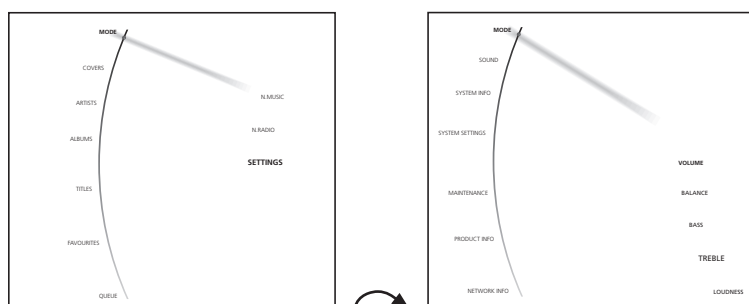
- Select **PC** in the LIST on Beo4 and press **GO** / select the configured soft button, eg. **PC** on the screen on Beo5 and press **OK**.
- Beo4, press **MENU 9** / Beo5, press **Menu + 9** (the '+' enables numerical soft buttons) on the screen.
- Press **RED GO** on Beo4 / **RED OK** on Beo5 ('Configuration Menu' expands).

The procedure is illustrated below:



BeoSound 5

- Move the navigator arm to **MODE** and use the wheel to highlight **SETTINGS**.
- On BeoSound 5, press: **▶ ▶ GO** to activate 'Customer Configuration Menu' (the menu appears on left side of the screen, containing new sub menus).



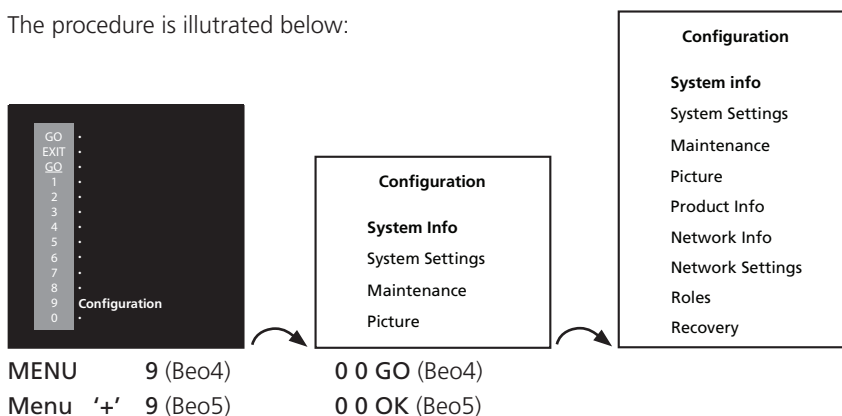
Highlight **SETTINGS** and press **▶ ▶ GO**

Access to 'Service Configuration Menu'

BeoMaster 5

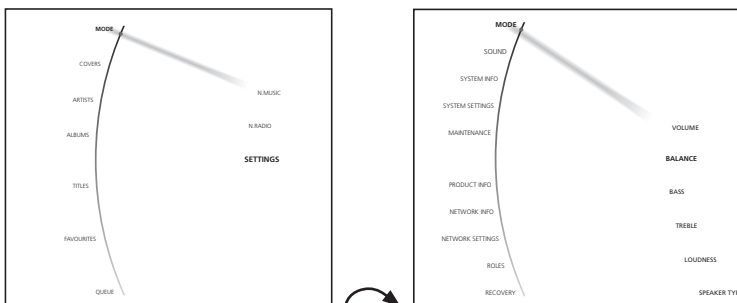
- Select **PC** in the LIST on Beo4 and press **GO** / select the configured soft button, eg. **PC** on the screen on Beo5 and press **OK**.
- Press **MENU 9** on Beo4 / press **Menu + 9** (the '+' enables numerical soft buttons) on the Beo5 screen.
- Press **0 0 GO** on Beo4 / **0 0 OK** on Beo5 ('Configuration Menu' expands).

The procedure is illustrated below:



BeoSound 5

- Move the navigator arm to **MODE** and use the wheel **O** to highlight **SETTINGS**.
- On BeoSound 5, press: **▶ ◀ ▶ ◀ GO** to activate 'Service Configuration Menu' (the menu appears on left side of the screen, containing new sub menus).



Highlight **SETTINGS** ▶ ◀ ▶ ◀ **GO**

Note!



The 'Customer Configuration Menu' or 'Service Configuration Menu' must be activated from either BeoSound 5 or BeoMaster 5. It is not possible to activate the menus on both BeoSound 5 and BeoMaster 5 at the same time.

How to exit 'Configuration Menus'

BeoMaster 5

- To exit 'Configuration Menu' on BeoMaster 5:
Press **EXIT** on Beo4 or **BACK** on Beo5 to return to BeoMaster 5 Main menu.
(The number of times to press **EXIT/BACK** depends of the menu stage).

BeoSound 5

- To exit 'Configuration Menu' on BeoSound 5:
Move the navigator arm  to **MODE**, use the wheel  to highlight **N.MUSIC / N.RADIO** and press **GO**.

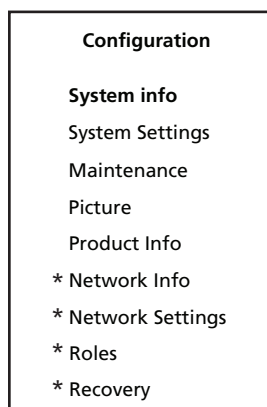
Survey of 'Configuration Menus'

This chapter is a survey that describes the content of the 'Customer Configuration Menu' and the 'Service Configuration Menu' on BeoSound 5 and BeoMaster 5. The 'Service Configuration Menu' is the extended version of the 'Customer Configuration Menu', as opposed to the 'Customer Configuration Menu' contains all menu items.

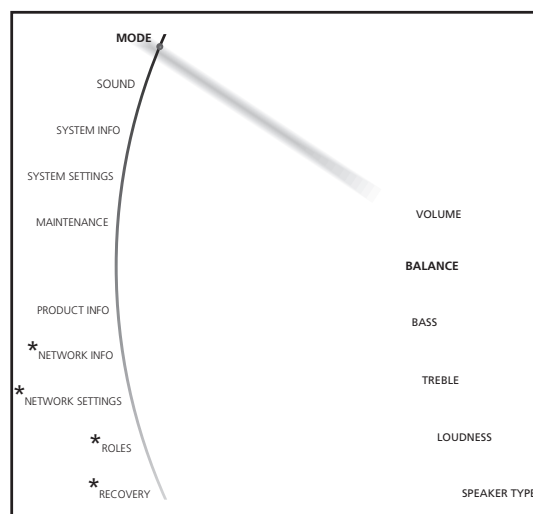
Items marked with a '*' in the overview below is only available in the 'Service Configuration Menu'.

Menu overview

BeoMaster 5



BeoSound 5



Some menu items will only be available in BeoSound 5 and other only in BeoMaster 5. In the following description of the menu items, it will be mentioned whether the item is present in only BeoMaster 5 or BeoSound 5.

Description of menu items

MODE (BeoSound 5 only)

This menu item provides the opportunity to choose one of the following options:

- **N.MUSIC**, opens the source N.Music and leaves 'Configuration Menu'.
- **N.RADIO**, opens the source N.Radio and leaves 'Configuration Menu'.
- **SETTINGS**, opens the basic SETTINGS menu and leaves 'Configuration Menu'.

SOUND (BeoSound 5 only)

This menu item provides the opportunity to setup the settings for BeoSound 5.

- **VOLUME**, provides the opportunity to setup the default volume level. To enter, press ◀ and a scale divided in steps from 0 to 90 appears on the screen.
- **BALANCE**, provides the opportunity to setup the default balance point. To enter, press ◀ and a scale divided in steps from <9 to >9 appears on the screen.
- **BASS**, provides the opportunity to setup the default bass level. To enter press ◀ and a scale divided in steps from -6 to 6 appears on the screen.
- **TREBLE**, provides the opportunity to setup the default treble level. To enter press ◀ and a scale divided in steps from -6 to 6 appears on the screen.
- **LOUDNESS**, provides the opportunity to set loudness ON/OFF.
- **SPEAKER TYPE**, provides the opportunity to set whether a pair of BeoLab 5 is connected to BeoMaster 5 or not. This menu item is only visible when speakers are connected to one of the POWERLINK sockets on BeoMaster 5.

SYSTEM INFO

This menu item provides the opportunity to display information about the health of BeoMaster 5 and BeoSound 5. The information contains the following:

- **B55 CASE TEMP**, reads out the temperature inside BeoSound 5 (in degrees Celsius).
- **BM5 CASE TEMP**, reads out the temperature inside BeoMaster 5 (in degrees Celsius).
- **BM5 HDD TEMP**, reads out the HDD temperature inside BeoMaster 5 (in degrees Celsius).
- **BM5 UPTIME**, reads out the time BeoMaster 5 has been connected to the mains.
- **AVAILABLE STORAGE**, reads out the free space left on the HDD in BeoMaster 5 (in gigabytes).

SYSTEM SETTINGS

BeoSound 5:

- **LANGUAGE**, provides the opportunity to setup the preferred language on BeoSound 5. The options are displayed on the respective languages and are: DANSK, DEUTSCH, ENGLISH, ESPANOL, FRANCAIS, ITALIANO, NEDERLANDS and SVENSKA (The setting does not have any impact to the language in 'Customer Configuration Menu' and 'Service Configuration Menu' as the only are available in english).
- **TIME ZONE**, this menu item provides the opportunity to setup the area where BeoSound 5 is installed. This setup is very important because it determines the time and thus the time for BeoMaster 5 to perform the automatic check for software updates. The options reaches from GMT-12:00 to GMT+13:00 (GMT stands for Greenwich Mean Time).

BeoMaster 5:

- **Extended character set**, provides the opportunity to enable the use of special characters (characters wich is not in common with the english character set), regarding to the chosen language.
- **TIME ZONE**, this item menu provides the opportunity to setup the area where BeoSound 5 is installed. This setup is very important because it determines the time and thus the time for BeoMaster 5 to perform the automatic check for software updates. The options reaches from GMT-12:00 to GMT+13:00 (GMT stands for Greenwich Mean Time).

MAINTENANCE

BeoSound 5/BeoMaster 5:

- **CLEAN-UP***, this feature provides the opportunity to delete tracks or stations from the favourites list on BeoSound 5. The options are ON/OFF.
- **UPDATE SOFTWARE**, this feature provides the opportunity to perform on-demand software check/update. It is very important that BeoMaster 5 is not interrupted when the software update procedure is running.
The system is ready for use when the system has rebooted and the stby. LED lights red constantly.
- **REBOOT**, this feature reboots BeoMaster 5/BeoSound 5.
- **SERVICE MENU****, this item menu accesses the service menu for BeoMaster 5, please refer to page 2.10 for further information.

* Only available on BeoSound 5

** Only available in 'Service Configuration Menu'!

PRODUCT INFO

PRODUCT INFO provides the opportunity to read-out information about software versions, type no., item no., serial no. etc. The items are described below.

BeoSound 5:

BS5/BM5 APPLICATION	Application software version
BS5 MAIN FIRMWARE	BeoSound 5 main firmware
BS5 BOOT FIRMWARE	BeoSound 5 boot firmware
BS5 PCB	BeoSound 5 PCB version
BS5 BOM	
BS5 TYPE NO	Type number for BeoSound 5
BS5 ITEM NO	Item number for BeoSound 5
BS5 SERIAL NO	Serial number for BeoSound 5
BM5 ML FIRMWARE	BeoMaster 5 Master Link firmware
BM5 ML PCB	BeoMaster 5 Master Link PCB version
BM5 MB BIOS	BeoMaster 5 Motherboard BIOS
BM5 SERIAL NO	Serial number for BeoMaster 5
BM5 OS IMAGE	BeoMaster 5 Operating System image
BM5 OS UPDATE	BeoMaster 5 Operating System update

BeoMaster 5 (contains 2 sub-menus, one for **BM5** and one for **BS5**):

Product info for BM5

BM5 Application	BeoMaster 5 application software
BM5 ML Firmware	BeoMaster 5 Master Link firmware
BM5 ML PCB	BeoMaster 5 Master Link PCB version
BM5 MB Bios	BeoMaster 5 Motherboard BIOS
BM5 Serial No	Serial number for BeoMaster 5
BM5 OS Image	BeoMaster 5 Operating System image
BM5 OS Update	BeoMaster 5 Operating System update

Product Info for BS5

BS5 Main App	BeoSound 5 main application firmware
BS5 Main Firmware	BeoSound 5 main firmware
BS5 Boot Firmware	BeoSound 5 boot firmware
BS5 PCB	BeoSound 5 PCB version
BS5 BOM	
BS5 Type No	Type number for BeoSound 5
BS5 Item No	Item number for BeoSound 5
BS5 Serial No	Serial number for BeoSound 5

NETWORK INFO

NETWORK INFO provides the opportunity to read-out network information. The elements are described below.

HOST NAME

Here the host name for BeoMaster 5 is read-out.

IP ADDRESS

Here the IP address for BeoMaster 5 is read-out.

MAC ADDRESS

Here the physical MAC address of the Ethernet adapter is read-out. If a wireless Ethernet adapter (WLAN) is connected, the MAC address for wireless adapter (WLAN) is shown, otherwise the read-out is for the wired network adapter (LAN).

CLIENTS CONNECTED

Here it is possible to see if a client PC is connected to BeoMaster 5, the options are 'No clients connected' or '1'.

INTERNET CONNECTION

This feature informs whether the network connection to the router/access point is OK or not. The options are YES/NO.

NETWORK SETTINGS

'Network Settings' provides the opportunity to set the 'Client Password'. It is necessary to set the 'Client Password' in order to establish connection between BeoMaster 5 and the 'Client PC'.

You can enter password data from both BeoSound 5 and BeoMaster 5.

Explanation for BeoSound 5:

- O** Changes/flicks through the characters.
- GO** Accept the selected character.
- '^'** Toggles between upper and lower case letters (placed in the character list).
- STORE** Saves the created password (placed in the character list).

Explanation for BeoMaster 5 (Beo4/Beo5):

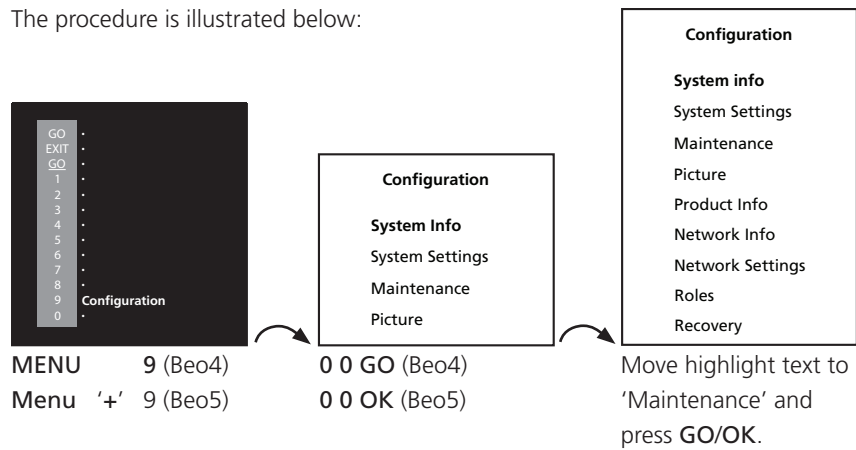
- ▲** First press in the menu opens the character list.
Second press and following, toggles between upper and lower case letters.
- ▼** Closes the character list.
- ◀ ▶** Moves the cursor between the characters.
- GO/OK** Saves the created password.

Access to Service Menu

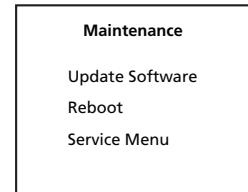
BeoMaster 5

- Select **PC** in the LIST on Beo4 and press **GO**/select the configured soft button, eg. **PC** on the screen on Beo5 and press **OK**.
- Press **MENU 9** on Beo4/press **Menu + 9** (the '+' enables numerical soft buttons) on the Beo5 screen.
- Press **0 0 GO** on Beo4/**0 0 OK** on Beo 5 ('Configuration Menu' expands).

The procedure is illustrated below:











- Move highlight text to 'Service Menu' and press GO/OK.



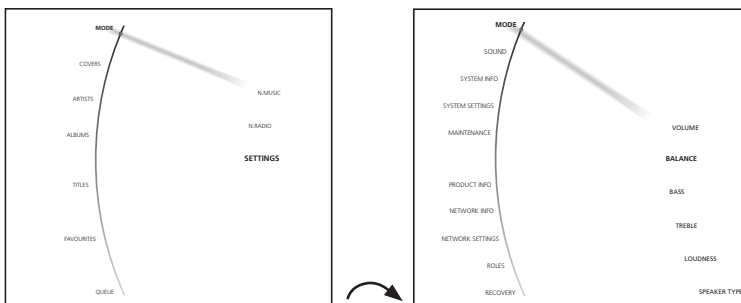
Now all running sources and processes related to BeoSound 5 or BeoMaster 5 shut down, and the SERVICE MENU appears on the screen.









BeoSound 5

- Move the navigator arm  to **MODE** and use the wheel  to highlight **SETTINGS**.
- On BeoSound 5, press:     **GO** to activate 'Service Configuration Menu' (the menu appears on left side of the screen, containing new sub menus).
- Move the navigator arm  to **MAINTENANCE**, use the wheel  to highlight **SERVICE MENU** and press **GO**.

The procedure is illustrated below:



- Highlight **SETTINGS**
    **GO**
- Move the navigator arm  to **MAINTENANCE**, use the wheel  to highlight **SERVICE MENU** and press **GO**.

Now all running sources and processes related to BeoSound 5 or BeoMaster 5 shut down, and the **SERVICE MENU** appears on the screen.



How to exit Service Menu

- To exit Service Menu on BeoSound 5/BeoMaster 5, double click the 'Exit Service Menu' icon on the desktop, and the product returns to its normal state.



Survey of 'Service Menu'

This chapter is a survey that describes the shortcuts of the icons in the 'Service Menu' on BeoSound 5 and BeoMaster 5. The purpose of these shortcuts is to give an easy access to the different features. The shortcuts are:

- 'Date and Time'
- 'Exit Service Menu'
- 'Install Adobe Flash'
- 'Network Connections'
- 'Regional and Language Options'
- 'Test Internet Connection'

Description of menu items

'Date and Time'



This icon is a shortcut to 'Date and Time' and provides the opportunity to manually set the date, time and time zone. This could be relevant if the auto update of date and time could not be performed.

'Exit Service Menu'



This icon exits the 'Service Menu' and returns the product to its normal state.

'Install Adobe Flash'



The shortcut 'Install Adobe Flash' is a link to install a 'Flash Player' which provides the opportunity to browse 'Flash' media files on BeoMaster 5 (WEB).

'Network Connections'



The shortcut 'Network Connections' provides the opportunity to manually set up the settings for the network connection. This shows installations with a wireless network connection or a network without a 'DHCP server'.

'Regional and Language Options'



This icon is a shortcut to 'Regional and Language Options', and provides the opportunity to manually set up regional options and languages options (eg. text services and input languages). It might be necessary to perform this setup, if a router with special characters is installed in the network setup.

'Test Internet Connection'



This icon is a shortcut to Bang & Olufsen's homepage on the internet. The link provides the opportunity to check the internet connection from 'Service Mode'. If the home page is shown, the internet connection is ok.

Survey of control function

BeoSound 5 functionality

- ◀ Selects/enters the high-lighted sub-menu.
- ▶ Back to the previous menu, modified data is not saved.
- GO Selects items.
Saves the modified data and leaves the sub-menu to the previous menu.
- Scrolls through menu items, radio stations, music files etc.
- ↔ Moves the pointer on the screen according to the direction of the navigation arm.

Beo4 functionality

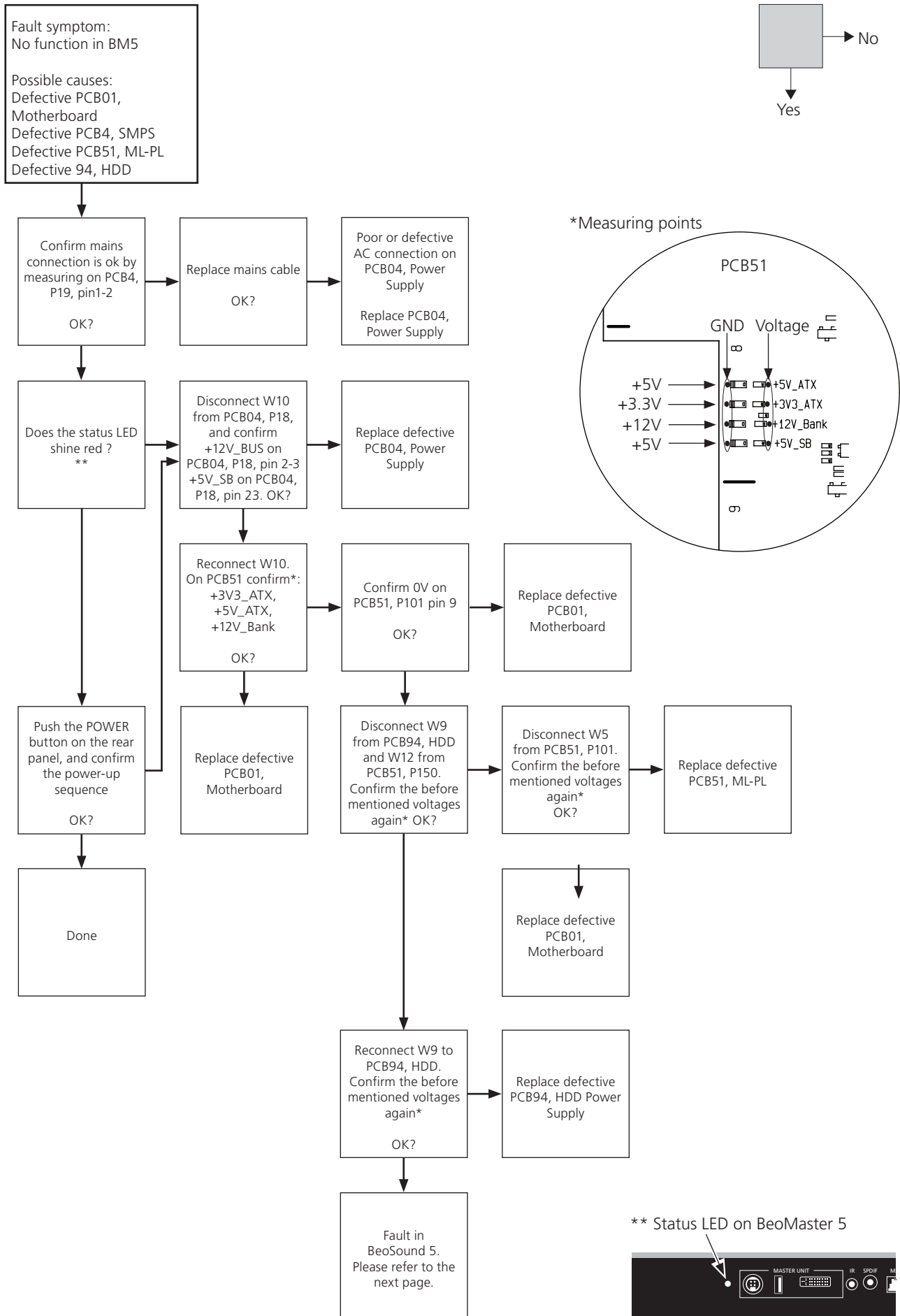
- MENU** Bring up the menu overlay.
- GO Selects the sub-menu where the cursor is located.
Accepts a menu, saving the values that have been entered.
Activates a function.
- ▲ Moves the cursor bar up. Edits characters in the characters list.
- ▼ Moves the cursor bar down. Edits characters in the characters list.
Selects a sub-menu in special cases.
- ◀/▶ Modifies data.
- STOP** Back to the previous menu, modified data is not saved.
- Digit
0 - 9 Modifies data.

Beo5 functionality

- MENU** Bring up the menu overlay.
- OK, selects the sub-menu where the cursor is located.
Accepts a menu, saves the values that have been entered.
Activates a function.
- ▲ Moves the cursor bar up. Edits characters in the characters list.
- ▼ Moves the cursor bar down. Edits characters in the characters list.
Selects a sub-menu in special cases.
- ◀/▶ Modifies data.
- BACK** Back to the previous menu, modified data is not saved.
- Digit
0 - 9 Modifies data.

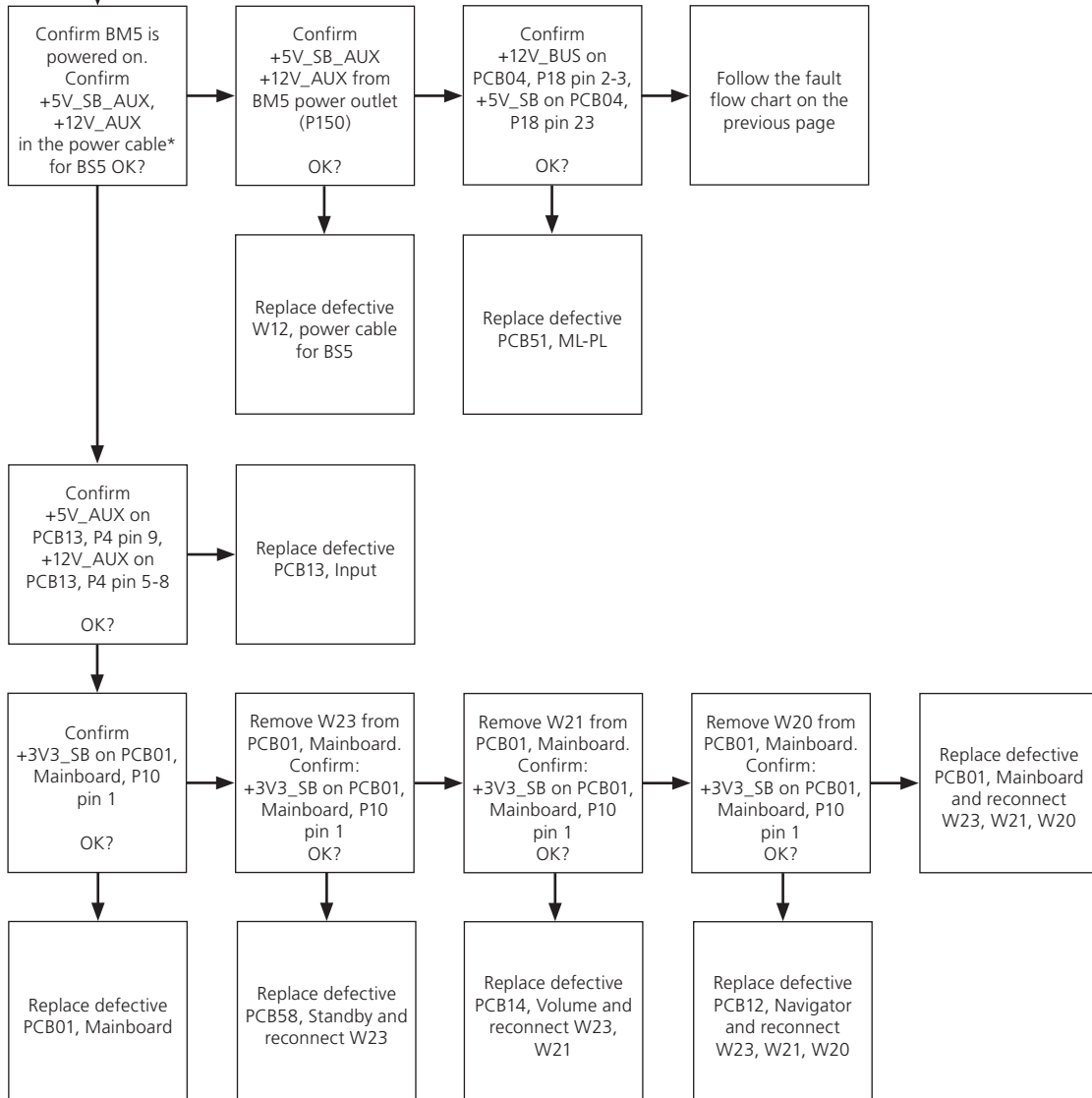
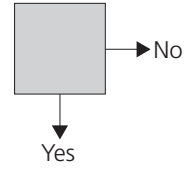
Fault flow chart

No function in BM5	3.2
No red LED in BS5	3.3
No function in BS5	3.3
No operation of BS5	3.4
No 'click sound' (Stby. LED in BS5 OK)	3.4
No or incomplete boot sequence	3.5
Boot error (disk boot failure)	3.5
No/faulty picture on BeoSound 5. (Stby. LED is OK)	3.6
No display (no Bang & Olufsen text on DVI-D at startup)	3.7
No HDD activity (fan ok)	3.7
No sound from BeoMaster 5	3.8
No N.Radio connection	3.9

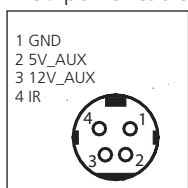


Fault symptom:
No red LED in BS5
No function in BS5

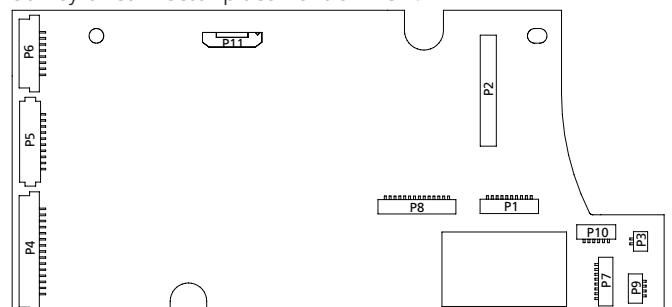
Possible causes:
Defective PCB01,
Mainboard
Defective PCB13, Input
Defective PCB61,
Backlight Inverter
Defective BM5

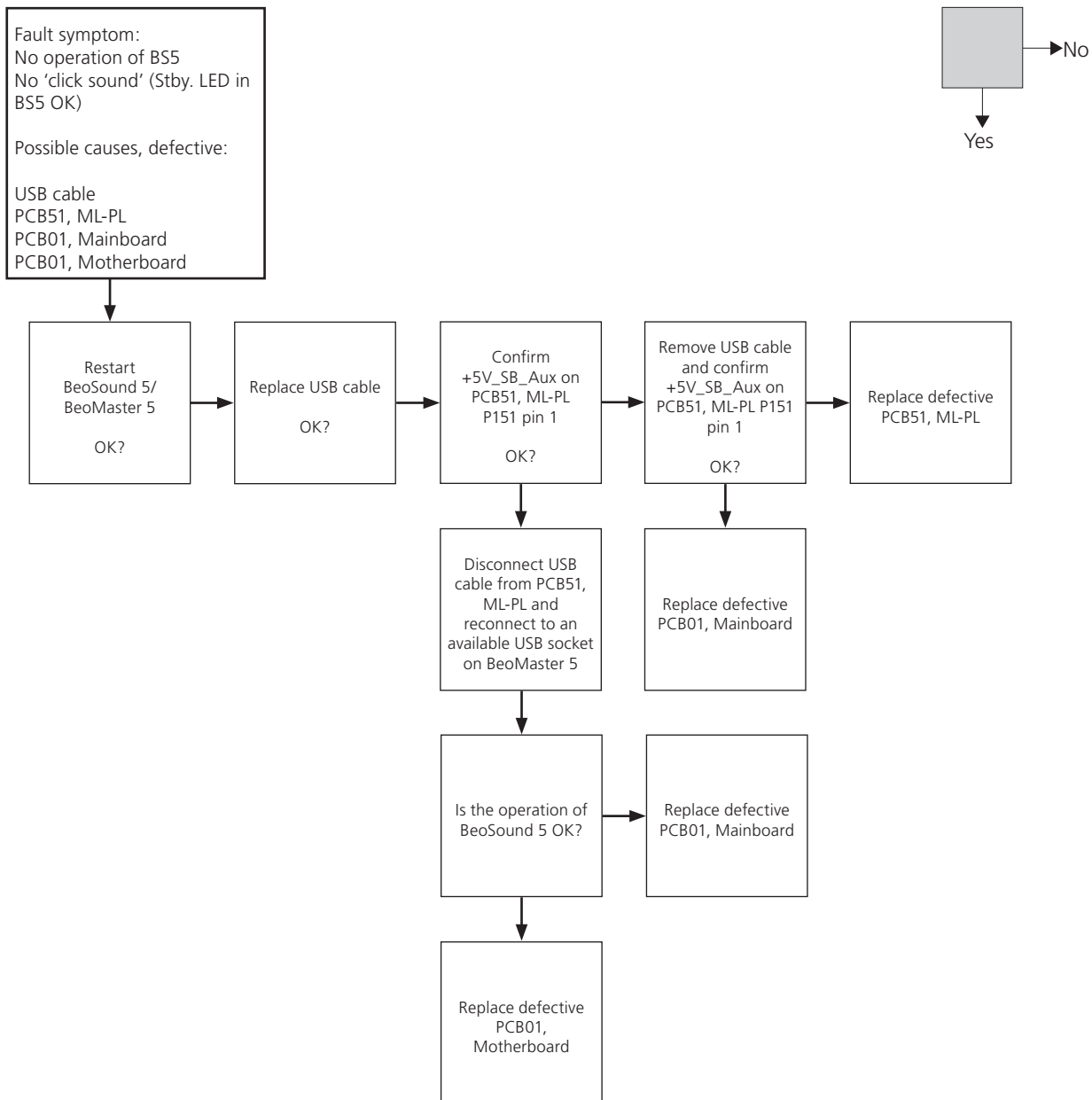


*BS5 power cable



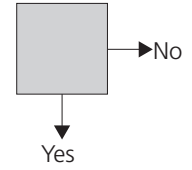
Survey of connector placement on PCB01





Fault symptom:
No or incomplete boot sequence
Boot error (disk boot failure)

Possible causes, defective:
HDD/file structure
SATA cable
Power cable
PCB01, Motherboard



Restart
BeoSound 5/
BeoMaster 5
OK?

Replace W9, power
cable

Disconnect BM5 from mains.
Place USB pen drive with BeoMaster 5
ServiceTool in an available USB socket.
Connect the USB keyboard to an available USB
socket.
Switch on the BeoMaster 5, press and hold the
'Esc' button on the keyboard, until the **Boot
Menu** appears on the screen.

Did ***Boot Menu** appear on the screen?

Replace PCB01,
Motherboard.
Refer to adjustment
to serialise PCB01,
Motherboard

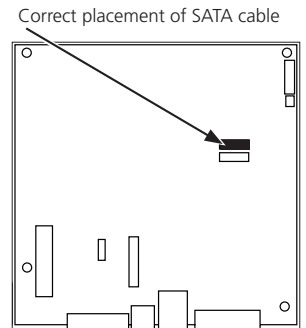
Choose
+ Hard Disk in the
***Boot Menu**.
Is both Ch0 M. and
USB-HDD0
present?

Check that W6,
SATA cable is OK
and properly
connected
OK?

Replace or
reconnect W6,
SATA cable

Replace defective
PCB94, HDD.
Refer to adjustment
to restore data
(only if relevant)
OK?

Replace PCB01,
Motherboard.
Refer to adjustment
to serialise PCB01,
Motherboard



Choose **USB-HDD0** in the ****Hard Disk Menu**
to execute BeoMaster 5 ServiceTool.
Refer to ServiceTool for adjustment on page 4.2
and choose **Clone System Drives**.
Await the cloning process to end.
Remove USB pen drive, click **Reboot System**.

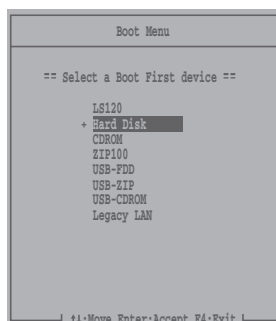
OK?

Perform the same
procedure as
previous, but
instead of choosing
**Clone System
Drives**, choose
Clone Entire HDD
OK?

Replace defective
PCB94, HDD.
Refer to adjustment
to restore data
(only if relevant)
OK?

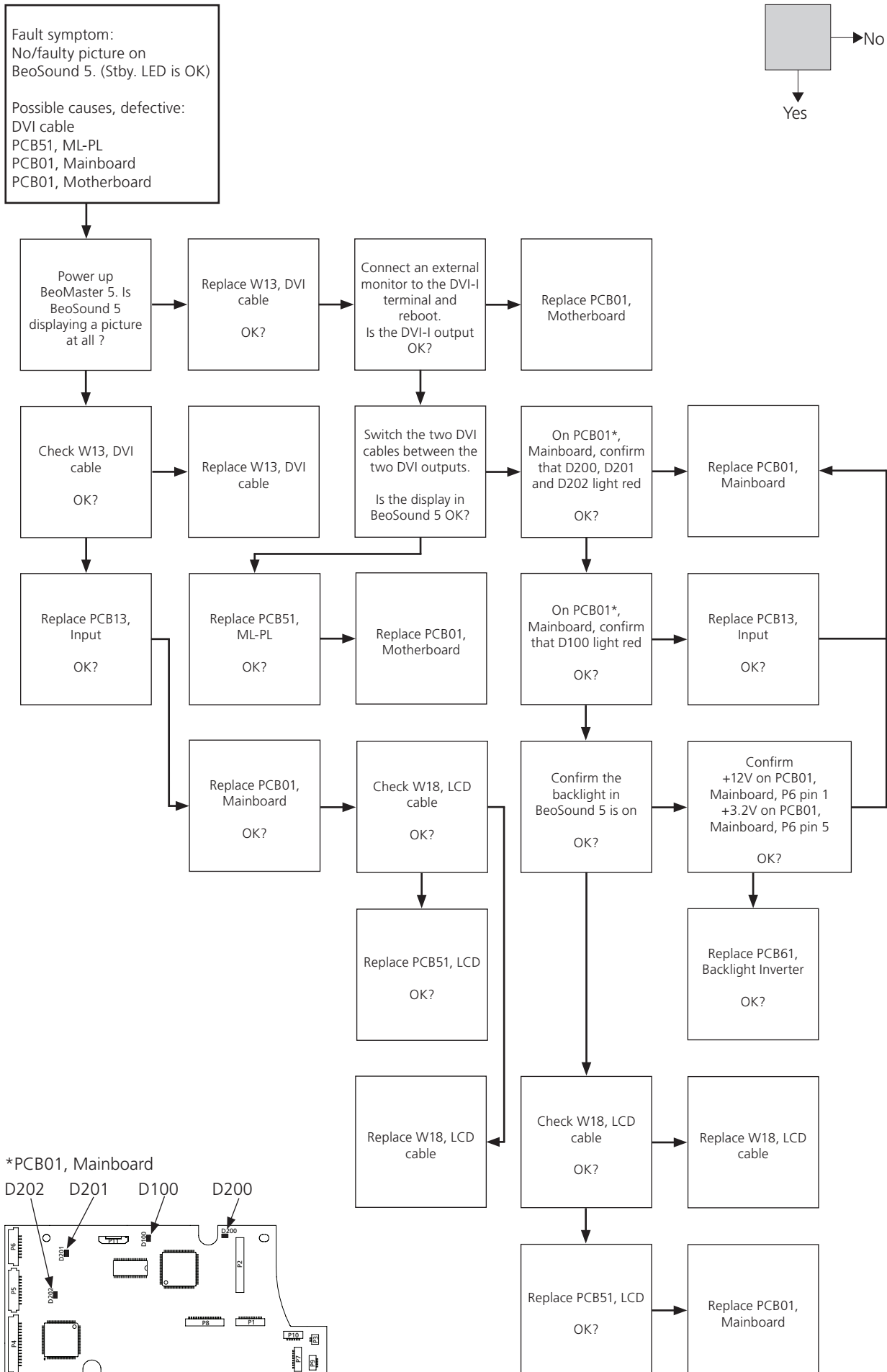
Replace PCB01,
Motherboard.
Refer to adjustment
to serialise PCB01,
Motherboard

* Boot Menu



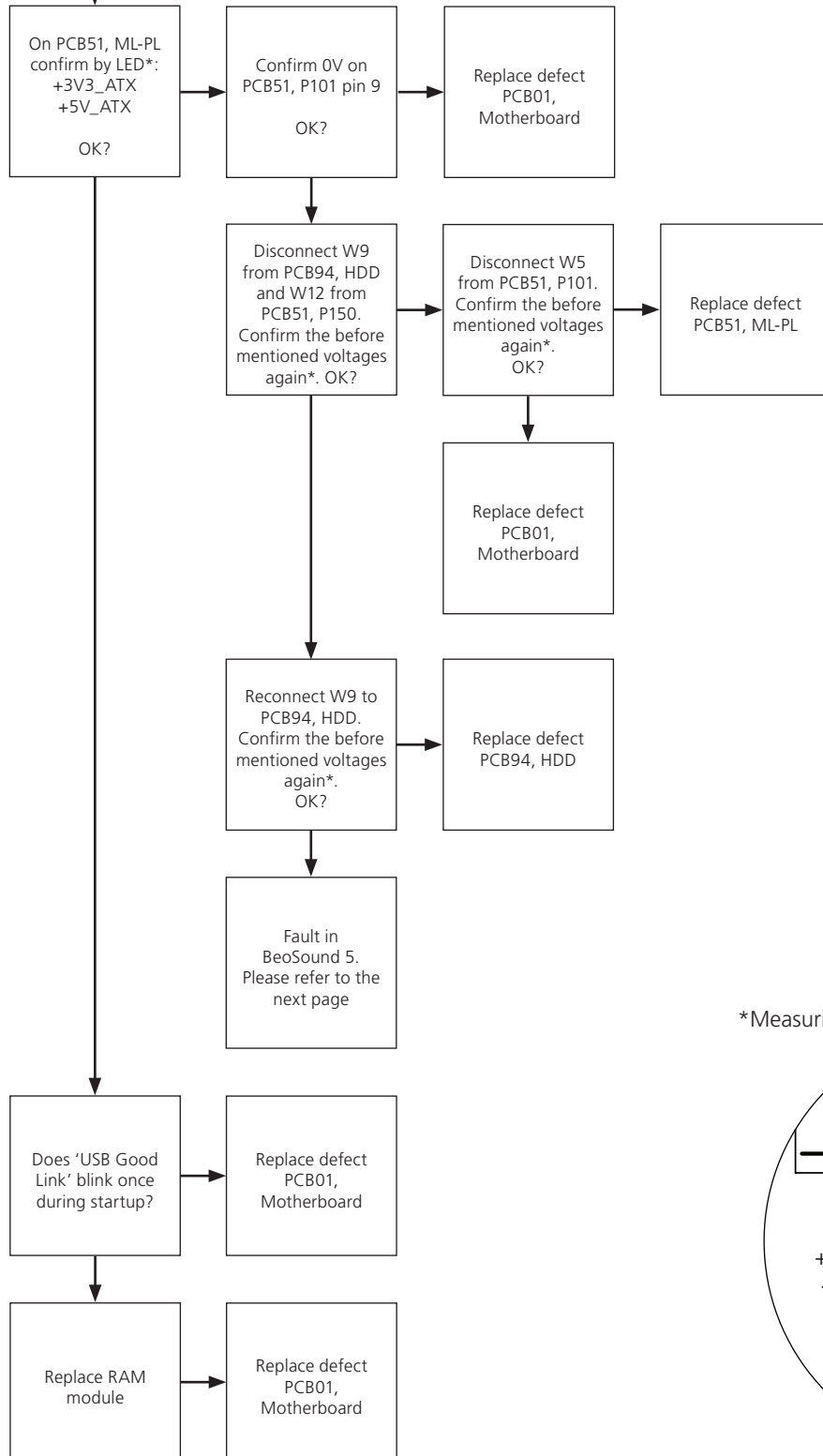
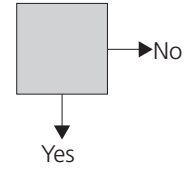
** Hard Disk Menu



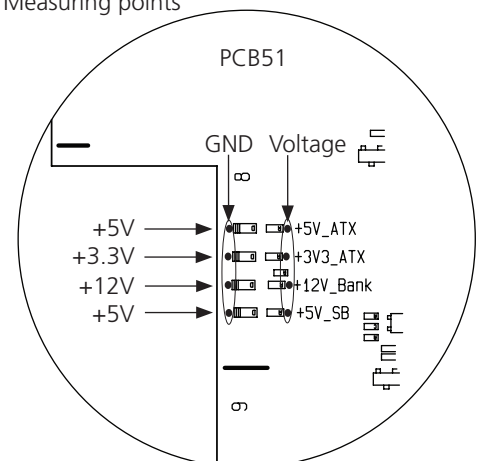


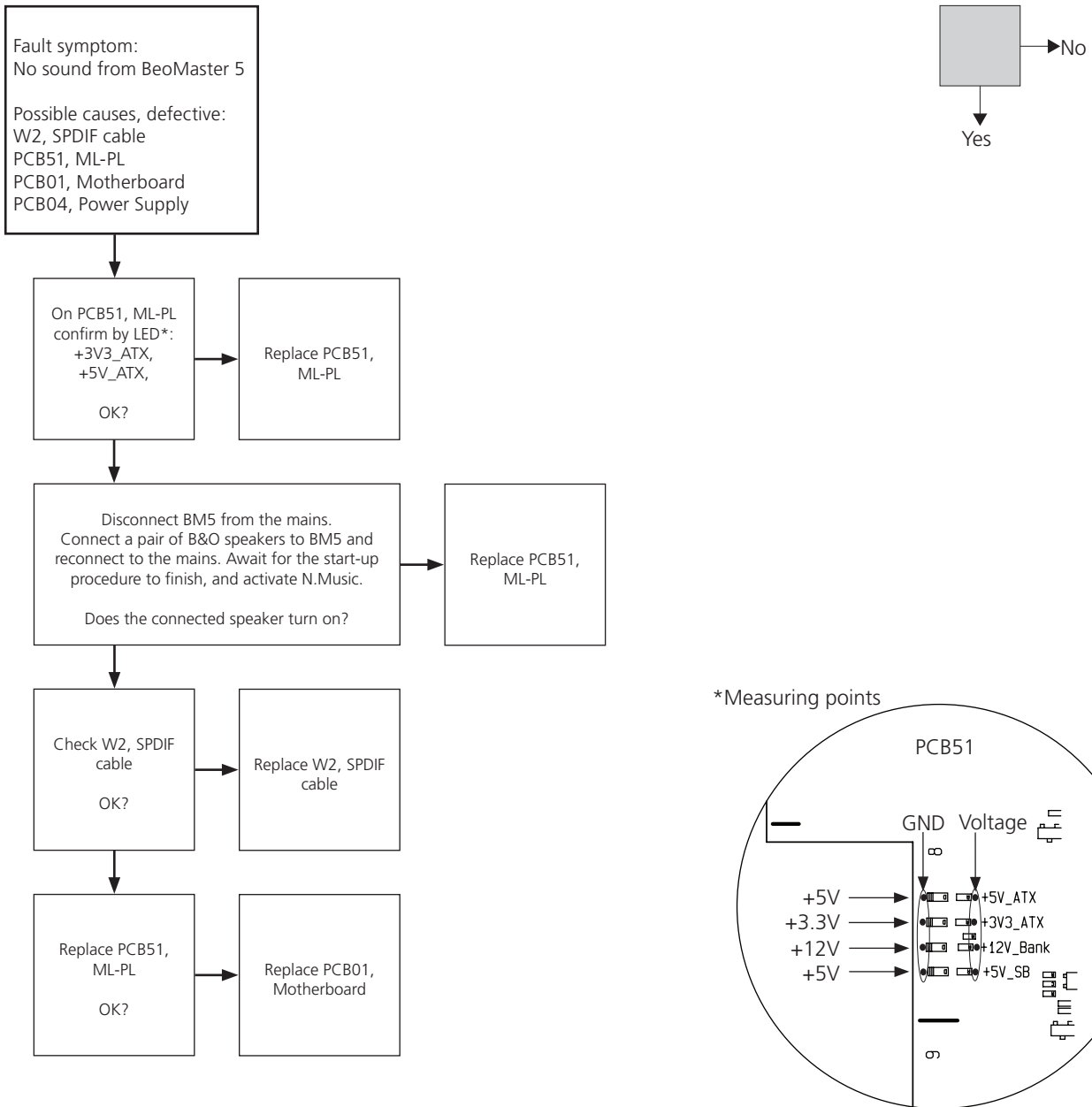
Fault symptom:
 No display (no Bang & Olufsen text on DVI-D at startup)
 No HDD activity (fan ok)

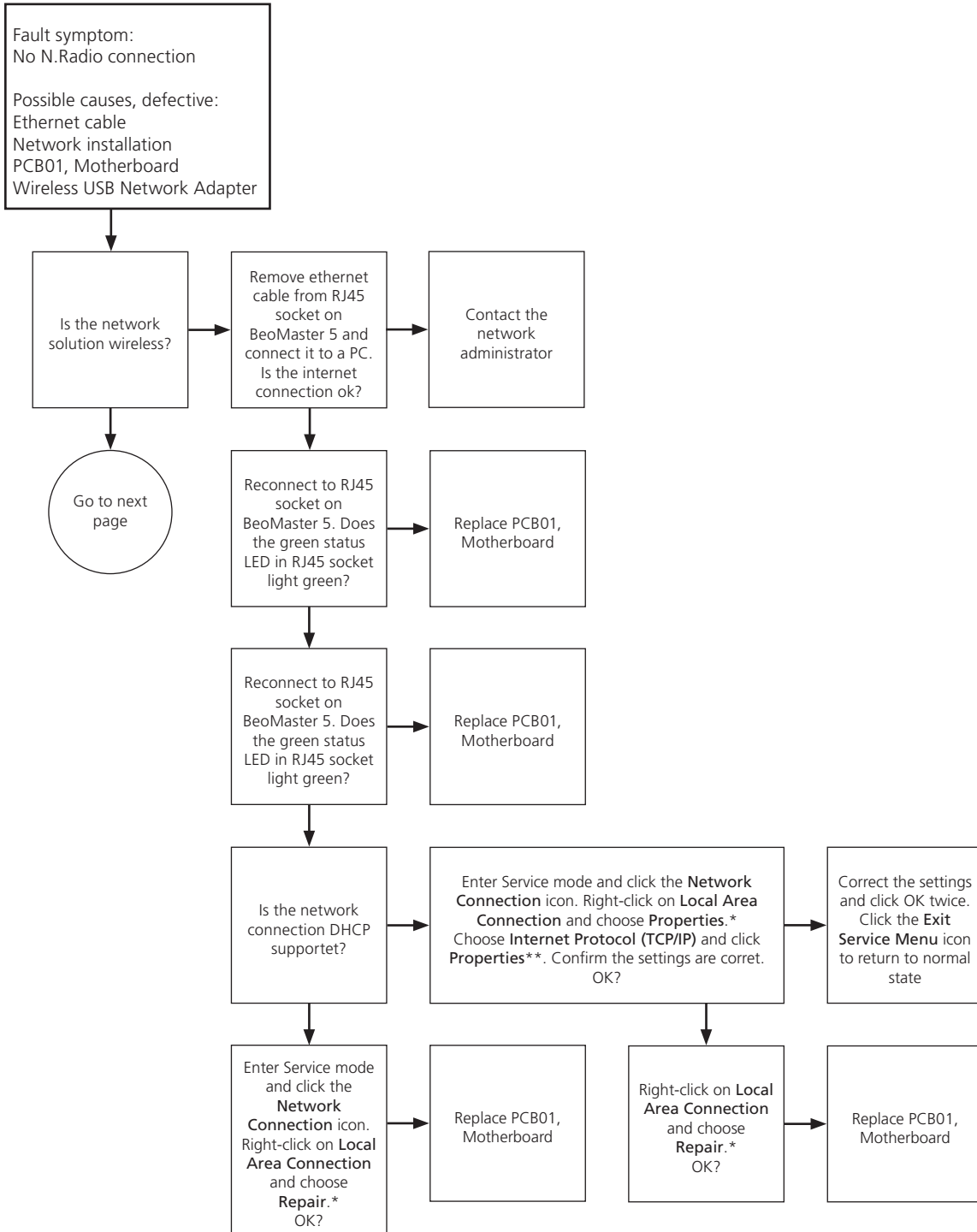
Possible causes, defective:
 PCB01, Motherboard
 PCB04, Power Supply
 PCB94, HDD
 RAM module



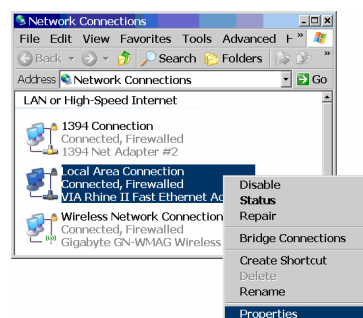
*Measuring points



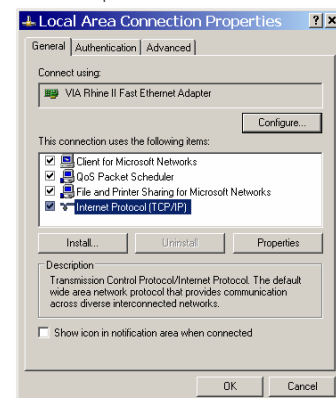


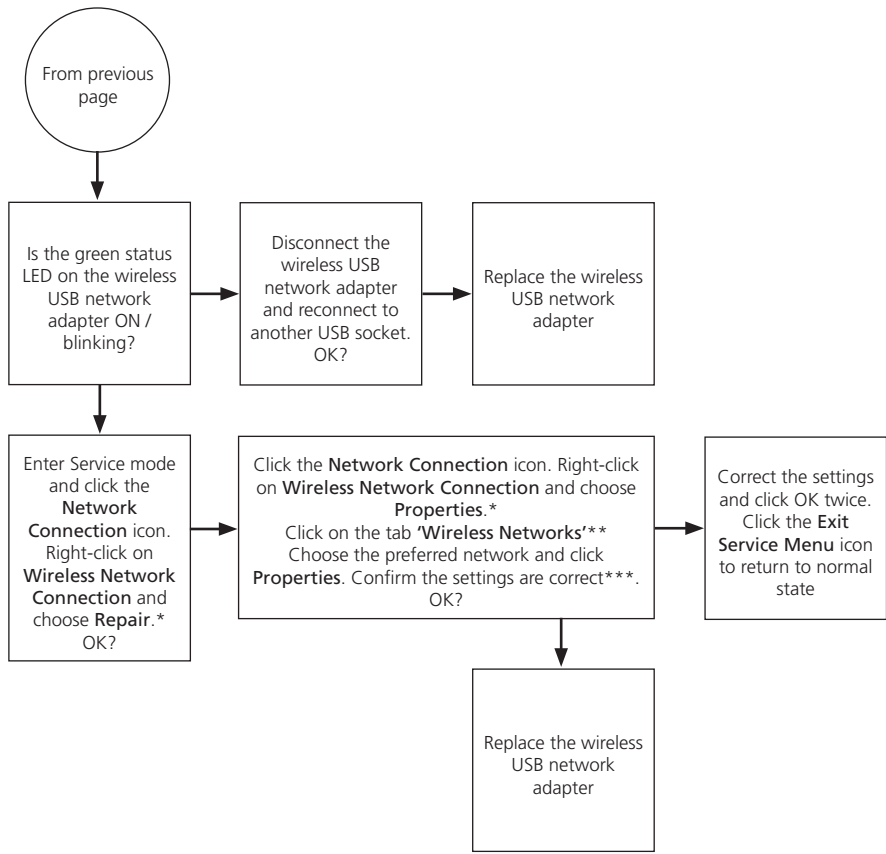


*Network Connections / Local Area Connection

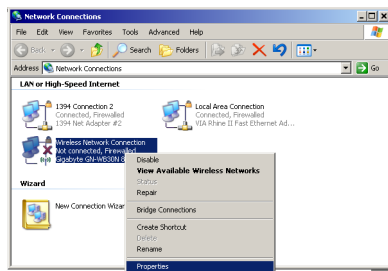


** LAN Properties

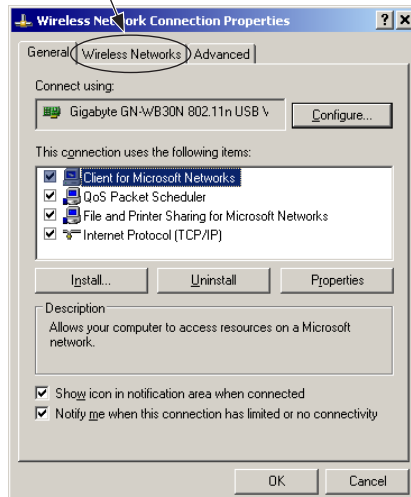




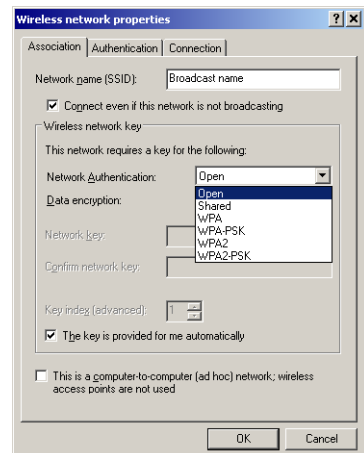
*Network Connections/ Wireless Network Connection



** Wireless Network Connection/Properties



*** Wireless network properties



ServiceTool – Adjustments – Final check after repair

ServiceTool for adjustments	4.2
Information	4.2
Survey of features in ServiceTool	4.2
Additional information	4.3
Accessing ServiceTool	4.4
How to exit ServiceTool	4.4
Explanation of features in the ServiceTool	4.5
Adjustments	4.7
Useful Information	4.7
Elements described	4.7
Necessity of adjustments	4.7
After replacement	4.8
Final check after repair	4.9
Insulation test	4.9
Product Info	4.9
Customer setup	4.9
Check audio/video outputs	4.10
Clean the product	4.10
Cabinet surfaces	4.10

ServiceTool for adjustments

Information

The ServiceTool for BeoMaster 5 is new and developed to maintain the product when certain modules are replaced, or to maintain the HDD/file structure (cloning), if the health of this is weak.

The ServiceTool also provides the opportunity to:

- Serialise individual modules with a serial number
- Upgrade firmware/BIOS in individual modules
- Backup/restore the customer's data to a new HDD

The ServiceTool is placed on a USB pen drive and is only available in the backup suitcase. The BeoMaster 5 has to be booted from the USB pen drive to access the ServiceTool. During the boot-up procedure, the ServiceTool is loaded into a virtual RAM drive on BeoMaster 5.

Survey of features in ServiceTool

The ServiceTool contains the following features:

- 'Clone System Drives'
- 'Clone Entire HDD'
- 'Update BM5 BIOS'
- 'Update BM5 ML'
- 'Update BS5 FEP'
- 'Restore BM5 Serial From HDD'
- 'Restore BS55 Serial From HDD'
- 'Backup/Restore'
- 'Reboot System'
- 'File Manager' (only available for special service situations)
- 'Ghost' (only available for special service situations)
- 'Command Prompt' (only available for special service situations)

For a fully detailed description of the features above please refer to page 4.4.

- ! The three last features are only available for special service situations with instructions from Bang & Olufsen support center. A detailed description for these features is not included in this Service Manual.

Additional information

When either PCB01, Mainboard (BS5), PCB51, ML-PL (BM5) or PCB01, Motherboard (BM5) has been replaced, the firmware must be updated in the individual module. The ServiceTool is necessary for this operation.

! The serial number is stored in the following places:

- PCB01, Mainboard (BS5)
- PCB01, Motherboard (BM5)
- PCB94, HDD (BM5)

If the PCB01, Mainboard (BS5) or the PCB01, Motherboard (BM5) have been replaced, the ServiceTool is required to initialise the serial number into the new module.

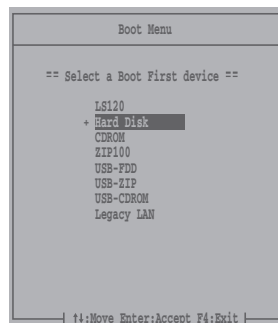
The HDD contains the serial number for both the PCB01, Mainboard and the PCB01, Motherboard as a backup. Serial data is stored on the HDD each time BeoMaster 5 is starts up.

Accessing ServiceTool

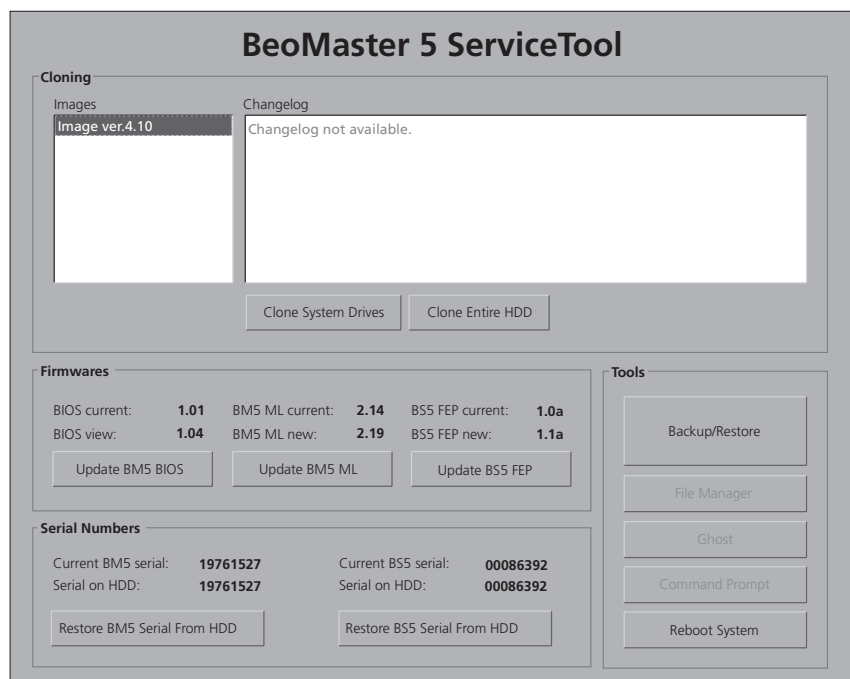
To access the ServiceTool, please follow the below procedure:

- Remove mains cable for BeoMaster 5.
- Install the USB flashdrive in one of the available USB sockets of BeoMaster 5.
- Install a USB keyboard with an integrated mouse/mousepad to a available USB socket.
- Verify that BeoMaster 5 is connected to either a BeoSound 5 or an external monitor (DVI-I).
- Install the old HDD with the power splitter cable and connect the SATA cable to the available SATA-channel (for backup/restore data - only if relevant).
- Switch on the BeoMaster 5, press and hold the 'Esc' button on the keyboard, until the 'Boot Menu' appears on the screen (BeoSound 5 or monitor).

Illustrated below:



- Move the menu bar to '+ Hard Disk' and press **ENTER**
- Move the menu bar to 'USB-HDD0 : KingstonDataTraveler 2' and press **ENTER**
- Now the BeoMaster 5 ServiceTool appears on the screen:



How to exit ServiceTool

To exit the ServiceTool, remove the 'USB Pen Drive' from the USB socket and click the 'Reboot System' button. BeoMaster 5 reboots and returns to its normal state.

Explanation of features in the ServiceTool

'Clone System Drives'

This feature provide the oppertunity to clone the drives on BeoMaster 5 which contain system files only. When this operation is executed, the customers data is unaffected. This feature is intended to be used in situations where unexplained faults have happened to the system files, and the recovery process is not possible due to a damaged file structure.

'Clone Entire HDD'

This feature provide the oppertunity to clone all drives on BeoMaster 5, including the shared folder where the customers data is stored (*Warning* - these will be lost). When this operation is executed, the BeoMaster 5 is set to factory default. This feature is intended to be used in situations where unexplained faults have happened to the system files, and the recovery process is not possible due to a damaged file structure.

'Update BM5 BIOS'

This feature provide the oppertunity to update the BIOS (Basic Input Output System) on PCB01, Motherboard in BeoMaster 5. This update is necessary if PCB01, Motherboard has been replaced, to ensure the BIOS is updated to the newest version.

'Update BM5 ML'

This feature provide the oppertunity to update the firmware on PCB51, ML-PL in BeoMaster 5. This update is necessary if PCB51, ML-PL has been replaced, to ensure the firmware is updated to the newest version.

'Update BS5 FEP'

This feature provide the oppertunity to update the firmware on PCB01, Mainboard in BeoSound 5. This update is necessary if PCB01, Mainboard has been replaced, to ensure the firmware is updated to the newest version.

'Restore BM5 Serial From HDD'

This feature provide the oppertunity to copy the serial number from the HDD into a new PCB01, Motherboard in BeoMaster 5.

'Restore BS5 Serial From HDD'

This feature provide the oppertunity to copy the serial number from the HDD into a new PCB01, Mainboard in BeoSound 5.

'Backup/Restore'

This feature provide the oppertunity to restore the customers data from an old HDD to a new. This could be relevant in cases where the old HDD is suspected of having a defect. Playlists, music files, pictures and web sites are copied to the new HDD. The time for this operation is dependent on the content of the old HDD.

'Reboot System'

This feature provide the oppertunity to reboot BeoMaster 5. This is the method to exit the ServiceTool and return to normal mode.

Adjustments

Useful Information

There are three main scenarios where it is necessary to perform adjustments. Actually, two of the adjustments are more an initialisation of the serial number and a firmware update to specific modules than it is an adjustment. It is very important to perform these adjustments before the product is left to the customer. The ServiceTool is required to perform the adjustments and is placed on a USB pen drive (only available in the back-up suitcase).

Elements described

The three elements in the adjustments in BeoSound 5 and BeoMaster 5 are:

- Initialisation of the serial number.
- Firmware update.
- Adjustment of mains voltage.

Necessity of adjustments

An initialisation of the serial number is necessary after the following PCBs have been replaced:

- PCB01, Mainboard in BeoSound 5.
- PCB01, Motherboard in BeoMaster 5.

A firmware update is necessary after the following PCBs have been replaced:

- BIOS on PCB01, Motherboard in BeoMaster 5.
- ML on PCB51, ML-PL in BeoMaster 5.
- FEP (Front End Processor) on PCB01, Mainboard in BeoSound 5.

Adjustment of mains voltage is necessary after replacement of PCB04, Power Supply in BeoMaster 5.

After replacement

PCB01, Mainboard in BeoSound 5

- Boot up BeoMaster 5 with the ServiceTool (please refer to page 4.4 for access).
- Click the button 'Restore BS5 Serial From HDD' and await confirmation.
- Click the button 'Update BS5 FEP' and await confirmation.

PCB01, Motherboard in BeoMaster 5

- Boot up BeoMaster 5 with the ServiceTool (please refer to page 4.4 for access).
- Click the button 'Restore BM5 Serial From HDD' and await confirmation.
- Click the button 'Update BM5 BIOS' and await confirmation.

PCB51, ML-PL in BeoMaster 5

- Boot up BeoMaster 5 with the ServiceTool (please refer to page 4.4 for access).
- Click the button 'Update BM5 ML' and await confirmation.

PCB04, Power Supply in BeoMaster 5

- Check mains voltage for the product (please refer to type survey on page 6.2), and mount the 'jumper' for markets with 100~127 V. **No 'jumper' is for 200~240V.**

Final check after repair

The final check after repair describes the activities needed to ensure that the product is returned in perfect condition to the customer. The contents are:

- Insulation test.
- Check product information.
- Restore the setup and check connections, picture and sound.
- Final cleaning of the product.

Insulation test

Each set must be insulation tested after having been dismantled. Make the test when the set is reassembled and ready to be returned to the customer.

Flashovers must not occur during the testing procedure!

Make the insulation test as follows:

Short-circuit the two pins of the mains plug and connect them to one of the terminals of the insulation tester. Connect the other terminal to ground on the aerial socket.

- ! To avoid damaging the set, it is essential that both terminals of the insulation tester have good contact.
- Slowly turn the voltage control of the insulation tester until a voltage of 2.5 kV and max. 10 mA is obtained. Maintain that voltage for one second, then slowly turn it down again.

Product Info

The scope of this check is to ensure the following:

- The product has maintained the correct identity.
- The product is set to the correct Option.

Procedure:

- Enter Service Configuration Menu (described on page 2.3).
- Choose PRODUCT INFO.
- Check the serial number is correct for BeoSound 5 and/or BeoMaster 5.
- Return to Service Configuration Menu and choose ROLES.
- Check Option setting is correct.

Customer setup

Remember to inform the customer of any changes that have been made in the user setup, due to procedures in the Service Manual, such as Connections, Sound, Picture, etc.

Restore the product to the customer setup.

Check audio/video outputs

Check that audio and video outputs are working correctly.

Clean the product

Never use alcohol or other solvents to clean any part of the product.

Use a soft, lint-free cloth to clean the surfaces of the product.

Cabinet surfaces

Wipe dust off the surfaces using a dry, soft cloth. Remove grease stains or persistent dirt with a soft, lint-free, firmly wrung cloth, dipped in a solution of water containing only a few drops of mild detergent, such as washing-up liquid.

Replacement of modules in BeoSound 5

BeoSound 5 in service position 5.2

Replace PCB01, Mainboard 5.16

Replace PCB11, IR 5.8

Replace PCB12, Navigator 5.6

Replace PCB13, Input 5.3

Replace PCB14, Volume 5.4

Replace PCB51, LCD 5.12

Replace PCB52, Keyboard 5.5

Replace PCB58, Standby 5.10

Replace PCB61, Backlight Inverter 5.14

Warning – Static electricity



Static electricity may damage the product.
 A static-protective field service kit must always be used when the product is disassembled or modules are being handled.

Notice!
 All modules must be placed on the ESD-mat or in an ESD-proof bag.

Purpose of replacement of modules

Short instructions for replacement of the available modules, with reference to additional illustrations:

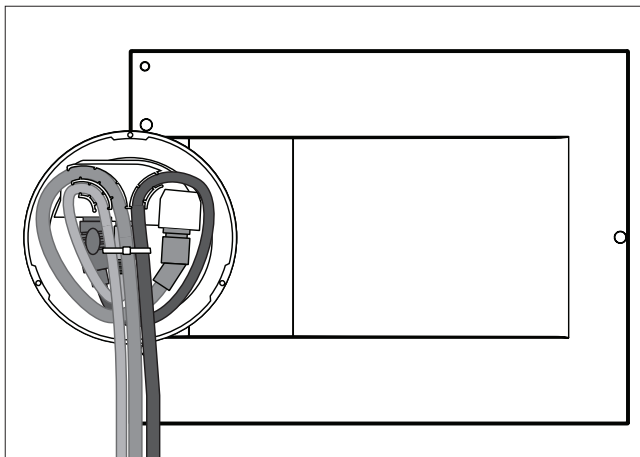
- The correct sequence for replacing modules.
- Text and illustrations.
- Reference to adjustment.

After replacement of modules

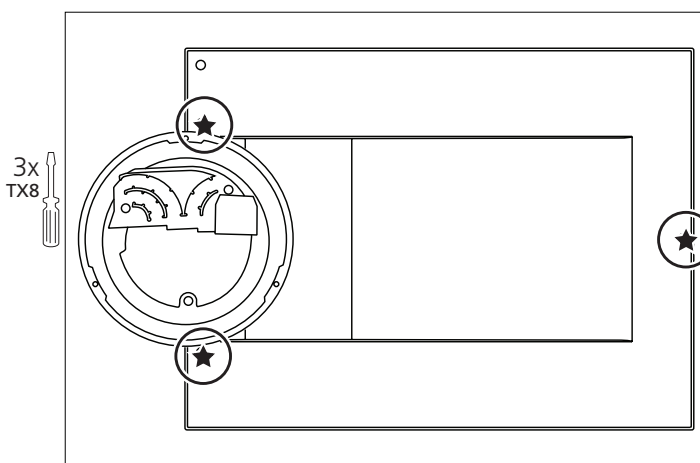
Replaced parts	Action
PCB01, Mainboard	Use BeoMaster 5 ServiceTool to serialise the serial number into PCB01, Mainboard when replaced. Please refer to adjustments page 4.7.
PCB01, Mainboard	Use BeoMaster 5 ServiceTool to update the firmware in PCB01, Mainboard when replaced. Please refer to adjustments page 4.7.
PCB01, Mainboard	Please refer to page 4.9 to perform a final check after repair.

BeoSound 5 in service position

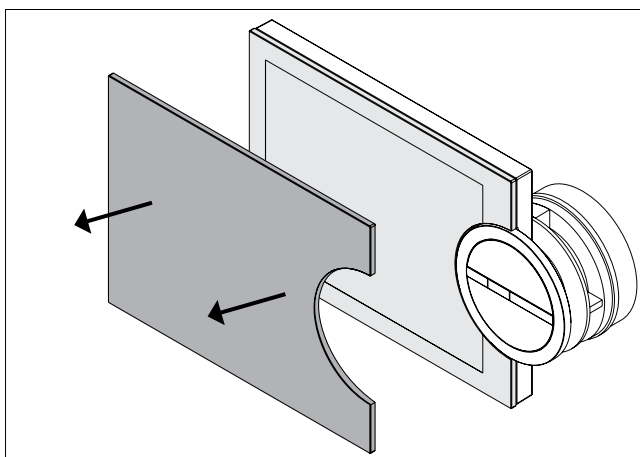
- Remove all cables



- Remove screws

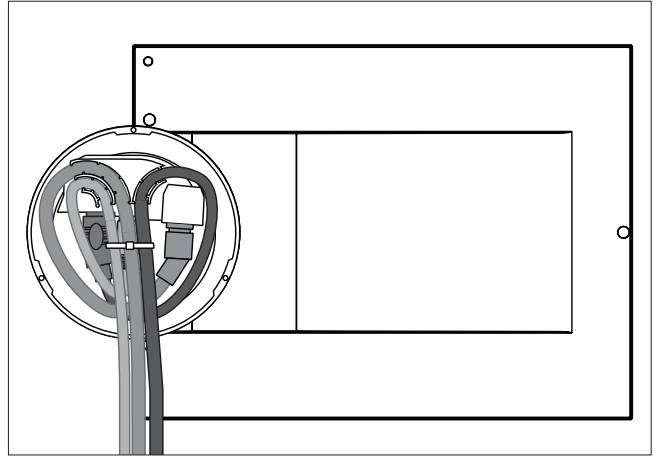


- Remove front glass

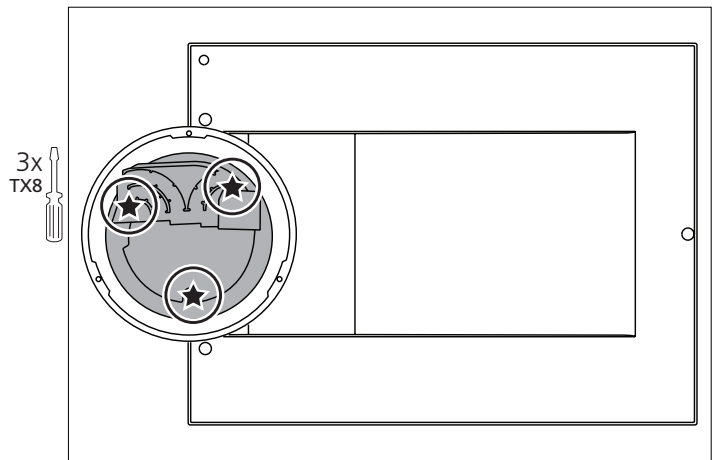


Replace PCB13, Input

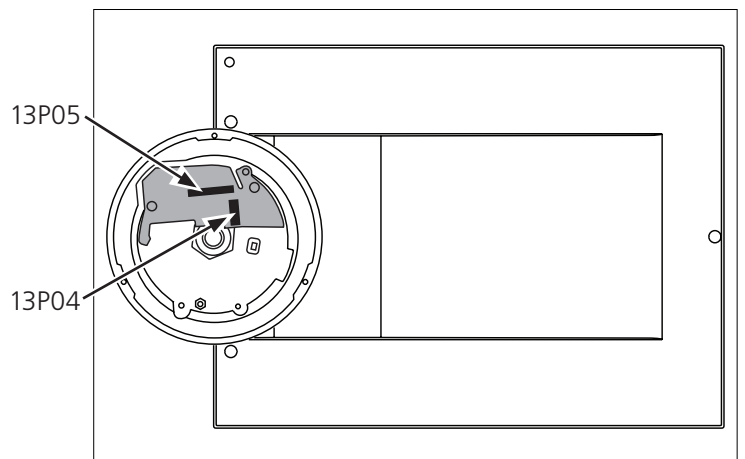
- Remove all cables



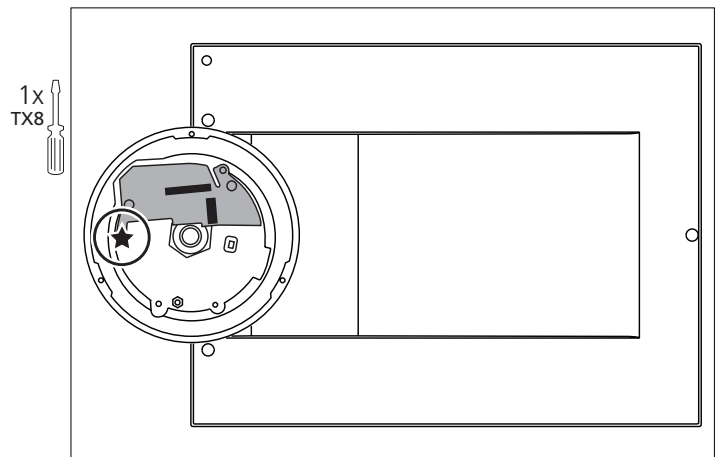
- Remove screws



- Remove cables from PCB13, Input



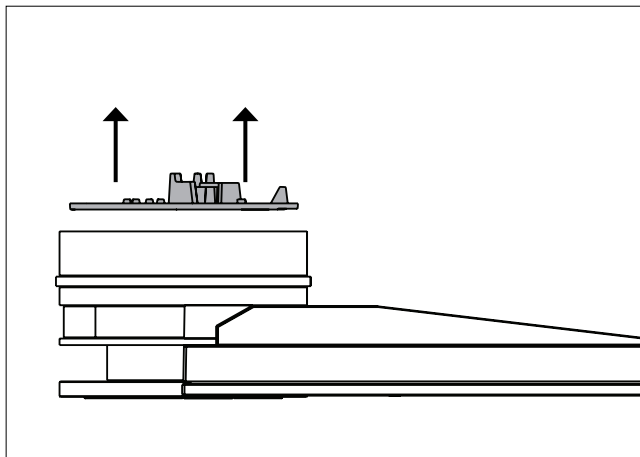
- Remove screw



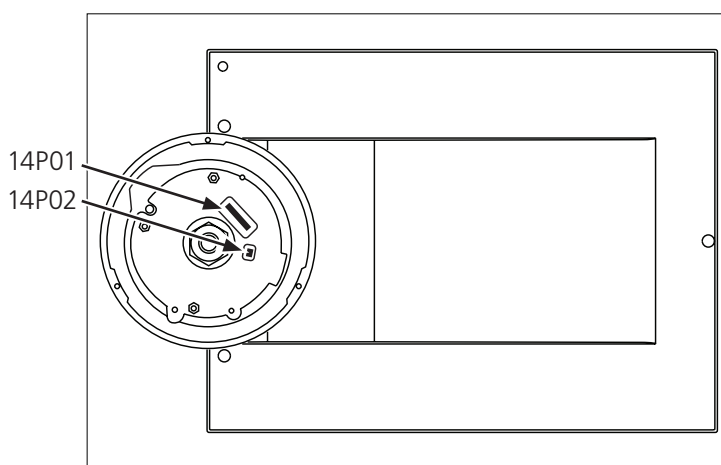
Replace PCB14, Volume

5.3 Remove PCB13, Input

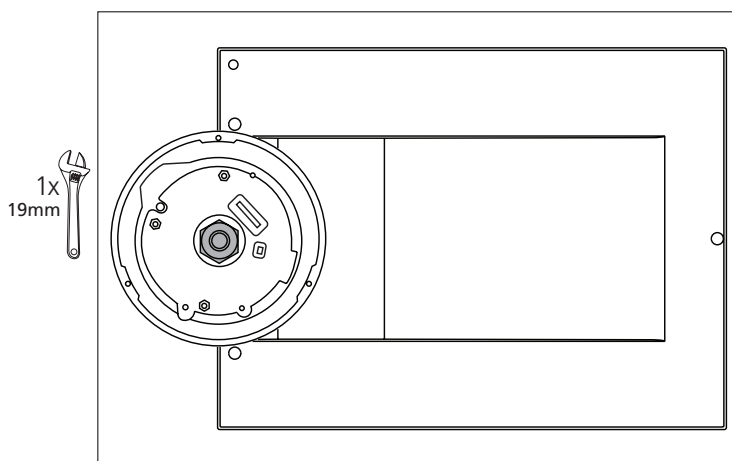
- Remove wire guide



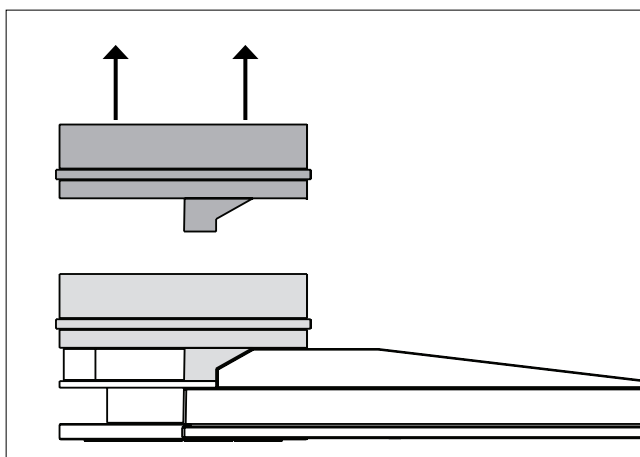
- Remove cables from PCB14, Volume



- Remove nut



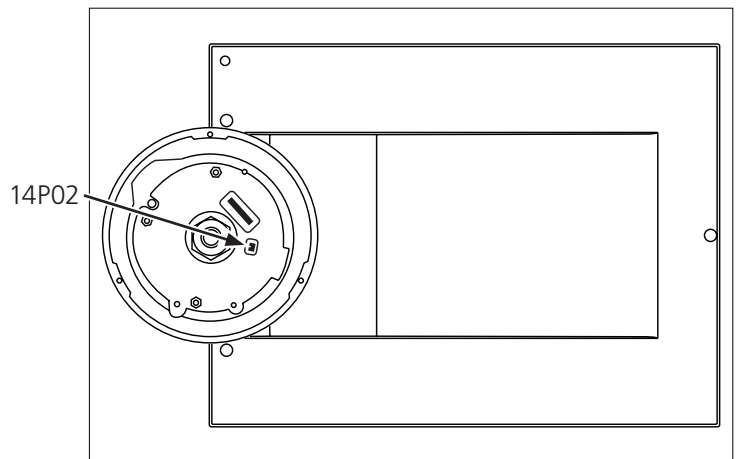
- Carefully lift off socket



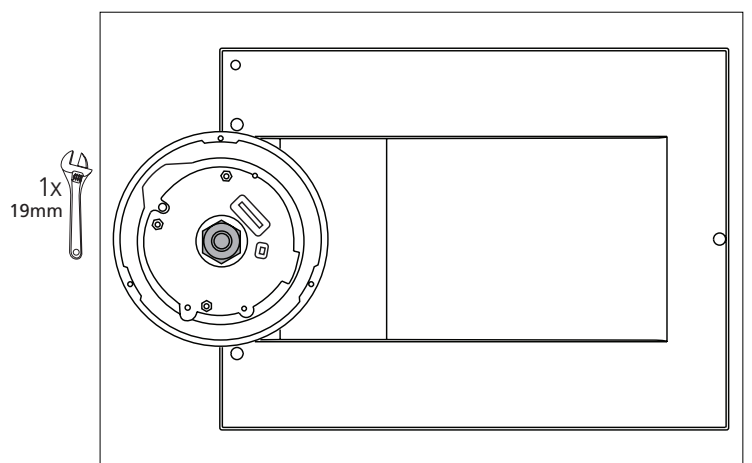
Replace PCB52, Keyboard

5.3 Remove PCB13, Input

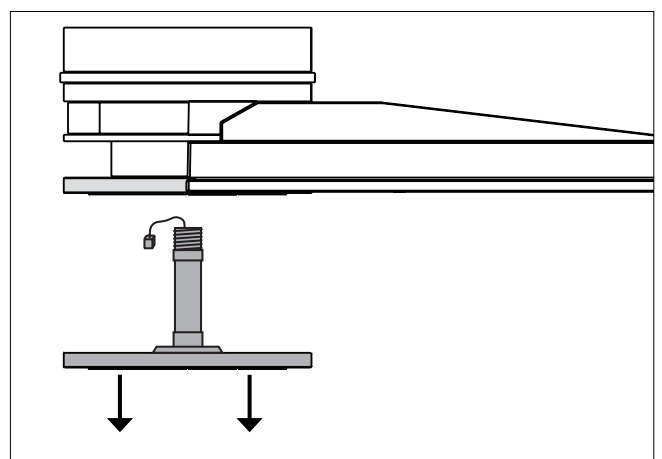
- Remove cable from PCB14, Volume



- Remove bearing nut



- Carefully pull off button unit

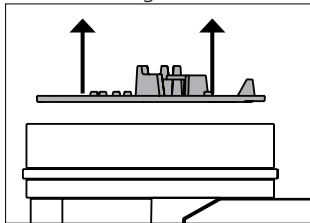


Replace PCB12, Navigator

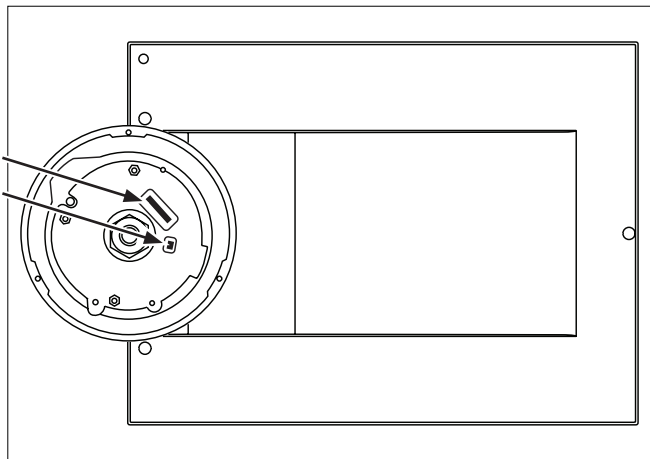
5.3 Remove PCB13, Input

- Remove cables from PCB14, Volume

Remove wire guide

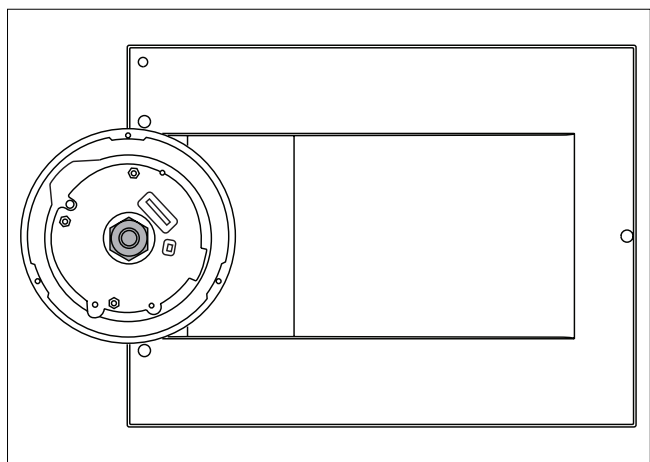


14P01
14P02

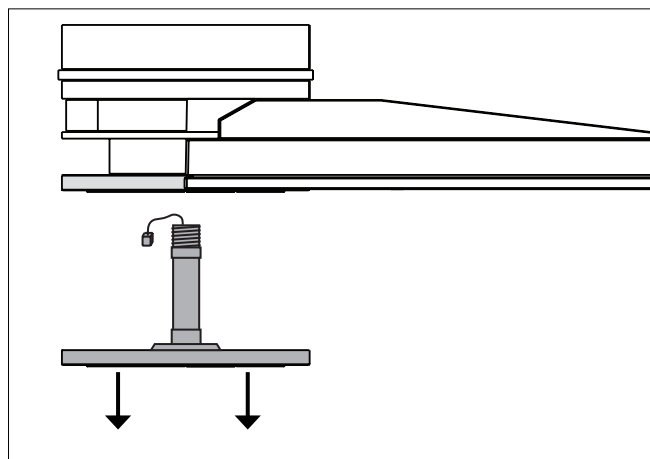


- Remove bearing nut

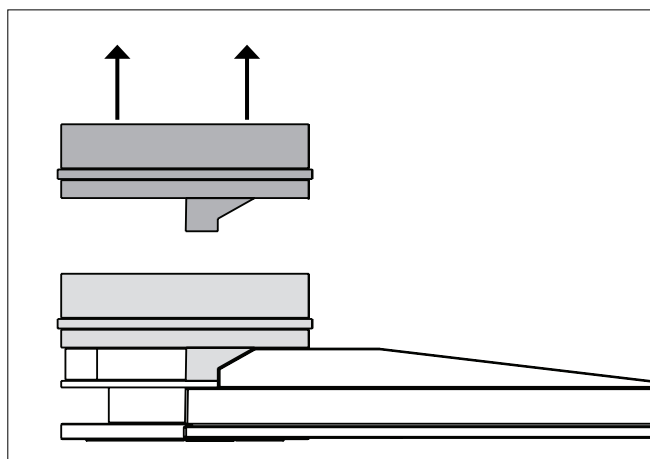
1x
19mm



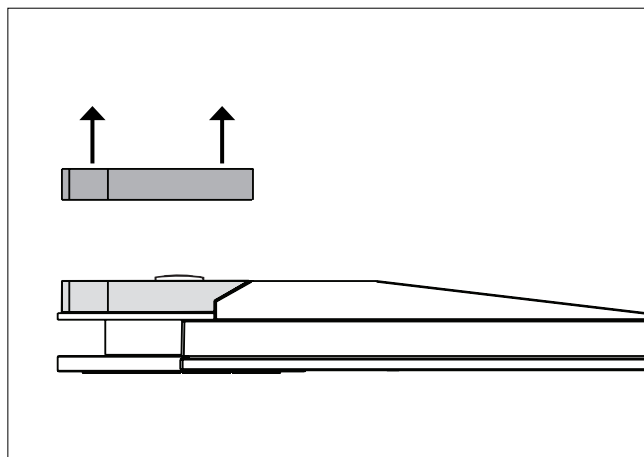
- Carefully pull off button unit



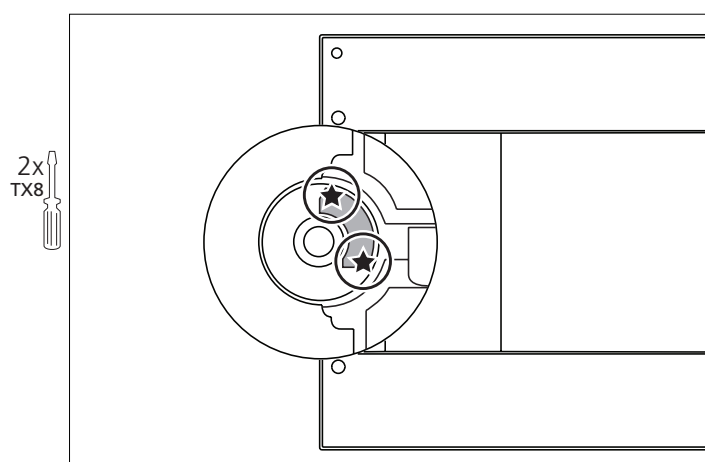
- Carefully lift off volume wheel unit



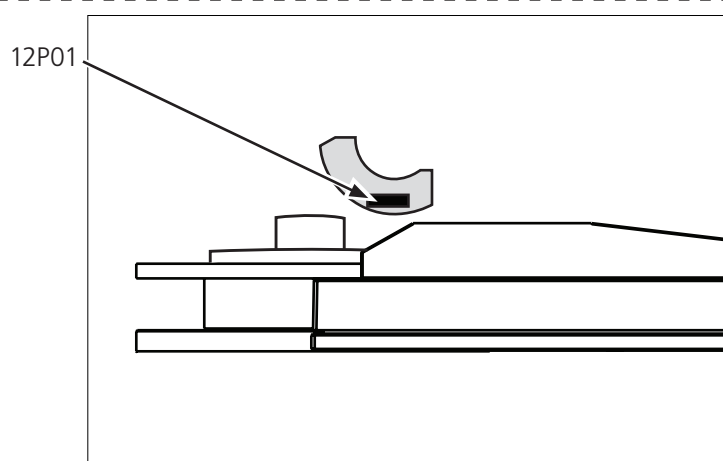
- Pull off navigation arm



- Remove screws



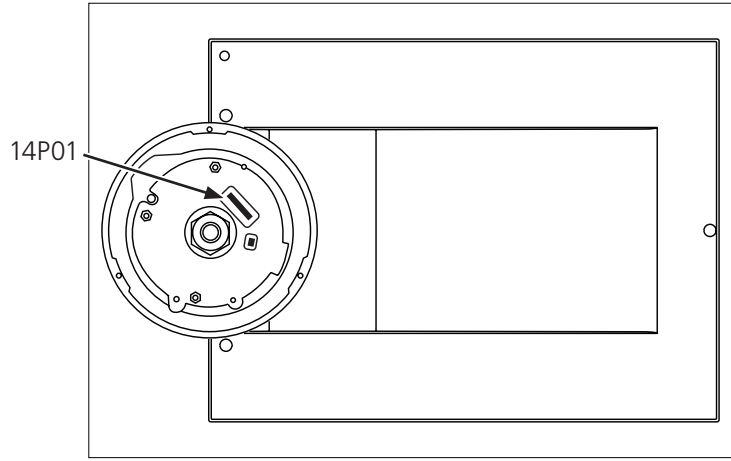
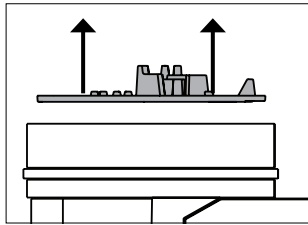
- Remove cable from PCB12, Navigator



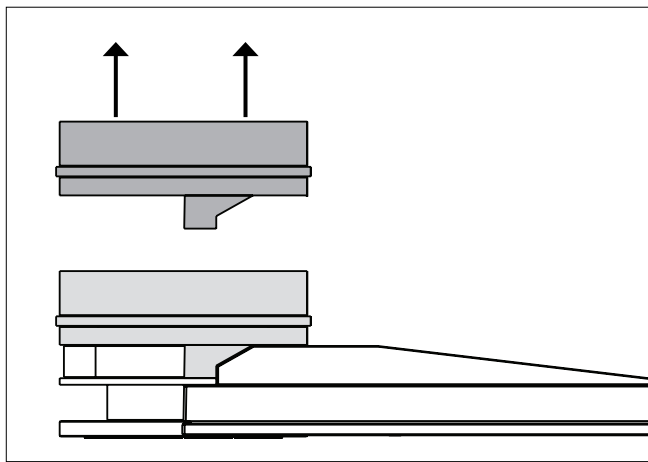
Replace PCB11, IR

- ☞ 5.2 BeoSound 5 in service position
- ☞ 5.3 Remove PCB13, Input
- ☞ 5.5 Remove PCB52, Keyboard

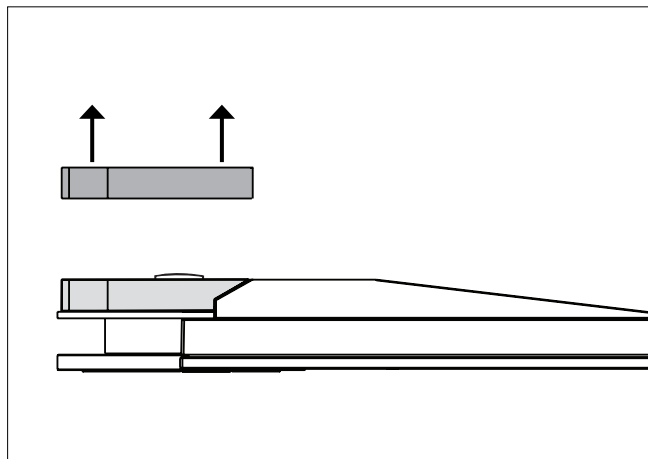
- Remove cable from PCB14, Volume
Remove cable holder



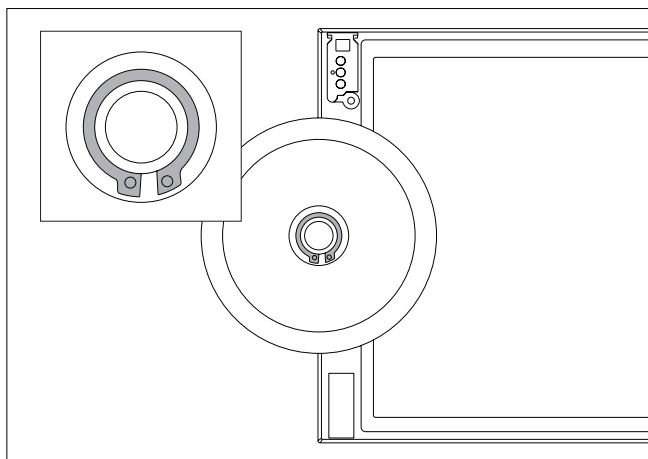
- Lift off volume wheel unit



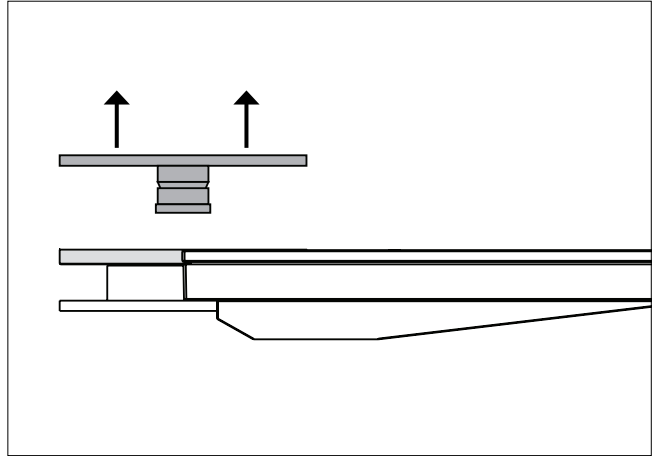
- Pull off navigation arm



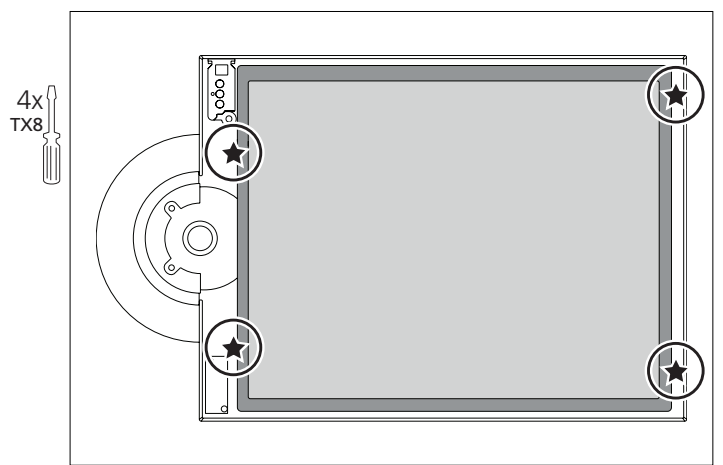
- Remove lock ring



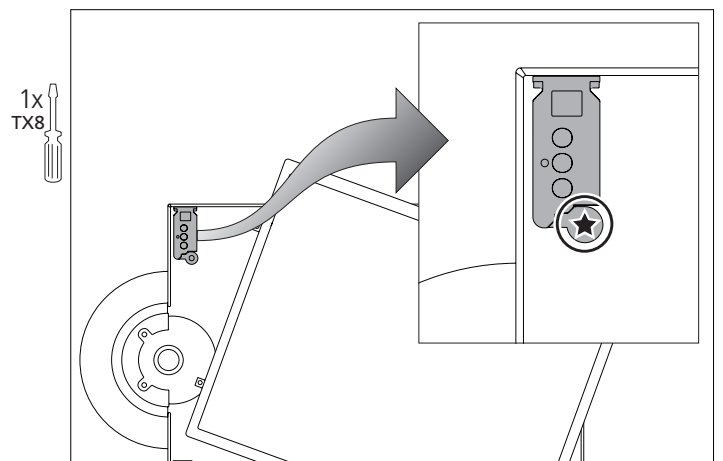
- Pull off menu wheel



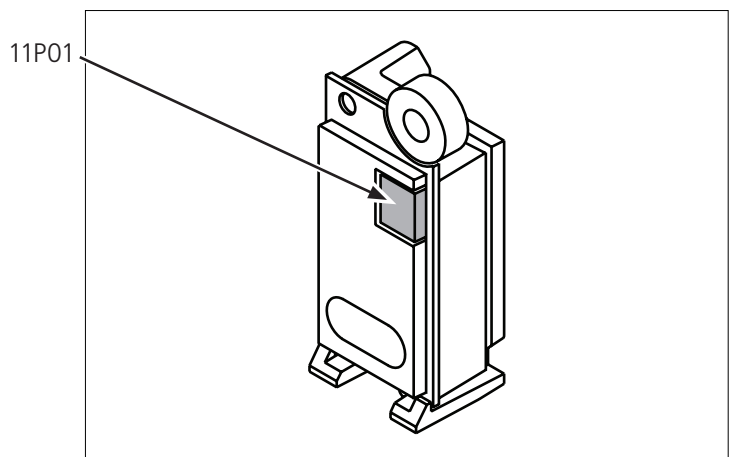
- Remove screws for LCD Panel



- Remove screw



- Remove cable from PCB11, IR

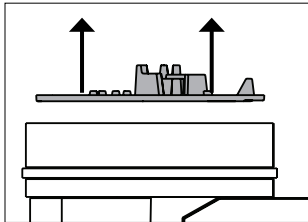


Replace PCB58, Standby

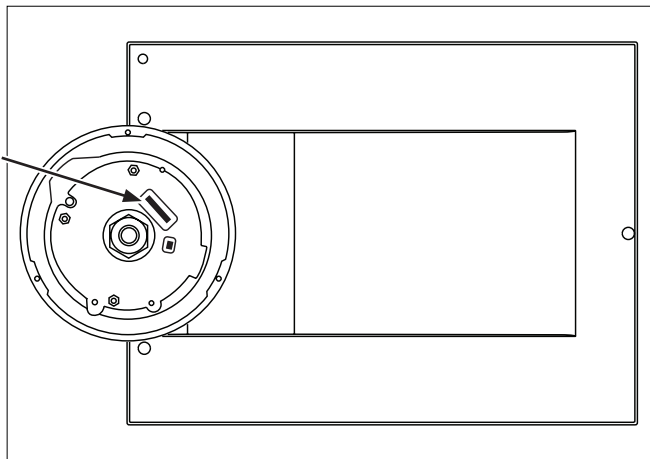
- ☞ 5.2 BeoSound 5 in service position
- ☞ 5.3 Remove PCB13, Input
- ☞ 5.5 Remove PCB52, Keyboard

- Remove cables from PCB14, Volume

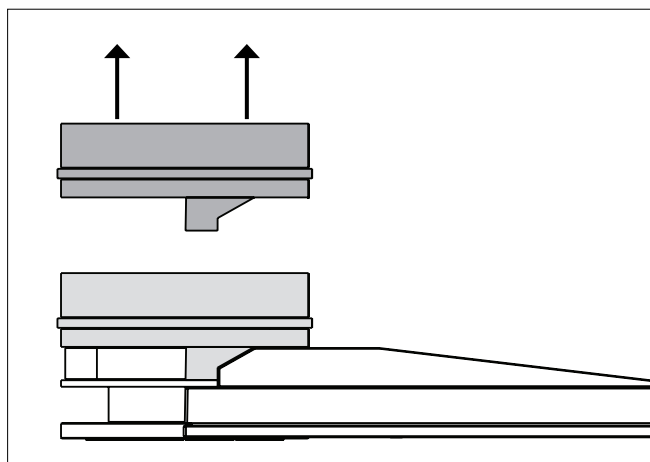
Remove cable holder



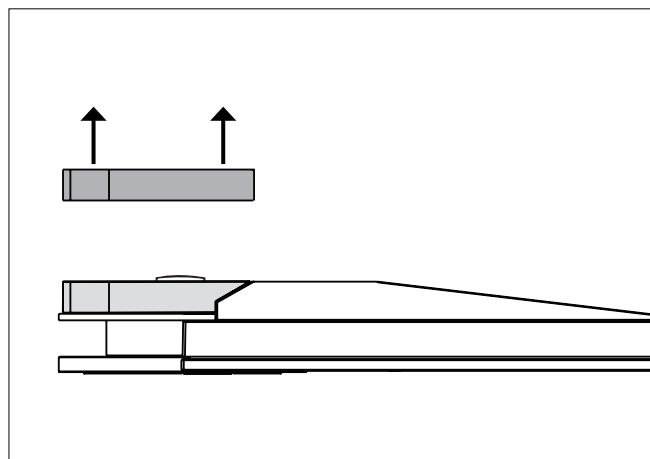
14P01



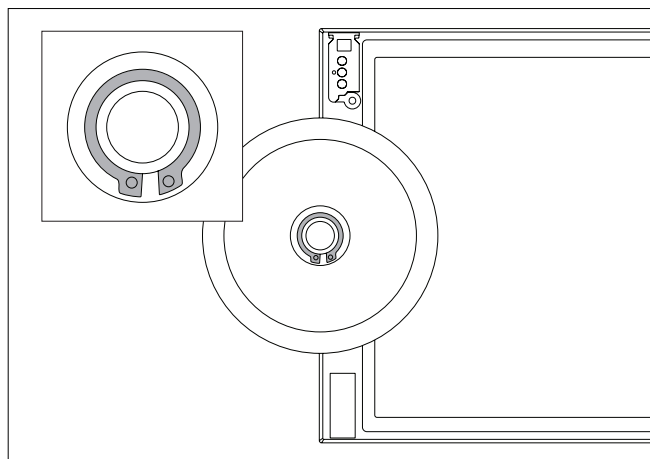
- Lift off volume wheel unit



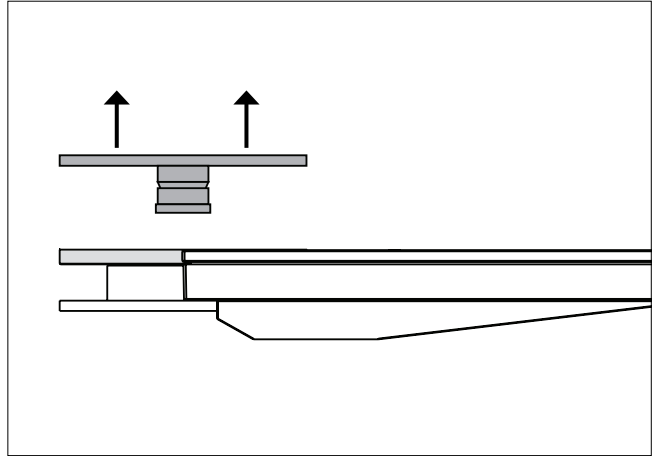
- Pull off navigation arm



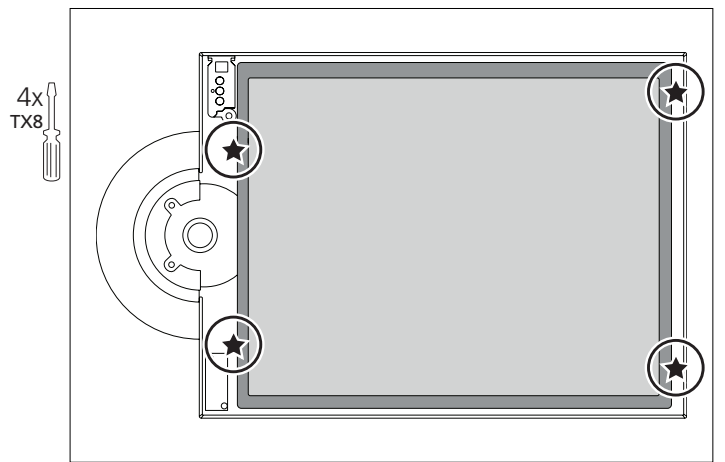
- Remove lock ring



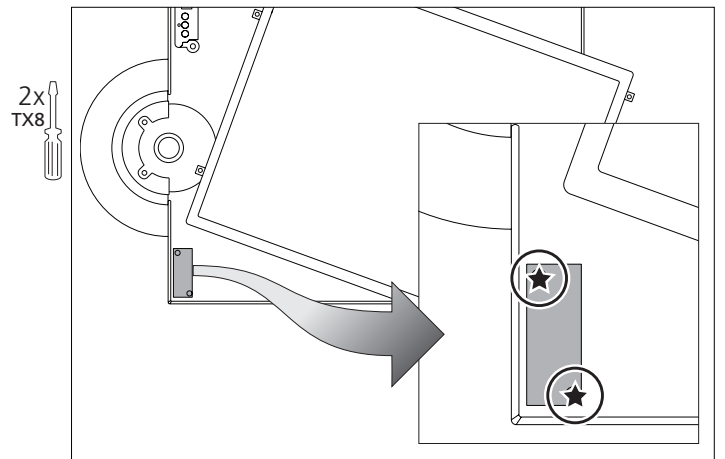
- Pull off menu wheel



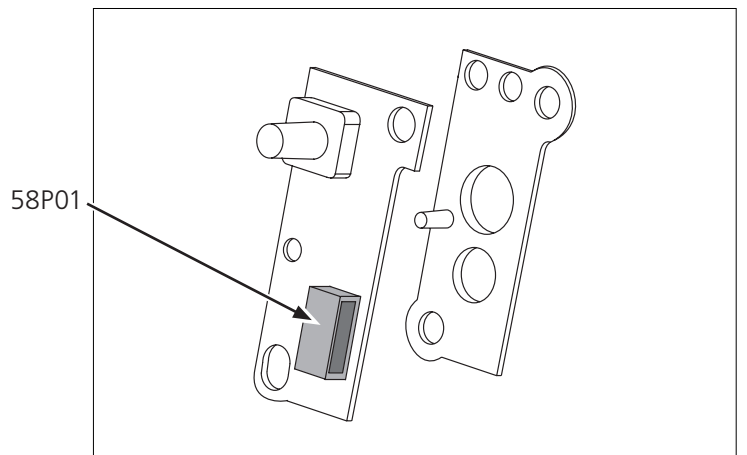
- Remove screws for LCD Panel



- Remove screws



- Remove cable from PCB58, Standby

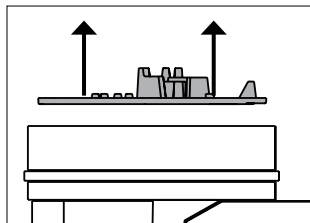


Replace PCB51, LCD

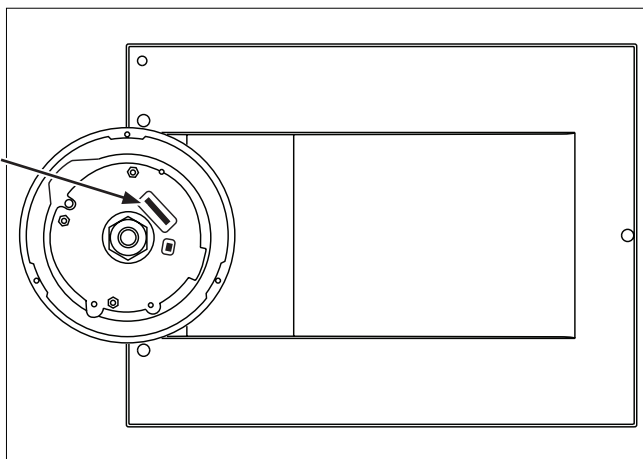
- ☞ 5.2 BeoSound 5 in service position
- ☞ 5.3 Remove PCB13, Input
- ☞ 5.5 Remove PCB52, Keyboard

- Remove cable from PCB14, Volume

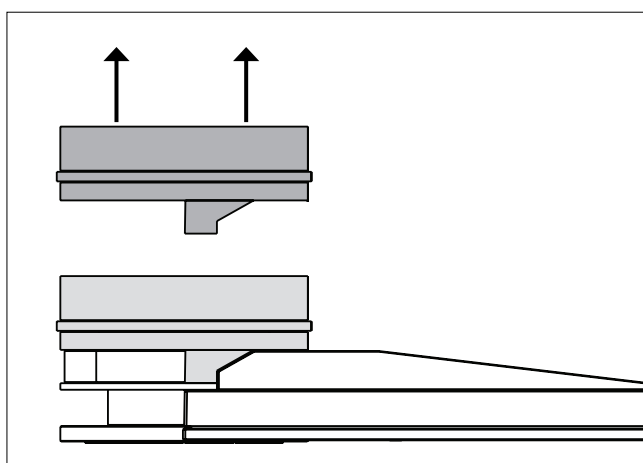
Remove cable holder



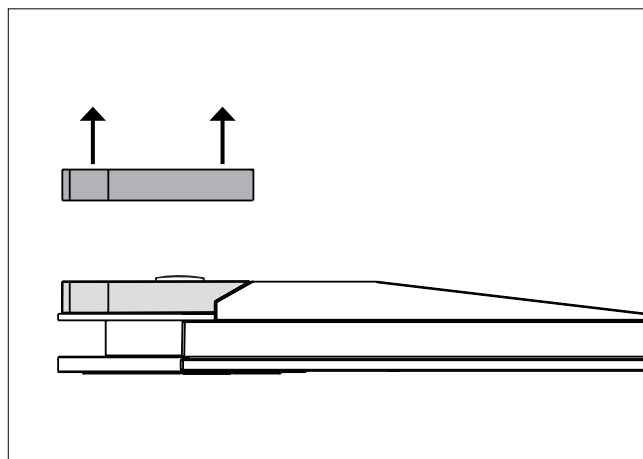
14P01



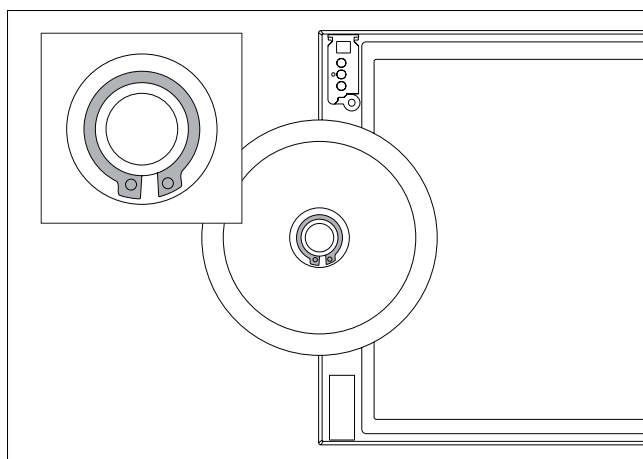
- Lift off volume wheel unit



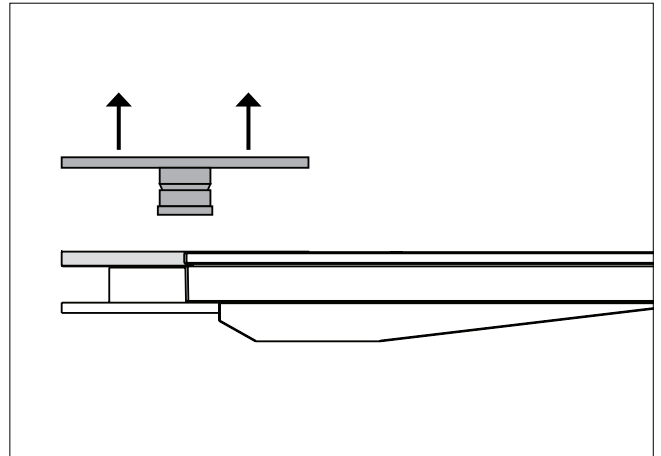
- Pull off navigation arm



- Remove lock ring

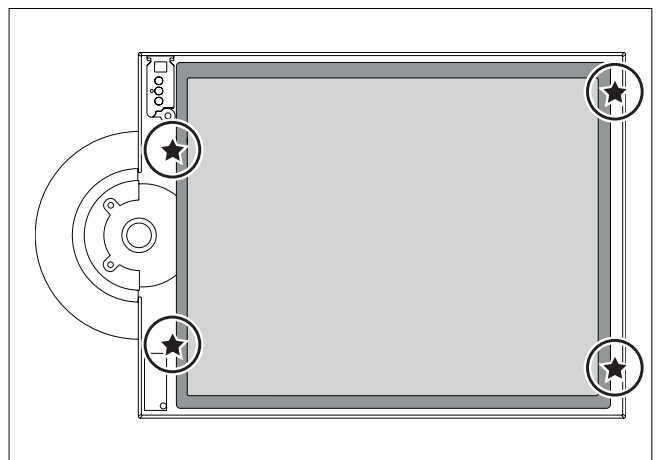


- Pull off menu wheel



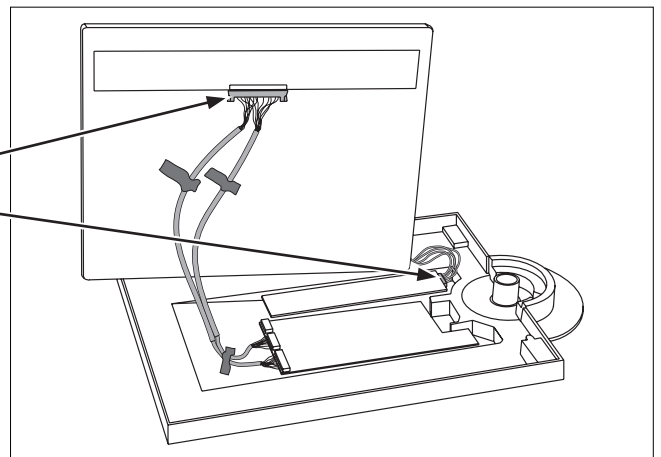
- Remove screws for LCD Panel

4x
TX8



- Remove cables from PCB51, LCD

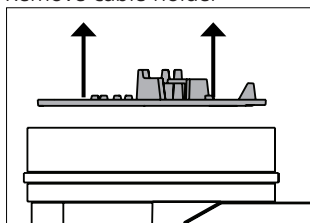
@ LCD
61-CN2



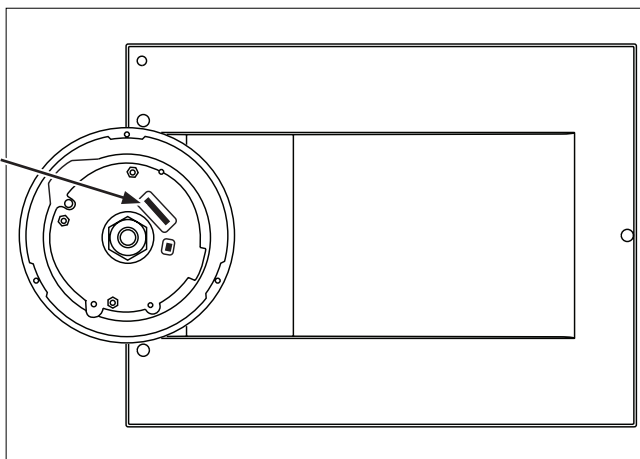
Replace PCB61, Backlight Inverter

- ☞ 5.2 BeoSound 5 in service position
- ☞ 5.3 Remove PCB13, Input
- ☞ 5.5 Remove PCB52, Keyboard

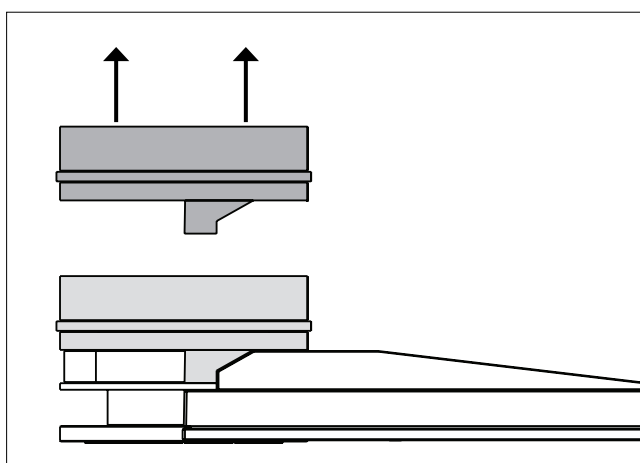
- Remove cables from PCB14, Volume
- Remove cable holder



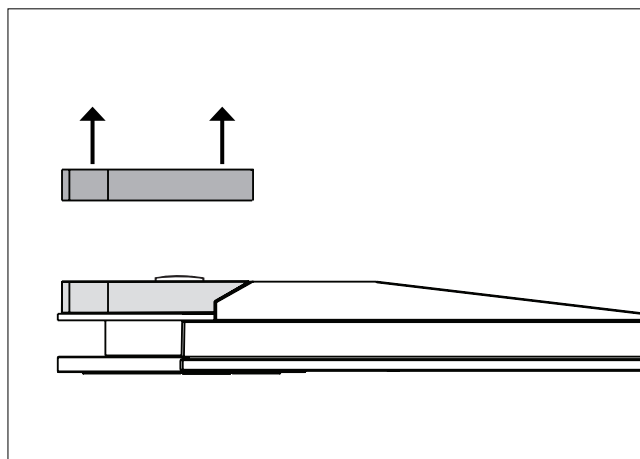
14P01



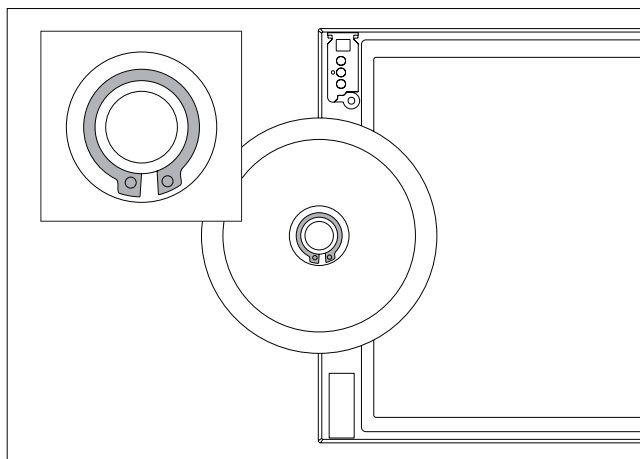
- Lift off volume wheel unit



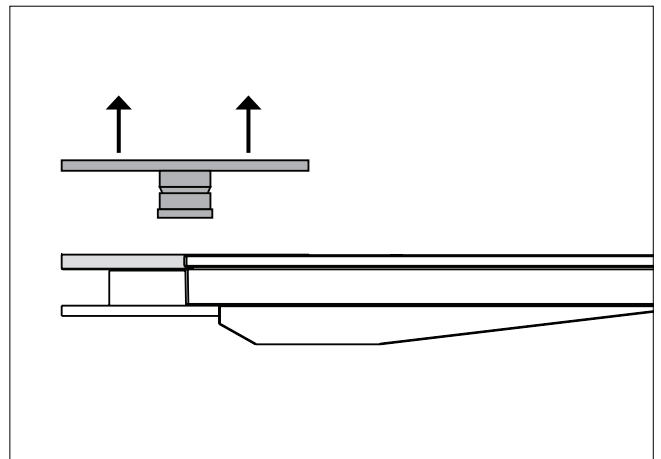
- Pull off navigation arm



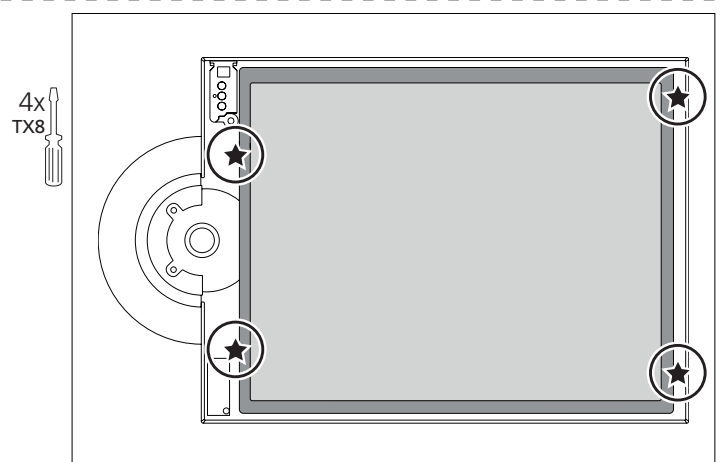
- Remove lock ring



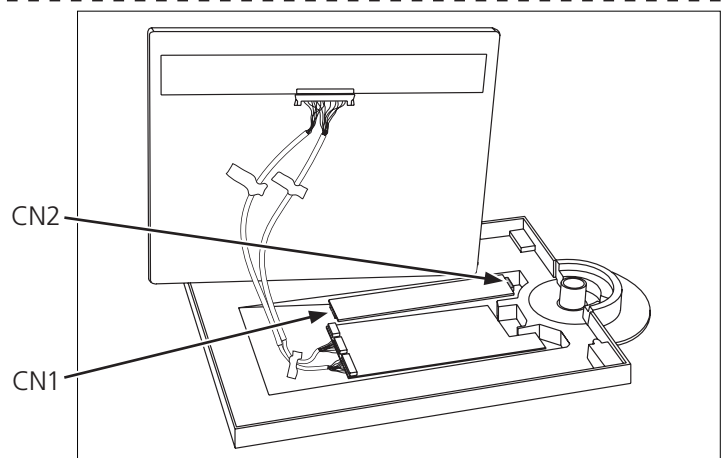
- Pull off menu wheel



- Remove screws for LCD Panel



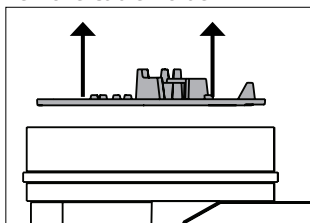
- Remove cables from PCB51, LCD



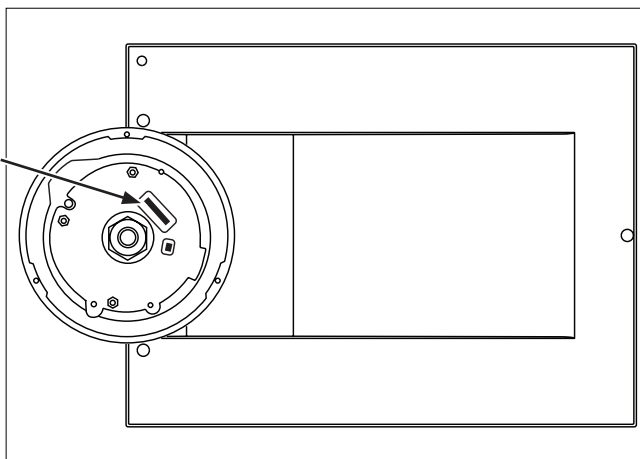
Replace PCB01, Mainboard

- ☞ 5.2 BeoSound 5 in service position
- ☞ 5.3 Remove PCB13, Input
- ☞ 5.5 Remove PCB52, Keyboard

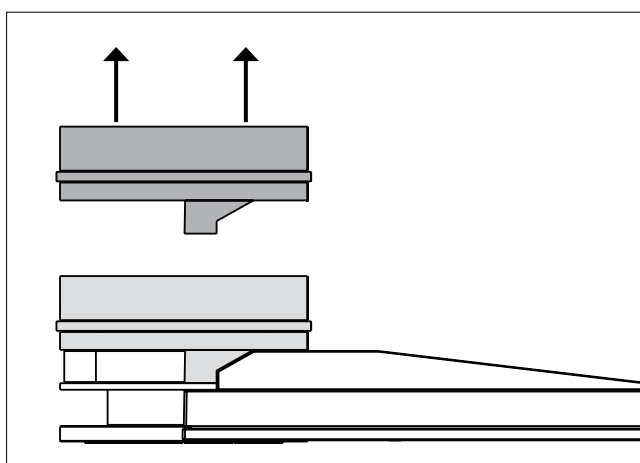
- Remove cable from PCB14, Volume
- Remove cable holder



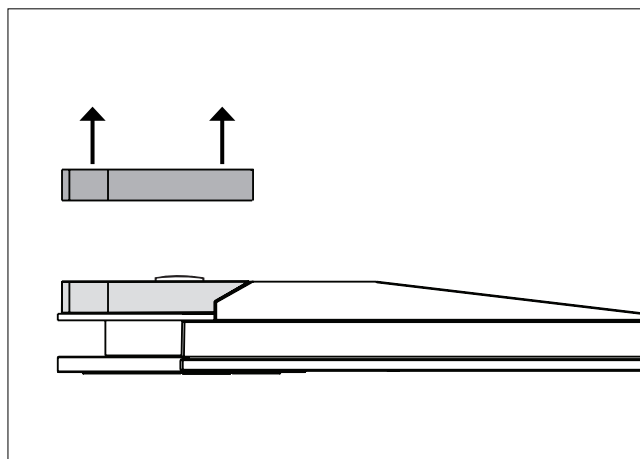
14P01



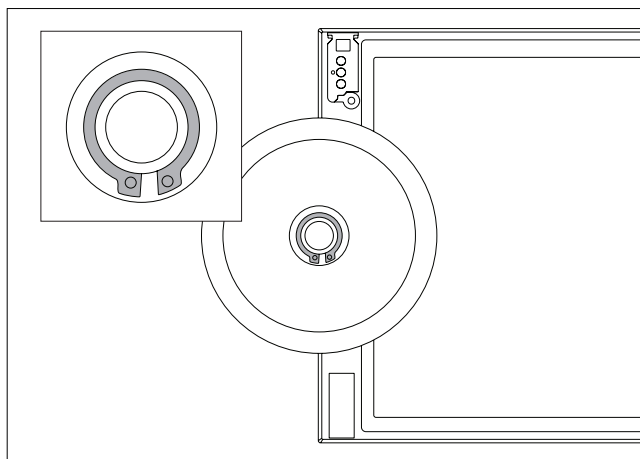
- Lift off volume wheel unit



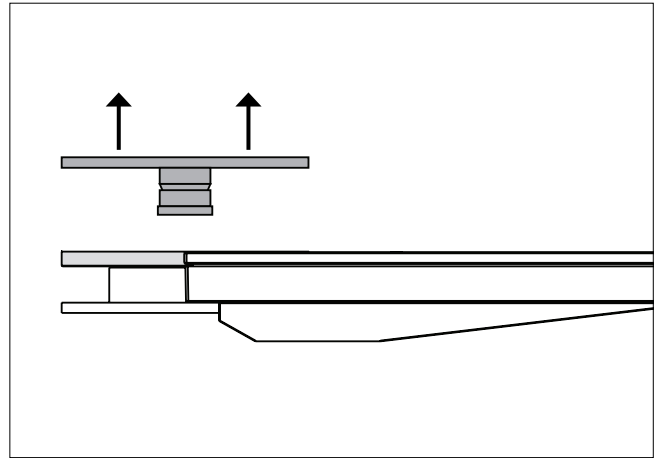
- Pull off navigation arm



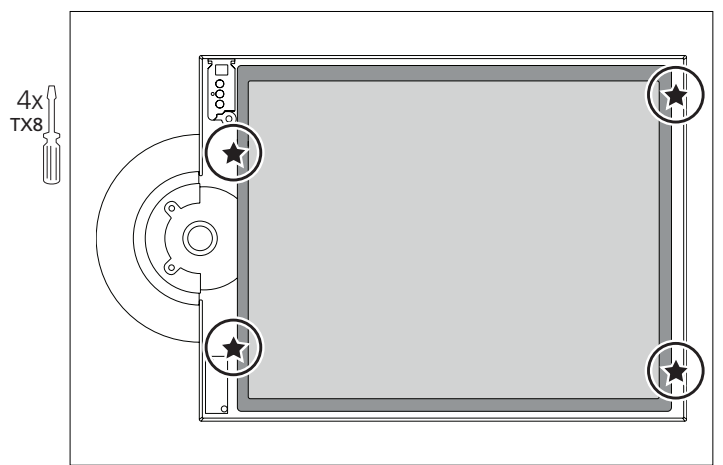
- Remove lock ring



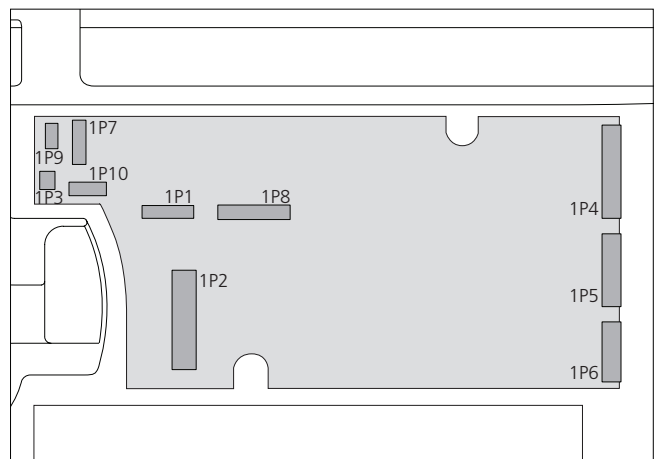
- Pull off menu wheel



- Remove screws for LCD Panel



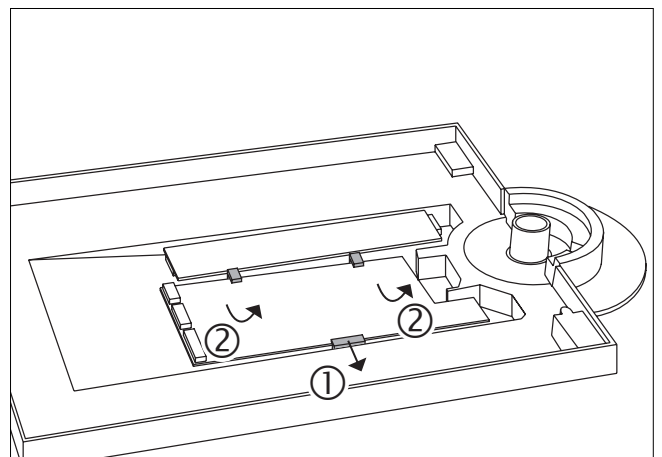
- Remove cables shown from PCB01, Mainboard



- Pull out PCB01, Mainboard as shown



Use BeoMaster 5 ServiceTool to serialise the serial number and to update the firmware in PCB01, Mainboard when replaced.
Please refer to adjustments page 4.7.



Replacement of modules in BeoMaster 5

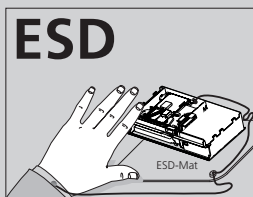
BeoMaster 5 in service position 5.20
 Replace PCB01, Motherboard 5.22
 Replace PCB04, Power Supply 5.24
 Replace PCB51, ML-PL 5.21
 Replace PCB94, HDD 5.23

Warning – Disconnect mains and wait 30 seconds before dismantling



BeoMaster 5 Power Supply and the local power supplies on the different boards must be discharged before dismantling. This is done by disconnecting mains, and then wait 30 seconds before replacing any modules.

Warning – Static electricity



Static electricity may damage the product.

A static-protective field service kit must always be used when the product is disassembled or modules are being handled.

Notice!

All modules must be placed on the ESD-mat or in an ESD-proof bag.

Purpose of replacement of modules

Short instructions for replacement of the available modules, with reference to additional illustrations:

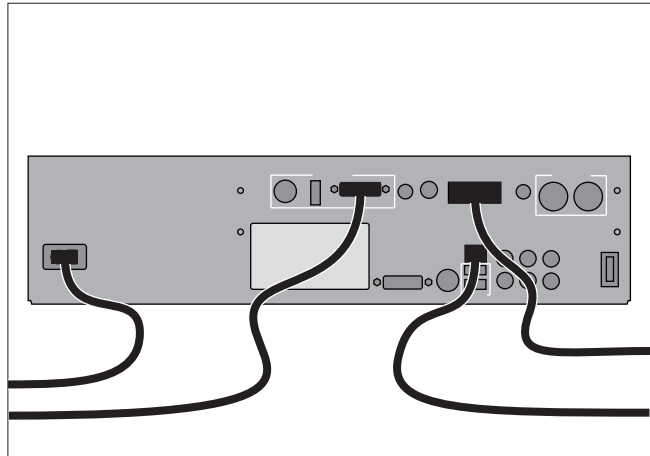
- The correct sequence for replacing modules.
- Text and illustrations.
- Reference to adjustment.

After replacement of modules

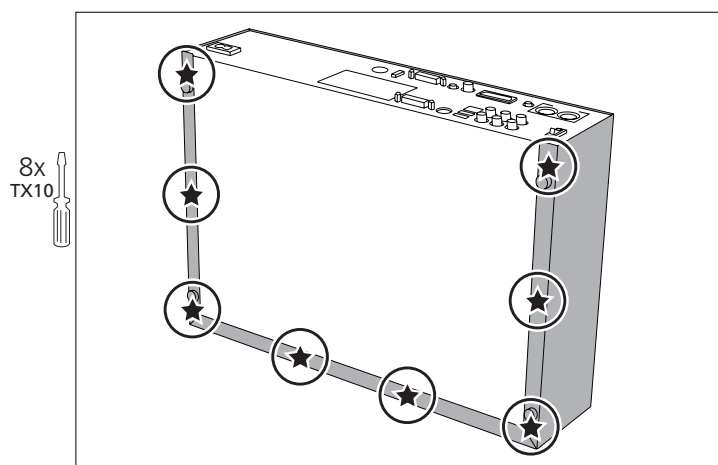
Replaced parts	Action
PCB01, Motherboard	Use BeoMaster 5 ServiceTool to serialise the serial number into PCB01, Motherboard when replaced. Please refer to adjustments page 4.7.
PCB01, Motherboard	Use BeoMaster 5 ServiceTool to update BIOS in PCB01, Motherboard when replaced. Please refer to adjustments page 4.7.
PCB51, ML-PL	Use BeoMaster 5 ServiceTool to update the firmware in PCB51, ML-PL when replaced. Please refer to adjustments page 4.7.
PCB01, Motherboard	Please refer to page 4.9 to perform a final check after repair.
PCB51, ML-PL	Please refer to page 4.9 to perform a final check after repair.

BeoMaster 5 in service position

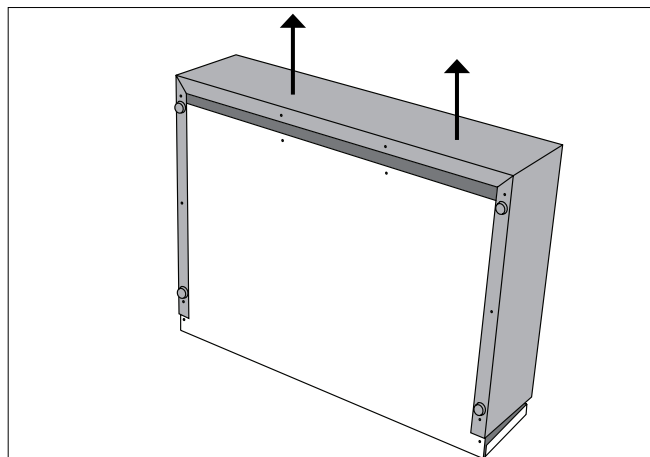
- Remove all cables



- Remove screws

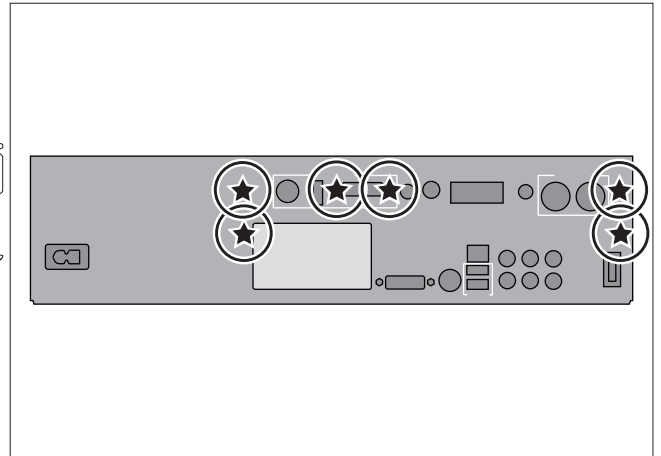


- Pull off cabinet cover and place BeoMaster 5 with the bottom plate down

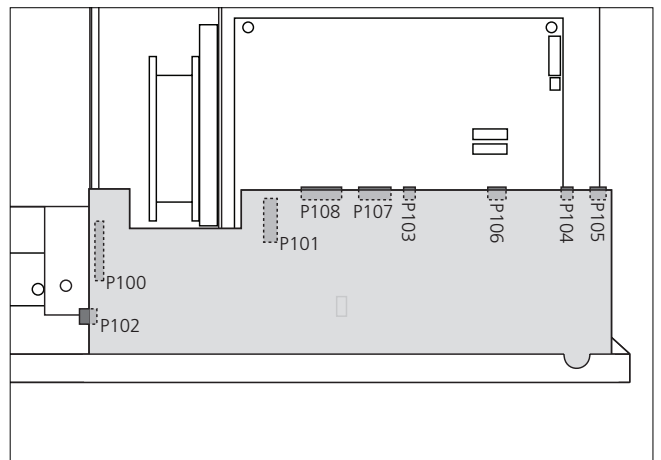


Replace PCB51, ML-PL

- Remove screws on backside



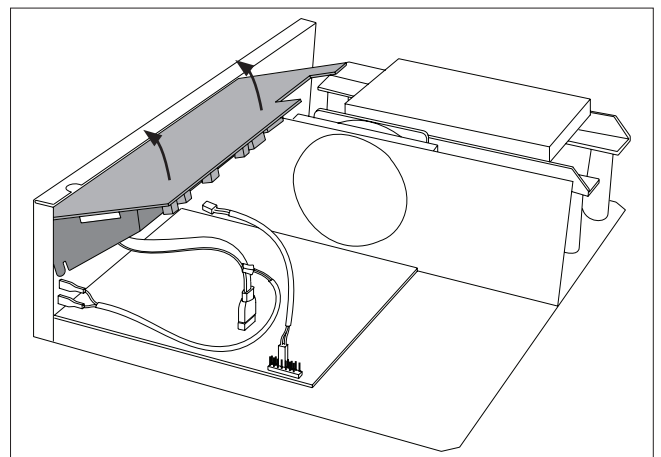
- Carefully remove the cables from PCB51, ML-PL



- Pull out PCB51, ML-PL



Use BeoMaster 5 ServiceTool to update the firmware in PCB51, ML-PL when replaced. Please refer to adjustments page 4.7.

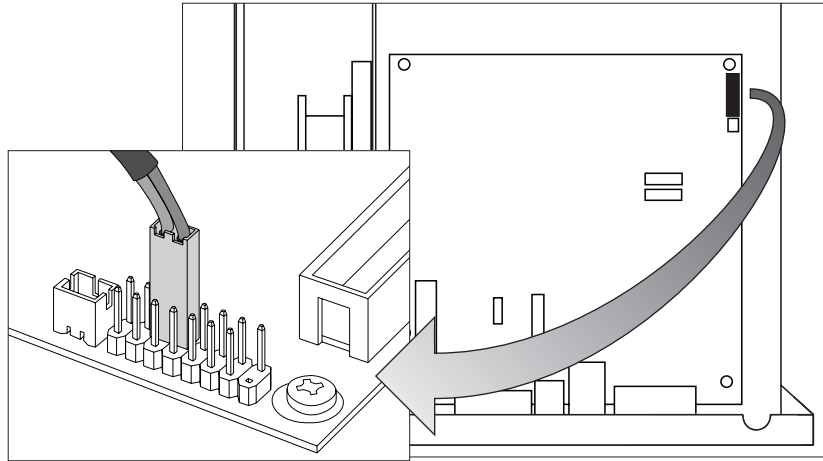


Replace PCB01, Motherboard

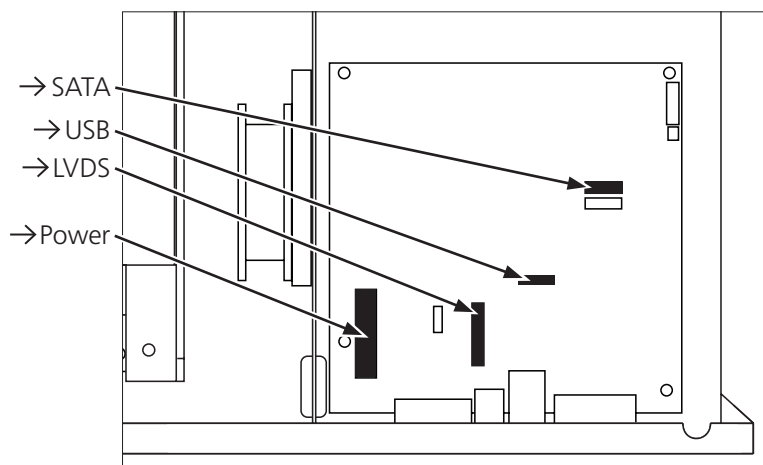
☞ 5.20 BeoMaster 5 in Service Position

☞ 5.21 Remove PCB51, ML-PL

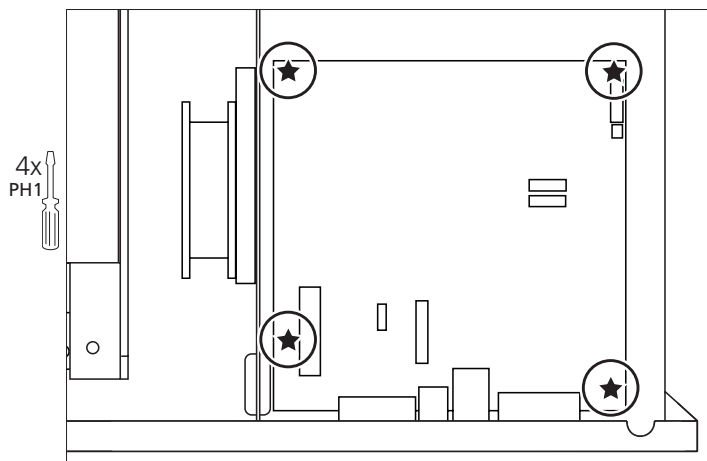
- Remove cable to Power switch



- Remove cables from PCB01, Motherboard



- Remove screws on PCB01, Motherboard

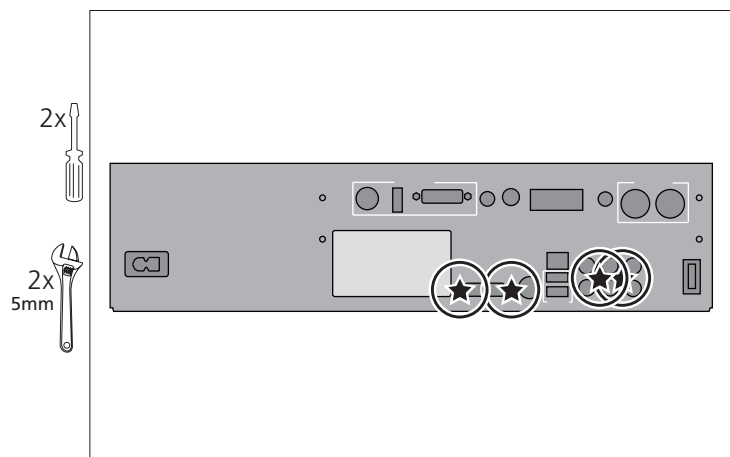


- Remove screws on backside



When remounting it is important to fasten screws on backside before fastening the screws on PCB01, Motherboard.

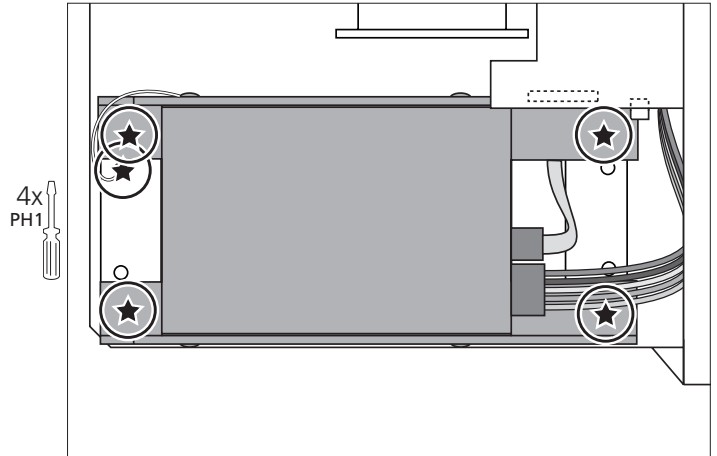
Use BeoMaster 5 ServiceTool to serialise the serial number and to update BIOS in PCB01, Motherboard when replaced. Please refer to adjustments page 4.7.



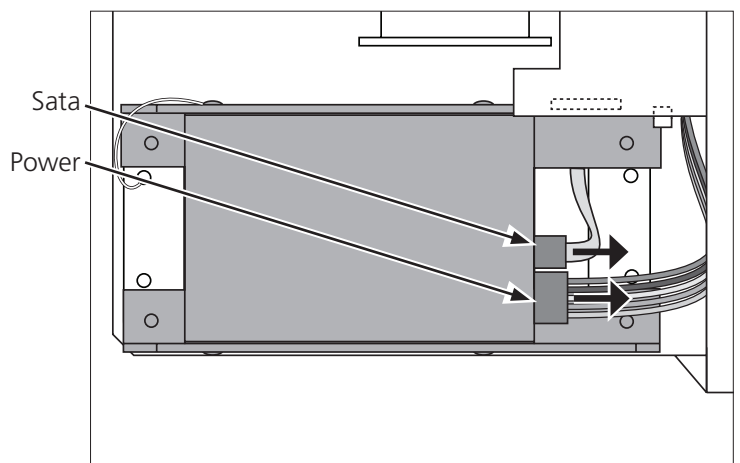
Replace PCB94, HDD

5.20 BeoMaster 5 in Service Position

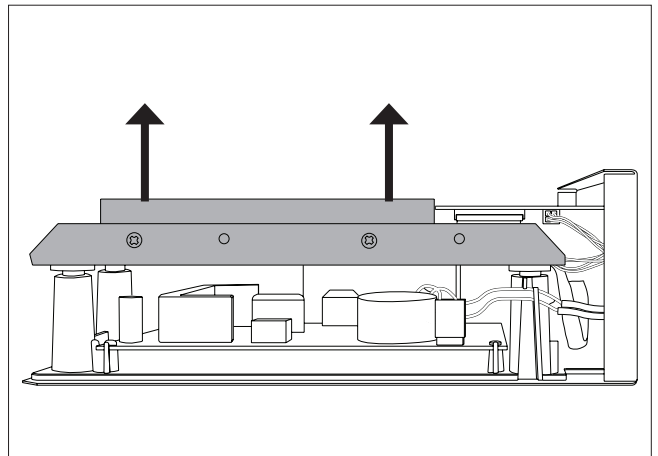
- Remove screws



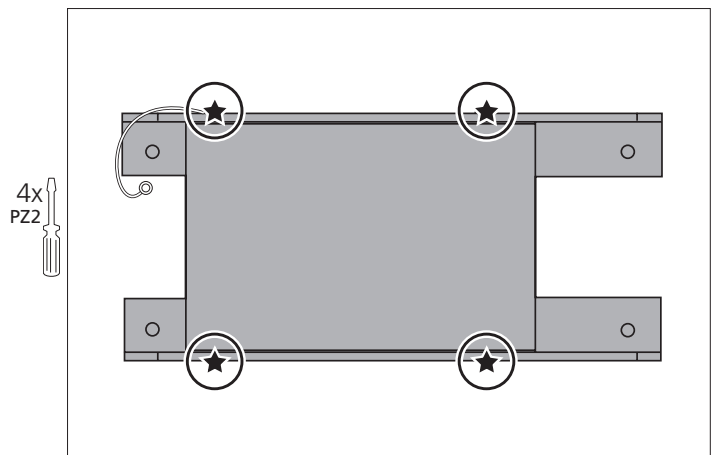
- Remove cables from PCB94, HDD



- Pull off PCB94, HDD



- Remove cables from PCB94, HDD

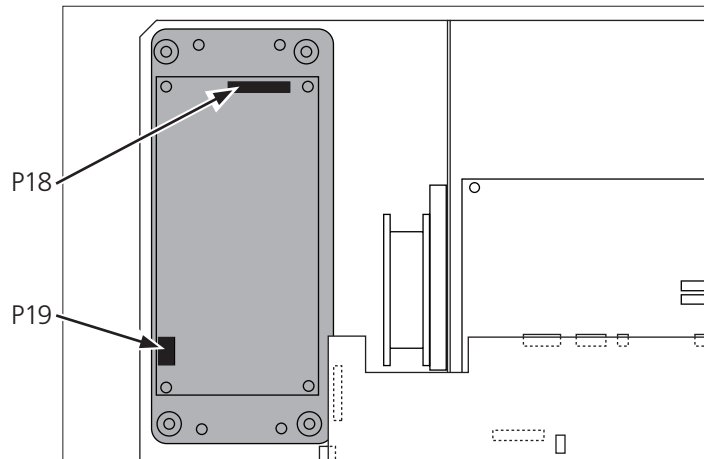


Replace PCB04, Power Supply

☞ 5.20 BeoMaster 5 in Service Position

☞ 5.23 Remove PCB94, HDD

- Remove cables

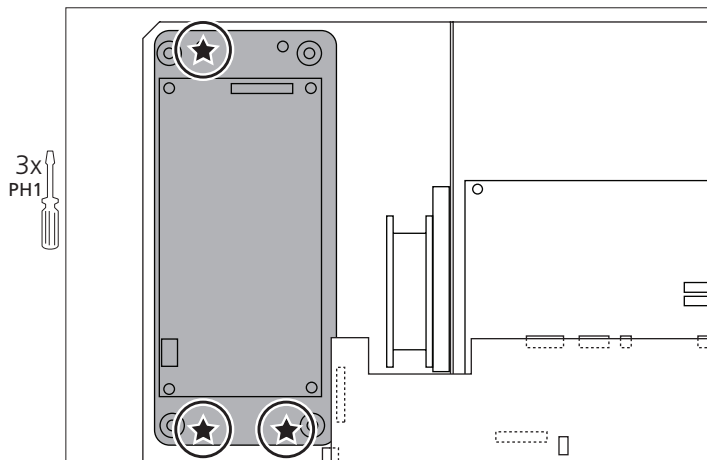


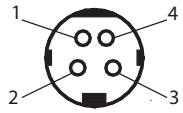
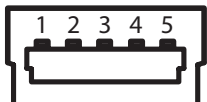

- Remove screws



When remounting, it is important to check the jumper settings on PCB04, Power Supply.

Please refer to adjustments page 4.7.



SPECIFICATION GUIDELINES FOR SERVICE USE		BeoSound 5, BeoMaster 5
BeoSound 5		
Type survey		
Market	Type number	
Argentina, Australia, Austria, Azerbaijan, Bahrain, Belgium, Botswana, Bulgaria, Brazil, Canada, Chile, China, Croatia, Czech Repub., Denmark, Egypt, Faroe Islands, Finland, France, Germany, Greece, Greenland, Holland, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Japan, Kazakhstan, Korea, Kuwait, Latvia, Lithuania, Lebanon, Liechtenstein, Luxembourg, Malaysia, Mexico, Morocco, New Zealand, Nigeria, Norway, Oman, Pakistan, Poland, Portugal, Qatar, Romania, Russia, Saudi Arabia, Serbia, Singapore, Slovak Rep., Slovenia, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, UK, United Arab Emirates, Uruguay, USA	2900	
Design	Anders Hermansen	
Cabinet finish	Anodised aluminium, pressure diecasted aluminium, Coated glass	
Display	10.4" XGA (1024 x 768) TFT display, 16,777,216 colours	
Power supply	12V DC, supplied from BeoMaster 5	
Control	Beo4, Beo5, wheel, pointer, volume	
Features:	SW update via BeoMaster 5, MOTS ("More Of The Same")	
Stands	Wall bracket, Aluminium (blackpainted) Table stand, Iron (blackpainted) Floor stand, Iron/Aluminium	
Dimensions	30.5 x 19 x 7.5 cm (W x H x D)	
Weight	2.65 kg	
Connections		
Power input		Pin 1 GND Pin 2 +5V_SB_AUX Pin 3 +12V_AUX Pin 4 IR_IN
USB mini-B		Pin 1 +5V_VCC Pin 2 Data - Pin 3 Data + Pin 4 N.C. Pin 5 GND
HDMI mini		Pin 1 GND Pin 2 T.M.D.S. Data 2+ Pin 3 T.M.D.S. Data 2- Pin 4 GND Pin 5 T.M.D.S. Data 1+ Pin 6 T.M.D.S. Data 1- Pin 7 GND Pin 8 T.M.D.S. Data 0+ Pin 9 T.M.D.S. Data 0- Pin 10 GND Pin 11 T.M.D.S. Clock+ Pin 12 T.M.D.S. Clock- Pin 13 GND Pin 14 CEC Pin 15 DVI_SCL Pin 16 DVI_SDA Pin 17 Reserved Pin 18 +5V Power_DVI Pin 19 Hot Plug Detect

BeoMaster 5

Type survey

Market	Type number
Argentina, Australia, Austria, Azerbaijan, Bahrain, Belgium, Botswana, Bulgaria, Chile, Croatia, Czech Repub., Denmark, Egypt, Faroe Islands, Finland, France, Germany, Greece, Greenland, Holland, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Kazakhstan, Korea, Kuwait, Latvia, Lithuania, Lebanon, Liechtenstein, Luxembourg, Malaysia, Morocco, New Zealand, Nigeria, Norway, Oman, Pakistan, Poland, Portugal, Qatar, Romania, Russia, Saudi Arabia, Serbia, Singapore, Slovak Rep., Slovenia, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, UK, United Arab Emirates, Uruguay,	1753 (EU)
Brazil, Canada, Mexico, Japan, Taiwan, USA	1754 (US)
China	1755 (CH)

Power consumption	38 W, 1.3W alone, 2W incl. BeoSound 5 ! Standby only possible in LAN setup (not in WLAN)
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Mains voltage range	Type EU/CH: 200 - 240 V, +10 / -15 %, 50-60 Hz Type US: 100 -127 V +10 / -15 %, 50-60 Hz
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Noise	Active max. 23dB, Standby max. 20dBA
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Operating system	Microsoft Windows XP Embedded
------------------	-------------------------------

Main board	VIA EX
------------	--------

CPU	2 GHz
-----	-------

RAM	1 GB
-----	------

HDD	500GB
-----	-------

Software upgrades	Automatically performed on weekly basis (sunday night)
-------------------	--

Features	N.Music, N.Radio, Photo, Web
----------	------------------------------

Security	Windows XP SP 2, Integrated firewall, Antivirus program with automatic updates, BullGuard (5 years)
----------	--

Dimensions	37.9 cm x 27.7 cm x 9.9 cm (W x D x H)
------------	--

	47 cm x 36 cm x 22 cm (Including packaging - W x D x H)
--	---

Weight	4.7 kg (6.0 kg including packaging)
--------	-------------------------------------

Display resolution DVI-I	Max. res 1920x1200 (supports HD 1920x1080 none interlaced / interlaced) depending on actual TV
--------------------------	--

Display resolution DVI-D	1024 x 768 (Fixed format for BeoSound 5 only)
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Supported formats	
-------------------	--

N.Radio	WMA, MP3, ASX (MS advanced playlist format). Normally locates WMA streaming, but can also locate MP3 streaming. M3U (Simple playlist format). Locates MP3 streaming.
---------	--

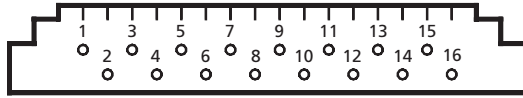
N.Music	WMA, MP3, WAV, ASF (a so-called container that can contain several different compression formats. If it contains WMA/MP3/WAV we support it, otherwise not). AAC (together with MAC as editor PC)
---------	--

PHOTO	*.bmp: Bitmap (all colour depths 1-32 bit) *.gif: GIF (only the first frame of animated GIFs is shown) *.png: Portable network graphics (or 'Png Not GIF'). *.tiff: TIFF images (typically used in the graphics industry) *.jpeg, *.jpg: JPEG standard 24 bit is used by all cameras
-------	--

Video (WEB)	*.mpeg; *.mpe;*.mpg: MPEG-x various MPEG format, but only MPEG-1 supported *.avi: Very broad format (we only support M-JPEG, MS MPEG4 and uncompressed AVI) *.wmv: Windows Media Video *.vfw: (a so-called container that can contain several different compression formats).
-------------	--

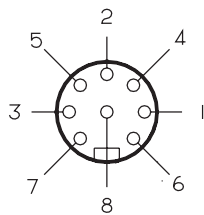
Connections

MASTER LINK



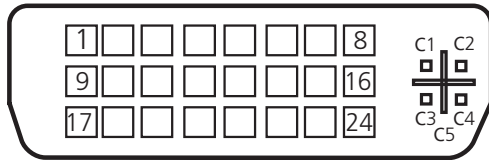
Pin 1	Data- -0.4V ±0.1V
Pin 2	Data+ +0.4V ±0.1V
Pin 3	ML sense
Pin 4-8	N.C.
Pin 9	ATI transmit
Pin 10	ATI receive
Pin 11	-supply voltage -7V to -15V (in St By -3V to -15V)
Pin 12	+supply voltage +7V to +15V (in St By +3V to +15V)
Pin 13	Audio -L 1V Bal, Rin 2.2MΩ, Rout 75Ω
Pin 14	Audio +L 1V Bal, Rin 2.2MΩ, Rout 75Ω
Pin 15	Audio -R 1V Bal, Rin 2.2MΩ, Rout 75Ω
Pin 16	Audio +R 1V Bal, Rin 2.2MΩ, Rout 75Ω

POWER LINK



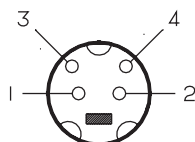
Pin 1	Power up => 2.5V, OFF =< 0.5V
Pin 2	Signal GND
Pin 3	Audio L out 0V - 6.5V RMS
Pin 4	Loudspeaker ON => 2.5V, OFF =< 0.5V
Pin 5	Audio R out 0V - 6.5V RMS
Pin 6	Data: High >3.5V, Low <0.8V
Pin 7	Data GND
Pin 8	Not used

DVI-I (Dual Link)



Pin 1	T.M.D.S. Data 2 -
Pin 2	T.M.D.S. Data 2 +
Pin 3	T.M.D.S. Data 2/4 shield
Pin 4	T.M.D.S. Data 4 -
Pin 5	T.M.D.S. Data 4 +
Pin 6	DDC Clock
Pin 7	DDC Data
Pin 8	Analog vert. sync
Pin 9	T.M.D.S. Data 1 -
Pin 10	T.M.D.S. Data 1 +
Pin 11	T.M.D.S. Data 1/3 shield
Pin 12	T.M.D.S. Data 3 -
Pin 13	T.M.D.S. Data 3 +
Pin 14	+5V Power
Pin 15	Ground
Pin 16	Hot plug detect
Pin 17	T.M.D.S. Data 0 -
Pin 18	T.M.D.S. Data 0 +
Pin 19	T.M.D.S. Data 0/5 shield
Pin 20	T.M.D.S. Data 5 -
Pin 21	T.M.D.S. Data 5 +
Pin 22	T.M.D.S. Clock shield
Pin 23	T.M.D.S. Clock +
Pin 24	T.M.D.S. Clock -Composite video
C1	Analog red
C2	Analog green
C3	Analog blue
C4	Analog horizontal sync
C5	Analog ground (Return for R, G and B signals)

S - Video



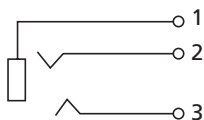
S - Video connector
GND pin 1 and 2
Y in pin 3 1.0Vpp ±3dB incl. sync 75Ω ±10%
C in pin 4 1.0 Vpp ±3dB 75Ω ±10%

SPDIF out



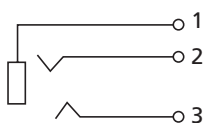
RCA phono Black
 0.5 Vpp 75 ohm ± 10%
 Specified by IEC 60958 and IEC61937

IR-IN



Minijack stereo
 Pin 1 Shield: Shield
 Pin 2 Inner: IR Signal
 Pin 3 Outer: 5V

Line Out



Minijack stereo , Max 1.4 Vrms 30Ω
 Pin 1 Shield: Shield
 Pin 2 Inner: Right
 Pin 3 Outer: Left

Y, P_b, P_r (3 x RCA Phono connectors, Green-Blue-Red)



Y out 1.0 Vpp incl. Sync.
 P_b out 0.7 Vpp
 P_r out 0.7 Vpp
 Output impedance 75 ohm ±10 %

Video (CVBS output)



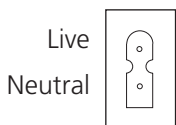
1 phono socket, yellow (RCA)
 Inner: CVBS out
 Outer: GND

Audio Line out



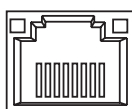
2 phono sockets, L/R (RCA)
 Output L/R Audio out 0.2 – 2V rms

Mains inlet



To see the different types of mains lead see exploded view in the Retail Ordering System

Ethernet



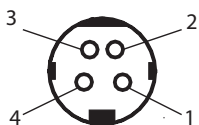
RJ45 socket
 Ethernet 10/100 Mbit/s
 IEEE 802.3

USB



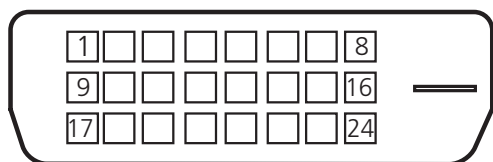
3 plugs One reserved for BeoSound 5!
 USB 2.0

Power output (to BeoSound 5)



Pin 1 GND
 Pin 2 +5V_SB_AUX
 Pin 3 +12V_AUX
 Pin 4 IR_IN

DVI-D for BeoSound 5

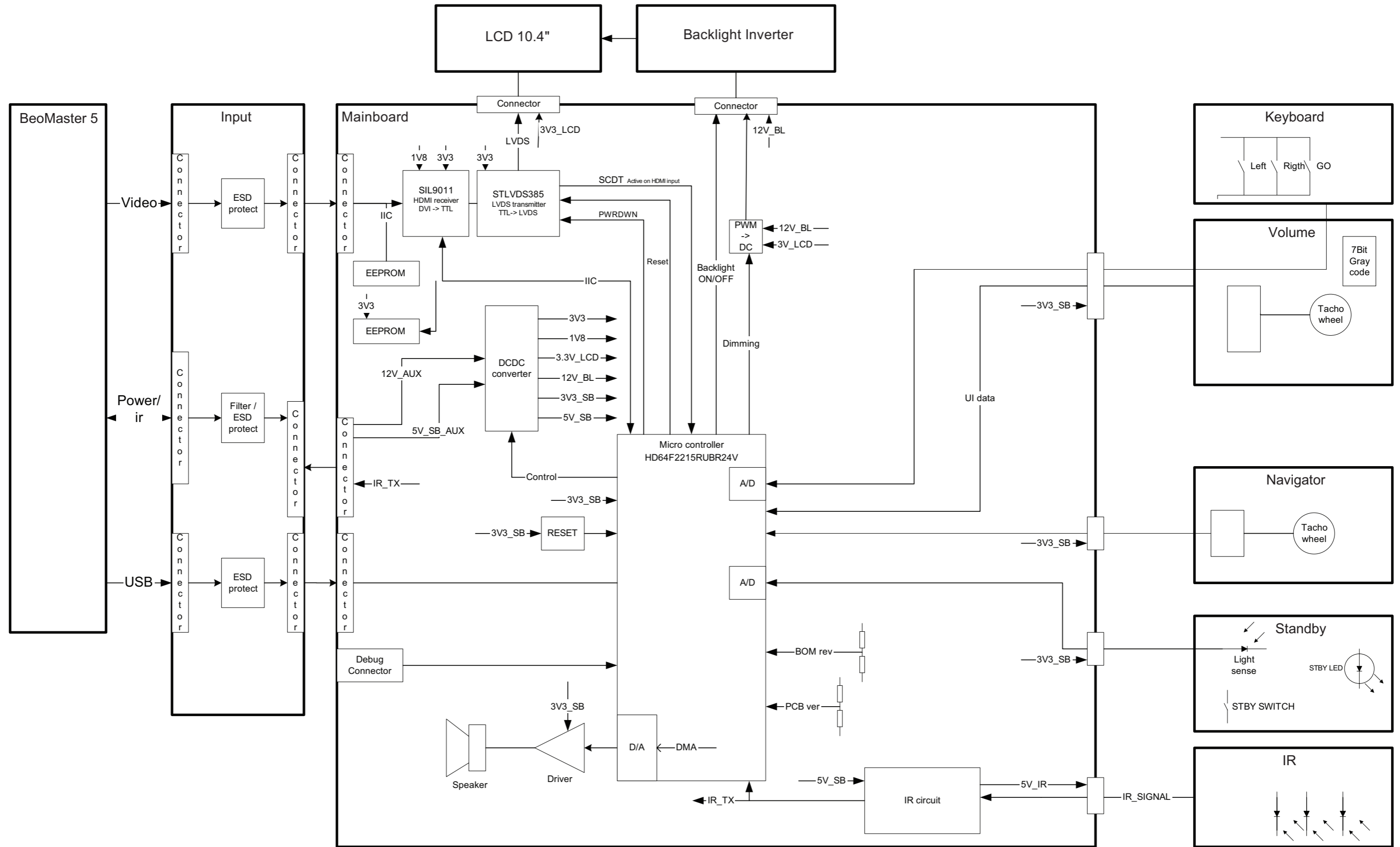


Pin 1	T.M.D.S.Data 2 -
Pin 2	T.M.D.S. Data 2 +
Pin 3	T.M.D.S. Data 2/4 shield
Pin 4	T.M.D.S. Data 4 -
Pin 5	T.M.D.S. Data 4 +
Pin 6	DDC Clock
Pin 7	DDC Data
Pin 8	Analog vert. sync
Pin 9	T.M.D.S. Data 1 -
Pin 10	T.M.D.S. Data 1 +
Pin 11	T.M.D.S. Data 1/3 shield
Pin 12	T.M.D.S. Data 3 -
Pin 13	T.M.D.S. Data 3 +
Pin 14	+5V Power
Pin 15	Ground
Pin 16	Hot plug detect
Pin 17	T.M.D.S. Data 0 -
Pin 18	T.M.D.S. Data 0 +
Pin 19	T.M.D.S. Data 0/5 shield
Pin 20	T.M.D.S. Data 5 -
Pin 21	T.M.D.S. Data 5 +
Pin 22	T.M.D.S. Clock shield
Pin 23	T.M.D.S. Clock +
Pin 24	T.M.D.S. Clock -Composite video

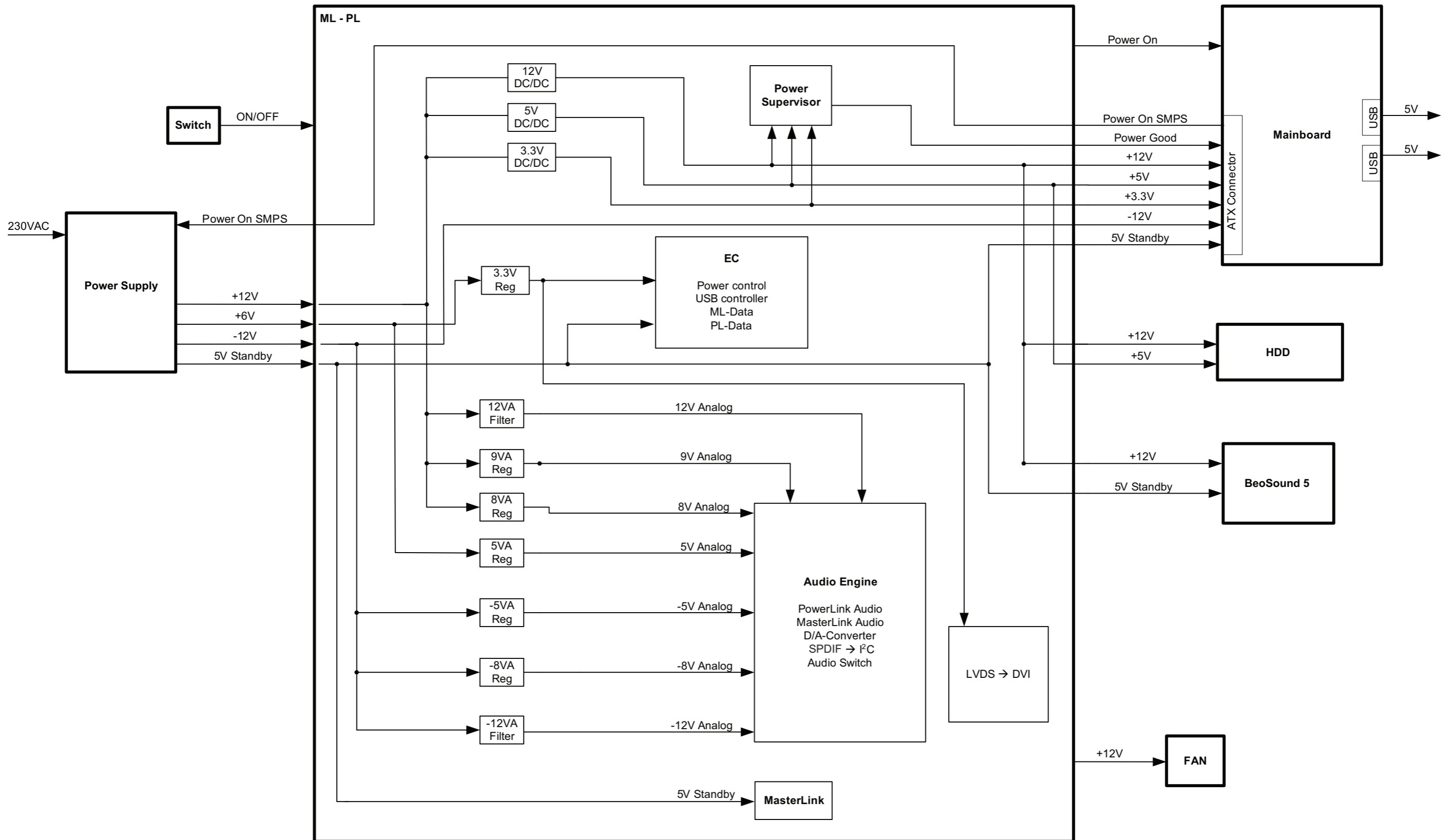
Video Output formats

Product	Resolution (VGA) 60 Hz	Resolution (DVI) 60 Hz (BM5)	Resolution (YpbPr) 60Hz (BM5)	Resolution (CVBS or Y/C)
BeoSystem 1 MKII (940x)	-	-	-	800 x 600
BeoSystem 1 MKIII (9431-9436)	-	-	-	800 x 600
BeoSystem 2 MKII (941x)	-	-	-	800 x 600
BeoSystem 2 MKIII (942x)	-	-	-	800 x 600
BeoSystem 3 + BV4 MKI HD	1360 x 768	1360x768	720p / 1080i	800 x 600
BeoSystem 3 + BV4 MKII FHD	1360 x 768	1920x1080p	720p / 1080i	800 x 600
BeoSystem 3 + BV4 MKIII FHD	1360 x 768	1920x1080p	720p / 1080i	800 x 600
BeoVision Avant 32 DVD MK III (846x)	-	-	-	800 x 600
BeoVision 3 – 32 MK III (881x)	-	-	-	800 x 600
BeoVision 5 MK III (891x/8931)	-	-	-	800 x 600
BeoVision 5 MK IV (8939/894x)	1024 x 768	1024 x 768	1024 x 768	800 x 600
BeoCenter 6 – 23 (9212-9218) HD-Ready	1360 x 768	1360 x 768	-	800 x 600
BeoCenter 6 – 26 (9280-9286)	1360 x 768	1360 x 768	720p / 1080i	800 x 600
BeoVision 7 – 32 MKI (9310-9320)	1366 x 768	1360 x 768	-	800 x 600
BeoVision 7 – 32 MKI (9310-9320) HD-kit	1360 x 768	1360 x 768	720p / 1080i	800 x 600
BeoVision 7 – 32 MKII (9321-9329)	1366 x 768	1360 x 768	-	800 x 600
BeoVision 7 – 32 MKII (9321-9329) HD-kit	1360 x 768	1360 x 768	720p / 1080i	800 x 600
BeoVision 7 – 32 MKIII (9331-9339)	1360 x 768	1360 x 768	-	800 x 600
BeoVision 7 – 40 MKI (9351-9359)	1366 x 768	1360 x 768	-	800 x 600
BeoVision 7 – 40 MKI (9351-9359) HD-kit	1360 x 768	1360 x 768	720p / 1080i	800 x 600
BeoVision 7 – 40 MKII (9361-9369)	1360 x 768	1360 x 768	720p / 1080i	800 x 600
BeoVision 7 – 40 MKIII (9370-9384)	1360 x 768	1920x1080p	720p / 1080i	800 x 600
BeoVision 8 – 26 (9500)	1360 x 768	1360 x 768	Not possible !	800 x 600
BeoVision 8 – 32(9550-9551)	1360 x 768	1360 x 768	Not possible !	800 x 600
BeoVision 8 – 40 (9560-9561)	1360 x 768	1920x1080p	Not possible !	800 x 600
BeoVision 9-50 MKI HD (9710-9719)	1360x768	1360x768	720p / 1080i	800 x 600
BeoVision 9-50 MKII FHD (9710-9719)	1360x768	1920x1080p	720p / 1080i	800 x 600
BeoVision 9-50 MKIII FHD (9760-9772)	1360x768	1920x1080p	720p / 1080i	800 x 600

Overall block diagram – BeoSound 5

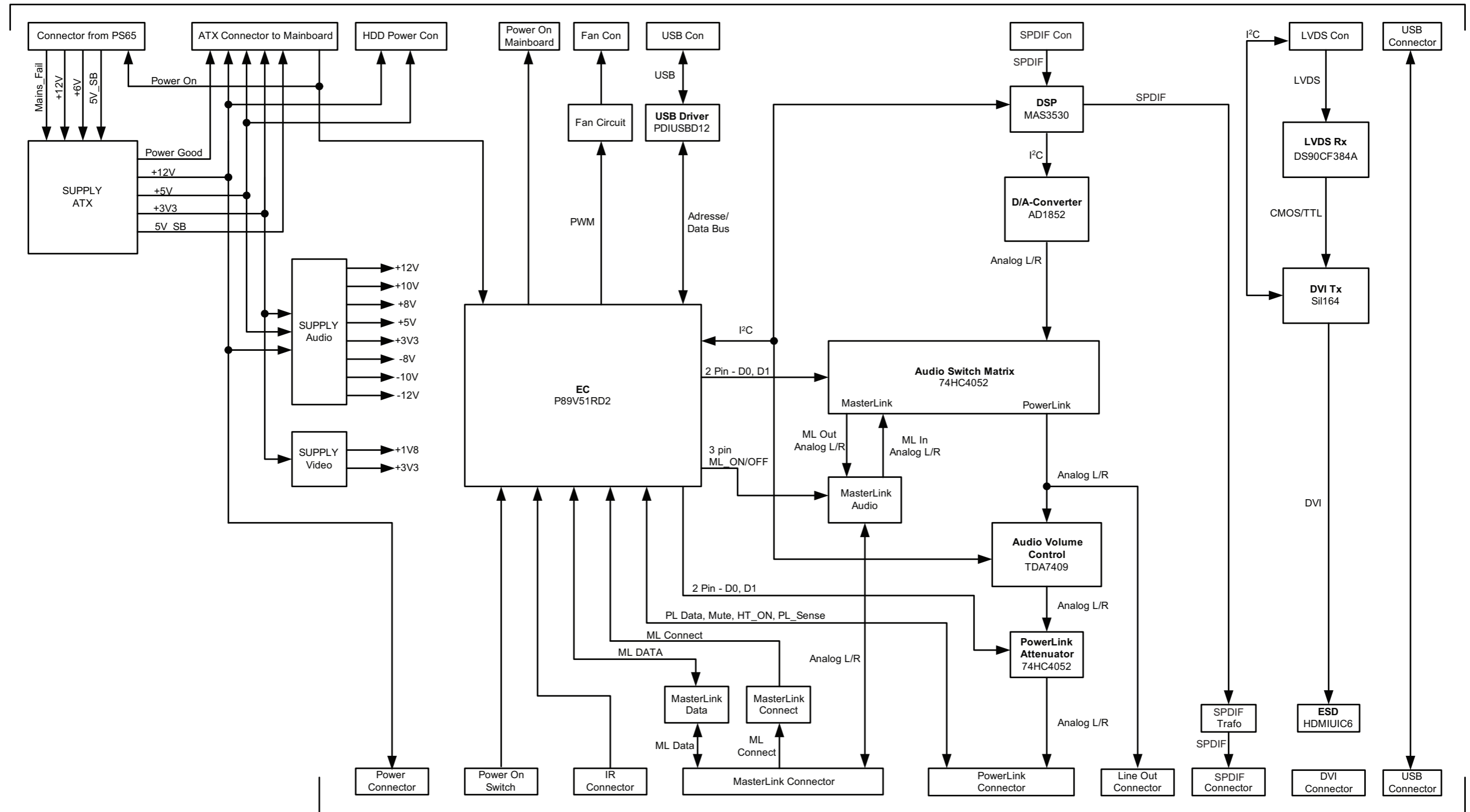


Block diagram – Power – BeoMaster 5



Block diagram – ML-PL – BeoMaster 5

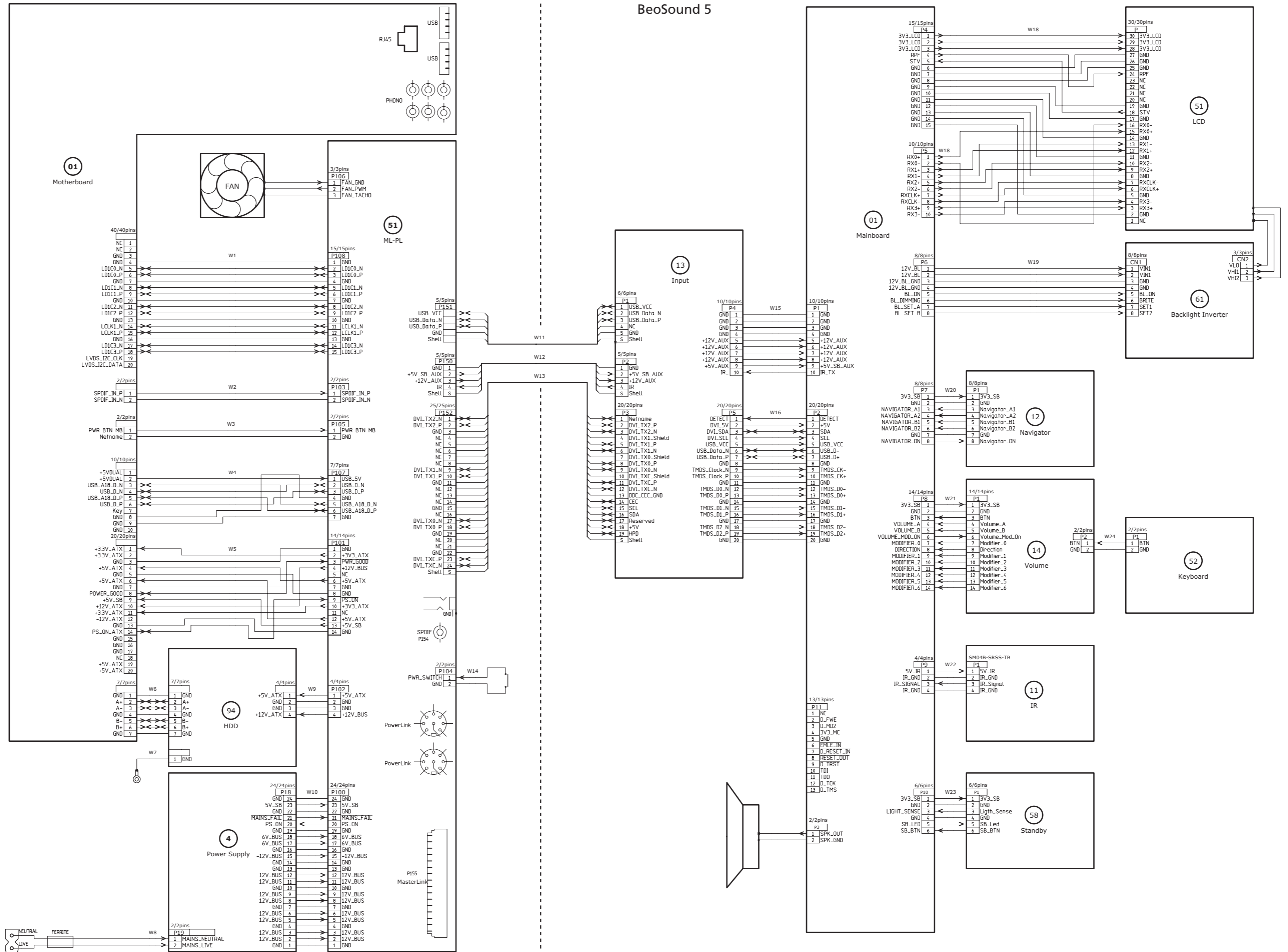
Internal Connectors



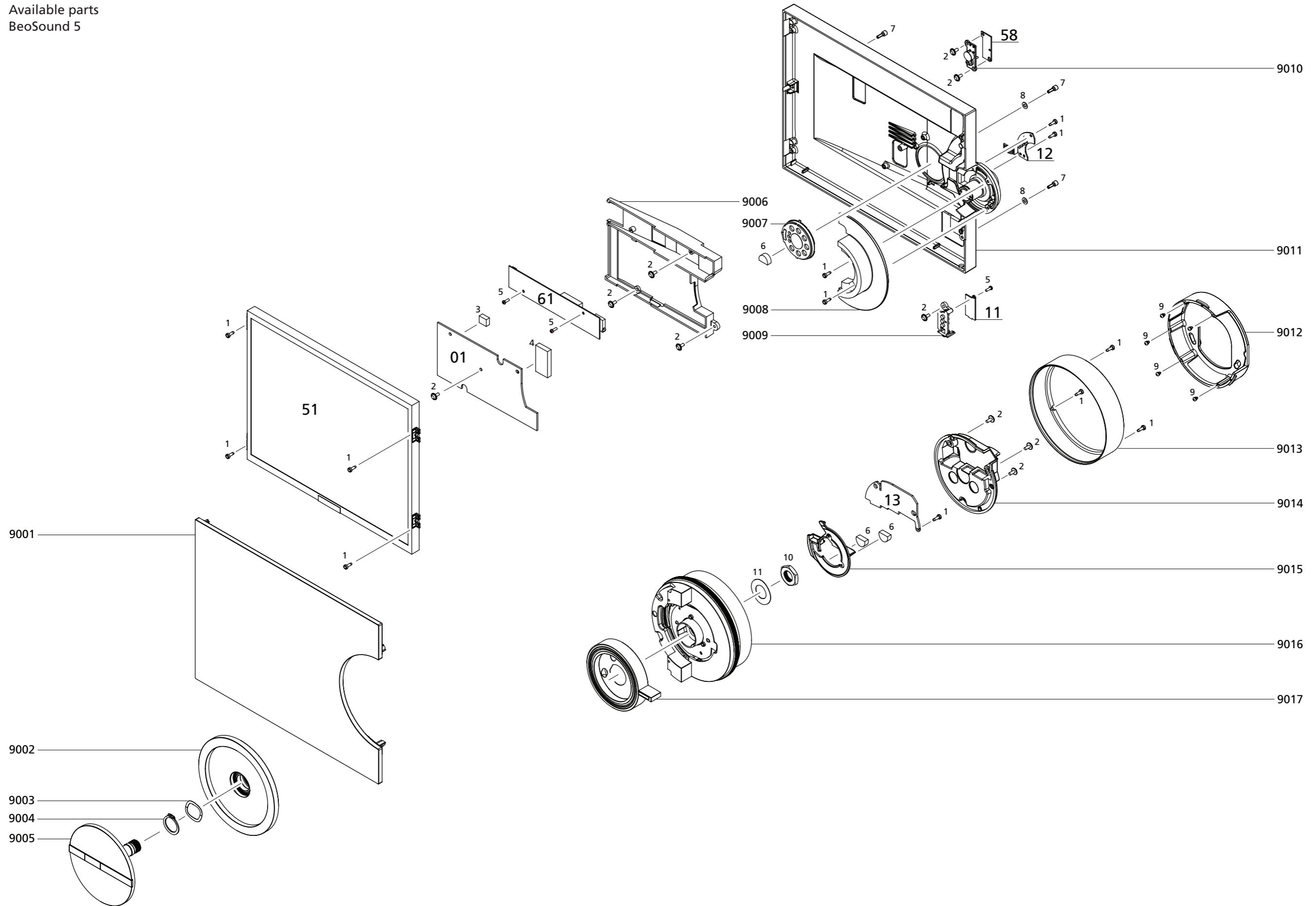
External Connectors

BeoMaster 5

BeoSound 5



Available parts
BeoSound 5



**Available parts
BeoSound 5**

9001	3451873	Front glass
9002	2804054	Menu wheel incl. pos. no. 9003, 9004
9003	2816445	Spring
9004	2390013	Lock f/menu wheel
9005	2776816	Button unit
9006	3321117	Frame
9007	8480185	Speaker
9008	3164072	Cover f/menu wheel
9009	3321158	IR lens incl 2 screws
9010	3131112	Holder, complete
9011	3431515	Back cover
9012	3901127	Wall bracket
9013	3901151	Decoration ring
9014	3321125	Cover f/socket unit
9015	3321159	Wire guide
9016	2804080	Volume wheel unit
9017	2804065	Navigation arm

01Module	8004045	PCB01, Mainboard
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11Module	8004039	PCB11, IR
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12Module	8004040	PCB12, Navigator
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13Module	8004038	PCB13, Input
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51Module	8200204	PCB51, LCD
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58Module	8004041	PCB58, Standby
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61Module	8004042	PCB61, Backlight Inverter
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Screws, washers etc.

1	2019027	Screw 22 x 7mm
2	2019033	Screw 2.5 x 6mm
3	3300187	Gasket
4	2622071	Gap pad 31 x 16mm
5	2052083	Screw 20 x 6mm
6	3947080	Foam
7	2052079	Screw 2.5 x 8mm
8	2622075	Washer
9	3103274	Rubber foot
10	2380024	Bearing nut
11	2632000	Washer

Survey of cables

W11	6270960	Wire, USB - 4.5M
	6270961	Wire, USB to repeter - 4.5M
W12	6270905	Cable, power - 4.5M
	6270914	Cable, power - 9M
W13	6270959	Cable, DVI-I singleline-HDMI - 4.5M
	6270962	Cable, DVI-I singleline-HDMI - 9M
W15	6278250	Wire SHR-10
W16	6278236	Wire micro coax
W18	6278237	Cable LVDS
W19	6278238	Wire Main/Inverter
W20	6278268	Wire SR08
W21	6278267	Wire SR14
W22	6278266	Wire SR04
W23	6278276	Wire SR06
W24	6278277	Wire SR02

Parts not shown

3376190	Product cover
3010063	Tool f/bearing nut
8004169	Wireless USB network adapter

Back-up suitcase

3395333	Back-up suitcase
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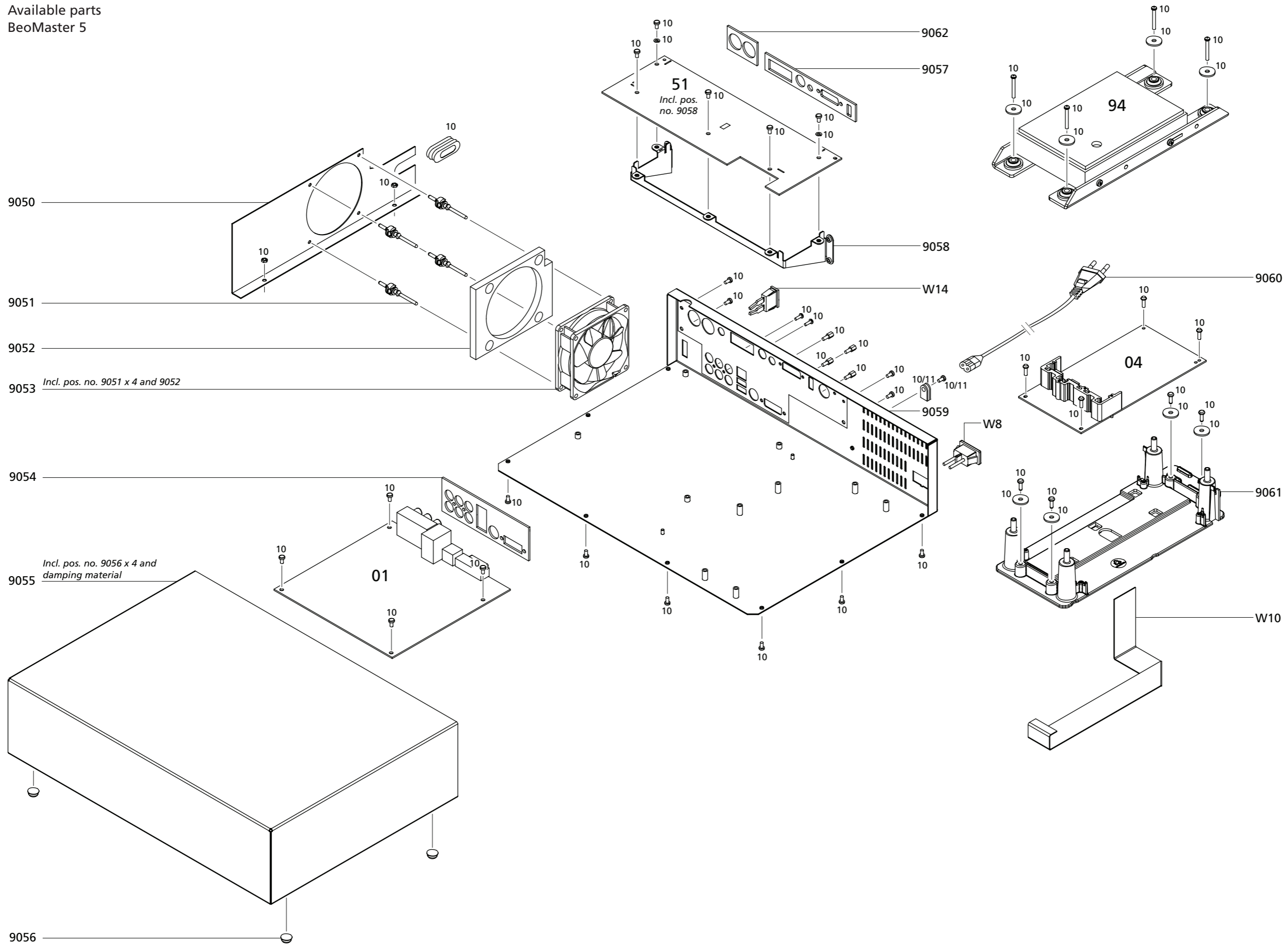
Packing

3393144	Packing, complete
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Available documentation

See Retail Ordering System

Available parts
BeoMaster 5



Available parts

BeoMaster 5

9050	3031139	Wall f/fan
9051	3938010	Damper f/fan
9052	3340308	Gasket f/fan
9053	8410009	Fan incl. pos. no. 9051 x 4 and 9052
9054	3340309	Gasket f/PCB01
9055	3431506	Cabinet, top incl. damping material
9056	3103208	Foot
9057	3340314	Gasket f/PCB51
9058	3152588	Bracket f/PCB51
9059	3431508	Cabinet, bottom
9060	6100245	Mains cable EU, 2.5A, 1.8M
	6100328	Mains cable UK, 2.5A, 1.8M
	6100125	Mains cable TWN, 2.5A - 125V, 3M
	6100151	Mains cable TH, 2.5A 1.8M
	6100247	Mains cable JP, 7A, 1.8M
	6100248	Mains cable AUS, 2.5A 1.8M
	6100306	Mains cable US, 2.5A, 1.8m
	6100040	Mains cable China, 2.5A, 1.8M
	6100386	Mains cable Korea, 3A 3M
9061	3152552	Holder f/PCB04
9062	3947513	Gasket f/ML

01Module	8004085	PCB01, Motherboard
	8004086	RAM

04Module	8003045	PCB04, Power Supply
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51Module	8004083	PCB51, ML-PL
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94Module	8420040	PCB94, HDD
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Survey of screws, washers etc.

10	3390167	Bag w/all screws, washers and pos. no. 11
11	3390006	Bag w/cable holder and screw

Survey of cables

W1	6278244	Cable, LVDS
W2	6278246	Wire, SPDIF
W3	6278248	Wire, Power
W4	6278245	Cable, USB
W5	6278240	Cable, ATX/ATX
W6	6278239	Cable
W7	6278249	Wire, ground
W8	6278243	Wire f/mains polarized
W9	6278241	Cable, HDD power
W10	6278242	Wire, 24 pole
W11	6270960	Wire, USB - 4.5M
	6270961	Wire, USB to repeter - 4.5M
W12	6270905	Cable, power - 4.5M
	6270914	Cable, power - 9M
W13	6270959	Cable, DVI-I singleline-HDMI - 4.5M
	6270962	Cable, DVI-I singleline-HDMI - 9M
W14	6278247	Wire, reset w/switch

Parts not shown

3375179	Product cover
3390006	Bag w/wire relief
6270925	Cable network RJ45

Back-up suitcase

3395333	Back-up suitcase
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Packing

3393149	Packing, complete
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Available documentation

See Retail Ordering System

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DK-7600 Struer
Denmark

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10-08