FlashMic DRM85

Service Manual

Version 0.91 ***February 2007***

Table of contents

Overview and layout

This service manual is written for the use of trained service personnel only, severe damage could be caused by disassembly of the FlashMic by untrained operatives.

The manual is laid out with sections on disassembly, assembly, firmware updates, known faults, and differences between different models.
The sections at the end show an exploded view of the unit and a full parts list.

Throughout the text the item numbers as shown in the exploded diagrams are enclosed in square brackets, for example [001]

Please note that only a few component parts are available for the PCB's as changing other PCB components is not considered practical for field service, if faults occur the whole PCB must be replaced.

Tools
Normal workshop tools for work on small electronic assemblies are required; the only additional items that are essential are a number T06 and T08 Torx driver, do not attempt to use other tools to remove the Torx headed screws as damage will result.

Notes
Before disassembly takes place, the batteries must be removed.

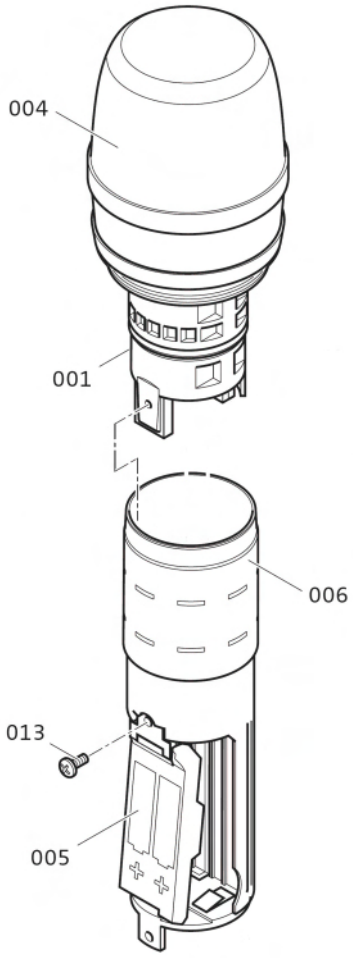
FlashMic website www.flashmic.info

Disassembly

1. Capsule removal

To remove the capsule the protective basket [004] must be unscrewed from the top of the barrel. This unscrews anticlockwise, when viewed from the top of the microphone. Ensure that the coloured ring [003] is not misplaced when the basket is removed. Be careful not to damage or touch the front elements of the capsule.

Next the barrel of the microphone [002] must be unscrewed from the end cap; this is also removed by unscrewing anticlockwise, when viewed from the capsule end.

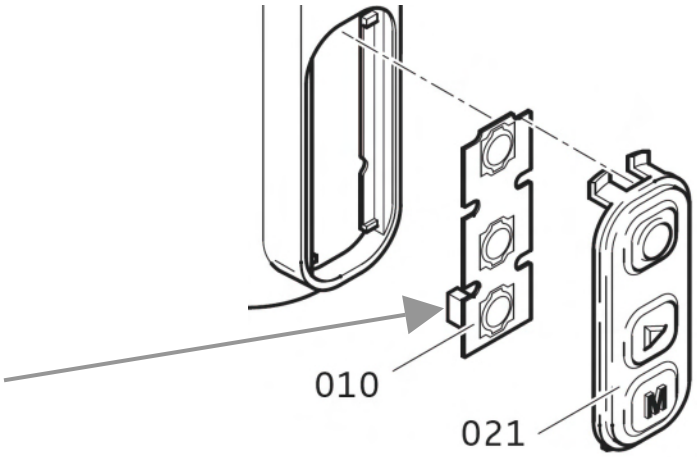


Pull the barrel forward away from the end cap, this will expose the battery compartment lid [005] and allow access to the screw [013], which holds the capsule in place.
Remove screw [013] then push the barrel back toward the end cap and the capsule can be gently pulled from the chassis [006]

2. Key pad removal

The key pad [021] Record, Play and Menu buttons should be removed by using a stiff but not scratchy narrow tool inserted just above the Record button (shown by arrow), a narrow nylon cable tie is ideal for this task. If a screwdriver is used it is very easy to scratch the case of the unit or mark the rubber of the keypad.

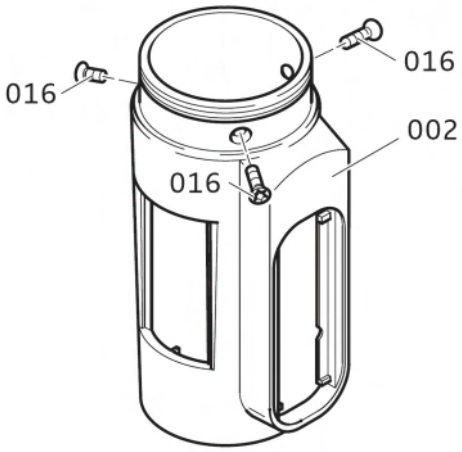
The rubber keypad is lifted away and then the Keyboard PCB [010] can be carefully removed – Please note that on the lower left hand rear edge (shown by arrow in diagram below) is the connector that connects to the main CPU PCB and the keyboard must be removed with the connector square so as to avoid any damage occurring.



3. End Cap removal

The keypad MUST be removed (see 2 above) before the end cap is removed otherwise damage to the Keyboard and CPU PCB's ***WILL*** occur.

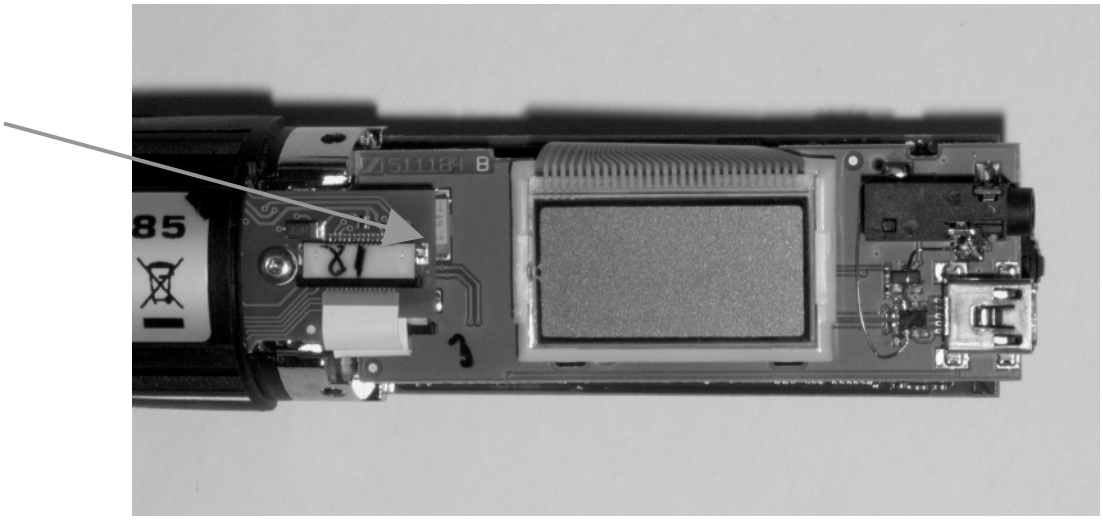
After step 2 above unscrew the barrel [002] and slide away from the end cap. Using a T08 Torx driver undo the three retaining screws [016]



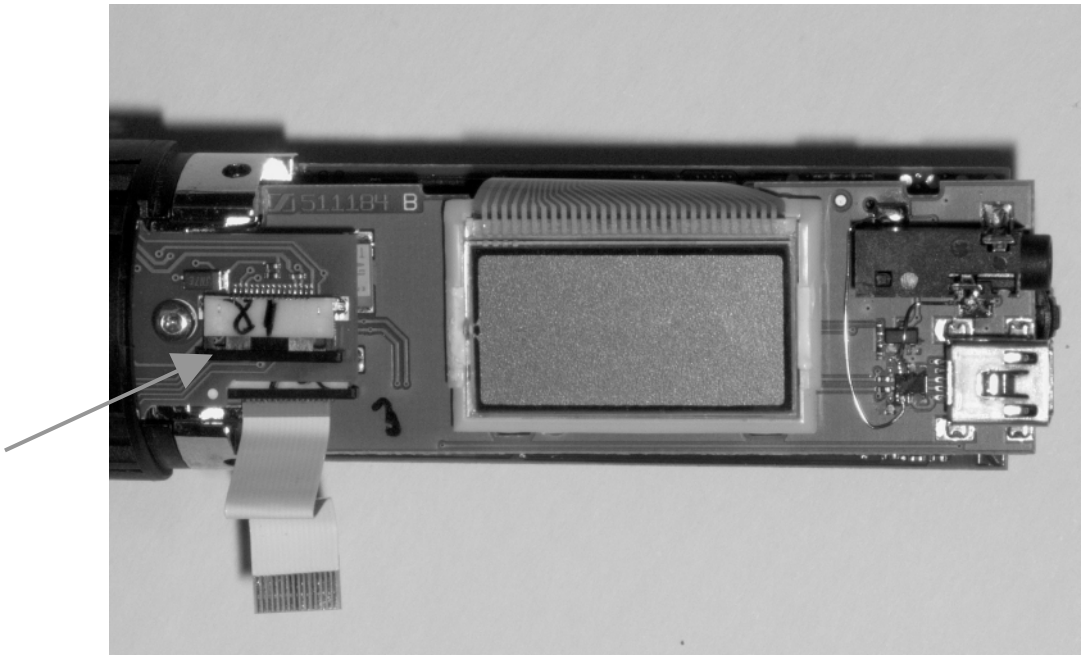
Then the End cap can be gently removed from the chassis and barrel, take care to ensure the PCB's slide out of the end cap squarely.

4. AF PCB removal

The AF PCB [007] is located inside the chassis [006] and is largely hidden from view as it is behind the battery compartment; with the end cap removed the end of the AF PCB (shown by arrow below) can be seen

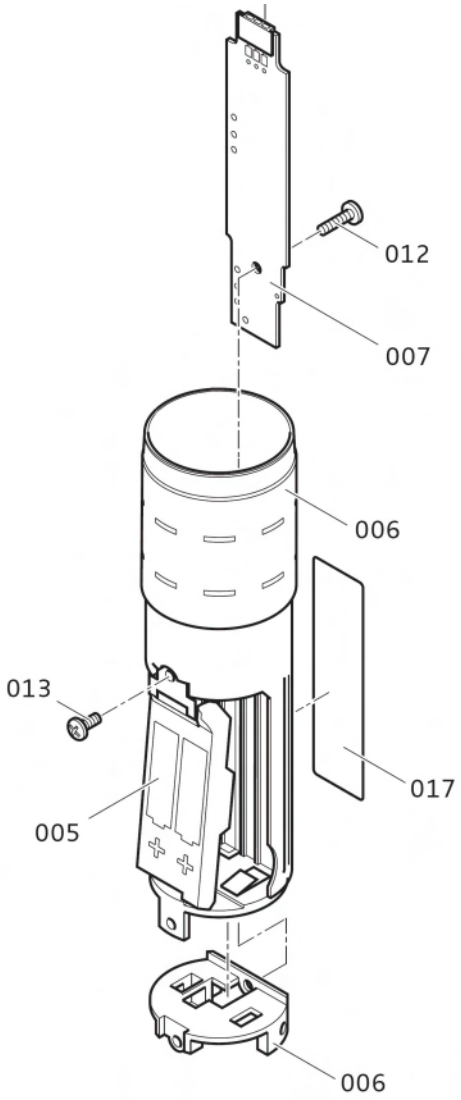


The capsule, keypad and end cap must all be removed before the AF PCB can be removed.



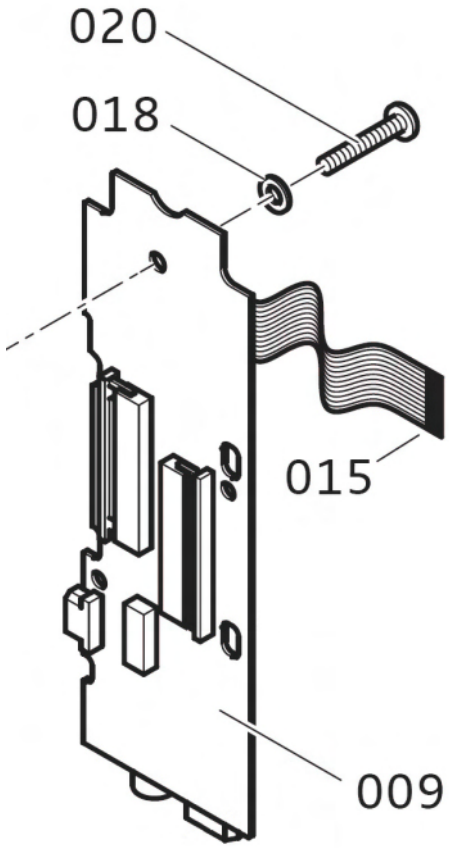
The ribbon cable [015] has to be disconnected from the AF PCB, this is done by lifting the black locking latch on the connector (shown arrowed above), and then the cable [015] can be carefully pulled out from the connector. Once the cable is free the screw

[012] T06 Torx is unscrewed. Once the screw is removed the AF PCB can be slid down and out of the front end of the barrel.

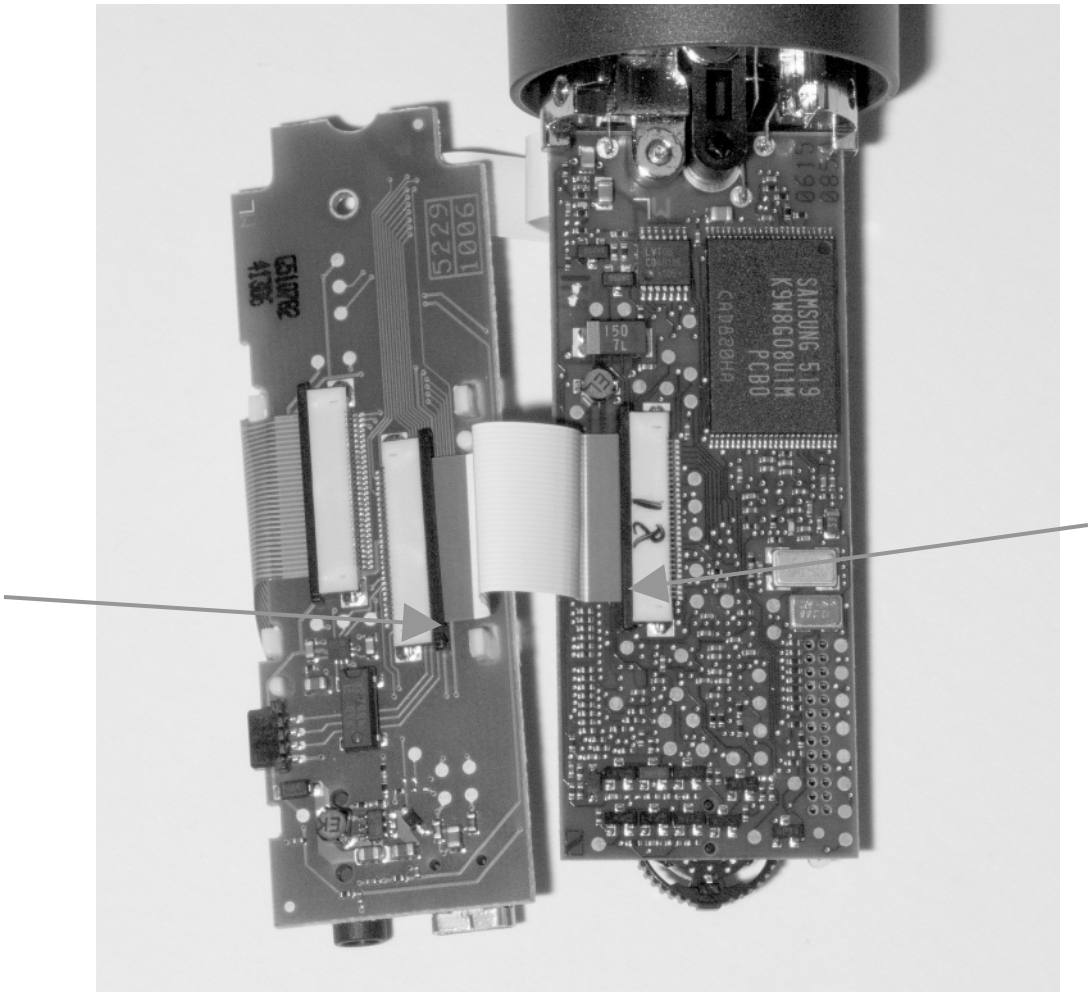


5. Connector PCB removal

After completion of steps 1-4 above the connector PCB [009] can be removed. Undo screw [020] with a T06 Torx driver being careful to retain washer [018].



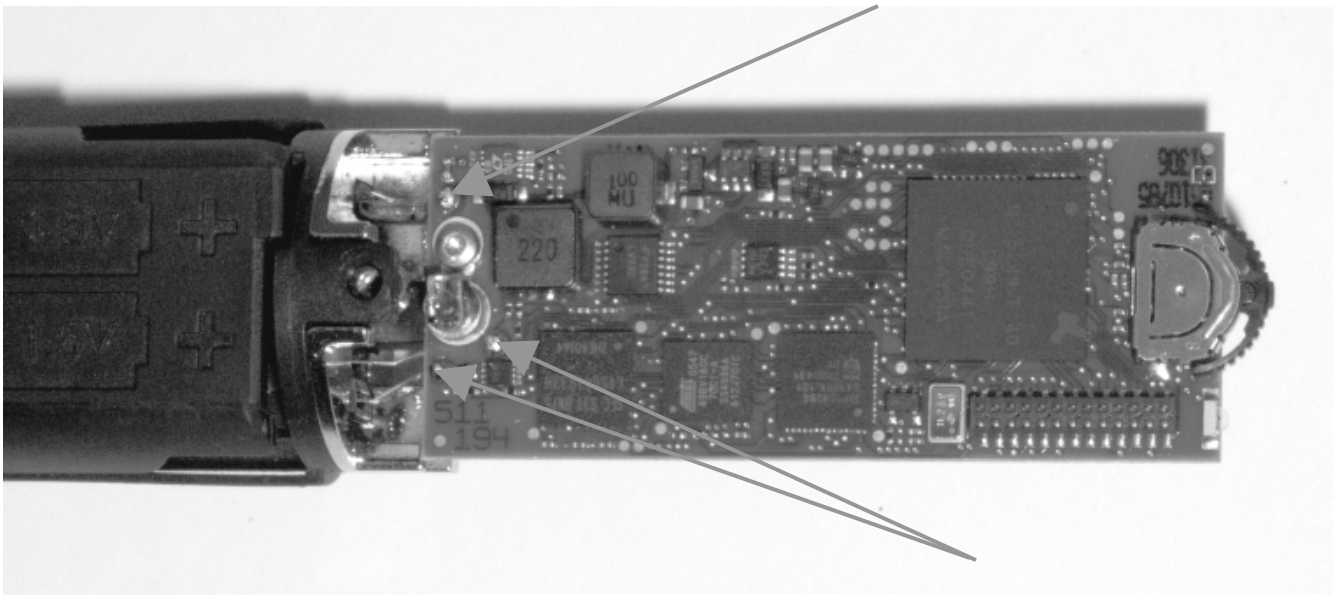
This will leave the connector board only linked via the ribbon cable [014]. Turn the connector board over to gain access to the ribbon cable latch.

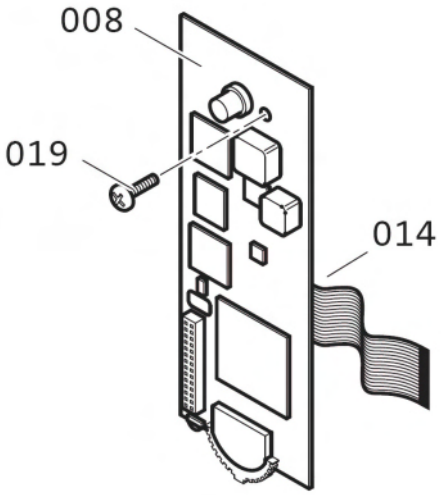


This latch at either end – shown by arrow above (CPU or Connector PCB) can be released and the ribbon cable removed, this will then free the Connector PCB.

6. CPU PCB removal

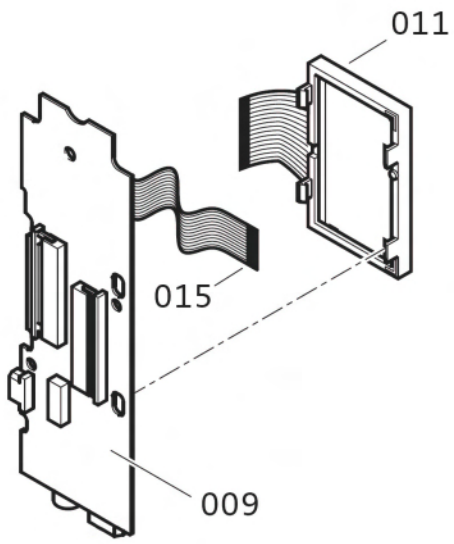
To remove the CPU PCB [008] one Torx screw [019] must be removed and the three connections from the battery compartment have to be very carefully unsoldered.
Once the screw [019] is removed the connections can be unsoldered (3 connections as shown by the arrows below) and the CPU PCB removed, this must be done with care to ensure no damage occurs to the PCB or the battery connecting wires.



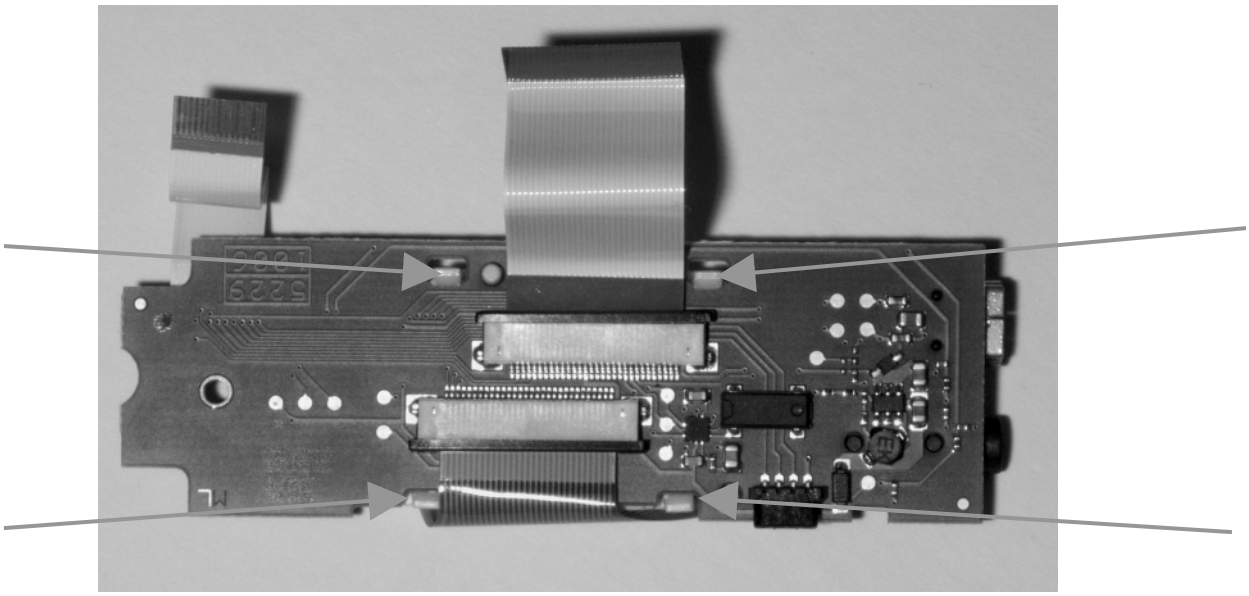


7. LCD removal

To remove the LCD from the Connector PCB, first follow steps 1-5 above and then on the Connector PCB [009] release the black latch holding the ribbon cable from the Connector PCB to the LCD module.

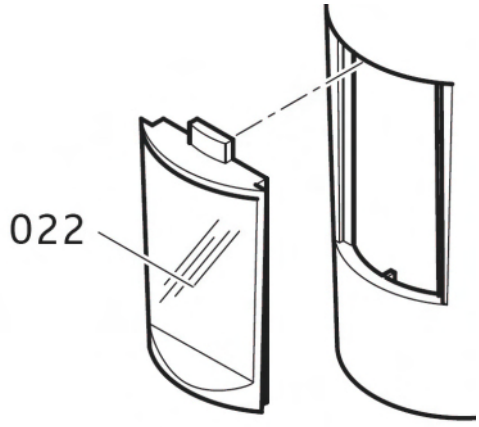


Then unclip the LCD from the PCB by moving the 4 LCD clips (shown arrowed below) to release the module.



8. LCD lens removal

The LCD lens [022] can be removed from the exterior of the FlashMic with no other disassembly but it is very difficult to do. It is much easier to remove the lens once the end cap is removed from the unit.



Then it is a simple matter to remove the lens by releasing the clip of the lens that is located near the closed end of the cap by using either your finger inserted into the end cap or a non-scratchy tool inserted through the keypad opening.

Assembly

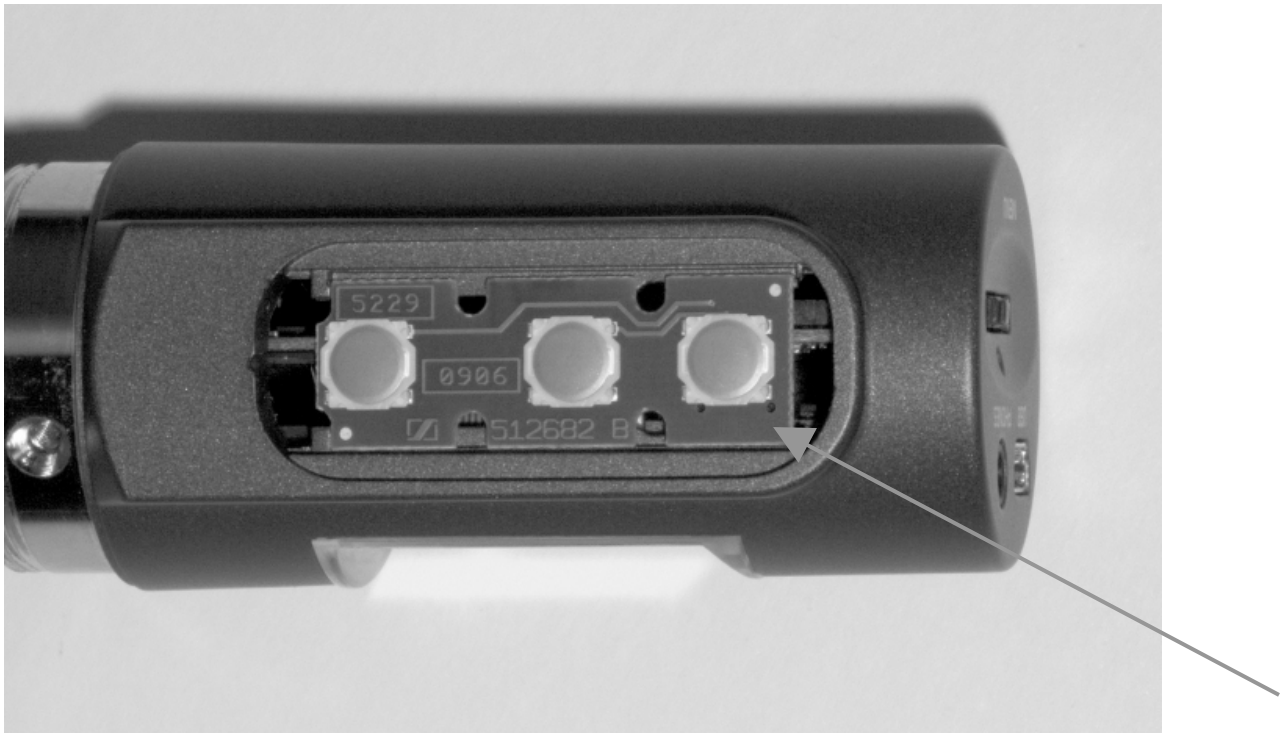
In general assembly is the reverse of disassembly but there are a number of steps in the assembly that require particular care and these are detailed below:

1. Capsule replacement

The capsule replacement is straightforward but make sure that the connector pins (opposite the screw socket) on the capsule are in correct alignment with the socket in the unit – the alignment is correct when the pins on the capsule align with the LCD display window. When replacing the basket make sure the coloured ring [003] is replaced between the basket and the barrel.

2. Key pad replacement

When replacing the keypad it is very important to make sure that the plug on the Keypad PCB [010] is correctly located in the socket that is mounted on the Connector PCB [009] this connector is located at the bottom left hand corner of the PCB in the picture below (indicated by arrow). The PCB is located precisely by the guides in the end cap moulding but it is essential to push the Keyboard PCB onto the socket squarely, otherwise damage to the plug or socket could result.



3. End Cap replacement

Inside the end cap are guides to hold the PCB's securely in place, and during reassembly it is essential to make sure the boards are properly located. When the rear cap is nearly pushed fully home the USB connector, jack socket, and rotary switch will emerge from the end of the rear cap – check these are correctly aligned, and do not force the end cap into place. When replacing the three T08 Torx screws [016] do NOT over tighten as this could strip the threads in the chassis [006]

4. AF PCB replacement

The AF PCB must be slid down chassis [006] from the capsule end. When the PCB reaches the ribbon cable carefully fold the cable so that it goes under the AF PCB and the free end protrudes for connection after the T06 Torx screw [012] is inserted. Reconnect the ribbon cable making sure the latch on the ribbon cable socket is fully open, then insert the cable fully and close the latch.

5. Connector PCB replacement

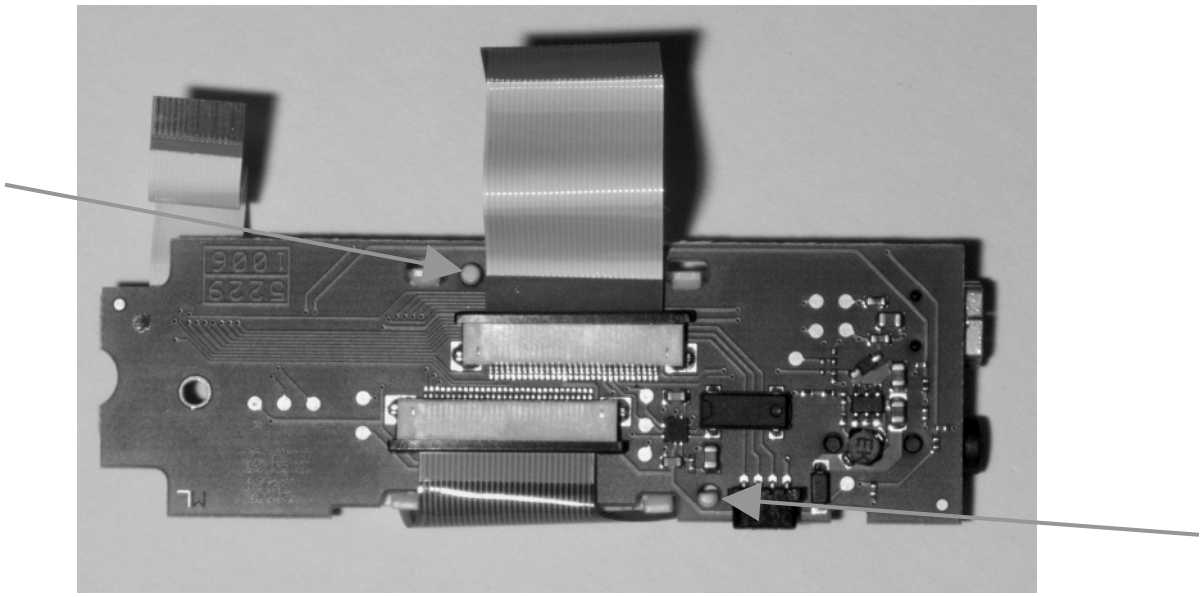
Lay the Connector PCB beside the CPU PCB so that the ribbon cable can be inserted, make sure the latch on the ribbon cable socket is fully open, then insert the cable fully and close the latch. The Connector PCB can then be folded over on top of the CPU PCB – check the ribbon cable folds neatly between the two boards. Then screw the Connector PCB into place using the T06 Torx screw [020] and washer [018]

6. CPU PCB replacement

Check that the CPU PCB holes for the soldered connections are clean before reassembly. Insert the CPU PCB in place checking the battery connections are in place in the PCB holes then screw the board in place using the T06 Torx screw before soldering the connections.

7. LCD replacement

Note that there are two alignment pins to allow easy positioning of the LCD module, when re attaching the ribbon cable first make sure the latch is open then ensure that the cable is fully inserted, before closing the socket latch



8. LCD lens replacement

The LCD easily clips back into place but ensure the inside surface is cleaned before assembly of the end cap onto the unit.

Firmware including updates

The FlashMic firmware is held in non-volatile memory and two copies are kept in memory to ensure that operation is still possible even if the currently in use firmware somehow becomes corrupt.

1. Firmware problems

Generally, most booting, freezing or locking up problems have been due to the earliest release of firmware, v3.02.10, which could corrupt the flash memory file system if the batteries were allowed to run flat in the mic. This bug was removed in an update to v3.02.12 that was the subject of a technical bulletin back in August 2006; all microphones should have been updated at that time. The current firmware is v4.04.06, which contains a still more secure file system.

The firmware for the FlashMic may be updated from time to time and the latest version will be available for download from the website:

www.flashmic.info

2. File corruption

FlashMic's with "corrupt" files systems (and, indeed, any FlashMic) should be reformatted and then updated to v4.04.06. All data will be lost.

There are two operator recovery options (first fit fresh or fully charged batteries):
Try 'A' first
A. Hold down the REC and M buttons whilst powering on. The display will show DRM85 and go no further. Move the rocker switch up or down. If the display shows SAME, them remove the batteries and start again, but move the rocker switch in the opposite direction to before (i.e., turn switch up if the switch was turned down before). The display should show UPDATE, with a progress bar. If successful, note, the firmware version, and then perform a forced format, as described in 'B'
B. Forced reformat. Hold down REC, PLAY and M buttons whilst powering on. The display should show DRM85, then the firmware version, then "FMT N" Use the rocker control to select "FMT Y" and press in to select (all data will obviously be lost).

Assuming you manage to re-update in 'A' and successfully reformat, then update the firmware to v4.04.06. Do the update twice (as stated above the Mic holds two copies of the firmware; you are choosing between the two copies in 'A' above, so it's important that both copies are updated).

Known Faults

To date there have been very few re occurring faults, most problems relate to the use of very early firmware, please see above
There is one known hardware problem that has occurred on a few occasions and that is detailed below:

1. Failure of Keyboard buttons

This fault is exhibited by a total lack of any operation being possible from the Record, Play or Menu keys.
This is caused by the socket that is mounted on the Connector PCB [009] becoming disconnected from the Connector PCB and requires disassembly of the unit as detailed in disassembly steps 1-5 above.
It will be found that when the Keyboard PCB [010] that the CPU PCB connector is attached to the plug
PHOTO
The connector can then be re soldered onto the PCB note that there are small alignment pips on the socket to locate the socket square in the PCB, it is most important to ensure the socket is square to the PCB once soldering is complete.
PHOTO

The FlashMic Family

There are currently two different models in the FlashMic range and Omni and Cardioid:

1 DRM85 – Omnidirectional

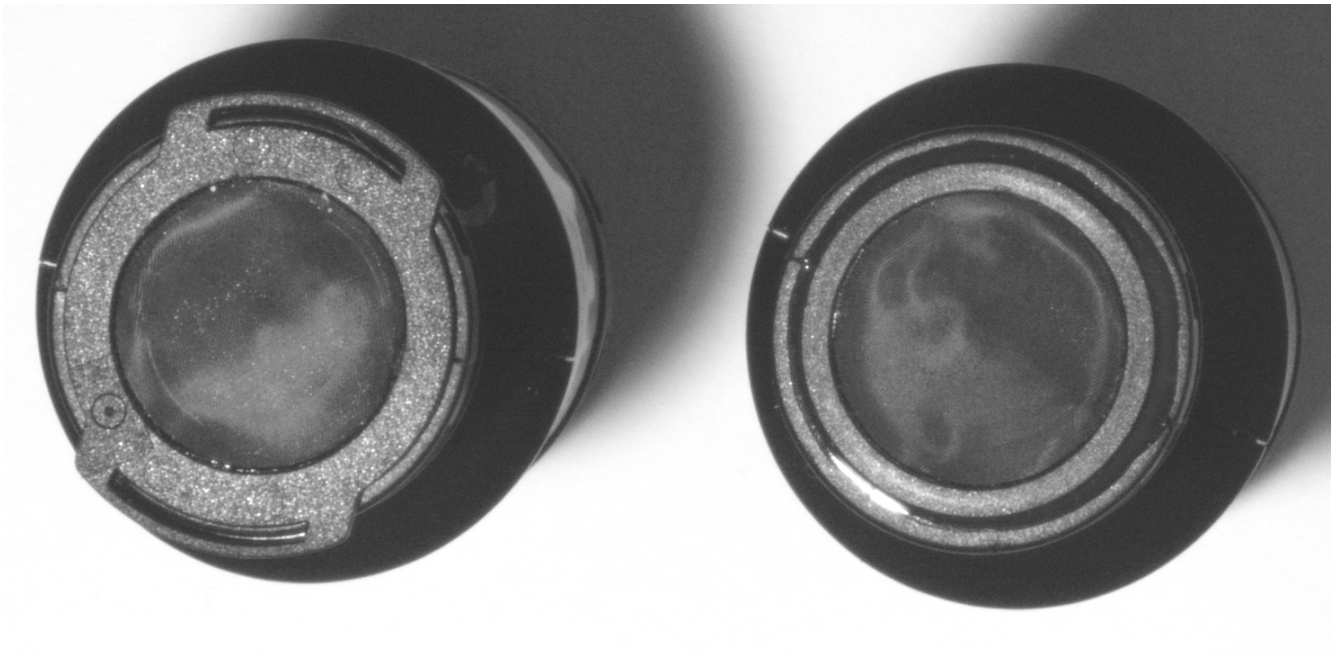
The pick up of audio is broadly the same all around the microphone

2 DRM85C - Cardioid

The pick up of audio is higher from the front of the microphone than from the sides or rear.

3 Differences between the two models

The Capsules are two different types as shown below, note that it is easy to distinguish the cardioid as it has two extensions on either side of the front plate of the capsule.



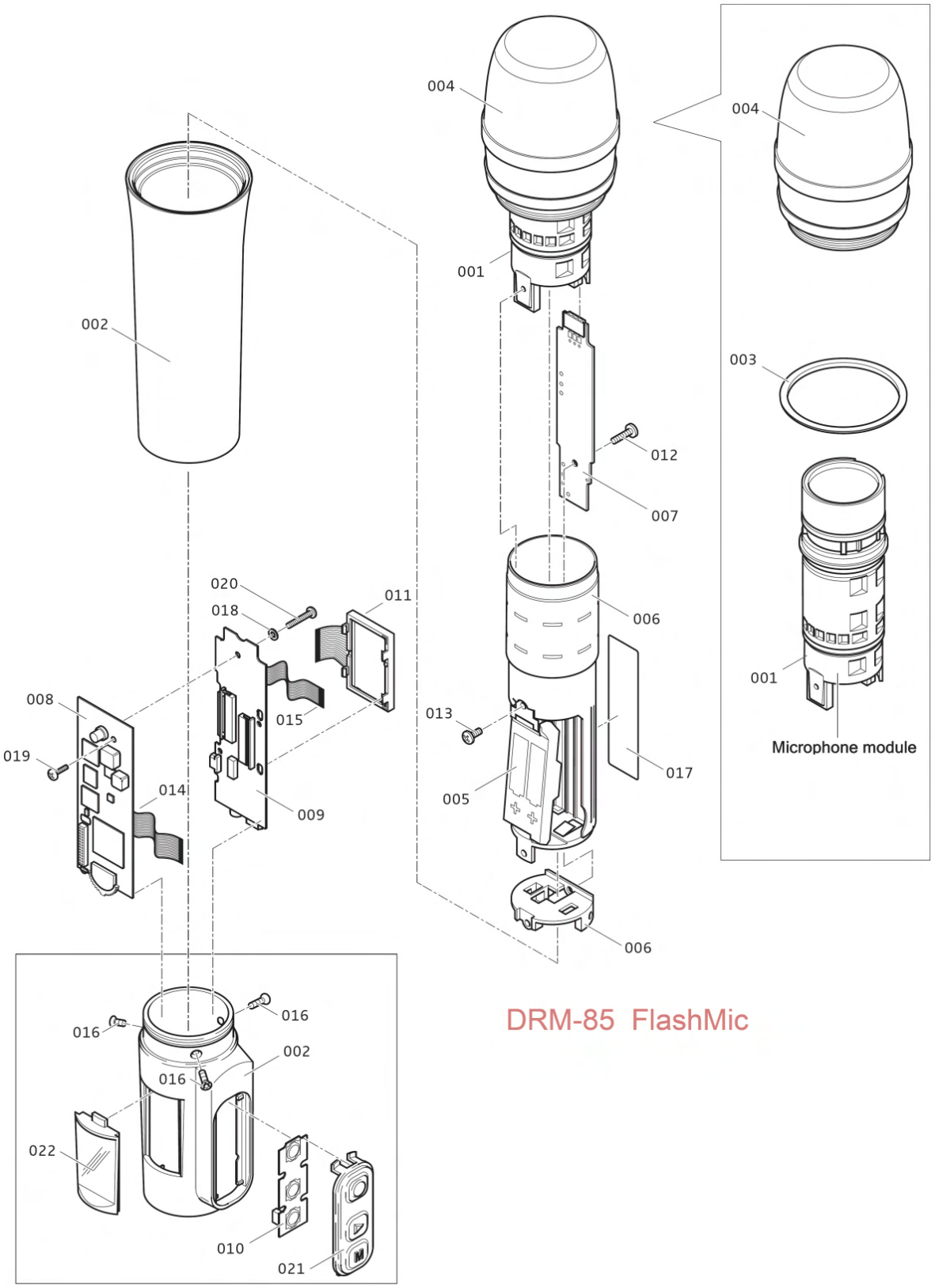
Cardioid Omnidirectional

Capsule Omnidirectional part number – 512514
Capsule Cardioid part number
And to ensure that the units can be differentiated from the exterior the barrel and cap are marked differently
Barrel Omnidirectional part number – 514478
Barrel Cardioid part number –

Please note that the barrel and end cap are supplied as a matched pair to ensure the logo on the barrel is correctly aligned with the with the keypad.

All the electronics and the rest of the unit are identical

Exploded view



Parts list

Item No.	Part No.	Description
001	512514	Microphone module Omnidirectional
002	514478	Barrel & end cap (supplied as matched pair)
003	511565	Coloured ring, purple
004	77535	Basket with pop protection
005	93126	Battery compartment SKM-G2
006	90343	Chassis
007	517630	Printed circuit board AF
008	517631	Printed circuit board CPU
009	517632	Printed circuit board Connector
010	517633	Printed circuit board Keyboard
011	511568	LCD
012	22980	Screw 2.5x4 DIN7985
013		Screw ??
014	87150	Flat cable 30xRM0.5
015	87149	Flat cable 15xRM0.5
016	83055	Countersunk screw MEM2.5x8 TORXT8 DIN7500
017	92092	Label silver - Printed as ordered
018	60108	Washer
019	83054	Screw CEM2x6 TORXT6 DIN7500
020	83051	Screw M2x12 TORXT6 ISO7045
021	512510	Rubber Key pad - REC, PLAY, MENU
022	512508	LCD Lens 34.5x21x2.2

Parts list – part 2

	87425	Cable mini-USB 1.5m
	517609	CD ROM with cover
	76670	Microphone clamp black MZQ1
	512723	Bag
	512721	Box base 32x15x0.5
	512720	Box cover 32x15x0.5
	512725	Cardboard box
	512722	Operations Manual
	Sub parts list to Part no 093126	
023	90366	Flap for battery comp. SKM G2
024	92616	Holder
	Sub parts list to Part no 517631	CPU PCB [008]
025	87409	SMD switch
026	87434	Adapter JTAG
027	45720	SMD LED, red
	Sub parts list for Part no 517632	Connector PCB [009]
028	87181	Jack 3.5S
029	87410	Jack USB
	Sub parts list for Part no 517633	Keyboard PCB [010]
030	72512	SMD tactile switch

Parts list – part 3

Different items fitted to the DRM85C Cardioid version		
001		Microphone module Cardioid
002		Barrel & end cap (supplied as matched pair)