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PHILIPS

ISSUE PA97.06 (97-11-26)

Published by:
Service Department LOBPA Hong Kong

LINE OF BUSINESS PORTABLE AUDIO

SERVICE NEWSLETTER

06.01 TYPENUMBER(S) : **AE3350**

SYMPTOM : Batteries run out quickly.

CURE : A transistor (Q7) and a resistor 1kΩ (R17) were added since week 9636 to protect the audio IC from wrong polarity of external DC supply.
The grounding end of R17 is wrongly connected to the ground before the power switch, so that a current of 2.5mA is drawn in the power “OFF” condition.
To solve the problem, remove R17 and connect a 1kΩ resistor from the base of Q7 to the negative (-) of C43.

REMARKS : Modification has been implemented in production from week 9745 onwards.

06.02 TYPENUMBER(S) : **AW7150, AW7250**

INFORMATION : For **AW7150/11P** and **AW7250/11P** only:
The tuning capacitor 2101 was replaced by 4822 125 11104.
To obtain optimum alignment, following components were changed to:
2116 5322 122 34107 3.9pF ±0.5pF N470
2124 4822 126 14267 3.3pF ±0.5pF N3300

REMARKS : Changes have been implemented in production from week 9723 onwards.

06.03 TYPENUMBER(S) : **AZ1100, AZ1101, AZ1102, AZ1103, AZ1104, AZ1105, AZ1106**

INFORMATION : **Correction to Service Manual, mechanical partslist:**
Item 33 is no service article.
Codenumber 4822 526 10625 refers to item 35.
35 4822 526 10625 magnet ring

REMARKS :

06.05 TYPENUMBER(S): **AZ1100, AZ1101, AZ1102, AZ1103, AZ1104, AZ1105, AZ1106**

INFORMATION : From October 1997 onwards, the CD main board was replaced by “CD97 module”. In combination also a new Front Board and an additional Regulation Board were implemented.
For details see Service Information A97-589 (4822 725 25647).

REMARKS : Sets with “CD97 module” can be identified by the factory change code starting from **KZ04**9740... onwards.

06.06 TYPENUMBER(S): **AZ1202, AZ1602**

SYMPTOM : The system hangs up when switching from TUNER- or TAPE-mode to CD-mode.

CURE : To eliminate the noise level add capacitor 1nF/50V (4822 122 33197) from pin 23 of 7401 to ground on front board.

REMARKS : Modification has been implemented in production from week 9740 onwards.

06.07 TYPENUMBER(S): **AZ1302, AZ1307, AZ1308, AZ1402, AZ1407, AZ1508, AZ1509, AZ2415, AZ2804, AZ2805, AZ2808**

INFORMATION : From October 1997 onwards, the CD-drive (item 1800) of the “Short Loader module” was changed from CDM12.1 to VAM1201 (4822 691 10615). In combination with VAM1201 the Clamper Assy (item 212) has been changed to 4822 401 11709.

REMARKS : Short Loader modules with VAM1201 can be identified by the type plate located on the rear side of the module.
VAM1201 is used from factory change code **KT02** onwards.

06.08 TYPENUMBER(S): **AZ1308**

INFORMATION : **For AZ1308/11 (FM/SW1/SW2/MW version) only:**
In course of production the tuning capacitor 2101 was replaced by 4822 125 11104.
To obtain optimum alignment, following components were changed to:
2116 4822 126 14266 1pF ±0.25pF N470
2124 4822 126 14267 3.3pF ±0.5pF N3300

REMARKS : Changes have been implemented in production from week 9750 onwards.

06.09 TYPENUMBER(S): **AZ2100, AZ2600, AZ2605, AZ2615**

INFORMATION : For sets with factory change code **KT02**, which indicates new “CD5” or “CD6” CD modules, resistors 3847 and 3848 were changed from 22kΩ to 33kΩ (4822 116 52271) in order to solve the start up problem for 3“ skew disc.

REMARKS : Modification has been implemented in production from week 9742 onwards.

06.10 TYPENUMBER(S): **AZ2305**

INFORMATION : For radio alignment, the location of trimming capacitors C1, C2, C3 and C4 is not indicated on the layout diagrams in service manual. For additional information see Service Information A97-587 (4822 725 25645).

REMARKS :

06.11 TYPENUMBER(S): **AZ2605, AZ2615**

INFORMATION : Item 7812, the remote control sensor TFMS5360 (4822 212 30842) has been replaced by TSOP1736 (4822 218 11745).

REMARKS : The new remote control sensor has been implemented in production from week 9740 onwards. The new sensor can be used without further modification.

06.12 TYPENUMBER(S): **AZ6880**

INFORMATION : **Correction to Service Manual, Electrical partslist:**
The service code number of Q421, 74HC4052 should read 5322 209 15779.

REMARKS :

06.13 TYPENUMBER(S): **AZ7260, AZ7261, AZ7263, AZ7264, AZ7265, AZ7265, AZ7266, AZ7267, AZ7268, AZ7271, AZ7272, AZ7275, AZ7278**

INFORMATION : Above mentioned sets cannot charge ordinary loose NiCd batteries. Only the Philips battery pack AY3361 (4822 138 10615) can be charged.

REMARKS : The battery pack is charged via a separate charging pin, connected to the exposed negative terminal of AY3361. On ordinary loose NiCd batteries the negative terminal is insulated and thus charging cannot work.

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PHILIPS

ISSUE PA97.05 (97-10-01)

Published by:
Service Department LOBPA Hong Kong

LINE OF BUSINESS PORTABLE AUDIO

SERVICE NEWSLETTER

05.01 TYPENUMBER(S): **AJ3720, AJ3740**

INFORMATION : Due to a software problem, the Alarm 2 does not function on Radio preset 1. An addendum sheet is added to notify customers.
The message is as follows:
"In the radio wake-up alarm mode, the PRESET 1 station operates on ALARM 1 only and not ALARM 2."

REMARKS : Microprocessor IC with modified software will be implemented in production from week 9748 onwards.

05.02 TYPENUMBER(S): **AQ4050, AQ4150**

INFORMATION : **New tape deck was used in production.**
Please refer following different service codenumbers:

4822 358 10233	Main belt
4822 528 70849	Pinch Roller Arm
4822 528 70695	Pinch Roller
4822 403 70968	Eject Slider

REMARKS : Modification was implemented in production from August 97 onwards (factory code starting from KZ019734.. onwards).

05.03 TYPENUMBER(S): **AZ1202, AZ1209**

INFORMATION : **Correction Service Manual, Mechanical partslist:**
The service codenumber of the CD-drive (item 454) on the exploded view diagram is missing. It should read 4822 691 10587.

The motors of the CD-drive have been changed to type RF-310T.
The service codenumber of the new drive reads 4822 691 10654.
Only new drives will be delivered.

In order to optimize the playability of the new CD-drive, following components on the CD97 board have also been changed:

2820	4822 121 51399	47nF 10% 50V
3855	4822 116 52271	33kΩ 5% 0.16W

REMARKS : Modification is implemented in production from week 9741 onwards.
For service purpose above mentioned components need not to be exchanged when replacing an old drive by a new one.

05.04 TYPENUMBER(S): **AZ1602**

INFORMATION : The motors of the CD-drive have been changed to type RF-310T. The service codenumber of the new drive reads 4822 691 10654. Only new drives will be delivered.

In order to optimize the playability of the new CD-drive, following components on the CD97 board have also been changed:
2820 4822 121 51399 47nF 10% 50V
3855 4822 116 52271 33kΩ 5% 0.16W

REMARKS : Modification is implemented in production from week 9741 onwards. For service purpose above mentioned components need not to be exchanged when replacing an old drive by a new one.

05.05 TYPENUMBER(S): **AZ2100, AZ2600, AZ2605, AZ2615**

INFORMATION : This information is valid only for sets which are produced after July 1997, referring following Service Information:
A97-576 (4822 725 25628) for AZ2100
A97-577 (4822 725 25629) for AZ2600
A97-578 (4822 725 25631) for AZ2605
A97-579 (4822 725 25632) for AZ2615

The motors of the CD-drive have been changed to type RF-310T. The service codenumber of the new drive reads 4822 691 10654. Only new drives will be delivered.

In order to optimize the playability of the new CD-drive, following components on the CD5 and CD6 board have also been changed:
2820 4822 121 51399 47nF 10% 50V
3855 4822 116 52284 47kΩ 5% 0.16W

REMARKS : Modification is implemented in production from week 9741 onwards. For service purpose above mentioned components need not to be exchanged when replacing an old drive by a new one.

05.06 TYPENUMBER(S): **AZ8050, AZ8051, AZ8052, AZ8055, AZ8056, AZ8057, AZ8061, AZ8068, AZ8070, AZ8075, AZ8262, AZ8267**

INFORMATION : The Front Cabinet (item 504) is now available via following service codenumber:
4822 459 04782 Front Cabinet (Silver)
4822 459 04783 Front Cabinet (Dark Grey)

REMARKS :

05.07 TYPENUMBER(S): **AZ8050, AZ8051, AZ8052, AZ8061, AZ8070**

INFORMATION : This information is valid only for AZ805./..D, AZ8061/..D and AZ8070.

The motors of the CD-drive have been changed to type RF-310T.
The service codenumber of the new drive reads 4822 691 10654.
Only new drives will be delivered.

In order to optimize the playability of the new CD-drive, following components on the Combi A4-board have also been changed:
2820 4822 121 51399 47nF 10% 50V
3855 4822 116 52284 47kΩ 5% 0.16W

REMARKS : Modification is implemented in production from week 9741 onwards. For service purpose above mentioned components need not to be exchanged when replacing an old drive by a new one.

05.08 TYPENUMBER(S): **Compact Disc drive CDM12.3BLC**

INFORMATION : Many defects are caused by loose Clamping Plate and Guide Block (toothed bar).

Following improvement actions have been taken:
1. Clamping Plate : Tooling modified to increase snap area and the height of stopping boss.
2. Guide Block : Tooling modified to strengthen one rib.

REMARKS : Action 1 was implemented in production from week 9724 onwards.
Action 2 was implemented in production from week 9740 onwards.

ISSUE AS97.04 (97-09-11)

Published by:
Service Department Audio Systems

LINE OF BUSINESS AUDIO SYSTEMS

SERVICE NEWSLETTER

04.01 TYPENUMBER(S): **74MX530, 74MX550, 74MX610, AS440/xxG, AS450, AS540/xxG, AS550, AZ1302, AZ1307, AZ1308, AZ1402, AZ1407, AZ1508, AZ1509, AZ2804, AZ2805, AZ2808, AZ8640, FW17, FW18, FW24, FW26, FW46, FW68, FW330, FW332, FW335, FW362, FW363, FW610, FW630, FW690**

SYMPTOM : CD tray doesn't open/close completely or tray is blocked.

CURE : In course of production a number of parts have been improvemed. Nevertheless a lot of Short Loader Modules without these improvements are in the field.
It is therefore recommended to replace all critical parts when above mentioned fault is complained:

pos.	service code	article description
202	4822 522 33464	gear wheel drawer
204	4822 522 33465	cam wheel
213	4822 532 52573	pinion guiding
216	4822 444 40727	drawer

REMARKS :

04.02 TYPENUMBER(S): **CDC752/00**

INFORMATION : **ERRORS IN INSTRUCTION FOR USE**

1. The set is not equipped with RC5 Cinch sockets.
2. "PROG" button on the Remote control is not functional for this set.

In the production an addendum sheet will be packed by until corrected IFUs are available.

REMARKS : The serial numbers of sets affected (already released into market) are from VE029724 001001 to VE029724 001796.

04.03 TYPENUMBER(S): **FW12**

SYMPTOM : During play CD sound becomes distorted and finally stops playing, Tuner and Cassette operates normal.

CAUSE : The light pen is jammed or obstructed. As a result diodes 6221-6224 and IC 7841 become very hot (heavy current draw).

CURE : Remove the RCD1.2 disc drive, clean the light pen spindles thoroughly and add 1-2 drops of lubrication oil onto the spindles. Check for smooth movement of the light pen before re-assembly. Lubrication oil “SANKOL LEN-315F” can be ordered with service code number 4822 390 10154.

REMARKS :

04.04 TYPENUMBER(S): **FW66**

INFORMATION : **Correction to Service Manual** (4822 725 23971)
Electrical Diagram : interface unit for CD short loader (page 52)
diode 6402 BXZ79/C13 should read BZX79/C5V6
-12 should read -5V6 (position E3 and I4)
-13V should read -5V2 (red) (position E3 and I4)

REMARKS :

04.05 TYPENUMBER(S): **FW76**

INFORMATION : **Correction to Service Manual** (4822 725 23972)
Electrical Diagram : interface unit (page 47)
diode 6402 BXZ79/C13 should read BZX79/C5V6
-12 should read -5V6 (position E25 and I26)
-13V should read -5V2 (red) (position E25 and I26)

REMARKS :

04.06 TYPENUMBER(S): **FW332, FW352C, FW362, FW372C, MC150**

SYMPTOM : Audio Output stage IC 7291 (AN7164) becomes defective.

CURE : The protection circuit of the IC AN7164 is incorrectly applied. This leads to defective ICs when the Loudspeaker wires are short circuited at output levels of above 1/8 rated output power.

As the correction of the application is too complicated for service, the only practical solution will be to replace the defective IC.

REMARKS : New products using the same IC will have the protection circuit corrected in the design.

04.07 TYPENUMBER(S): **FW362, FW363, FW372C, FW373C, FW382V, FW383V, FW395C, FW710C, FW725C, FW730C, FW745C, FW750C, FW770P, FW780P, FW783P, FW788P, FW790P, MC150, MC170, MC172, MX545, MX555, M7C, M17C, M18C, M27C, M28C, M37DC, M38C, M48DC**

SYMPTOM : The tape mechanism fails and cassette cannot be taken away.

CURE : The problem is due to Cam gear shaft cracked by weld line.
This causes the Cam gear not to return to its stop position.
Replacement of control disc (big gear or pos 25) is not recommended because of critical assembly & alignment control.

For such problem the complete deck should be replaced.

REMARKS : Improved tape mechanisms can be recognized by the label on the tape mechanism's motor. The label should read:

TYPENUMBERS	LABEL INDICATION
MC150, MC170, MC172	60718xxM/C onwards (year 96, July, 18 onwards)
FW362, FW363, FW372C, FW373C, FW382V, FW383V, FW395C, FW710C, FW725C, FW730C, FW745C, FW750C, FW770P, FW780P, FW783P, FW788P, FW790P, MC150, MC170, MC172, MX545, MX555, M7C, M17C, M18C, M27C, M28C, M37DC, M38C, M48DC	CWB44..... ....H onwards (H and above, ie. H, I, J....) eg. CWB44FR03 7030763IO 70307 = 1997-March-07; prod line 63, I=Indonesia, O=latest version

This fault has already been published in Service Newsletter AS97.03, item 03.10 for FW395C and MC170 only.

04.08 TYPENUMBER(S): **FR732, FR752**

INFORMATION : **Correction to Service Manual, Electrical partslist**
The type number of IC303 should read TDA7313D (4822 209 14856).

REMARKS :

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ISSUE CDR97.01 (97-08-21)

Published by:
Service Department New Business

LINE OF BUSINESS DISC SYSTEMS

SERVICE NEWSLETTER

CD-RECORDABLE/REWRITABLE

The objective of this first and “special” issue of CD-Recordable / ReWritable-newsletter is to give, at the global introduction of CDR870, information and/or explanation about this new recording system and set.

This newsletter informs also about the applied discs for recordings and its characteristics. More details are described in Circuit description: “The basics of Compact Disc Recordable/ReWritable” that is in preparation now and will be available soonest via service codenumber 4822 725 25242.
Also the service manual is in preparation now and can be ordered via service codenumber 4822 725 25241.

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1. Introduction

Set CDR870

With the introduction of the Philips CDR870 CD-Recorder it is possible to make your audio CD at home. Of course the set can also playback pre-recorded audio CD's like the well-known audio CD-player. Recordings can be made from, as well as analogue, as digital audio sources.
Applications:
- Compose your own digital audio recordings and compilations at home.
- Create your compilations to enjoy your favourite music in car, cd-soundmachine and other portable CD-players.

2. The CD-Recordable system

The CD-Recordable system consists of a CD-Recordable player and the exchangeable software carrier CD-Recordable disc.
As the read out system for an audio recorded CD-Recordable disc is the same as for the conventional CD-Audio, the recorded CD-Recordable disc can be played back on any existing CD-Audio player.

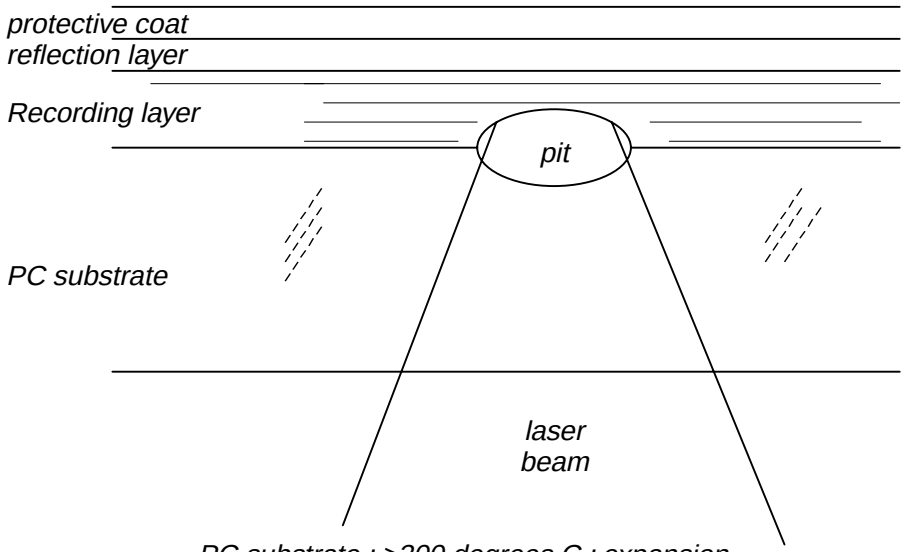
All CD systems, like CD-Audio, CD-ROM, CD-i, CD-ROM XA, Photo CD, Video CD are pre-recorded systems, and lack the facility of recording as enjoyed by tape systems. CD-Recordable systems address this deficiency.

CD-Recordable

CD-Recordable, a so called Write Once principle, has the advantage of full compatibility with all pre-recorded CD Systems.

The key to CD-Recordable is an organic dye coating (the photo absorption layer) applied over a substrate containing a wobbled tracking groove. The wobble frequency of the groove is FM modulated with timecode information. The average wobble frequency is used to control the turntable motor speed, while the timecode information is used to position recordings on the disc. This groove, often called: "pre-groove", guides the laser beam during recording.

The organic dye coating, on its turn, is covered with a reflective layer. The coating is initially transparent, and for recording it is heated by a laser beam. When the intensity of the laser spot passes a certain threshold, a bump appears in the layer. This is an irreversible process that drastically alters the optical characteristics. Using this technique, a pit (or rather, bump) pattern is written in the tracking groove by a relatively high-power laser in a dedicated recorder. The laser power required for recording is typically an order higher than the 0.5mW laser power used for reading.



PC substrate : >200 degrees C : expansion

Recording layer : 250 degrees C : melting

CD-ReWritable

CD-ReWritable may be seen as a logical extension of the CD-Recordable series of systems, based on the same pre-grooved substrate as CD-Recordable with just another type of recording layer.
CD-ReWritable drives will be able to write read and rewrite CD-ReWritable discs, as well as writing and reading CD-Recordable discs and reading all CD-Audio discs.

With only a minor modification in electronics, which CD-Audio players will implement, all future Philips CD-Audio players will be able to read CD-ReWritable discs.

How CD-ReWritable recordings are made and erased

An erasable CD technology must, of necessity, be in harmony with the existing CD systems. Philips persevered with phase change technology, by itself quite challenging in compatibility terms. Phase, in this context, refers to the physical aggregation state of the material used for the recording layer of the disc. There are two possible phases, with quite different optical properties. A low-reflectance domain of amorphous, or patternless, phase (equivalent to a CD pit) is produced when a laser heats the recording material raidly above its melting point of 500-700ºC. Cooling very quickly, the amorphous domain "freezes". On the other hand, if the recording material is heated to a rather lower temperature for a somewhat longer time, a higher reflectance domain of polycrystalline phase is formed, equivalent to a CD land.

Readout

Phase change tracks are read in the same way as regular CD tracks. The readout mechanism does no more than detect the transitions between low and high reflectivity, and measure the length of the periods between those transitions. Although the reflectance is lower than the for regular CD's, the relative proportions of light reflected from the amorphous and polycrystalline phases remains the same.

CD's reflectance specifications are defined at 70% minimum for lands, 28% maximum for pits. But with these specifications , the development of a recording material is a practically impossible task; if 70% of the light is reflected, only 30% at most remains to change the phase. Nowadays, these levels are not necessary: the photodiodes of today are able to detect much lower reflectance differences. All that is needed is the correct reflectance ratio and adequate amplification. That's why the CD-format specifications have been adapted accordingly.

The new CD-Recordable/ReWritable drives will write and re-write the CD-ReWritable discs - as well as writing CD-Recordable discs. And future CD-drives, fitted with automatic gain control, will be able to read them.
The recording material for CD-ReWritable consists of a layer of silver, indium, antimony and tellurium. The polycrystalline phase reflects about 20% of the light, the amorphous phase only 8%. That meets the requirement for a minimum modulation of 60%, and allows for writing by a laser of 10-15mW.

CD-ReWritable thus conforms the original CD specification except in one small respect. The discs have equal dimensions and store the same quantity of data. The drives embody a small modification, but in other respects are identical.

3. The Discs

CD-DA:

- Playback of the audio CD's. This disc is called Compact Disc Digital Audio (CD-DA).

CD-DA Recordable:

- Recording and playback of CD Digital Audio Recordable.
- This disc operates according to the Write Once principle. As long as disc is not finalised music tracks can be added. (Depending to the max playtime of approx. 74 min; 99 tracks can be inserted)
- Can be played on all CD-players after finalising the Recordable disc.

CD-ReWritable:

- Recording, Playback and Erasing on ReWritable Compact Discs
- After recording it is possible to erase the last track to correct recording mistakes
- After recording it is possible to erase the complete disc for re-use
- Can be played on CD-players prepared for ReWritable Discs after finalising (current CD-players are not prepared)

4. CDR870 recording/playback functions

RECORDING FUNCTIONS
- Manual Recording
- Auto Start Recording (CD-Sync function)
- Pause Recording
- Manual Tracknumbering
- Automatic Tracknumbering
- Remaining recording time display
- Serial Copy Management System (SCMS)
- Erase last track (only CDRW disc)
- Erase disc (only CDRW disc)

PLAYBACK FUNCTIONS
- Play
- Pause
- Stop
- Direct track selection
- Next/Previous track selection
- Search forward/reverse
- Fast search
- Program play (20 tracks)
- Time display switching

TRACKNUMBERING DURING RECORDING

Automatic Digital Tracknumbering
- Automatic tracknumbering from CD/DAT/DCC/MD digital sources

Automatic Analogue tracknumbering
- When using the analogue input, tracknumbers are set automatically after detecting a 3 second pause in the music

Manual tracknumbering
- In manual track increment mode, tracknumbers can be set manually during recording

Important Notes:
Tracknumbering can not be changed after recording
Recording of indexes inside music tracks is not possible

5. Features

Auto-Start Recording (CD-SYNC)

- When using a known digital source (CD/DAT/DCC/MD) recording will start automatically when starting the digital source
- No special or separate connection with the source is needed for this besides the coax/optical digital audio connection

CD-SYNC modes

- CD-SYNC: auto recording of all music tracks from the source
  This mode is designed to make a copy of a complete disc or tape

- CD-SYNC1: automatic recording of 1 music track from the source
  This mode is designed to make compilations by recording fully automatic track-by-track

Sample Rate Conversion

- Digital sources with a sampling frequency other than the CD sampling rate of 44.1 kHz are automatically converted.
- The Sample Rate Converter also removes all jitter from the digital input

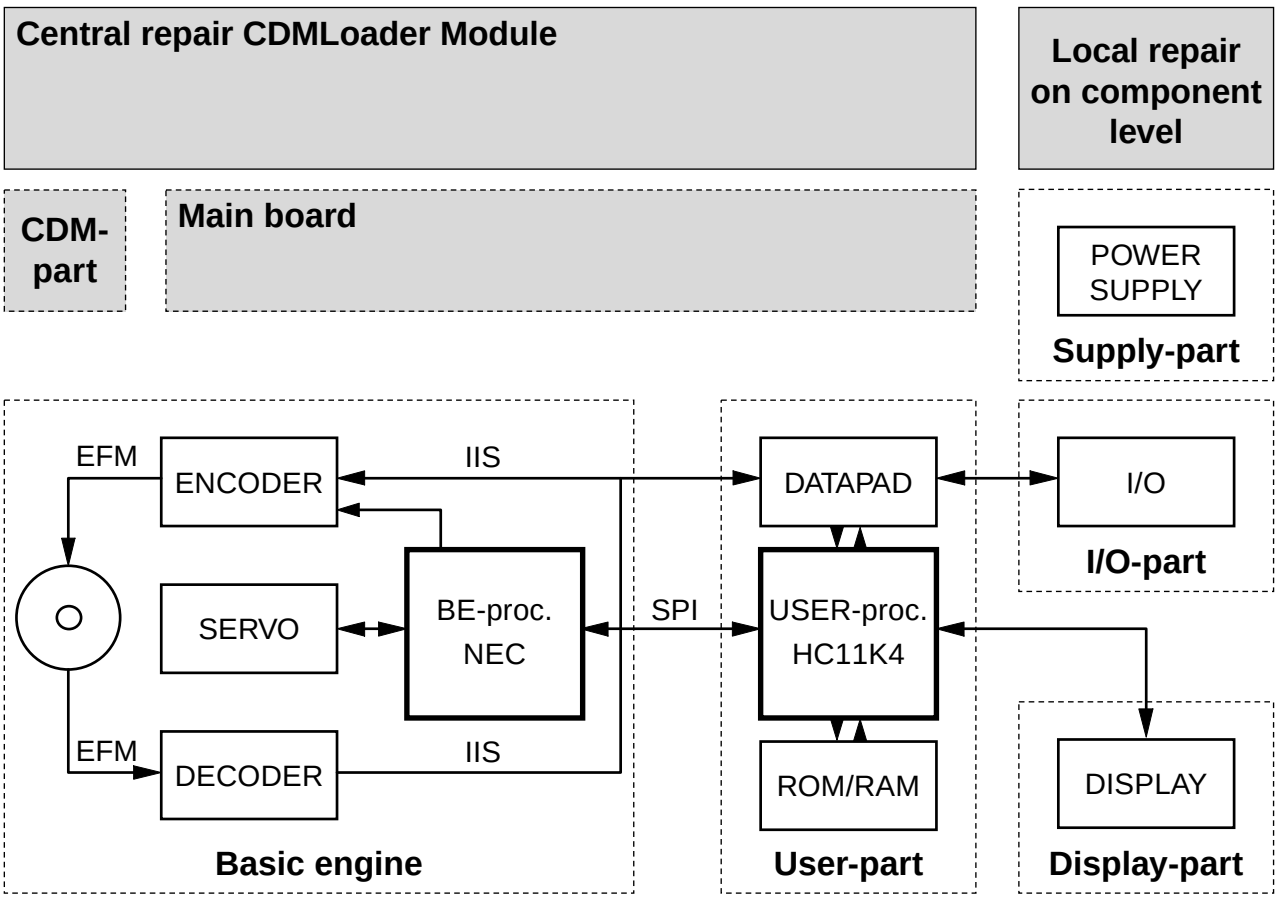
6. Servicing

For servicing CDR870 this set can be divided into two parts.

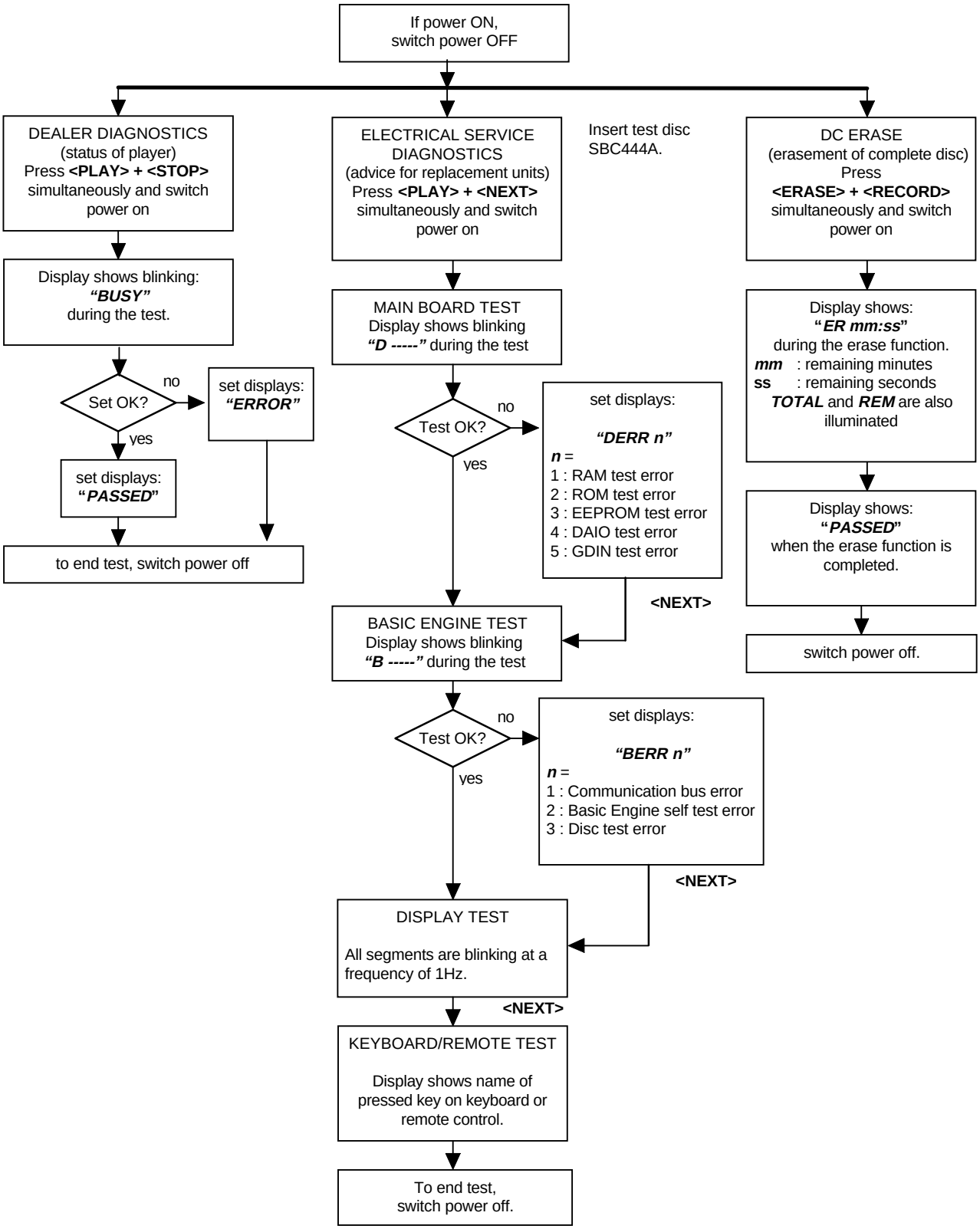
1. The Power supply board, Display board and the Input/Output interface board has to be repaired on component level. Detailed information will be available via Service Manual CDR870; 4822 725 25241.
2. The loader module with CD mechanism, CDM-board and the Main board will be exchanged completely. For easy diagnostics this set is equipped with a selfdiagnose program. To have repair costs lowered a repair procedure will be started and defective loader modules have to be returned. Details will be given as soon as service codenumber has been defined.

By means of the Service Test Program the playability of the set can be checked. See flow chart on next page, ELECTRICAL SERVICE DIAGNOSTICS.
First of all do not forget to insert test disc SBC444A into the recorder, otherwise a fault indication at disc test will be reported.
Then via actuating the PLAY NEXT and POWER ON keys simultaneously the Electrical Service Diagnostics mode is started.
In case of an DERR or BERR fault indication the CDMLoader module has to be exchanged.

We take it for granted that problems with power supply and display are solved before the electrical service diagnostics has been started.



SERVICE TEST PROGRAM



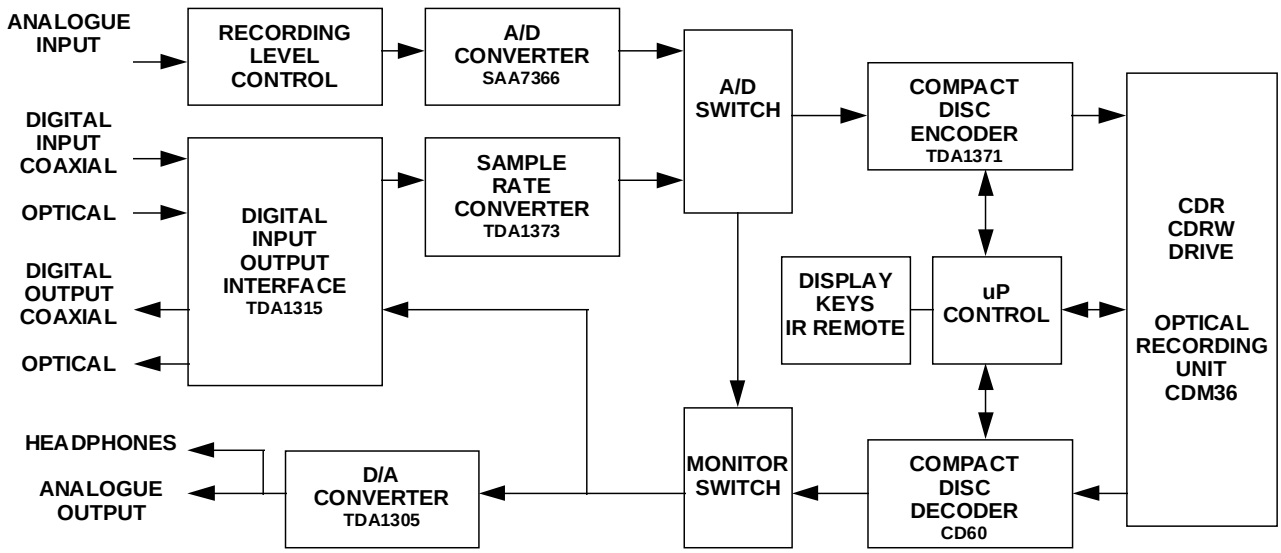
7. Block diagram of the CDR870

Finally we present the blockdiagram of CD-Recordable CDR870.
In Recording mode the analogue input has been converted into digital signal, which signal can be monitored via the A/D switch, than the signal is encoded into EFM-format and written onto the disc. The digital input sample rate may be converted before it is led to the A/D switch.

In Playback mode the read EFM-signal is decoded and led to digital output stage and / or converted into analogue audio signal in the DA Converter.

The µP is the heart of all these operations which controls the encoding and decoding processes.

Block diagram of the CDR870



ISSUE AS97.03 (97-08-18)

Published by:
Service Department Audio Systems

LINE OF BUSINESS AUDIO SYSTEMS

SERVICE NEWSLETTER

03.01 TYPENUMBER(S) : **AS445**

SYMPTOM : The message “HELLO” is shown on the display.

CURE : This phenomenon only appears when the mains cable is connected to the set, i.e. when moving the set to another place.
The message automatically disappears after a few seconds, when the set switches into the standby-mode.

REMARKS :

03.02 TYPENUMBER(S) : **AS660C, AS665C, AS760C, AS765C, FW322C, FW332C, FW335C, FW340C, FW342C, FW345C, FW352C, FW372C, FW362, FW363, FW373C, FW382V, FW391C, FW392C, FW395C, M7C, M17C, M27C, MC130, MC150, MC170, MX545**

SYMPTOM : Various failures disappear when the set is opened or when connectors are reconnected.

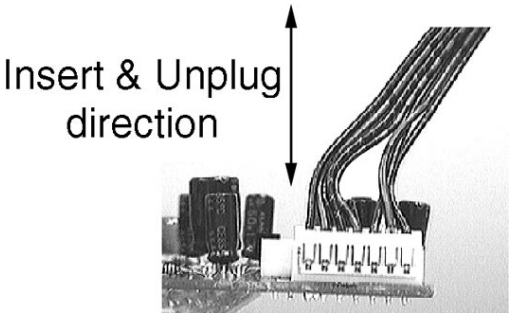
CAUSE : During production some JST connectors were changed from XH type to EH type with smaller head. This new EH type is more fragile and susceptable to deformation during plugging in and out of the connector socket. When it is deformed it will result in poor or intermittent contact.

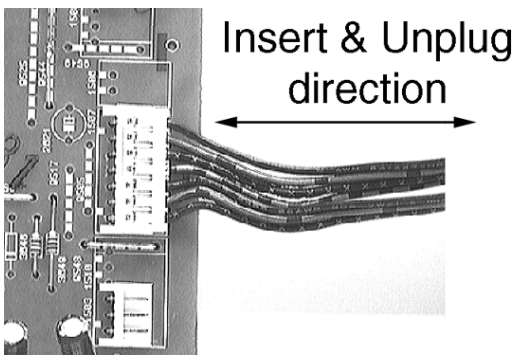
CURE :
1. During repair service technicians must handle the EH type connectors with care. The correct way to plug it in and out is indicated below.
2. All EH type connectors with an intermittent contact should be replaced as a preventive action.
3. All the different wire assemblies had been standardized and are available under the following service codes. For repair application the wires should be cut to the correct length as required in the defective set.

Order code	Description
4822 232 10395	6 pins Connector wire
4822 323 10396	5 pins Connector wire
4822 323 10405	4 + 3 pins Connector wire
4822 323 10397	4 + 5 pins Connector wire
4822 323 10398	6 + 4 pins Connector wire
4822 323 10399	4 + 4 pins Connector wire

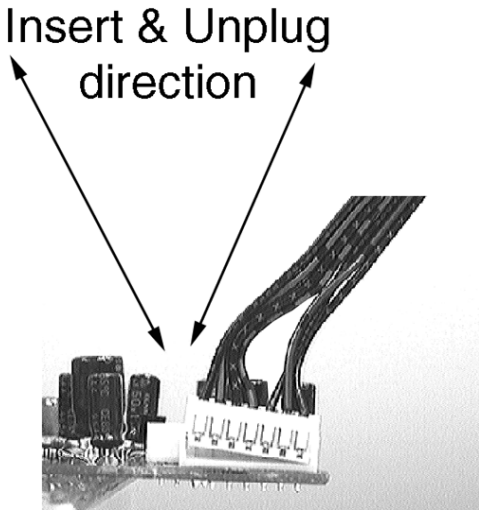
REMARKS : This information is valid for sets produced from week 9646 onwards. Improved material connectors are introduced in all sets by week 9712. New design plan to be introduced from May 1997 onwards.

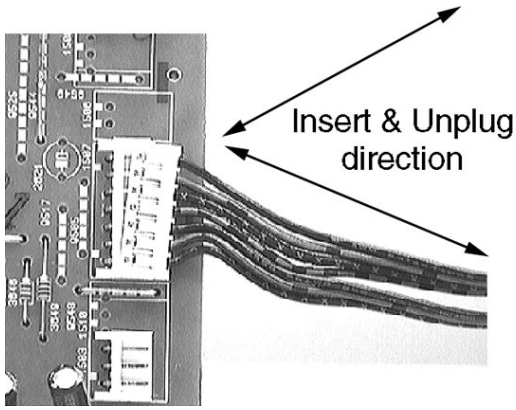
Correct handling





Wrong handling





03.03 TYPENUMBER(S): **AS760C, AS765C**

SYMPTOM : Volume drops after some time due to clipping circuit.

CURE : The output drop is due to an obsolete NTC & clipping circuit.
The problem can be fixed by deleting resistor 3472.

REMARKS : This problem may occur in sets with production code RZ..., produced before week 9704.

03.04 TYPENUMBER(S): **FB560**

INFORMATION : For above mentioned loudspeaker system no Service Manual has been published. The FB560 loudspeaker system consists of the loudspeaker boxes
• FB561 (front)
• FB562 (center)
• FB563 (surround)

The following spare parts are available:

Service Code	Article Description	Impedance	Application
4822 240 10085	Woofer 5 1/4”	12Ω	FB561
4822 240 10088	Tweeter	8Ω	FB561
4822 240 10086	Woofer 4”	12Ω	FB562
4822 240 10088	Tweeter	8Ω	FB562
4822 240 10087	Full range 5 1/4”	6Ω	FB563

REMARKS :

03.05 TYPENUMBER(S): **FW332**

SYMPTOM : POP Button does not function.

CURE : The problem is caused by the POP button activating point, which does not land correctly onto tact switch 1413.
This can be solved by:
• Remounting the switch 1413 or
• Shortening the stopper pins around the switch area by 0.5mm

CAUTION: Do not overdo this cutting because it may lead to easy breakage of the button hinge point when the customer over-presses the button.

REMARKS :

03.06 TYPENUMBER(S): **FW332, FW335, FW362, FW363**

SYMPTOM : The drawer gear wheel 202 and CAM wheel 204 are out of position.

CURE : The fault is due to an obsolete CAM gear wheel which is white in colour. Replace this part with the improved gear wheel (pos. 204) which is grey in colour.

REMARKS : Improved CAM gear wheel was introduced in production from week 9704 onwards.

03.07 TYPENUMBER(S): **FW332, FW335, FW352C, FW355C, FW362, FW363, FW372C, FW373C, FW375P, FW382V, FW395C, FW630, FW650C, FW670P, FW680V, FW725C, FW730C, FW745C, FW750C, FW780P, FW790P, M7C, M17C, M27C, M37DC, MC130, MC150, MC170, MC172**

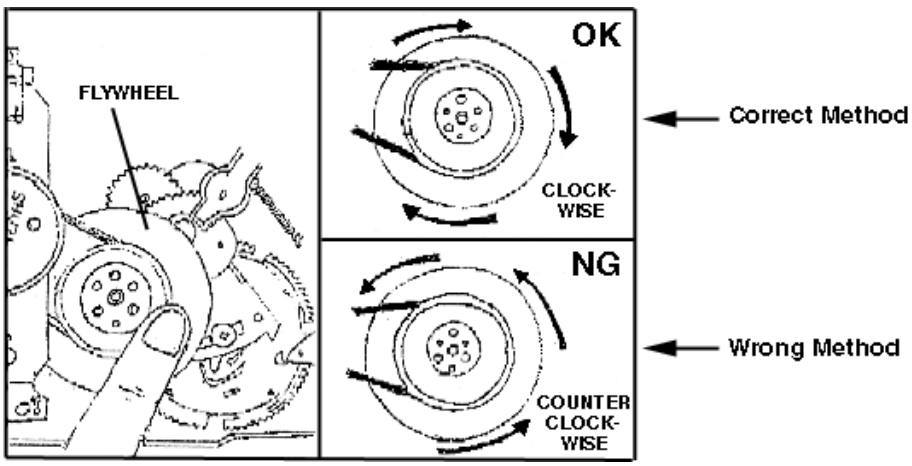
SYMPTOM : No sound when the set is switched from LW to STANDBY and afterwards switched-on again in LW-mode.

CURE : The fault is caused by IC 7101 TEA5762 (4822 209 90315).
The problem can be fixed as follows:
• Replace IC 7101 TEA5762 (4822 209 90315) or
• Add 1pF chip capacitor (4822 122 32447) across resonator 5121 or
• Change chip resistor 3162 from 150kΩ to 270kΩ (4822 051 20274)

REMARKS : This problem may be present in all sets using Tuner 95 board produced before 6th March 1997 (week 9710).

03.08 TYPENUMBER(S): **FW362, FW363, FW372C, FW373C, FW382V, FW383V, FW395C, FW710C, FW725C, FW730C, FW745C, FW750C, FW770P, FW780P, FW790P, M7C, M17C, M18C, M27C, M28C, M37DC, M38C, M48DC, MX545, MX555**

INFORMATION : **Repair hint, Tape Mechanism**
During repair or when the Tape mechanism needs to be reset for any reason, the flywheel can be turned manually. This can be done by turning the flywheel slowly in the clockwise direction. Counter clockwise motion must not be done because it may dent or damage some of the gears in the mechanism. See picture below.



REMARKS :

03.09 TYPENUMBER(S): **FW372C/22B**

SYMPTOM : The RDS function does not work.

CURE : The problem is because of 3 missing parts on the Front Board. The solution is to add:
- Resistors 3542 and 3545 (both 10kΩ, 4822 116 83864)
- Coil 5407 (2,2µH, 4822 156 21721)

REMARKS : This problem may be found in sets starting with serial number CB01 9714 0.....

03.10 TYPENUMBER(S): **FW395, MC170**

SYMPTOM : The tape mechanism fails and cassette cannot be taken away.

CURE : The cause is due to Cam gear shaft cracked by weld line. Replacement of control disc (pos. 25 in MC170) is not recommended because of critical assembly & alignment control.

For such problem the complete deck should be replaced.

REMARKS : Improved tape mechanism can be recognized by label on the tape mechanism's motor. The label should read:

FW395C	MC170
CWB44FR03 .....H onwards (eg. CWB44FR03 6102805AH)	60718xxM/C onwards (year 96, July, 18 onwards)

03.11 TYPENUMBER(S): **FW620C, FW650C, FW670P, FW672P, FW680V**

INFORMATION : **Correction Service Manual, Service Test Program**
The table of error codes, published in the Service Manual chapter “Service Test Program”, is not correct.
The error numbers and descriptions should read as follows:

Error number	Error description	Error type
1002	Focus Error. Triggered when the focus could not be found within a certain time when starting up the CD or when the focus is lost for a certain time during playing the CD.	F
1007	Subcode Error. No subcode could have been read, even not after retrying 10 times to restart the PLL and jumping 10 tracks. When this happens the servo is stopped and restarted (as if the user would have pressed stop and then play immediately) to recover.	W
1008	Out of lead-in during reading TOC Triggered when during reading the TOC the lead-in (track no. 0) is left. This can be caused by a misaligned inner-switch or by a disc with a mispositioned lead-in.	W
1010	Radial error Triggered when the radial servo is not on track for a certain time during playing the CD.	F
1011	Sledge error Generated when the inner-switch did not open within a certain time when the pick up is moved from the inner position outside.	W
1012	Fatal sledge error Generated when the inner-switch did not close within a certain time when the pick up is moved inside. Inner-switch or sledge motor problems.	F
1013	Turntable motor error. Generated when the CD did not reach 75% of speed during startup within a certain time. Discmotor problem.	F
1020	PLL lock error. When the PLL did not lock after 10 retries then this warning message is generated and the servo is stopped and restarted (as if the user would have pressed stop and then play immediately) to recover.	W
1070	Carriage did not reach the play position within a certain time.	F
1071	Carriage did not reach the stocker within a certain time.	F
1072	Carriage did not pass the play position within a certain time.	F
1073 [1)]	Desired disc position of the stocker could not be reached within a certain time.	W
1074 [1)]	Generated when the cam is moved and either SW1 or SW2 did not open within a certain time.	F
1075 [1)]	Generated when the cam is moved and either SW1 or SW2 did not close (reach the new position) within a certain time.	F
1076 [1)]	Tray open position not reached within a certain time.	W
1077 [1)]	Miscounting of the stocker position occured	F

[1)] corrected value

REMARKS :

03.12 TYPENUMBER(S): **FW670P**

SYMPTOM : If the custormer changes the mode or any volume/DSC setting on the set, the new setting will be automatically stored in the EEPROM.
If now the set is switched off after 1 second of the last setting change on the set, it is possible that a wrong information will be written to the EEPROM. If the set is switched on, the customer can have a strange volume knob function.
The volume setting is at mininum but the output power is very loud.

CURE : The solution is to clear the EEPROM.
Step 1 : Hold down button B1 & B3 (see fig.1) while plugging in the mains.
Step 2 : Press Center
Step 3 : Disconnect mains

The EEPROM will load with default data. Please note that the customer settings like Tuner settings will be lost.

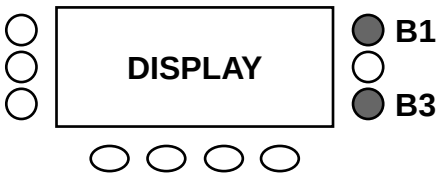


fig.1

REMARKS : The EEPROM clear procedure can also be found in the FW670P service manual page 3-9.

03.13 TYPENUMBER(S): **MC130**

SYMPTOM : The clock is inaccurate and runs 20 seconds too slow per day.

CURE : The cause of the problem is due to the Quartz frequency out of specification. This problem is solved by changing capacitors 2404 and 2405 from 120pF to 15pF (5322 122 33869).

REMARKS :

03.14 TYPENUMBER(S): **MX732**

SYMPTOM : Some sets are delivered with wrong AM grid 10kHz instead of 9kHz.

CURE : The sets can be adapted by the local service workshop by the procedure given below:
1. Remove jumper J284 (on the Front board)
2. Add jumper J283

REMARKS :

03.15 TYPENUMBER(S): **MX960PRO, MX960AHT**

SYMPTOM : The set does not work and the display shows “CHECK OWNER’S MANUAL”.

CURE : The connector CN808 on the CD decoder board is not properly connected. Fix the connector properly.

REMARKS :

ISSUE PA97.04 (97-07-31)

Published by:
Service Department LOBPA Hong Kong

LINE OF BUSINESS PORTABLE AUDIO

SERVICE NEWSLETTER

04.01 TYPENUMBER(S) : **AZ1202, AZ1302, AZ1307, AZ1308, AZ1407, AZ1508, AZ1509, AZ1602, AZ2100, AZ2600, AZ2605, AZ2615, AZ2804, AZ2805, AZ2808, AZ8050, AZ8051, AZ8052, AZ8055, AZ8056, AZ8057, AZ8061, AZ8068, AZ8070, AZ8075**

INFORMATION : The Pinch Roller Arm Assembly (items 10 + 11 + 12) on the cassette mechanism is now available under service code 4822 528 11189.

REMARKS :

04.02 TYPENUMBER(S) : **AZ2100, AZ2600**

INFORMATION : From July 1997 onwards, with factory code starting from KT02 9729..., new CDM and CD6 boards are used.
For servicing please refer to:
Service Information A97-576 (4822 725 25628) for AZ2100 and
Service Information A97-577 (4822 725 25629) for AZ2600.

REMARKS :

04.03 TYPENUMBER(S) : **AZ7360, AZ7362, AZ7363, AZ7364, AZ7365, AZ7366, AZ7368, AZ7372, AZ7376, AZ7453, AZ7457, AZ7460, AZ7462, AZ7463, AZ7464, AZ7465, AZ7474, AZ7476**

SYMPTOM : Laser light-pen is dead.

CURE : The light-pen is probably damaged by the high electromagnetic radiation especially from mobile phone transmission.
The CDM has to be replaced.
To avoid this fault to be happened again, change 2902 from 10nF to 1nF (5322 122 34123).

REMARKS : Modification had been implemented in production from week 9716 onwards.

04.04 TYPENUMBER(S): **AZ7453, AZ7457, AZ7460, AZ7462, AZ7463, AZ7464, AZ7465, AZ7474, AZ7476**

SYMPTOM : “Pop” noise is audible when ESA/ESP is on.

CURE : The working voltage of DRAM 7851 is low.
Solution 1 : Change resistor 3852 from 22Ω to 0Ω jumper (4822 051 20008).
Solution 2 : Replace 7851 (4822 209 12993).

REMARKS : 3852 had been changed to 0Ω in production from week 9730 onwards.

04.05 TYPENUMBER(S): **AZ7562, AZ7565, AZ7566**

SYMPTOM : “Pop” noise is audible when ESA/ESP is on.

CURE : The working voltage of DRAM 7851 and 7852 is low.
Solution 1 : Change resistors 3852 and 3853 from 22Ω to 0Ω jumper (4822 051 20008).
Solution 2 : Replace 7851 and 7852 (4822 209 12993).

REMARKS : 3852 and 3853 had been changed to 0Ω in production from week 9730 onwards.

ISSUE PA97.03 (97-06-30)

Published by:
Service Department LOBPA Hong Kong

LINE OF BUSINESS PORTABLE AUDIO

SERVICE NEWSLETTER

03.01 TYPENUMBER(S): **AE2340**

SYMPTOM : Display is dim or no segments are visible.

CURE : Capacitors C1 (22nF) and C4 (100nF) are defective and have to be replaced.

REMARKS : Improved capacitors are used in production from week 9724 onwards.

03.02 TYPENUMBER(S): **AQ6463**

SYMPTOM : The fast WIND and/or REWIND button stuck.

CURE : The spring near the common wheel is loose because the spring holder has broken by extreme large force applied to the button. Because both buttons are rather small and rather close to each other, the undesired button can accidentally be pressed down together with the other button.

REMARKS : No corrective actions can be taken due to the product design. Design of successors will be improved.

03.03 TYPENUMBER(S): **AW7150, AW7160, AW7250**

INFORMATION : The Recording Lever (pos. 503) is now available via service codenumber 4822 402 10786.

REMARKS :

03.04 TYPENUMBER(S): **AZ1302, AZ1307, AZ1308, AZ1407, AZ1508, AZ1509, AZ2804, AZ2805, AZ2808**

SYMPTOM : The Gear Wheels (pos. 202 and 204) are out of position.

CURE : The problem occurs when the Drawer (pos. 216) gets stuck and the customer pushes it back strongly by hand. It is recommended to replace not only the 2 Gear Wheels but also the Drawer.

REMARKS : The tooling of the Drawer (4822 444 40727) has been modified. New Drawers are implemented in production from week 9648 onwards.

03.05 TYPENUMBER(S): **AZ2100**

INFORMATION : Correction Service Manual, Electrical partslist:
For version /00 and /05, the service codenumber of the Mains transformer should read 4822 146 10768.

REMARKS :

03.06 TYPENUMBER(S): **AZ2405**

SYMPTOM : Preset tuner frequencies get lost when the mains is disconnected.

CURE : To extend the memory retaining time Zener diode ZD302 must be changed from 4.7V to 6.8V (4822 130 34278).

REMARKS : It is advised to change ZD302 in every set, brought in for repair. Modification will be implemented in production from week 9730 onwards.

03.07 TYPENUMBER(S): **AZ2405**

INFORMATION : Correction Service Manual, Electrical partslist:
The service codenumber of IC101 TA2065F should read 4822 209 15462.

REMARKS :

03.08 TYPENUMBER(S): **AZ7260, AZ7261, AZ7262, AZ7265, AZ7266, AZ7267, AZ7268, AZ7271, AZ7272, AZ7275, AZ7278**

INFORMATION : For sets with factory change code KT02, some statements in the Instruction for Use are found to be wrong.
On the page of CONTROLS, the STOP button will not activate charging. The fact is that the NiCad battery pack will be charged automatically if the mains adaptor is connected.
Also in the TROUBLESHOOTING chapter, words “no CHARGE indicator” should be deleted because “CHARGE” will never appear on the display.

REMARKS : Instruction for Use will be updated from week 9731 onwards.

03.09 TYPENUMBER(S): **AZ8050, AZ8051, AZ8052**

INFORMATION : For COMBI board “A03” (used in sets produced until October 1995), the microprocessor IC 7800 is replaced by an OTP version. When ordering the original codenumber 4822 209 90147, the OTP version 4822 900 11116 will be delivered automatically.

REMARKS :

03.10 TYPENUMBER(S): **AZ8050/..D, AZ8051/..D, AZ8052/..D, AZ8061/..D, AZ8070**

SYMPTOM : CD does not work because the disc drive is tilted. One of the disc drive holders (pos. 440) is out of position.

CURE : The fault is caused by heavy shocks. The problem can be solved by remounting the holder. It is recommended to add a metal plain washer (outer diameter 9mm) on the top of the holder. In this case the length of the screw must be changed from 8mm to 10mm.

REMARKS : This information is only valid for versions using the CD93 disc drive. Improved mounting process has been implemented in production from week 9710 onwards, washer has been added from week 9724 onwards.

03.11 TYPENUMBER(S): **ST2010, ST4010, TK6010, TS2100**

INFORMATION : The laser pick-up (4822 691 20795) is not available. We suggest to replace the complete CD mechanism, service codenumber 4822 691 30342.

REMARKS :

ISSUE PA97.02 (97-05-31)

Published by:
Service Department BUPA Hong Kong

LINE OF BUSINESS PORTABLE AUDIO

SERVICE NEWSLETTER

02.01 TYPENUMBER(S) : **AE2045, AE2140, AE2145**

INFORMATION : From week 9715 onwards, the design is changed.
A new rotatable telescopic aerial is used. The two different aerials are not inter-changeable.
4822 303 14018 Aerial (not rotatable)
4822 303 14057 Aerial (rotatable)

REMARKS :

02.02 TYPENUMBER(S) : **AJ3840**

INFORMATION : If the Clock IC is TMS3459BNL and spare part is not available, it is suggested to be replaced by LM8562B (4822 209 32851) and change the value of the following parts:
R122 (pin 16 to ground) changed to 180kΩ
C109 (pin 15 to pin 16) changed to 0.0033µF

REMARKS :

02.03 TYPENUMBER(S) : **AQ6546**

SYMPTOM : Auto reverse cassette deck plays at one direction only.

CURE : The reverse mechanism is interrupted by C70 (1µF/50V) which can be replaced by a SMD capacitor (4822 126 11692).

REMARKS : SMD capacitor was used in production from week 9708 onwards.

02.04 TYPENUMBER(S) : **AQ6546**

SYMPTOM : Battery inserting is difficult.

CURE : The batteries are blocked by the flat cables connecting to the equalizer board on the cassette door.
A piece of PVC adhesive tape (35mm x 3.8mm) can be used to cover the flat cable that extended under the battery cavity.

REMARKS : Modification was implemented in production from week 9708 onwards.

02.05 TYPENUMBER(S): **AW7550**

INFORMATION : **Correction Service Manual, Electrical partslist:**
For AW7550/14, the servicecode of the band switch S1 should read 4822 277 11626.

REMARKS :

02.06 TYPENUMBER(S): **AZ1100, AZ1101, AZ1102**

INFORMATION : **Correction Service Manual, Electrical partslist:**
The tuning capacitor is missing. It is available via service code 4822 125 11097.

REMARKS :

02.07 TYPENUMBER(S): **AZ1100, AZ1101, AZ1102**

INFORMATION : **Correction Service Manual, Tape deck:**
The type number of motor should be EG-530YD-9BH which is available via service code 4822 361 21592.

REMARKS :

02.08 TYPENUMBER(S): **AZ1100, AZ1101, AZ1102**

SYMPTOM : A strange fragrance is smelt from the set.

CURE : When a set is connected to the mains, the mains-transformer becomes warm and produces a strong fragrance.
There are no technical failures found in the set. The transformer supplier confirmed bad smell is come from the varnish after heat.
It is normal and no Hazard for Health.

REMARKS :

02.09 TYPENUMBER(S): **AZ1602**

INFORMATION : **Correction Service Manual, Electrical partslist:**
On CD97 board, service code of 2829 should read 4822 124 23178.

REMARKS :

02.10 TYPENUMBER(S): **AZ2100, AZ2600, AZ2605**

SYMPTOM : Hum noise from mains-transformer is audible.

CURE : The varnish of the transformer is not sufficient.
Transformer 4822 146 10396 has to be replaced.

REMARKS : Vacuum varnish process is applied in transformer manufacturer from week 9713 onwards.

02.11 TYPENUMBER(S): **AZ2100, AZ2600, AZ2605**

SYMPTOM : The tuning pointer does not move.

CURE : The pole on the tuner bracket for holding the pulley is broken. The Tuning bracket has to be replaced. The Bracket is now available via service code 4822 464 10291.

REMARKS :

02.12 TYPENUMBER(S): **AZ2405**

INFORMATION : During production, LD202 and LD203 (to light up volume controls) were changed from orange to green.
Service code of green LED is 4822 130 10668.

REMARKS :

02.13 TYPENUMBER(S): **AZ8340,AZ8345,AZ8440,AZ8445,AZ8540**

INFORMATION : From June of 1995 onwards, the front cabinet was modified by adding 4 round poles so that the cassette buttons can be mounted on the front cabinet instead of mounted on the tape deck.
The new Cabinet-Front Assembly is available via service code 4822 459 04552.

REMARKS :

02.14 TYPENUMBER(S): **AZ8350, AZ8351, AZ8352**

INFORMATION : **Correction Service Manual, Mechanical partslist:**
Item 419 is 4822 410 63178 Power/Mode Knob
Item 423 is not used in this model.

REMARKS :

02.15 TYPENUMBER(S): **AZ8357**

INFORMATION : **Correction Service Manual, Mechanical partslist:**
Item 419 is 4822 410 63178 Power/Mode Knob
Item 423 is 4822 411 61975 Spatial Knob

REMARKS :

03.16 TYPENUMBER(S): **AZ8567**

INFORMATION : **Correction Service Manual, Mechanical partslist:**
The service codenumber of item 401 Front Cover should read 4822 423 51202.

REMARKS :

ISSUE AS97.02 (97-03-31)

Published by:
Service Department Audio Systems

LINE OF BUSINESS AUDIO SYSTEMS

SERVICE NEWSLETTER

02.01 TYPENUMBER(S): **Compact Disc drives CDM12.1/15, CDM12.3BLC**

INFORMATION : Additional information to Newsletter issue 96.09.01 concerning objective lens cleaning.
A cleaning solvent B4-No2 can be ordered with service codenumber 4822 389 10024 and may only be used for plastic lenses as described in Newsletter issue 95.58.01.

REMARKS :

02.02 TYPENUMBER(S): **AZ3705, AZ3708, FW14, FW15, FW36, FW56, FW350C, FW351C, FW360C, FW370G, FW620C, FW650C, FW670P, FW680V, 74MX540**

INFORMATION : **CD changer module**
During production the spring pos. 70 has been modified from 16mm length to 14mm in order to match a similar change on bracket pos. 2. This makes matching between the bracket and spring necessary during repair. For this reason an additional service codenumber for the new spring was created:

Service code	Description
4822 492 42713	Spring 16mm
4822 492 11413	Spring 14mm

REMARKS :

02.03 TYPENUMBER(S): **CDC745**

SYMPTOM : In shuffle mode with 5 discs, some tracks are never played and some others are played several times.

CURE : The problem is caused by the software of the set. As the production has already been stopped there is no solution available.

REMARKS :

02.04 TYPENUMBER(S): **FW17, FW18**

INFORMATION : **Service Manual, Partslist**
The ordering code for the complete tape mechanism CRF4119 R/P is 4822 691 20954.

REMARKS :

02.05 TYPENUMBER(S): **FW17, FW18, FW40, FW41, FW46, FW56**

INFORMATION : The slow (damping) eject of cassette door is caused by the grease between the gear damper and gear holder. When replacing any of these 2 parts it is necessary to refill the grease content.
The grease G-331 is now available under 4822 390 10149.

The 2 parts can be identified by the position numbers in the exploded view of the tape mechanism:

Gear damper	Gear holder	Model used
pos. 10	pos. 9	FW17, FW18
pos. 14	pos. 13	FW40, FW41, FW46, FW56

REMARKS :

02.06 TYPENUMBER(S): **FW330**

INFORMATION : **Service Manual, Partslist**
On customer request the 25P female socket (pos. 1401) on the Front board is now available under 4822 267 60418.

REMARKS :

02.07 TYPENUMBER(S): **FW332**

SYMPTOM : The tray of the CD player opens until approximately 2cm before the end position and closes again immediately.
Lever pos. 214 touches jumper 9823.

CURE : Remove jumper 9823 from the component side and resolder it on the copperside of the printed board.

REMARKS :

02.08 TYPENUMBER(S): **FW332**

INFORMATION : **Service Manual, Mechanical partslist**
The lever from tape deck to record switch pos. 1707 is now available under service codenumber 4822 402 10126.

REMARKS :

02.09 TYPENUMBER(S): **FW362**

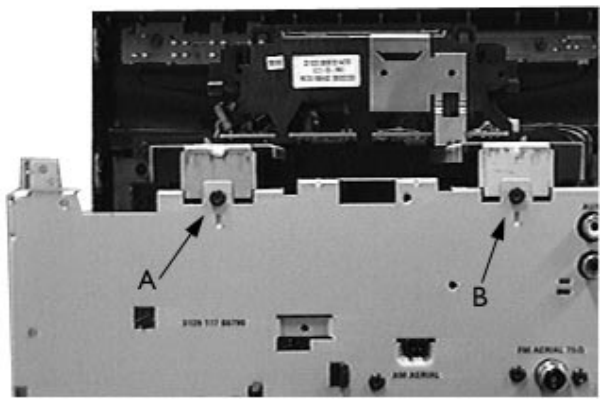
INFORMATION : **Service Manual, Mechanical partslist**
The service codenumber for Cabinet rear pos. 298 should read 4822 426 10187 for all versions. 4822 426 10069 is cancelled.

REMARKS :

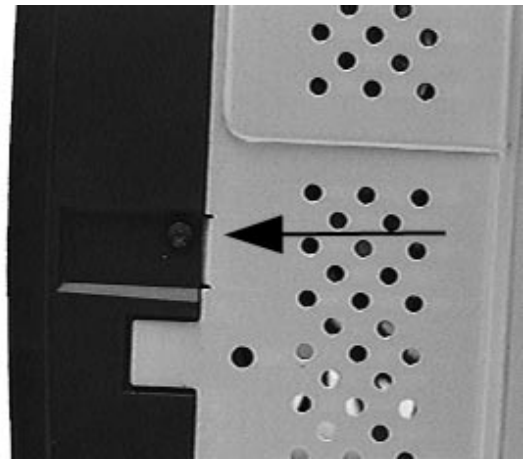
02.10 TYPENUMBER(S): **FW362, FW372C**

INFORMATION : **Adjustment of tape speed**
In order to get access to the potmeters for tape speed adjustment the complete tape module must be dismantled (see instructions below).

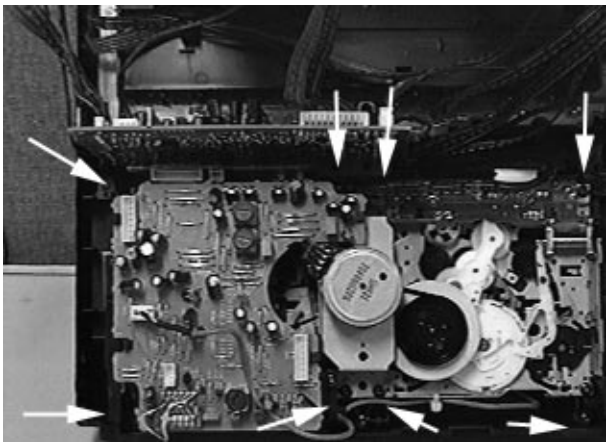
REMARKS :



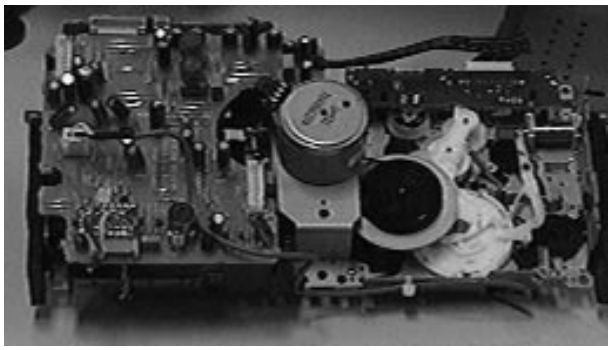
1) First remove the top cabinet of the set.
2) CD Shortloader Module:
   Loosen the 2 screws indicated in the picture above.
   CD Changer Module:
   Loosen the 2 screws at the back panel & the 2 screws on the front tray of the CDC module.
3) Remove the CD module.



4) Turn the set aside and loosen the bottom screw as indicated in the picture above.
5) Detach the front panel from the bottom panel.



6) Loosen the 8 screws of the tape module as indicated in the picture above
   (Note: 4 short screws on top, 4 long screws below).
7) Release all wires of the tape module.
8) Slowly detach the tape module from the cassette door.



9) The tape module is now in a proper position for servicing and troubleshooting.

02.11 TYPENUMBER(S): **FW395C**

INFORMATION : **Service Manual, Electrical partslist - Front Board**
The correct service codenumber for the Microprocessor should be 4822 209 13144 TMP87CS71F with marking “372S51141”.

REMARKS :

02.12 TYPENUMBER(S): **FW730C**

INFORMATION : **Service Manual, Electrical partslist - Front Board**
In the parts list of the Front board the Microprocessor IC 7441 is not clear indicated. The service codenumbers are:
4822 209 15475 TMP87CS71AF marking “770S51491” for versions /21/21M/34
4822 209 15476 TMP87CS71AF marking “770S51501” for versions /22/22S/25

REMARKS :

02.13 TYPENUMBER(S): **FW770P**

INFORMATION : For practical cost saving the following items have been changed/deleted:

1. Screw pos. 308 (2x) is deleted
2. Transformer bracket pos. 200 is deleted
3. Insulation plate pos. 290 is deleted
4. Screw pos. 296 is reduced to 1pc for the centre position only
5. Screw pos. 313 is reduced by 2pcs - rear cabinet mounting point at the bottom-most left and right positions are deleted.

REMARKS : Implemented from production week 9701 onwards.

02.14 TYPENUMBER(S): **FW770P**

INFORMATION : **Service Manual, Mechanical partslist - Main unit**
On commercial request the Philips badge pos. 243 is changed from 4822 459 11086 to 4822 459 11055.

REMARKS : Implemented from production week 9701 onwards.

02.15 TYPENUMBER(S): **FW770P**

INFORMATION : **Changes in course of production:**

AF3 Board (Effective from production week 9648 onwards)
1. Resistors 3561/3562 are changed to 2.2kΩ 1% 0.1W (4822 117 11449)
   Reason: For noise reduction.
2. Resistors 3631/3632 are changed to 560Ω 5% 0.5W (4822 116 52226)
   Reason: For reducing the distortion at high volume.

Front Board (Effective from production week 9648 onwards)
1. Resistor 3516 is changed to 15kΩ 5% 0.1W (4822 051 20153)
   Resistor 3649 is changed to 2.2Ω 5% 0.1W (4822 051 20228)
   Reason: Increase of sensitivity of VU-meter and prevent false indication.
2. Delete diode 6422
   Reason: Error in parts list

ETF2 Board (Effective from production week 9650 onwards)
1. Capacitor 2784 is changed to 15nF 10% 50V (4822 121 51305)
   Resistor 3769 is changed to 10kΩ 1% 0.1W (4822 117 10833)
   Resistor 3772 is changed to 6.8kΩ 5% 0.1W (4822 051 20682)
   Resistor 3775 is changed to 4.7Ω 5% 0.1W (4822 051 20478)
   Resistor 3778 is changed to 6.8Ω 5% 0.33W (4822 052 10688)
   Reason: Increase of erase current to solve marginal erase damping.

REMARKS :

02.16 TYPENUMBER(S): **FW780P/21S**

INFORMATION : **Service Manual, Partslist**
Correction of service codenumbers in Exploded view of set and Loudspeaker drawings:

Chapter	Pos no.	Service code	Description
14-2	241	4822 450 10228	Window Cassette Left
14-2	242	4822 450 10229	Window Cassette Right
15-1	3	4822 459 04544	Front Panel Assy Silver
15-1	-	4822 124 11982	3.3µF 50V Non-polarity

REMARKS :

02.17 TYPENUMBER(S): **MC170**

INFORMATION : **Service Manual, Speakerbox**
The service code for the tweeter should read 4822 240 70274 instead of 4822 247 70274.

REMARKS :

02.18 TYPENUMBER(S): **MC170**

SYMPTOM : During high sound reproduction level, the Loudspeaker boxes move when placed on a smooth surface due to vibration.

CURE : This problem can be solved by adding 4 pieces of rubber foot to keep it in position.
The service code for rubber foot is 4822 462 40683.

REMARKS :

02.19 TYPENUMBER(S): **MX731**

INFORMATION : In the MX731 system package the label on the Loudspeaker box is LSB680V21HT instead of FB680V/21 as indicated in the Service Manual. This loudspeaker box is correct and to avoid confusion it will be changed to FB680V/21 for set production from April 1997 onwards.

REMARKS :

ISSUE 97.01 (97-01-31)

Published by:
Service Department Audio Systems

SERVICE NEWSLETTER

01.01 TYPENUMBER(S) : **AQ6524**

INFORMATION : During production, two types of headphone sockets were used. Because body dimension and the pins location of the sockets are different, correct parts must be ordered.
1. 4822 267 31595 : body is rectangular (5 x 7 mm)
2. 4822 267 31861 : body is square (6 x 6 mm)

REMARKS :

01.02 TYPENUMBER(S) : **AW7560**

INFORMATION : **Information of Service newsletter 96.09.02 is wrong.**
The type number of the motor is M9T90U20-T.
Service code should read 4822 361 10958.

REMARKS :

01.03 TYPENUMBER(S) : **AZ1100, AZ1101, AZ1102**

SYMPTOM : The mains transformer is defective.

CURE : The capacitors C801, C802, C803 and C804 which are connected in parallel with rectifier diodes will burn out and short circuit by high PP transit voltage. This causes damage of the mains transformer. Capacitors must be replaced with ceramic capacitors of 0.022µF/63V (e.g. 4822 122 30103).

REMARKS : Capacitors with higher voltage rating are used in production from week 9633 onwards.
When sets produced before week 9633 or the 4 capacitors are marked with “AEC” are brought in for repair, we suggest to replace the capacitors with 4822 122 30103 or capacitors with equivalent specification.

01.04 TYPENUMBER(S): **AZ1100, AZ1101, AZ1102**

INFORMATION : **Service Manual, partslist**
The mains cord set for /17 versions is available with service code 4822 321 10862.

REMARKS :

01.05 TYPENUMBER(S): **AZ1307, AZ1308, AZ1407, AZ1508, AZ2805, AZ2808, AZ8050, AZ8051, AZ8052, AZ8055, AZ8056, AZ8057, AZ8061, AZ8068, AZ8070, AZ8075, AZ8150, AZ8262, AZ8267, AZ8297**

INFORMATION : **Service Manual, Mechanical partslist**
Correct Service code number for “mains socket IEC” reads 4822 265 20318.

REMARKS :

01.06 TYPENUMBER(S): **AZ2405**

INFORMATION : The service code of IC101 TA2065F should read 4822 209 15462.
The Remote Transmitter Assy is now available with service code 4822 219 10196.

REMARKS :

01.07 TYPENUMBER(S): **AZ3705, AZ3708, FW14, FW15, FW36, FW56, FW350C, FW351C, FW360C, FW370G, M25, M26, MX520**

INFORMATION : Pos 48 for the CDC mechanism is now available as service spare part. The 12NC is 4822 401 11681 Chassis clamper.

REMARKS :

01.08 TYPENUMBER(S): **AZ6834, AZ6835, AZ6836, AZ6837**

SYMPTOM : Cannot start up with 8 cm disc.

CURE : Problem can be solved by changing the following parts:
1. Replace 2920 1µF by 220nF/63V (4822 122 32927).
2. Replace 3921 2.2kΩ by 10kΩ (4822 117 11846).

REMARKS :

01.09 TYPENUMBER(S): **AZ6835**

INFORMATION : **Additional remark to Newsletter issue 96.06.13:**
Because T7282 is taken out, item 417 Spring-Detection Mid (4822 492 71605) is not used.

REMARKS :

01.10 TYPENUMBER(S): **AZ6843, AZ6844, AZ6845**

INFORMATION : **Additional remark to newsletter issue 96.06.14:**
1. The modification points 2, 4 and 5 are not valid for AZ6843 and AZ6845 because these type numbers have no built-in recharge function.
2. Because T7280 and T7282 are taken out, item 434 Spring-Detection Short (4822 492 71598) and item 436 Spring-Detection Mid (4822 492 71605) are not used.

REMARKS :

01.11 TYPENUMBER(S): **AZ6847, AZ6848**

INFORMATION : **Additional remark to Newsletter issue 96.06.16:**
Because T7280 and T7282 are taken out,
item 433 Spring-Detection Short (4822 492 71598) and
item 434 Spring-Detection Mid (4822 492 71605) are not used.

REMARKS :

01.12 TYPENUMBER(S): **AZ6846, AZ6847, AZ6848, AZ6850**

INFORMATION : **Additional information to Newsletter issue 96.08 and 96.10:**
With the following modification, now CDM12.3BL (4822 691 30359) can replace CDM12.3B (4822 691 30335) in AZ6846, AZ6847, AZ6848 and AZ6850.
Add resistor of 3.3Ω 1/3W (e.g. 4822 052 10338) in series to the turntable motor.

REMARKS :

01.13 TYPENUMBER(S): **AZ6848, AZ6850**

INFORMATION : Capacitor item 2300, 330µF/6.3V (4822 124 80352) is not available. It can be replaced by 220µF/4V (4822 124 42383) without any effect on performance.

REMARKS :

01.14 TYPENUMBER(S): **AZ7161, AZ7166, AZ7167, AZ7168**

SYMPTOM : Cannot start up with 8 cm disc.

CURE : Problem can be solved by changing the following parts:
1. Replace 2920 1µF by 220nF/63V (4822 122 32927).
2. Replace 3921 2.2kΩ by 10kΩ (4822 117 11846).

REMARKS :

01.15 TYPENUMBER(S): **FR731, FR751**

SYMPTOM : Tuner does not receive any radio station.

CURE : **Additional remark to newsletter issue 96.09.17:**
After the capacitors C150 and C151 are replaced with 18pF, the tuner must be re-aligned according to the alignment procedure, shown on page 7 of service manual.

REMARKS :

01.16 TYPENUMBER(S): **FW11**

INFORMATION : Transistors Q508 and Q524 2SB1023 (4822 130 63657) are not available. It can be replaced by BDT60F (4822 130 63508).

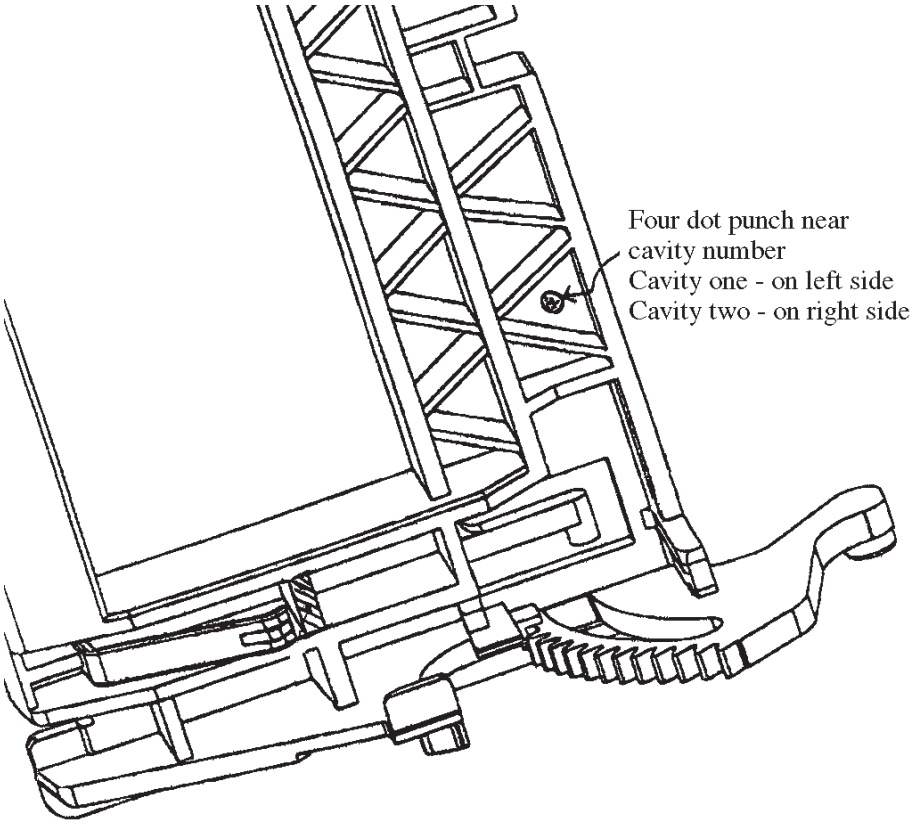
REMARKS :

01.17 TYPENUMBER(S): **FW322C, FW332, FW352C, FW391C, MC130**

SYMPTOM : Cassette door stucks with cassette during eject.

CURE : The problem is due to deformation of cassette door's plastic spring causing the cassette to interfere with tape deck capstan during eject. For repair the cassette door must be replaced by the improved cassette door. The improved cassette door can be recognized by 4 dots near the cavity number (see picture below).

REMARKS : The service stock at PCS has been checked and is OK.
Only improved cassette doors will be delivered.
Service code number reads 4822 443 10173.



01.18 TYPENUMBER(S): **FW322C, FW342C, FW352C, FW372C, FW391C, FW392C, FW395C**

SYMPTOM : CD Tray opens half way.

CURE : The cause is due to switch bracket (pos 123) jammed.
Improvement on switch bracket has been done to have more clearance between switch bracket and pcb & the fixation boss.

For repair only the switch bracket (12NC: 4822 402 10085) needs to be replaced.

REMARKS :

01.19 TYPENUMBER(S): **FW360C**

SYMPTOM : The display shows “NO DISC” although some discs are already loaded.

CURE : Add a capacitor 330nF (12NC: 5322 121 42661) across the “Play-position-over” switch (pos 82). This is done by soldering the capacitor across the 2 tracks of the 4cm x 1cm pc board on the right side of the CD Changer unit (see Service Manual chapter 4-5, figure2 - pc board above & behind gear C or pos 6).

REMARKS :

01.20 TYPENUMBER(S): **FW610, FW620C, FW630, FW650C, FW680V**

INFORMATION : **Service Manual, Electrical partslist**
Following parts are added to the electrical partslist:
4822 320 11804 Flexwire 15p Combi Board ↔ Control Board
4822 320 11805 Flexwire 19p Combi Board ↔ CD Interface Board
4822 320 11872 Flexwire 17p Combi Board ↔ Karaoke Board

REMARKS :

01.21 TYPENUMBER(S): **TS6902**

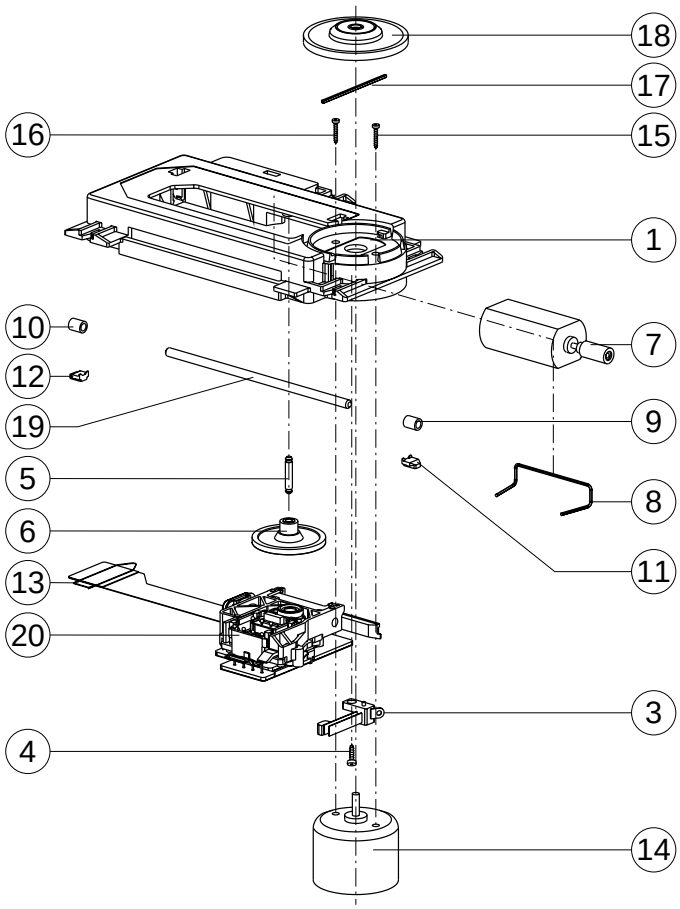
INFORMATION : **Correction to Service Information A93-566:**
In sets produced after week 9314, new CDM assembly 4822 691 30333 should be used. This CDM assembly cannot replace 4822 691 20794 in the previous production sets.
If 4822 691 20794 is not available, we suggest to repair the CDM assembly with the service parts given on page 32 of service manual 4822 725 24131.

REMARKS :

01.22 TYPENUMBER(S): **Compact Disc drives CDM12.1/15, CDM12.3BLC**

INFORMATION : **Standardization of failure descriptions**
For indication of the main parts exploded views and uniform item descriptions have been created.
For drawings and general information see next pages.

REMARKS :



PARTSLIST

1 Mounting plate
3 Inner-switch
4 Screw 2x8 plastite Torx
5 Spindle (gearwheel)
6 Gearwheel
7 Slide motor
8 Clamping bracket
9 Sleeve (spindle)
10 Sleeve (spindle)
11 Clamping plate (spindle)
12 Clamping plate (spindle)
13 Clamping (shortcircuit flexfoil)
14 Turntable motor
15 Screw M2x3 TORX
16 Screw M2x3 TORX
17 Turntable support ring
18 Turntable assembly
19 Spindle
20 Light pen assembly

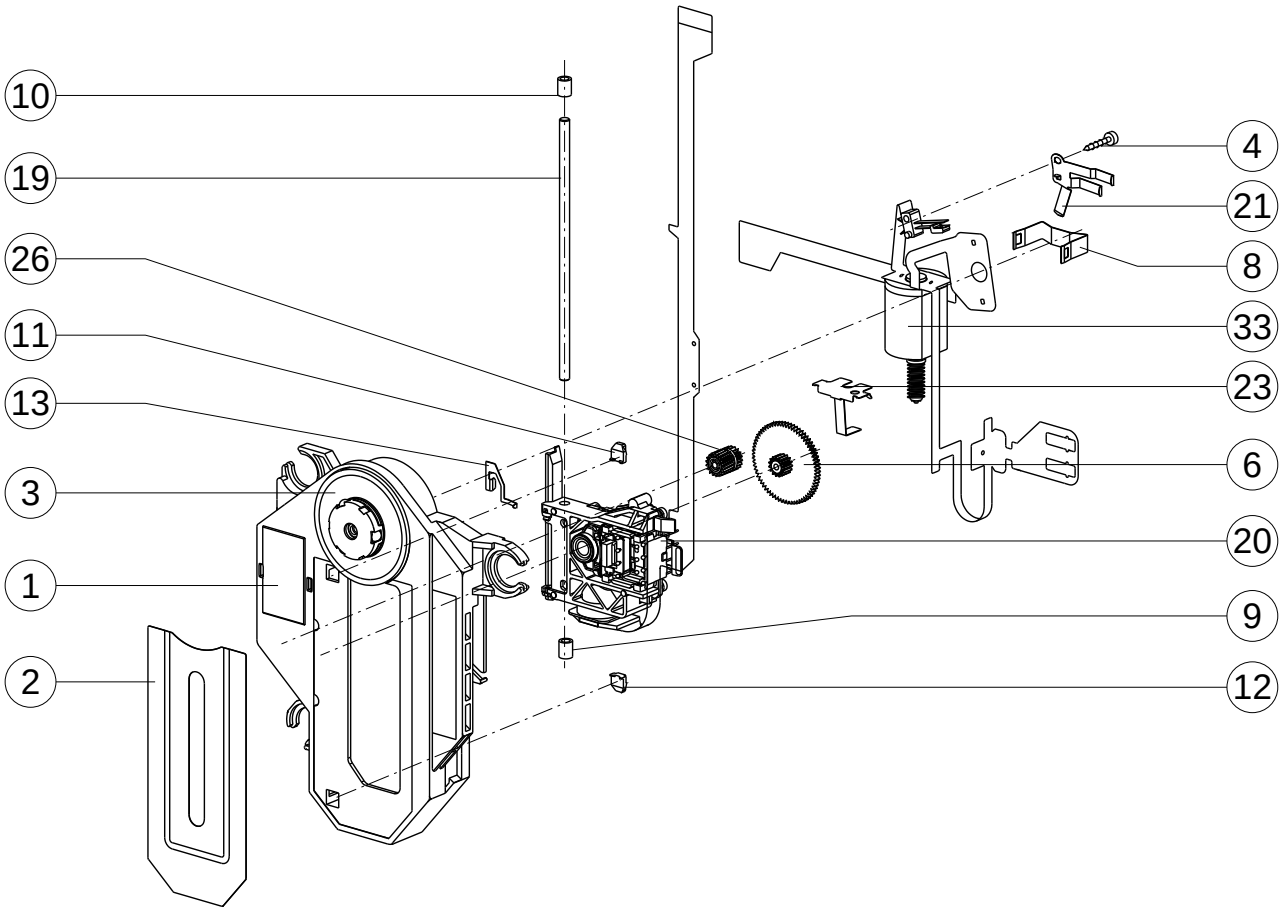
Remark: The CDM12.1/15 is only available as complete assembly, and as such not repaired. This sheet is published for standardized descriptions of failure causes, only.

TECHNICAL SPECIFICATION CDM12.1/15

Focus/radial tracking actuator	**CDM12.1/15**
Working area:	
focus	±0.5mm
radial tracking	±0.6mm
DC sensitivity:	
focus	0.8mm/V ±20%
radial tracking	0.35mm/V ±20%
AC sensitivity (200Hz):	
focus	0.28N/A ±20%
radial tracking	0.32N/A ±20%
Resonance frequency:	
focus	30Hz ±4Hz
radial tracking	49Hz ±7Hz
Coil resistance:	
focus	18Ω ±15%
radial tracking	18Ω ±15%
Laser diode	
Laser wavelength (30°C)	780nm ±20nm
Max. power intensity out of lens	≤0.5mW
Nom. laser current	60mA (90mA max.)
Slide motor	
Motor type	Matsushita PPN13
Resistance (20°C)	13.8Ω ±10%
Starting voltage in application	0.6V typ. (1.2V max.)
Disc readout diameter	47.4...117.5mm typ.
Turntable motor	
Motor type	RF-310T-11400
Resistance (20°C)	11Ω ±8%
Operating voltage in application	≥1.8V

HANDLING RECOMMENDATIONS

- Storage in dusty environments should be avoided.
- To avoid damage of the light pen assembly by electrostatic discharges, measuring equipment and operators must be grounded during handling.
- Contamination of the objective lens will influence the performance. Avoid fingerprints on the lens.
- The actuator with lightpath has been adjusted carefully during manufacturing. Avoid high forces on this part. Do not disassemble or re-adjusted
- The laserbeam may damage the human eye. Do not look directly into the objective lens.
- Fast heating up (e.g. by bringing the CDM from a cold place into a warm and humid room) can result in moisture condensating on the lens, thus influencing the playability for a certain time. Before checking the performance the CDM should acclimatize for at least 30 minutes.



TECHNICAL SPECIFICATION CDM12.3BLC

Focus/radial tracking actuator	**CDM12.3BLC**
Working area:	
focus	±0.5mm
radial tracking	0.35mm min.
DC sensitivity:	
focus	1mm/V ±20%
radial tracking	0.24mm/V ±20%
AC sensitivity (200Hz):	
focus	0.16N/A ±20%
radial tracking	0.25N/A ±20%
Resonance frequency:	
focus	30Hz +7Hz
radial tracking	49Hz ±5Hz
Coil resistance:	
focus	7.1Ω ±15%
radial tracking	18Ω ±15%
Laser diode	
Laser wavelength (30°C)	780nm ±20nm
Max. power intensity out of lens	≤0.5mW
Nom. laser current	36mA (47mA max.)
Slide motor	
Motor type	FF-030PK-08250
Resistance (20°C)	13.8Ω ±10%
Starting voltage in application	0.6V typ. (1.2V max.)
Disc readout diameter	47.4...117.5mm
Turntable motor	
Motor type	RF-410CH-12250
Resistance (20°C)	5.7Ω ±8%
Operating voltage in application	0.5V typ.

PARTSLIST

1 Mounting plate assy
2 Ornam. plate assy
3 Turntable + motor
4 Screw M1.6x8 Torx
6 Gearwheel
8 Clamping bracket
9 Sleeve (spindle)
10 Sleeve (spindle)
11 Clamping plate (spindle)
12 Clamping plate (spindle)
13 Contact spring (earth)
19 Spindle
20 Light pen assembly
21 Earth spring
23 Pivot spring
26 Idler wheel
33 Slide motor assembly

Remark: The CDM12.3BLC is only available as complete assembly, and as such not repaired. This sheet is published for standardized descriptions of failure causes, only.

HANDLING RECOMMENDATIONS

- Storage in dusty environments should be avoided.
- To avoid damage of the light pen assembly by electrostatic discharges, measuring equipment and operators must be grounded during handling.
- Contamination of the objective lens will influence the performance. Avoid fingerprints on the lens.
- The actuator with lightpath has been adjusted carefully during manufacturing. Avoid high forces on this part. Do not disassemble or re-adjusted
- The laserbeam may damage the human eye. Do not look directly into the objective lens.
- Fast heating up (e.g. by bringing the CDM from a cold place into a warm and humid room) can result in moisture condensating on the lens, thus influencing the playability for a certain time. Before checking the performance the CDM should acclimatize for at least 30 minutes.