

Service Manual

Gigaset SL100, SL150

up to level 2.5



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2 Additional features and differences to Gigaset S100/ 150

For an overview of all features see datasheets in G5000 folder on training CD-ROM.

SL1 handset:

- Like S1 handset plus the following features:
- Slim lumberg connector for headset, charger or connection to PC
- Illuminated keypad
- Vibra call
- Voice dialling of **23** numbers in the handset
- Recording of personal ringing tone via microphone possible (up to 4s)
- Polyphonic ringing melodies (16 chords)
- Download of polyphonic ringing tones via PC interface (Siemens data suite)
- Download of background picture via PC interface (Siemens data suite)
- Game: Ballon shooter

SL100/ 150 base station:

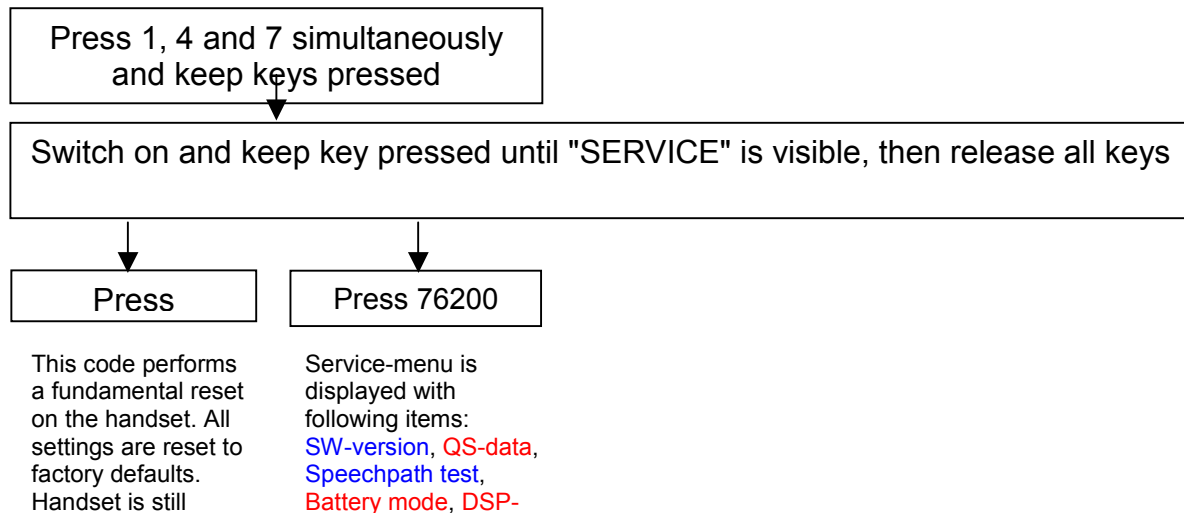
- Like S100/150, but without answering machine keys and charging possibility

3 Procedures

Note: The service procedures are confidential.

3.1 Service procedures for Gigaset SL1 handset

Read out IPUI of the handset (for identification purposes): menu-key, *, #, 0, 6, #



SW-version: Read out SW-version and IPUI (international portable user identity) of handset. IPUI is a unique number (like IMEI) that could be used for identification.

Speechpath-test: Switches a direct loop between microphone and loudspeaker. This enables a check of the speechpath by blowing in the microphone.

Metering mode: Press o.k. to activate an information line during normal operation mode and leave the service menu afterwards.

Example: 100 - 0 - 02 - 016 - 100
RX-level - Frequency - Time slot - Base code - Bit error rate (100 = 100% o.k.)

Measure time: Changes the measure time of the metering mode (change is not necessary).

Working time: Read out the time for which the handset has been switched on.
Example: 15d, 10h means handset has been switched on for 15 days and 10 hours. The counter's max. value is 65535 hours or 2730 days. It can only be reset at WSC.

Contrast: Changes the contrast of the display.

3.2 Service procedures for Gigaset SL100/ 150 base station

Press: "menu-key", 8, 9, ABCD (see table below), o.k.

Pos. acknowledge tone (rising sequence of notes) = Procedure has been accepted.

Feature	A	B	C	D (Option)
Read out RFPI number of base station	1	-	0	-
Pause after access code and length of dial pause ("P")	1	-	1	1 = 1 sec. 2 = 2 sec. 3 = 3 sec. 4 = 6 sec.
Pause after signal-key	1	-	2	1 = 800 ms 2 = 1600 ms 3 = 3200 ms
Automatic attenuation correction (dependant on country)	1	-	3	0 = off 1 = on
Time for end of call identification (to distinguish between 2 ringing pulses of one call with long pauses between pulses and 2 separate calls)	1	-	4	0 = 4 sec. 1 = 5.5 sec. 2 = 7 sec. 3 = 11 sec. 4 = 2.5 sec.
Hook-flash-prevention (cradle switch identification) (short press on cradle switch-key is extended by SW to prevent that it is interpreted as a press on the flash-key)	1	-	5	0 = 800 ms 1 = 2000 ms
Pause after line seizure	1	-	6	1 = 1 sec. 2 = 3 sec. 3 = 7 sec.
Music on hold	1	-	7	0 = off 1 = on
Read customer settings	1	-	8	- (see description below) *
Suppress first call if SMS is activated	1	-	9	0 = no 1 = yes
System PIN reset	3	76200	-	-
Programming data on an address	4	76200	1	Specific code needed
Read out SW-version (decimal figures)	4	76200	2	Example: 0100200 ... 01 = SW-variant 002 = SW-version 00 = Revision
Range of ringing frequency recognition	4	76200	3	0 = 20- 60 Hz 1 = 15- 75 Hz 2 = other settings
Dial pulsing: pulse pause ratio (make break ratio)	4	76200	4	0 = 1.5 : 1 1 = 2 : 1
CLIP list activation	4	76200	5	0 = on 1 = off
Off-hook CLIP activation	4	76200	6	0 = off 1 = on
Approval test	6	76200	5	-
Working time	7	-	1	- see **

* **Read customer settings** (menu, 8918):

Menu for Hotline purposes that enables to check some customer settings in 1 procedure. Instead of asking the customer which flash time...he has said he just needs to tell the Hotline this special code.

Example: 012XXX - 1 - 1 - 3

The first 6 characters show the registered handsets from 1 to 6 with authorisation.

Authorisation: 0 = external and internal (no barring)
 1 = external incoming
 2 = internal only
 X = not subscribed

In this case (021XXX) it means that 3 handsets are registered on the base station.

Handset 1 is not barred, handset 2 can only accept external calls and can be used for internal calls. Handset 3 can be only used for internal calls.

The 1 indicates the repeater mode: 0 = off
 1 = on

The 1 stands for the dial mode: 1 = DTMF
 2 = Dial pulsing
 3 = DTMF + Earth

The 3 stands for the flash time: 0 = 80 ms
 1 = 100 ms
 2 = 120 ms
 3 = 180 ms
 4 = 250 ms
 5 = 300 ms
 6 = 600 ms
 7 = 800 ms

** **Working time** (menu, 8971):

Read out the time for which the base station has been switched on.

Example: 15d, 10h means handset has been switched on for 15 days and 10 hours. The counter's max. value is 65535 hours or 2730 days. It can only be reset at WSC.

Fundamental reset:

Disconnect mains. Press paging key on base station and hold down.

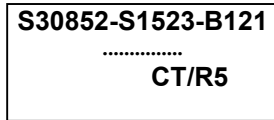
Plug in AC- adapter. Hold key pressed for more than 3 seconds.

Release paging key. The base station is now set to factory defaults.

The system-PIN is reset to 0000 and all mobile units are deregistered.

If a **handset** was registered only to this base station before the reset, it can be **registered automatically after a location update** with the base station (after appr. 30 seconds or after picking up the handset (off hook key)).

4 Lasered imprint and sticker on microprocessor

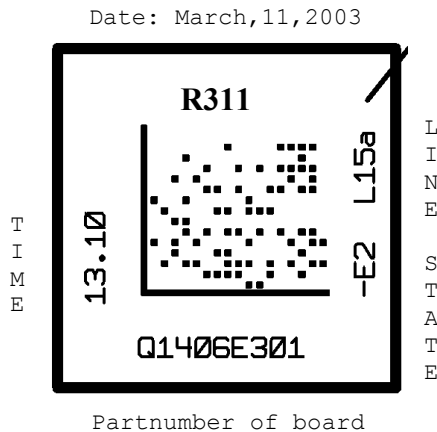


These are the 2 important numbers on the info sticker.
The first number shows the type of the phone.

- Example:
- **S30** means **new** component
 - S36** means **swap** component
 - 852 stands for analogue Gigaset
 - S15xx means 5000 family
 - The following **2 characters** indicate the **country**.
 B1 means Germany (Siemens); A1 means Germany (PTT)
 C1 Austria, C4 Australia, N1 France, V1 Ireland, K1 Italy,
 S2 Poland, S3 Russia, S7 Hungary, B4 Turkey, L1 UK,
 F1 Switzerland, M1 Netherlands, D1 Spain,
 - The following character shows the variant.
 Euro-PTT-Version, Base with Classic-/ Comfort handset...
 - The last character indicates the colour.

The second number indicates the date of production.
 CT stands for Bocholt.
 The next character shows the year of production.
 N = 2001, P= 2002, R = 2003, ...
 The last character shows the month of production.
 1-9 = January to September
 O = October
 N = November
 D = December

Sticker on Microprocessor:



5 Test and identification of faulty component

There are different faults that could appear.

Not all incoming components or systems have to be faulty.

The customer could have problems with the operation of the phone or could have placed it close to a device (PC...) that affects it.

It could also happen, that there is a loose connection in the phone (due to a cold soldering joint or something else).

So the fault might not appear during test.

There are different possibilities to test a phone depending on the information you received with it.

5.1 Check of complete system with fault description of customer

Try to reconstruct the fault using the description of the customer.

Check the batteries and the AC-adapter.

Find out whether the customer has programmed something wrong by checking the procedures concerned.

If that was not successful do an **incoming test**.

If there is a fault try to find out which component is faulty by registering on a golden device and testing again (deregister it from the golden device after testing).

Register swap component to customer component.

5.2 Check of complete system without fault description of customer

Check the batteries and the AC-adapter if existing.

Perform an **incoming test**.

If there is a fault try to find out which component is faulty by registering at a golden device and testing again (deregister it from the golden device after testing).

Register swap component to customer component.

5.3 Check of component with fault description of customer

Register component to golden device.

Try to reconstruct the fault using the description of the customer.

Check the batteries (handset) or the AC-adapter (base station).

Find out whether the customer has programmed something wrong by checking the procedures concerned.

If that was not successful make an **incoming test**.

Deregister customer device from golden device after testing.

5.4 Check of component without fault description of customer

Register component to golden device.

Check the batteries (handset) or the AC-adapter (base station).

Make an **incoming test**.

Deregister customer device from golden device after testing.

5.5 Functional Test

There is an incoming and an outgoing test.

The difference between them is that in the outgoing test you do a reset on the component after testing in case of swap (to deregister, reset PIN and set to factory defaults). For personalized repair outgoing test is the same as incoming test.

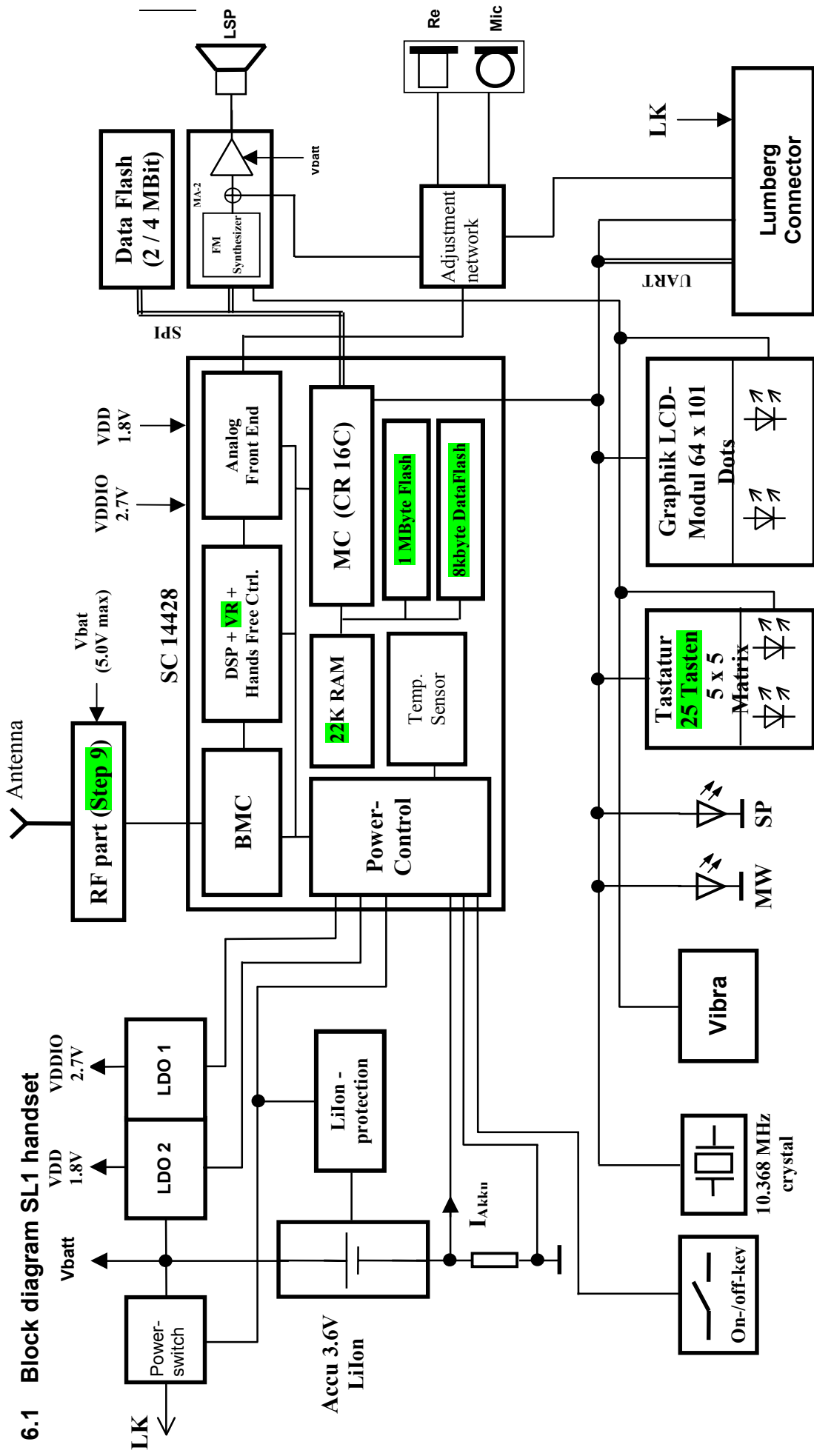
Outgoing test (system):

- 1) Displaytest Gigaset SL1:
Mobile unit is switched off.
Press 1, 4 and 7 simultaneous and hold down while switching on.
Press any key to alter pattern.
- 2) Charging-test:
Mobile unit is switched off.
Put mobile unit into charging cradle.
One segment of the battery display has to start blinking automatically when putting in.
- 3) There are 2 possibilities of testing the fundamental functions of the telephone:
 - 1) Test with PBX (private branch exchange):
 - a) Ringer test handset
 - b) Dialling test
 - c) Audio test in transmit and receive direction (speech) with the help of a second phone (corded) connected to the PBX.
 - 2) Test with telephone tester, if existing (e.g. WPG 1000):
 - Ringer test handset
 - DC resistance and isolation resistance (only for base station test)
 - Testing the dial information (only for base station test)
 - Testing the flash hookswitch (signal key) (only for base station test)
 - Audio test of telephone in transmit direction (SLR)
 - Audio test of telephone in receive direction (RLR)
- 4) Do a fundamental reset on the base station you want to test in case of swap:
Disconnect mains.
Press paging key and hold down.
Plug in AC- adapter.
Hold key pressed for appr. 3 seconds. Release paging key.
The base station is now set to factory defaults.
The system code is set to 0000 and all mobile units are deregistered.
- 5) Reset handset to factory defaults in case of swap:
Switch off the handset, press 1, 4 and 7 simultaneously and keep pressed while switching on. Press 4685463 (HOTLINE).
This resets the handset completely. It is still registered to the base station.

Incoming test: only step 1 to 3

6 Block diagrams

6.1 Block diagram SL1 handset

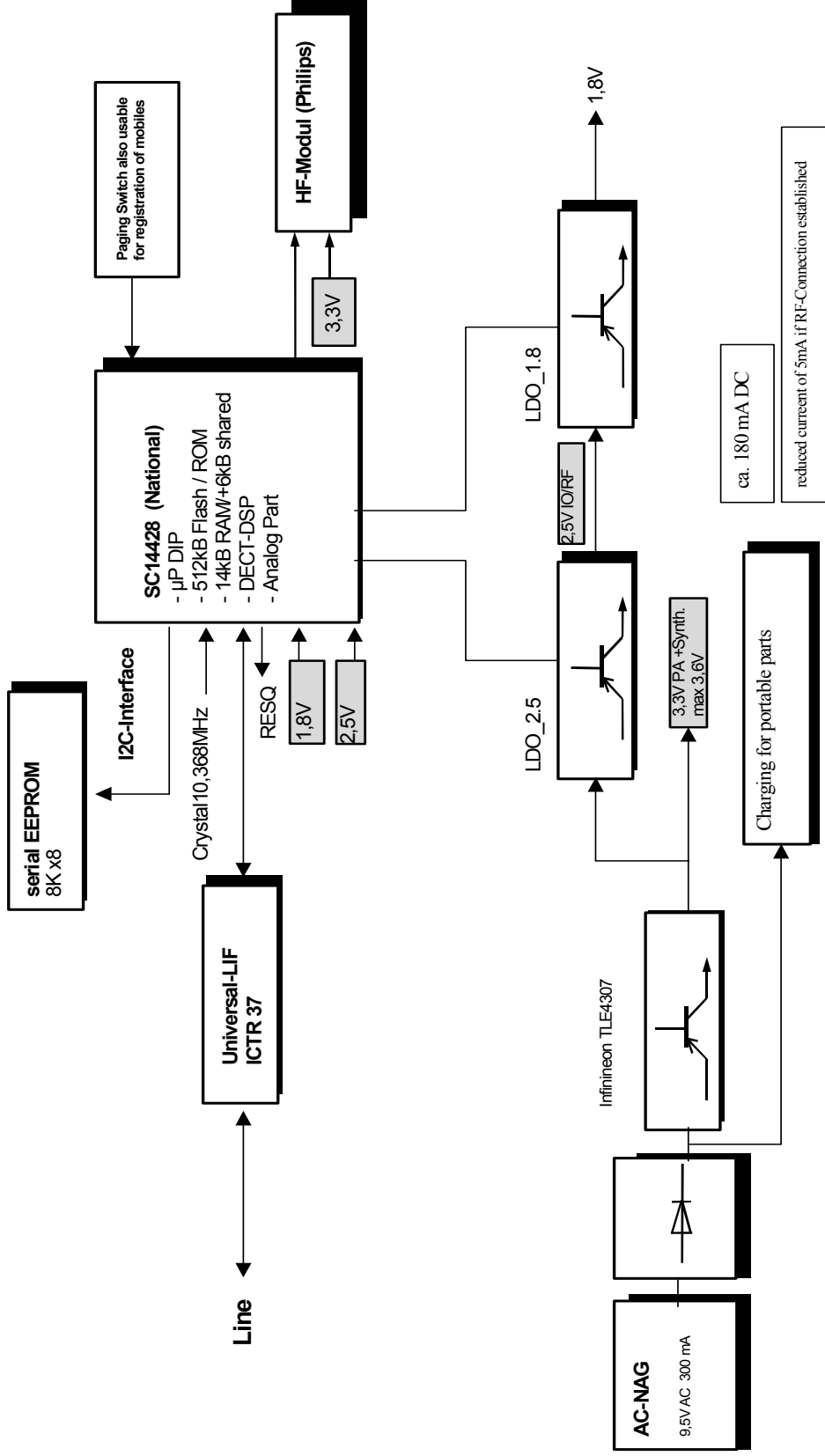


Confidential

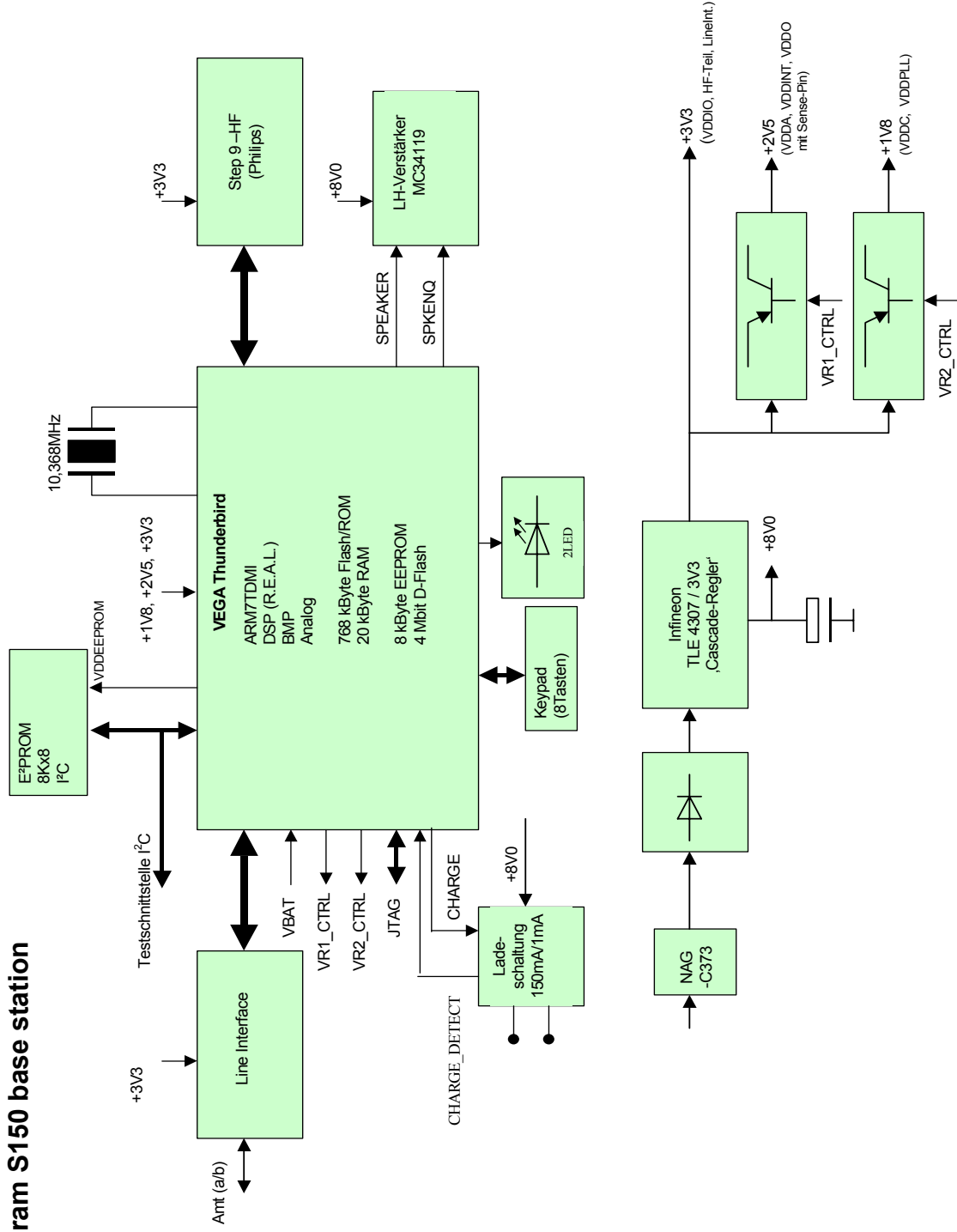
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ICM MP CCQ GRM C
J. Junggebauer

6.2 Block diagram S100 base station



6.3 Block diagram S150 base station



7 Repair of SL1 handset

Do the repair of the phone in a clean environment. Use gloves for assembling and ionized air to remove the dust from the display area of the handset and in general. Consider the international ESD regulations.

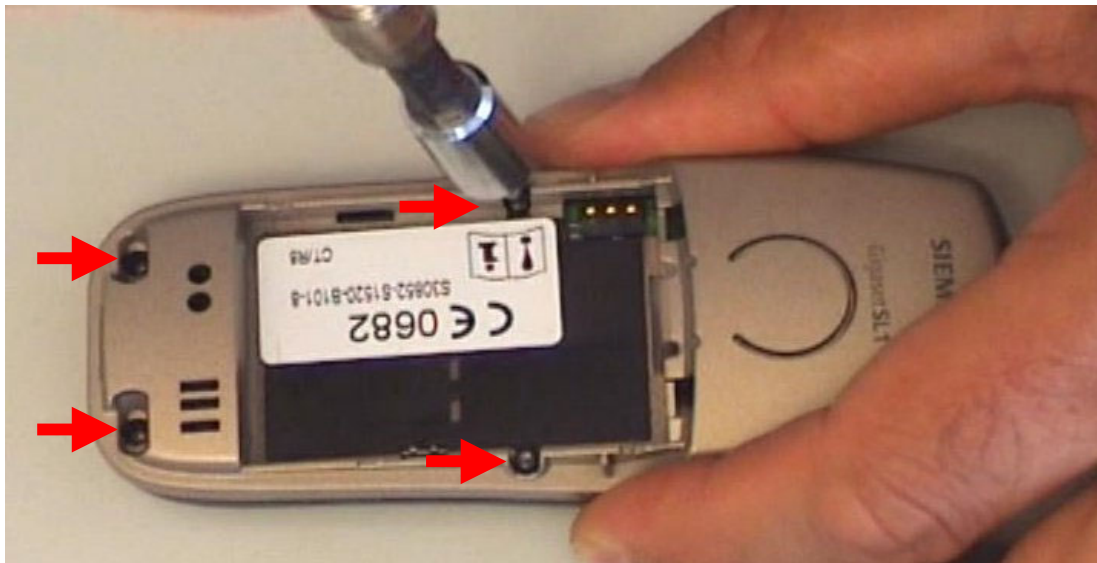
7.1 Special equipment and tools

Torque driver with torx 5+ bit



7.2 Disassembling SL1 handset

Unscrew all 4 screws.



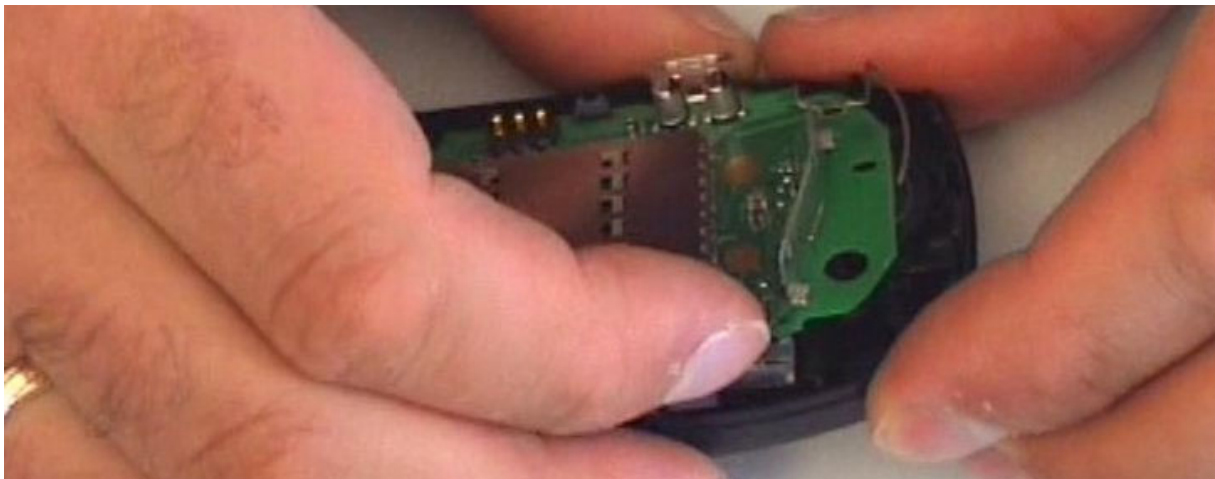
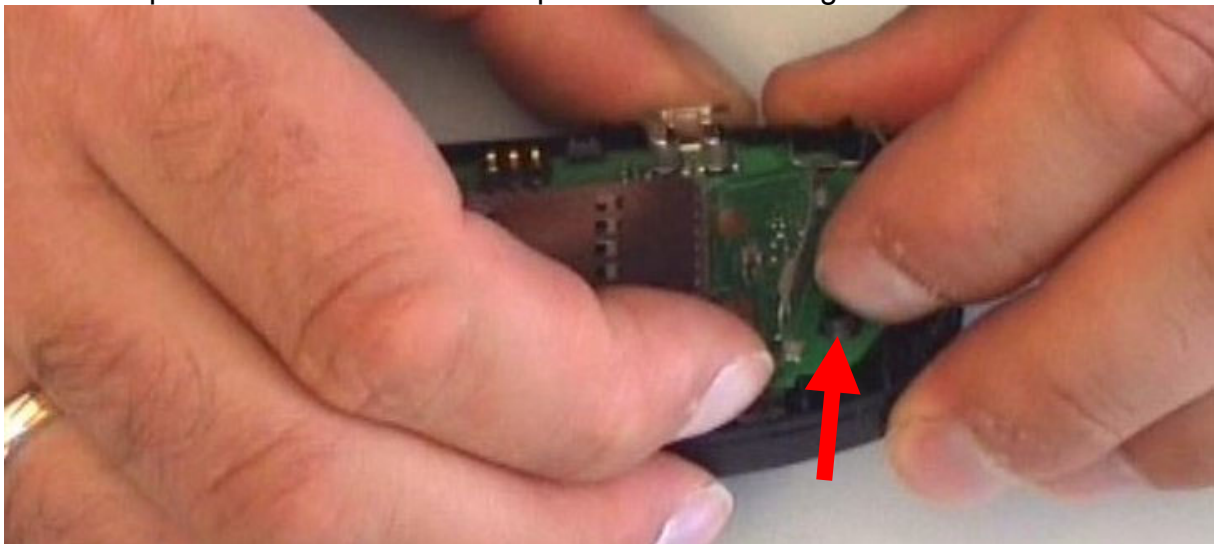
Insert the screwdriver in the belt clip hole and press in order to open the latch.



Press the dark case shell downwards in order to open the other latch.



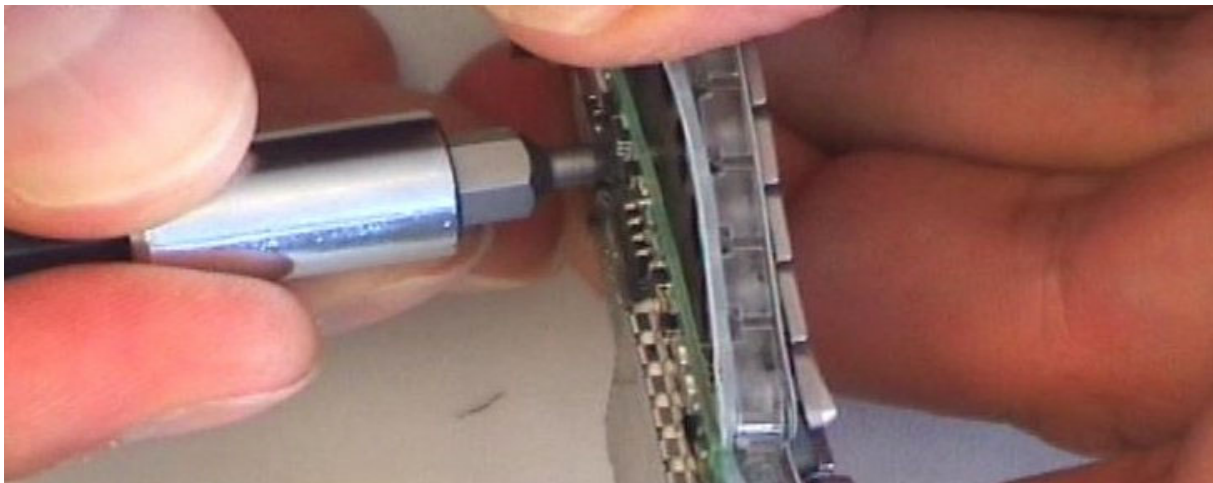
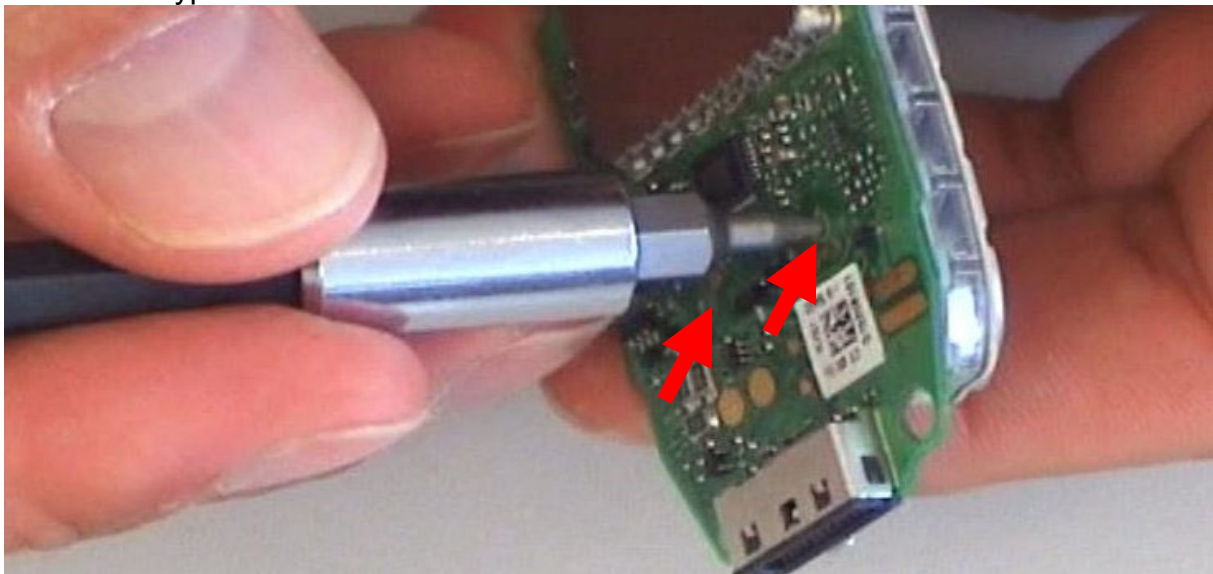
Press the plastic stud to the side and pull on the board to get it off.



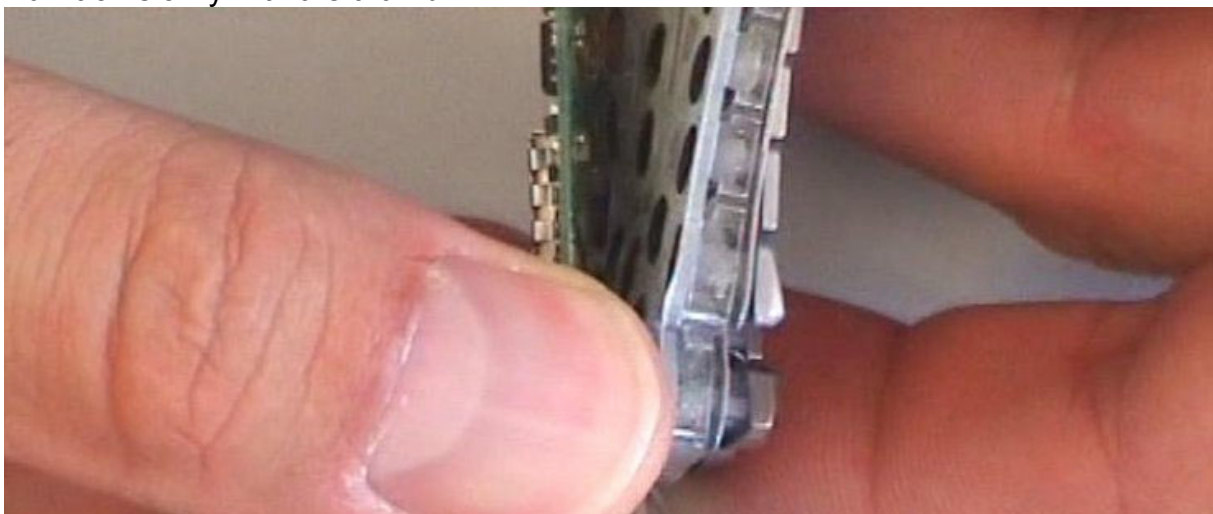
How to get the keypad off:

The keypad is glued on the board. In order to get it off please proceed as described in the pictures below.

Push the keypad off via the 2 holes in the PCB.



Pull it off slowly with the thumb.



7.3 Assembling SL1 handset

How to fix a new keypad:

Make sure that the PCB is clean (no remaining glue and no fingerprints on the keypad side).

Usually the glue stays on the keypad, but if necessary clean board with Isopropanol. Do the next steps shortly afterwards to prevent that dirt or dust gets between keypad and board.

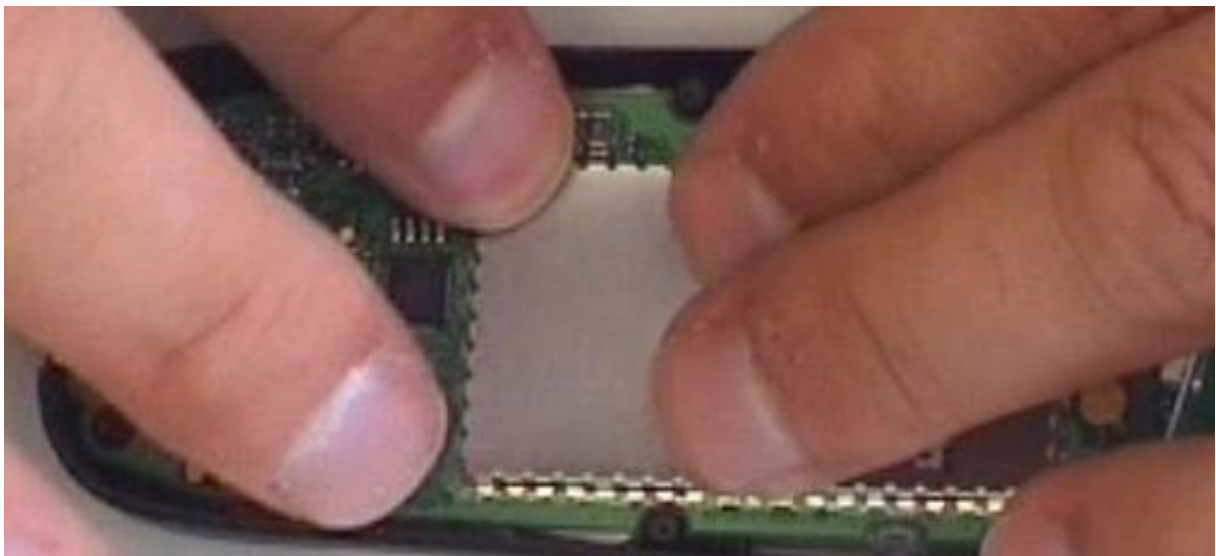
Peel off the protection foil of the keypad and insert it in the case shell (picture below).



Insert the board starting with the microphone area.



Press the board on the keypad as shown below.

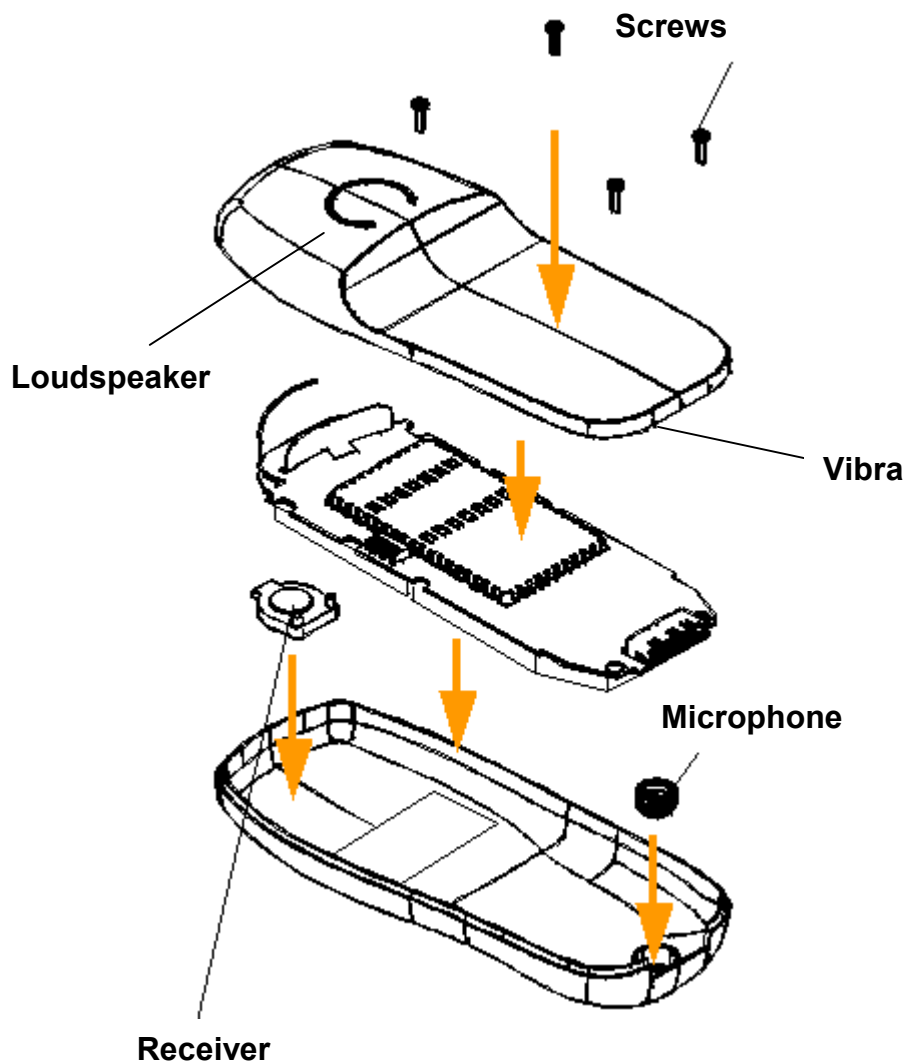


Use the exploded view as a help to see how and where the components are located.

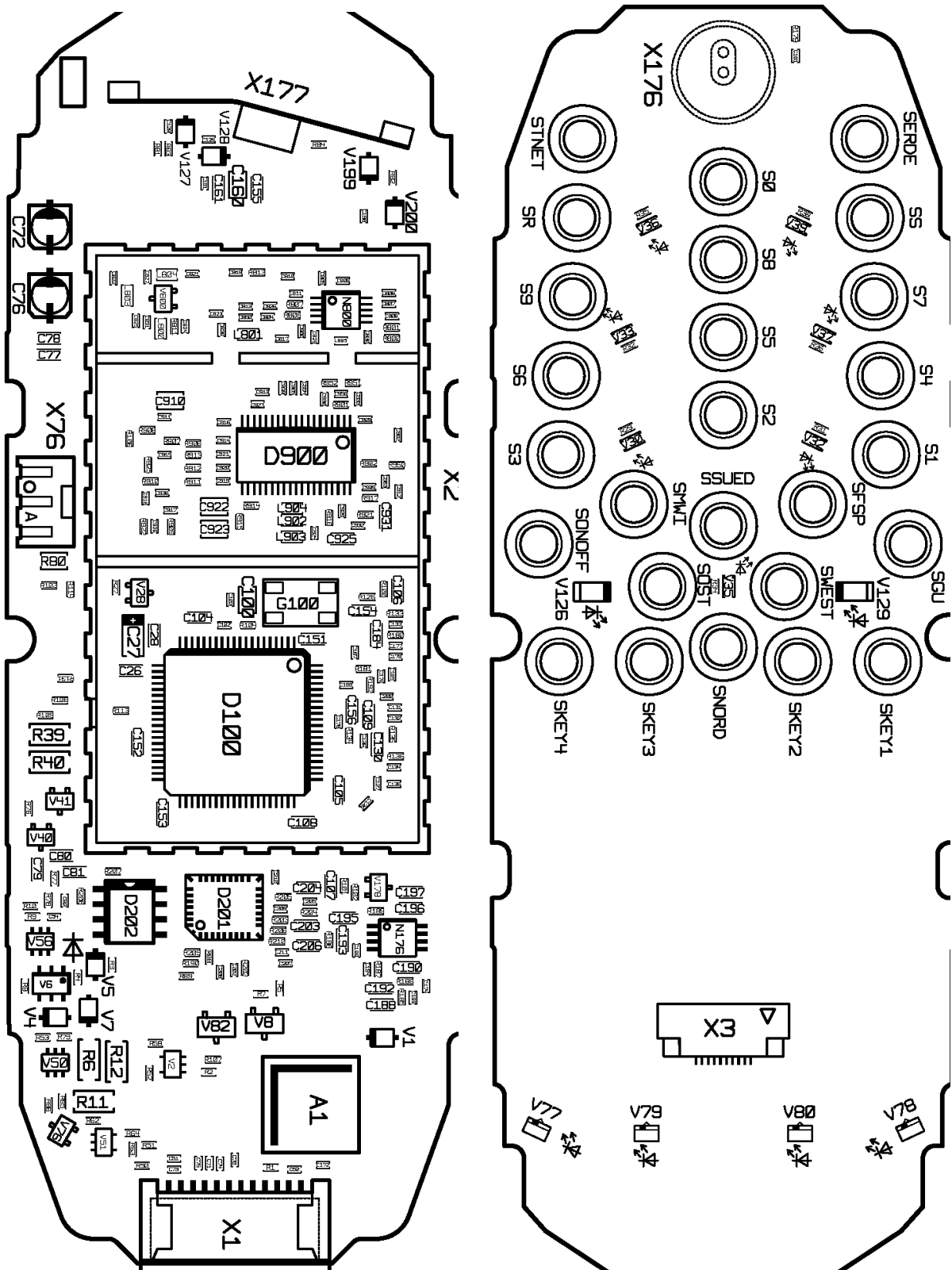
Insert microphone, speaker and afterwards PCB with keypad in upper case shell. Insert loudspeaker and vibra and close handset with lower case shell by pressing both case shells together. Fix the 4 screws with 15 Ncm using a torque driver torx 5+.

Switch the handset on to check correct function.

7.4 Exploded view SL1 handset



7.5 Board Layout Gigaset SL1 handset



7.6 Humidity or liquid damage

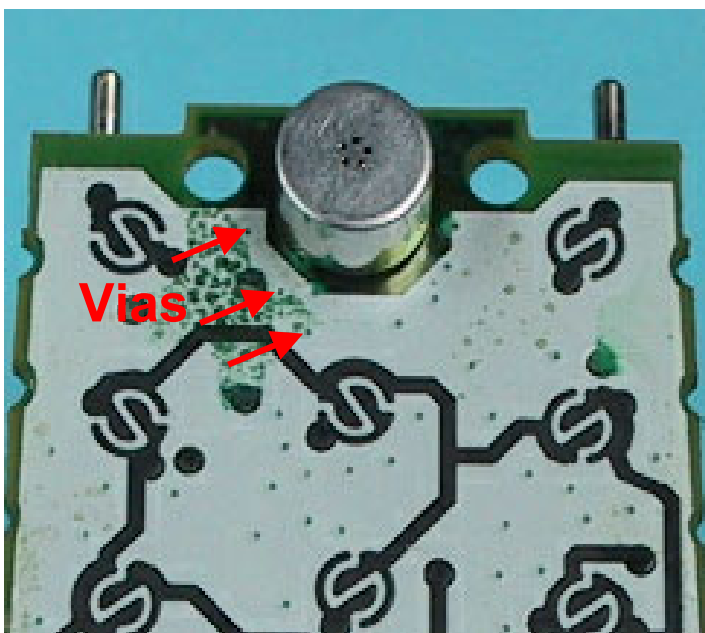
Diagnosis code IRIS: 61000 (DEVICE / MOISTURE DAMAGE)

Boards with humidity damages on the keypad and component side have to be scrapped.

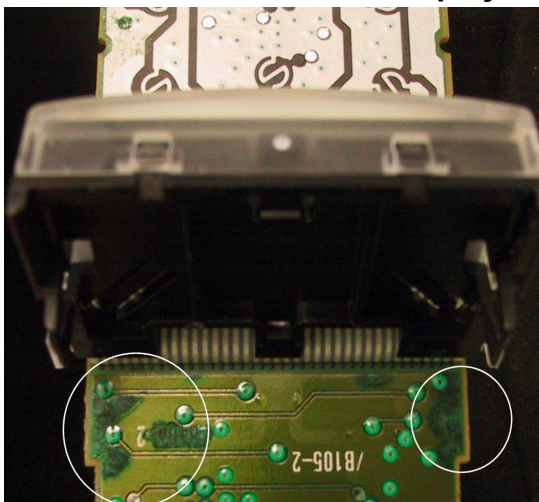
Remaining flux on the component side could look similar to a humidity damage (white deposits) but it will disappear when heating it up with a hot air blower.

Pictures below are taken from G4000 handsets.

Scrap:



Check also area under display!



7.7 Earphone capsule/ receiver faulty

<u>Affected unit:</u>	Gigaset SL1
<u>Diagnosis code IRIS:</u>	72100 (ACOUSTICS / RECEIVING / EARCAP)
<u>Repair level:</u>	Level 1
<u>Components:</u>	Earphone capsule/ receiver
<u>Needed equipment:</u>	Multimeter
<u>Working material:</u>	None

Diagnosis:

The diaphragm of the earphone could be affected by deposits with increasing age. There will be a higher attenuation when measuring RLR (receiving loudness rating). In most cases the earphone capsule is defective. If there is no noise audible on the earphone when making a sidetone check it's also possible that the wire of the coil is broken. Check the resistance of the coil with a multimeter. The typical impedance is appr. 32 ohms. In other cases replace it.

Repair:

Replace earphone capsule.

Test:

Put the repaired board in a testhousing and check the correct function. If there is a telephone tester with acoustic testhead make a RLR-test and check whether the attenuation is o.k..

7.8 Loudspeaker faulty

<u>Affected unit:</u>	Gigaset SL1
<u>Diagnosis code IRIS:</u>	72200 (ACOUSTICS / RECEIVING / LOUDSPEAKER)
<u>Repair level:</u>	Level 1
<u>Components:</u>	Loudspeaker
<u>Needed equipment:</u>	Multimeter
<u>Working material:</u>	None

Diagnosis:

The diaphragm of the loudspeaker could be affected by dust or humidity or the loudspeaker could be electrically faulty.

Make a sidetone check (service-menu) in order to check the sound of the speaker.

If there is no sound, check the resistance of the coil with a multimeter.

The typical impedance is appr. 16 ohms. In other cases replace it.

Repair:

Replace loudspeaker.

Test:

Put the repaired board in a testhousing.

Make a sidetone check by blowing into the microphone and checking the volume of the noise on the loudspeaker.

7.9 Display module faulty

<u>Affected unit:</u>	Gigaset SL1
<u>Diagnosis code IRIS:</u>	21100 (DISPLAY / PERFORMANCE / NO LETTERS) 21200 (DISPLAY / PERFORMANCE / LINE-/COLUMN ERROR) 23200 (DISPLAY / MECHANICAL DEFECT / DISPLAY BROKEN)
<u>Repair level:</u>	Level 1
<u>Components:</u>	Display module for SL1
<u>Needed equipment:</u>	tweezers
<u>Working material:</u>	none
<u>Diagnosis:</u>	Missing lines, columns, display does not work at all or display (LCD) broken.
<u>Repair:</u>	The display is connected with a zero craft connector. Take some tweezers, open the connector and release it. Insert a new display module and close the connector. Make sure that the display foil is inserted correctly.
<u>Test:</u>	Do a display test. Press 1,4 and 7 simultaneously and keep pressed while switching on the handset. Release all keys. Press a key. You must see a grid on the display. Press another key in order to change the lines and columns of the grid displayed. If you see again a grid the display is o.k.

7.10 Microphone faulty

Affected unit: Gigaset SL1

Diagnosis code IRIS:

73110 (ACOUSTICS / TRANSMITTING / MICROPHONE / NO FUNCTION)

73170 (ACOUSTICS / TRANSMITTING / MICROPHONE / LOW VOICE LEVEL)

Repair level: Level 1

Components: Microphone

Needed equipment: Tweezers

Working material: none

Diagnosis:

The diaphragm of the microphone is affected by humidity or nicotine with increasing age or the microphone could be electrically faulty. There will be a higher attenuation when measuring SLR (sending loudness rating). In most cases the microphone is defective. The springs could be also bent and therefore cause contact problems.

Repair:

Take some tweezers and pick up the microphone.

Insert a new microphone and press it gently in the housing making sure that it is fixed correctly.

Test:

Put the repaired board in a testhousing.

Make a sidetone check by blowing into the microphone and checking the volume of the noise on the loudspeaker.

If there is a telephone tester with acoustic testhead make a SLR-test and check whether the attenuation is o.k..

7.11 Slim Lumberg connector faulty

Affected unit: Gigaset SL1

Diagnosis code IRIS:
46000 (INTERFACES / CHARGING CONNECTOR)

Repair level: Level 2.5

Components: Slim Lumberg connector

Needed equipment: Tweezers, hot air blower, soldering iron

Working material: solder, flux

Diagnosis:

Problems with charging, headset function or connection to the PC.
Connector is damaged (optical inspection).

Repair:

Desolder the faulty connector with a hot air blower.
Due to the fact that there are small SMT devices near the connector pins the air flow of the hot air blower should be low to prevent that the components are blown away.
Heat the metal shield of the connector first (both sides are connected to the board).
Heat the pins and push away the connector. Put some flux on the pads.
Take a new connector and solder it with the hot air blower on the board.
Make sure that the plastic part of the connector does not melt.
If necessary resolder the pads with a soldering iron.

Test:

Connect a charger and check the charging function.
Connect a headset and check the headset function.
Connect a PC and check the function.

7.12 Battery contacts faulty

Affected unit: Gigaset SL1

Diagnosis code IRIS:

97000 (FUNCTIONALITY / DEVICE NO CHARGING)

92000 (FUNCTIONALITY / SWITCH ON PROBLEMS)

Repair level: Level 2.5

Components: battery contacts

Needed equipment: Tweezers, hot air blower, soldering iron

Working material: solder, flux, desolder wick

Diagnosis:

Problems with charging or switch on problems.

Connector is damaged (optical inspection).

Repair:

Desolder the faulty battery connector with a hot air blower.

Due to the fact that there are small SMT devices near the connector pins the air flow of the hot air blower should be low to prevent that the components are blown away.

Suck away solder on the pads with desolder wick. Put some flux on the pads.

Take a new battery connector and solder it with a soldering iron on the board.

Make sure that the plastic part of the connector does not melt.

Test:

Connect a charger and check the charging function.

Connect a headset and check the headset function.

Connect a PC and check the function.

8 Repair of basestation SL 100/ 150

8.1 Disassembling

ESD regulations have to be followed in the complete repair process!

Needed material: Screw driver with special tip (see picture below),
Opening tool G2000/G4000 (F30032-P175-A1)



Insert the screwdriver in the hole.



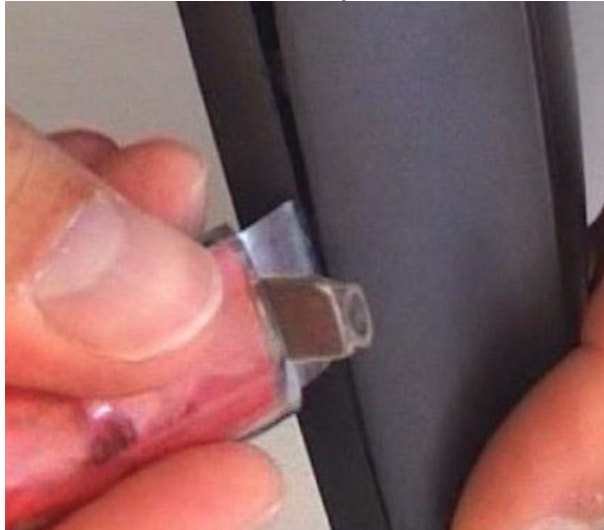
Turn it downwards in order to open the latch.



Do the same on the other latch.



Insert the opening tool in the middle of one side and turn it to open the next latch.



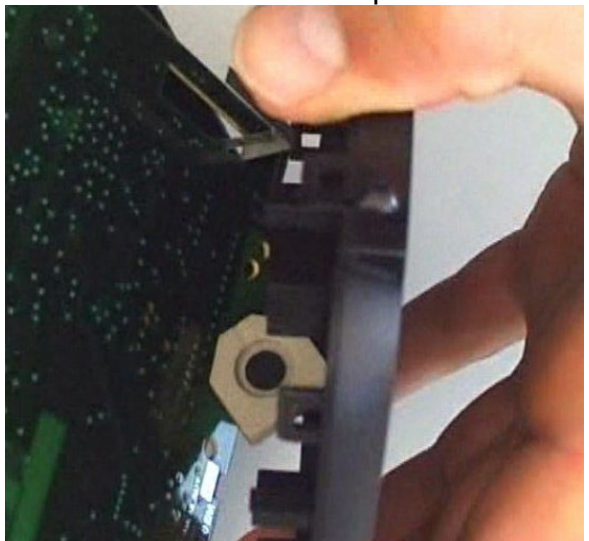
If the other side is still closed, insert the tool on the lower edge to open this latch.



Insert the tools in the middle and turn it.



Pull on the case shell to open the base.

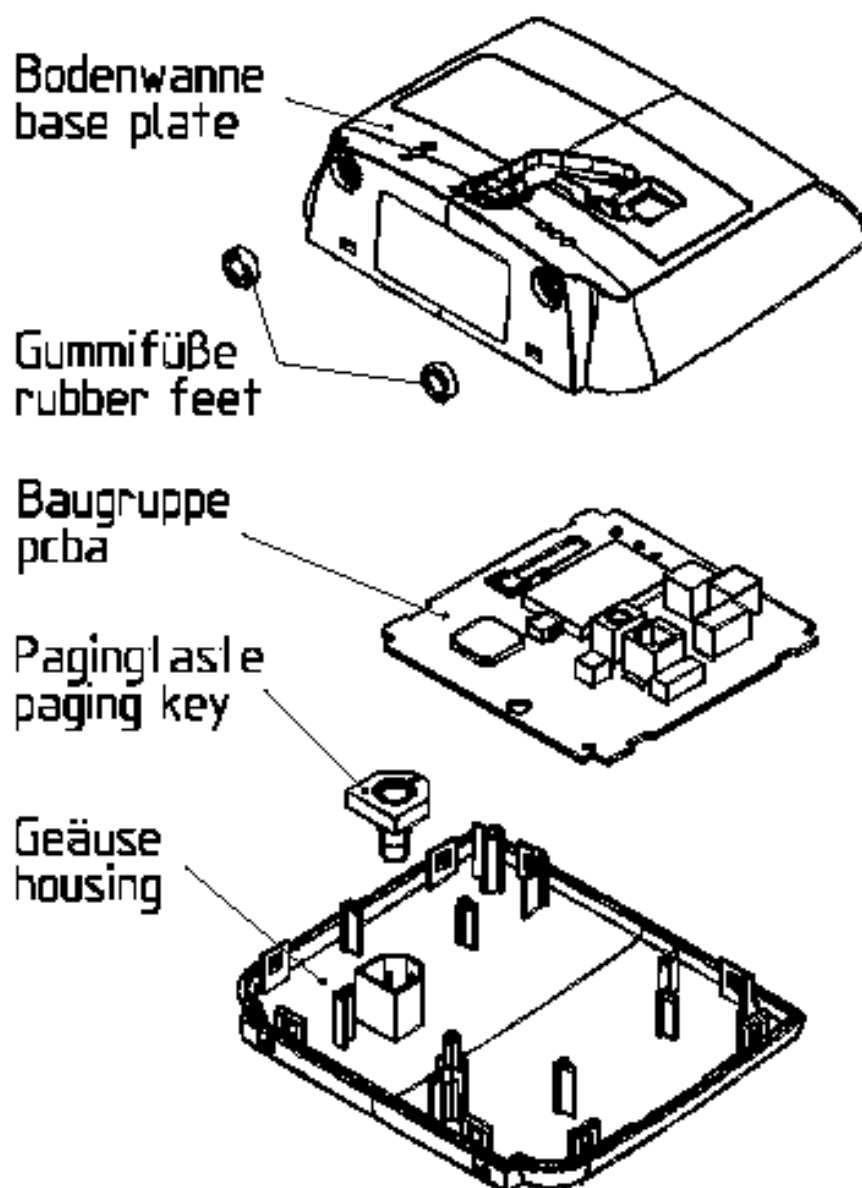


8.2 Assembling

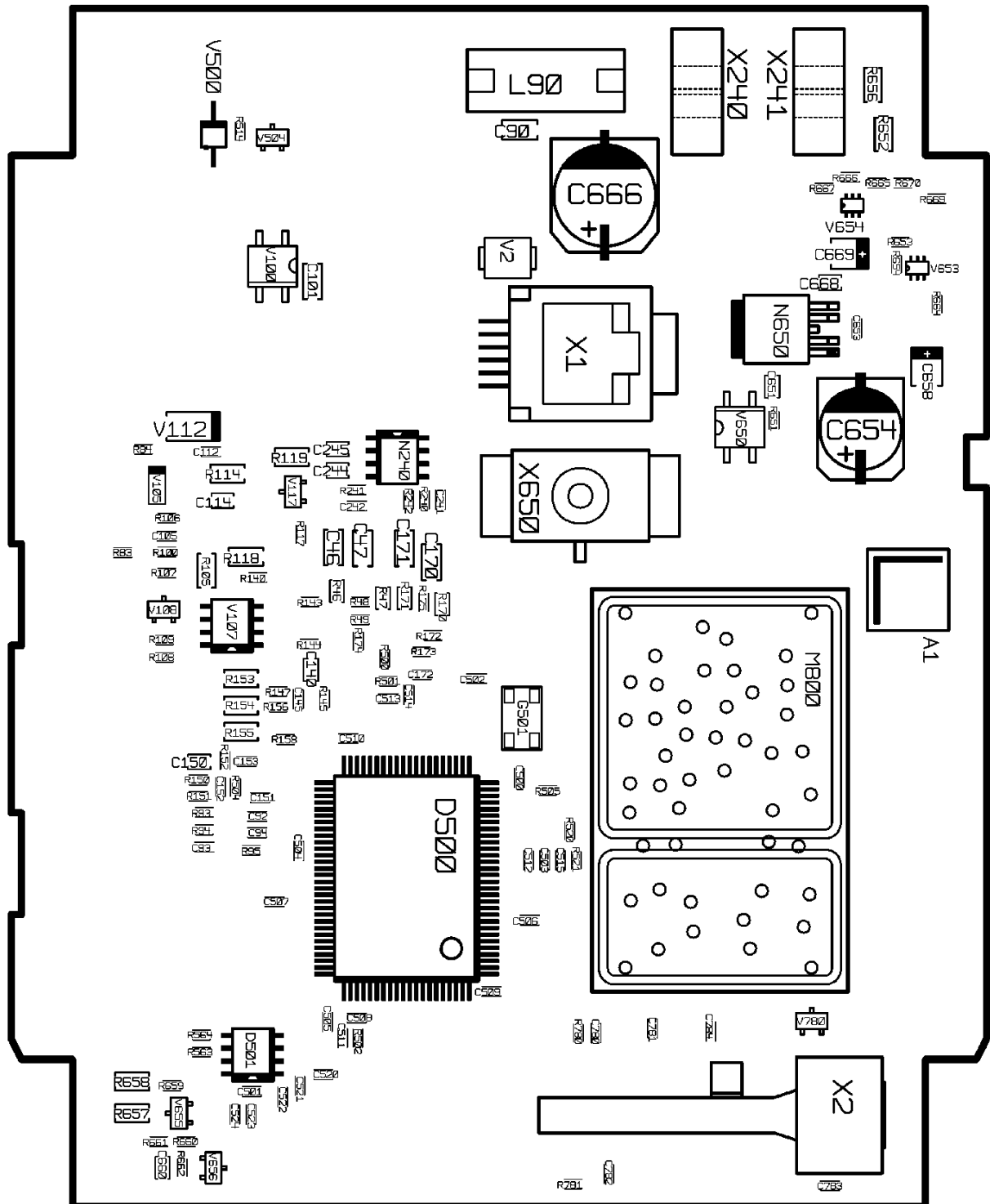
Needed material: none

Put keypad and board in upper case shell.
Attach the other case shell and close the device by closing the clamps.

8.3 Exploded view SL100/ 150



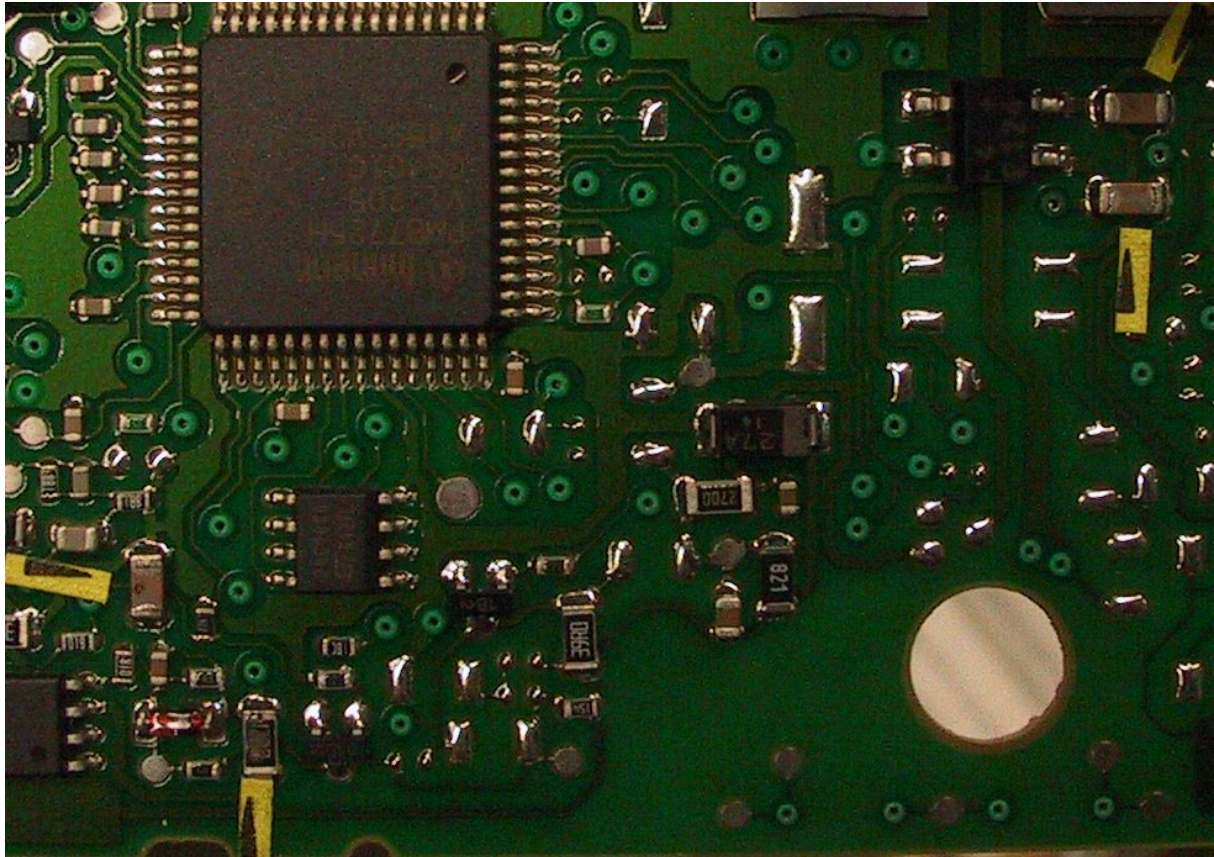
8.5 Board layout SL150 (EU1 version)



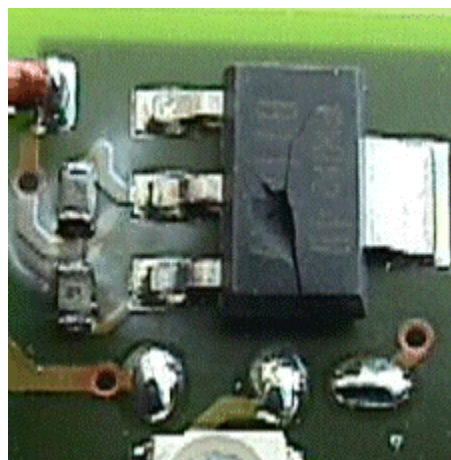
8.6 Lightning stroke damage

Diagnosis code IRIS: 62000 (DEVICE / LIGHTNING/OVER VOLTAGE)

The picture below is taken from a Gigaset 4010 base station and shows a small lightning stroke damage. Scrap all base stations with lightning stroke damage. Inspect the board with your eyes and look for chipped components, black soot on the board or components that look like those on the picture below (yellow signs).



**Chipped transistor
(photo taken from
Gigaset 2010)**



8.7 Line seizure problems

Affected unit: Gigaset SL 100/ 150

Diagnosis code IRIS: 93000 (FUNCTIONALITY / CALLING PROBLEMS)

Repair level: Level 2.5

Components: Philips IC PHC2300 or alternative component

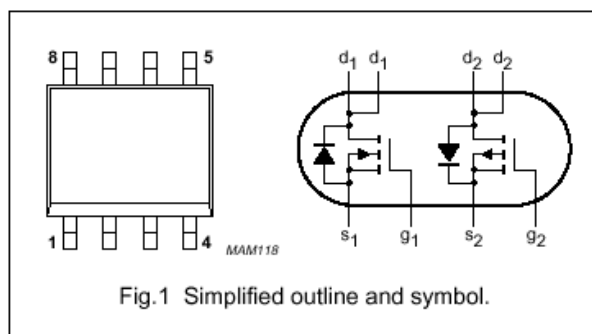
Needed equipment: Hot air blower, soldering iron, multimeter

Working material: Flux, solder

Diagnosis:

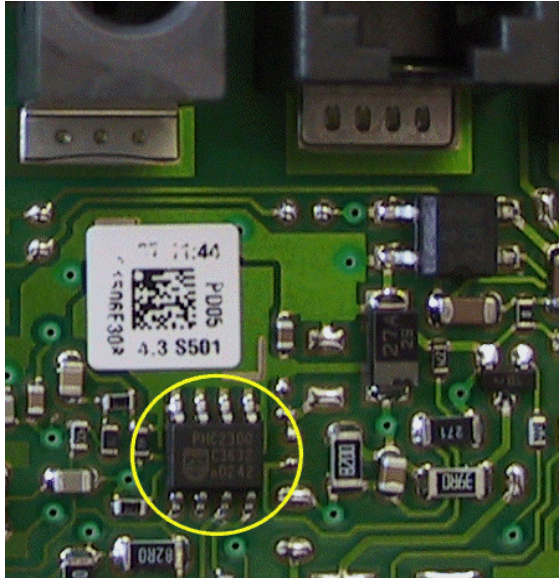
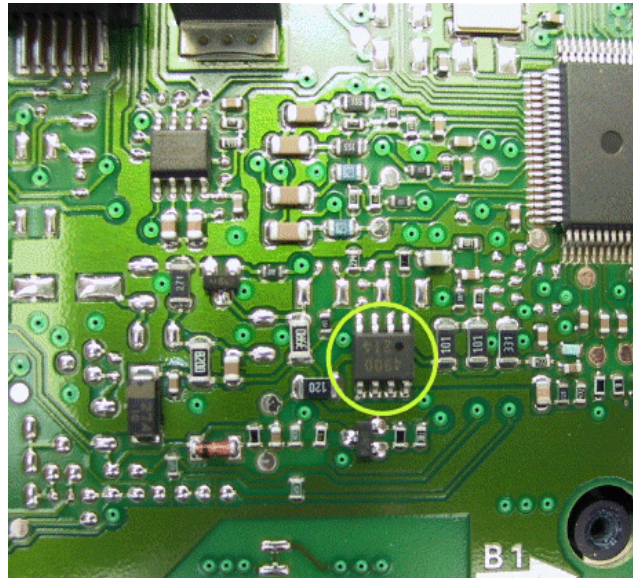
Line seizure is not possible or connection can not be released. The IC PHC2300 (or alternative component) consists of 2 transistors and is responsible for line seizure. Measure the 2 transistors with a multimeter.

PIN	SYMBOL	DESCRIPTION
1	s ₁	source 1
2	g ₁	gate 1
3	s ₂	source 2
4	g ₂	gate 2
5	d ₂	drain 2
6	d ₂	drain 2
7	d ₁	drain 1
8	d ₁	drain 1



Repair:

Desolder the IC and solder a new component with a hot air blower.
Put some flux on the joints and resolder them with a soldering iron.
If necessary put additional solder on the joints.

SL 100: location V107**SL 150: location V107**Test:

Assemble the base station and connect it to a PBX or PSTN line.
Pick up the handset and dial the extension of another phone connected to the PBX or PSTN. Establish a connection, test the speech path and release it afterwards.
Pick up the other phone and dial the extension of the repaired phone.
Accept the call on the repaired phone.
If the line seizure in both ways works the base station is o.k.

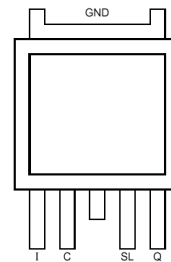
8.8 No function

- Affected unit: Gigaset SL 100/ SL150
- Diagnosis code IRIS: 92000 (FUNCTIONALITY / SWITCH ON PROBLEMS)
- Repair level: Level 2.5
- Components: Cascade regulator TLE 4307
- Needed equipment: Hot air blower, soldering iron, multimeter
- Working material: Flux, solder

Diagnosis: The base station does not switch on. Measure Pin 5 (Q) against ground (e.g. Pin 3 (GND) or RF-cover). Voltage must be appr. 3.3 volts.
If the IC is destroyed by a lightning stroke (chipped component) scrap the base!!!

Pin Definitions and Functions

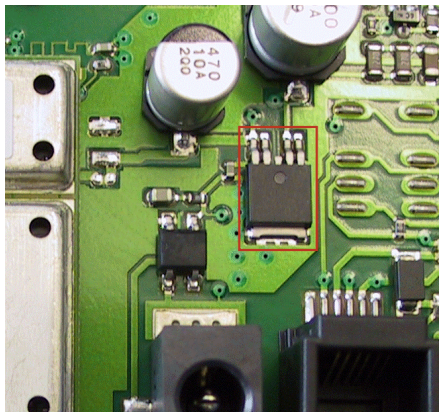
Pin No.	Symbol	Function
1	I	Input; Connect to the input voltage source
2	C	Charge-Pump Output; Connect to the energy reservoir capacitor to GND
3	GND	Ground
4	SL	Slewrates Control Input; a capacitor from this pin to the Input pin I controls the slewrates during recirculation
5	Q	Regulator Output; connect to GND with a capacitor as specified for C_O



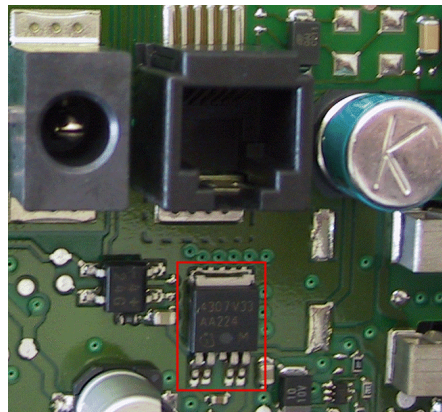
Repair:

Desolder the IC and solder a new component with a hot air blower. Put some flux on the joints and resolder them with a soldering iron. If necessary put additional solder on the joints.

SL100: location N600



SL150: location N650



Test:

Assemble the base station and connect it to mains. Check if the base station switches on and do an outgoing test.