

**NOKIA
6800**

NHL-6



GSM 900/1800 network

**NOKIA
6810**

RM-2

GSM 900/1800/1900 network
Bluetooth
EDGE

Transceiver characteristics

- GPRS (General Packet Radio Service)
- HSCSD (High Speed Data)
- WAP (via GRPS or CSD)
- WIM (Wireless Identity Module)
- Stereo FM radio
- Handsfree speaker
- Polyphonic ringing tones
- Wallpaper: full screen color image
- Display brightness control
- Connectivity options: IR and cable
- Full keyboard
- MMS, SMS, Instant Messaging
- Synchronize your calendar and contacts using Nokia PC Suite with a compatible device or over the air with OMA Data Synchronization

Transceiver with BLC-2 1000mAh Li-Ion battery pack

Talk time	Standby	Note
3h -6h	Up to 15 days	Depends on network parameters

SERVICE MANUAL

Service Level 1&2

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Change History

Status	Version No.	Date	Comments
Draft	0.1	05.02.2003	Initial draft
Draft	0.2	20.03.2003	Component Disposal incl., General Repair Information modified
Approved	1.0	20.03.2003	Approval
Approved	2.0	12.03.2004	Nokia 6810 added

1. INTRODUCTION

The purpose of this document is to help Nokia service levels 1 and 2 workshop technicians to carry out service to Nokia products. This Service Manual is to be used **only** by authorized Nokia service suppliers and the content of it is **confidential**. Please note that Nokia provides also other guidance documents (e.g. Service Bulletins) for service suppliers, follow these regularly and comply with the given instructions.

While every endeavor has been made to ensure the accuracy of this document, some errors may exist. If you find any errors or if you have further suggestions, please notify Nokia using the address below:

<mailto:cc-ts-rc.documentation@nokia.com>

Please keep in mind also that this documentation is continuously being updated and modified, so watch always out for the newest version.

Warnings and Cautions

Please refer to the phone's user guide for instructions relating to operation, care and maintenance including important safety information. Note also the following:

Warnings:

1. CARE MUST BE TAKEN ON INSTALLATION IN VEHICLES FITTED WITH ELECTRONIC ENGINE MANAGEMENT SYSTEMS AND ANTI-SKID BRAKING SYSTEMS. UNDER CERTAIN FAULT CONDITIONS, EMITTED RF ENERGY CAN AFFECT THEIR OPERATION. IF NECESSARY, CONSULT THE VEHICLE DEALER/MANUFACTURER TO DETERMINE THE IMMUNITY OF VEHICLE ELECTRONIC SYSTEMS TO RF ENERGY.
2. THE HANDPORTABLE TELEPHONE MUST NOT BE OPERATED IN AREAS LIKELY TO CONTAIN POTENTIALLY EXPLOSIVE ATMOSPHERES EG PETROL STATIONS (SERVICE STATIONS), BLASTING AREAS ETC.
3. OPERATION OF ANY RADIO TRANSMITTING EQUIPMENT, INCLUDING CELLULAR TELEPHONES, MAY INTERFERE WITH THE FUNCTIONALITY OF INADEQUATELY PROTECTED MEDICAL DEVICES. CONSULT A PHYSICIAN OR THE MANUFACTURER OF THE MEDICAL DEVICE IF YOU HAVE ANY QUESTIONS. OTHER ELECTRONIC EQUIPMENT MAY ALSO BE SUBJECT TO INTERFERENCE.

Cautions:

1. Servicing and alignment must be undertaken by qualified personnel only.
2. Ensure all work is carried out at an anti-static workstation and that an anti-static wrist strap is worn.
3. Ensure solder, wire, or foreign matter does not enter the telephone as damage may result.
4. Use only approved components as specified in the parts list.
5. Ensure all components, modules, screws and insulators are correctly re-fitted after servicing and alignment. Ensure all cables and wires are repositioned correctly.



Electrostatic discharge can easily damage the sensitive components of electronic products. Therefore every service supplier has to take care of all precautions, which are mentioned in the service level related "Service Supplier Requirements", available on Nokia Partner Web Site. Also see ESD Protection Requirements in this Service Manual.

2. GENERAL REPAIR INFORMATION

IN THIS SECTION THE TECHNICIAN WILL GET SOME GENERAL HINTS HOW TO CARRY OUT REPAIRS:

- To familiarize oneself with Nokia products read the tutorials respectively user guide on www.nokia.com -->Support--> Phones, by selecting the Phone Model.
- Before starting the repair you must take care of ESD precautions like being in your ESD Protected Area and connecting your wristband.
- Use gloves to avoid corrosion and fingerprints.
- Protect windows and displays with a film to avoid dust and scratches.
- When cleaning the pads you have to use a soft cloth/ESD brush and Isopropanol. It is not allowed to use a glass fiber pencil because it scratches the surface and will lead later on to corrosion.
- Mechanical parts (except shielding lids), which didn't repair the failure, can be reused, if they are not soldered. Careful handling will ensure the reusability of cover parts.
- When removing the shielding lids make sure to replace them with new ones, otherwise the high-frequency leakage can have an influence on the device.
- Use always original Nokia spare parts.
- Check the soldering joints of the parts which are concerned regarding the indicated error (e.g. soldered connectors or switches) and resolder them if necessary (Level 2 only).
- Remove redundant soldering flux after repair.
- Meet the torque requirements when assembling the unit (see also the document "torques for transceiver assembly" on Nokia Partner Web Site).
- Always use your own equipment for testing where you are sure that it works. E.g. if the customer complains about charger function, please test the phone with your own charger to be sure if phone or charger causes the malfunction.
- When doing the spare parts codes (order codes) entries, always note the Item code, which caused the malfunction. Also, fill in the appropriate part code from the assembly, if needed.
- Please be aware that some malfunctions could be software related and solved by an update.

There are several documents available on PWS/CarePoint, which have to be followed:

First, take care for the latest content pages of Service Bulletins, which are always available for each folder on Nokia Partner Web Site. This is also important to recognize, if existing documents have become invalid.

The service level indicator at the bottom of each document tells the appropriate destination.

Downloads > Support Library >

- 1. Instructions**
 - 2. General Service Bulletins**
 - 3. Product related documents**
 - 4. Spare Part Service Bulletins**
 - 5. Service Tools Service Bulletins**
 - 6. Common Softwares Service Bulletins**
- etc,...

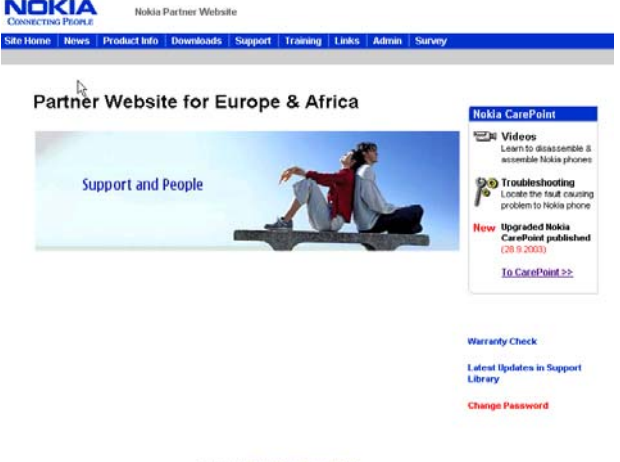
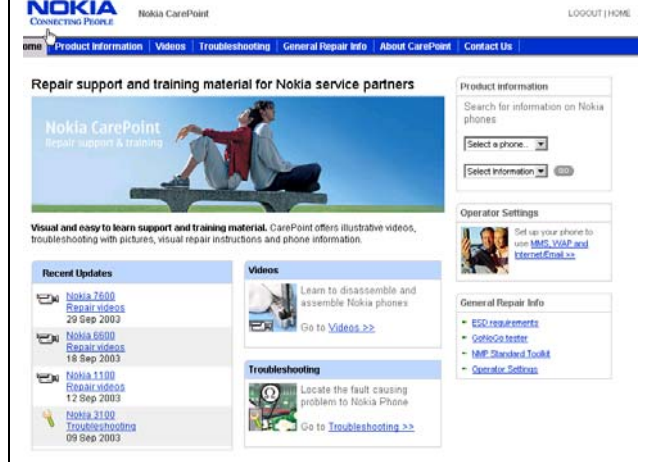
Use General SB-217 as a reference or overview.

Please also check Nokia Partner Web Site (PWS) for latest news and files on a regular basis.

3. PATHFINDER FOR WORKSHOP STAFF

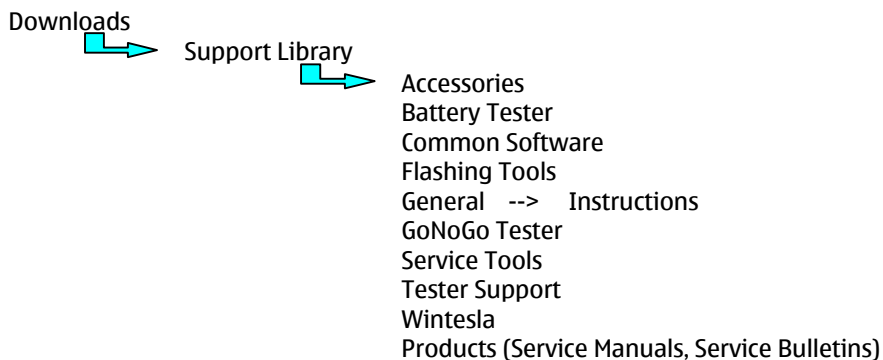
In addition to the information in this Service Manual, there are several instructions and information, which have to be followed.

Main documentation database is [Nokia Partner Website](#), which refers also to [Nokia Care Point](#) with the purpose of serving different multimedia content, like video clips or interactive tutorials.

Nokia Partner Web Site	Nokia Care Point (access through Partner Web Site)
<p>Nokia Partner Web Site for EMEA region is the most important document database for all service suppliers (level 1-4). All service relevant information like e.g. Service Manuals, Service Bulletins or General Instructions are available. Content is restricted according your access level. To be kept up-to-date also concerning newest software updates, a daily check of "latest updates in support library" is needed.</p>	<p>Nokia Care Point is repair support and training channel for Nokia service suppliers (mainly for service levels 1 and 2). By providing visual and easy to learn support and training material, such as illustrative repair videos, troubleshooting with pictures, product information and general repair information, Nokia Care Point offers user-friendly channel for service suppliers to learn technical issues.</p>
	

It is mandatory to watch for newest technical and organizational information on a daily basis to be updated as required (see "Latest Updates in support Library"). Every new information has to be processed and implemented as soon as possible.

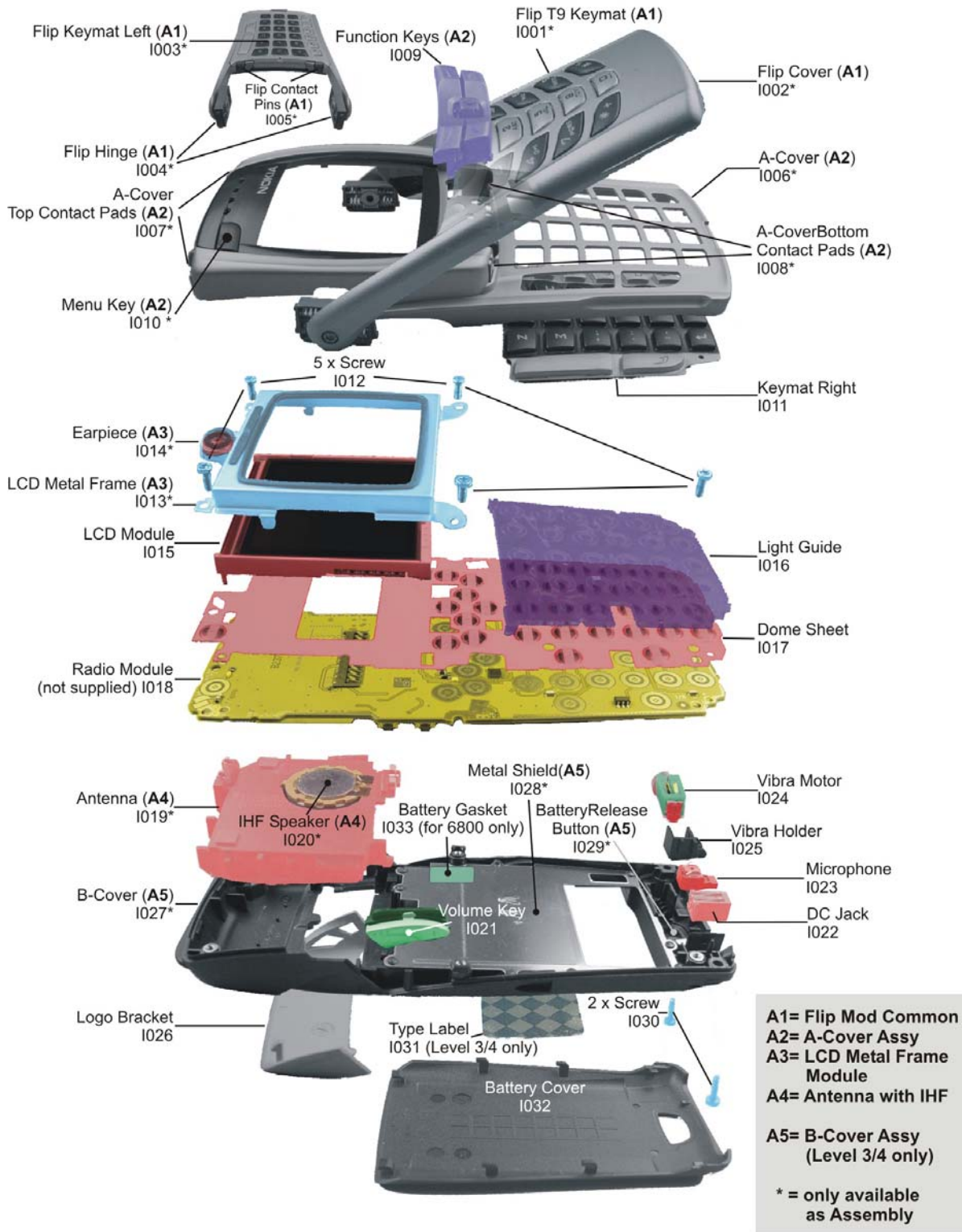
When logged into PWS you can also find needed information in different folder like:



To save server bandwidth it is recommended to download newest version of huge files like videos, Phoenix packages or Service Manuals only once and distribute it internally for further use.

4. EXPLODED VIEW AND COMPONENT DISPOSAL

Recommendation for the ecologically friendly disposal of components. Colorized components show the different categories. See corresponding ITEM/CIRCUIT REF in the Spare Parts Service Bulletins on PWS.



● Electro ● Silicone ● Metal ● Plastic ● PWB ● Cover










5. SPARE PARTS LIST

Please exchange this page (placeholder) with latest corresponding Service Bulletins (spare parts, SWAP units and service tools) from PWS!

This will ensure, that you are using up-to-date order codes only.

Therefore Service Bulletins have to be checked from PWS on daily basis.

6. SERVICE TOOLS

 	<p>FLS-45 incl. ACF-8, Driver and User Guide Dongle and flash device merged into one package, developed specifically for POS use.</p> <p>ACF-8 Universal Power Supply is used to power FLS-45.</p>
	<p>Internal Battery BLC-2C Li-Ion 1000 mAh battery</p>
	<p>Travel Charger ACP-8E Travel Charger ACP-8X Small and lightweight charger for fast charging of your phone battery.</p>
	<p>Headset HDS-3 Small and lightweight stereo headset for handsfree functionality and listening to FM radio.</p>
	<p>XCS-1 Service Cable is used to connect FLS-45 to FLA-29.</p>
	<p>FLA-29 POS Flash Adapter is used in POS (Point of Sales) environment for software updating. It provides controlled supply voltage and necessary connections between the phone and the Flash Device. It substitutes for the phone's standard battery during the software update.</p>
	<p>TEST PIN for Flash Adapter FLA-29</p>
	<p>SS-4 Domesheet Assembly Jig for Domesheet exchange</p>

**MJS-70 Soldering Jig****0772040 NMP Standard Toolkit**

- Nokia opening tool SRT-6 Nokia No. 0770431
- Tonichi torque driver Nokia No. 6901525
- [Hoya](#) micro fibre cloth MX304
- [Dastex](#) gloves S, M, XL
- [Artlux](#) goggles AH166
- [Wera](#) bit T5 867/4TX 5x50
- Wera bit T6 867/4TX 6x50
- Wera bit T6 PLUS® 867/4TX 6IP
- [Facom](#) side cutter 416E
- Facom T5 driver SP.14032
- Facom T6 driver SP.14033
- Facom slot screwdriver AEF. 2x35.E
- [Wetec](#) tweezers 7abb SA-ESD
- Wetec tweezers 22 SA-ESD
- Wetec tweezers 13 SA-SMD ESD
- Wetec tweezers PSF SA-ESD
- Wetec ESD brush E1211
- [Kaiser Fototechnik](#) airbrush 6315
- Wetec dental tool DEM83266/0
- [RS Components](#) Scissors 323-5732

7. SW-UPDATE

To use FLS-4S Flash Dongle you have to follow the user guide inside the sales package. Please check always for the latest version of flash software, which is available on **Nokia Partner Web Site**.

Flash Concept – (Point of Sales)



It is very important to follow this insertion and removal procedure, otherwise the contact pins of Flash Adapter will be damaged.



Insert the Flash Adapter FLA-29 like a battery, start at the Battery Connector side.



Now, push down the bottom side of the phone, do not use too much force.



When removing the Flash Adapter, always start from the bottom side of the unit.



Take away the unit now.

8. DISASSEMBLY INSTRUCTIONS (ALSO SEE VIDEOS ON CARE POINT)



Protect LCD window to avoid dust and scratches.



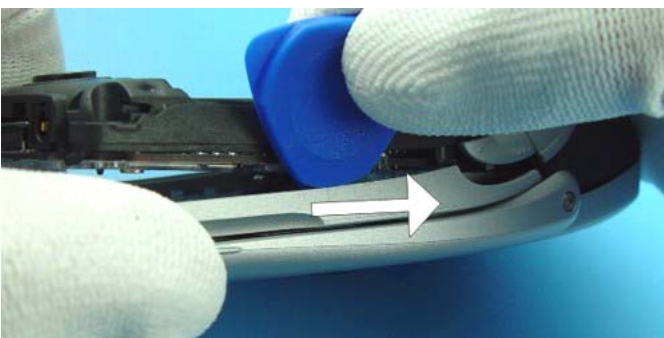
Press Release Button before removing Battery Cover.



Unscrew the two TORX PLUS® size 6 screws, using the order shown. **For assembly, the reverse order and a torque of 17Ncm have to be used. Use always new screws.**



Place the SRT-6 between B-Cover and A-Cover, and shift it carefully as shown in the picture. Note the correct position of the SRT-6, tip should not touch the PWB.



Now, the same procedure on the other side.



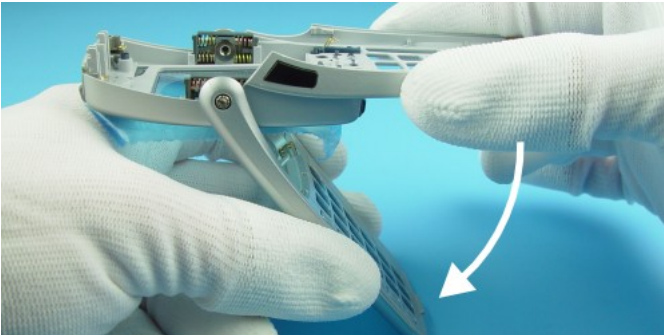
Separate the engine from A-Cover.



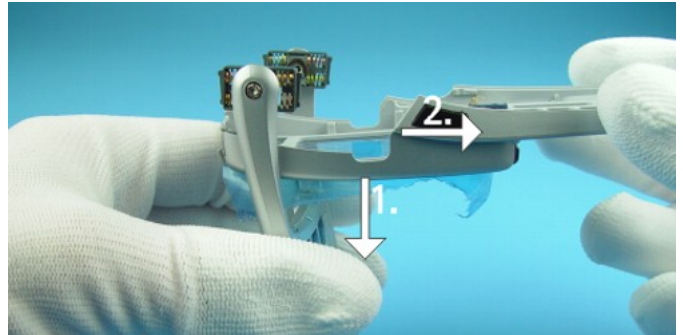
Protect LCD to avoid dust and scratches.



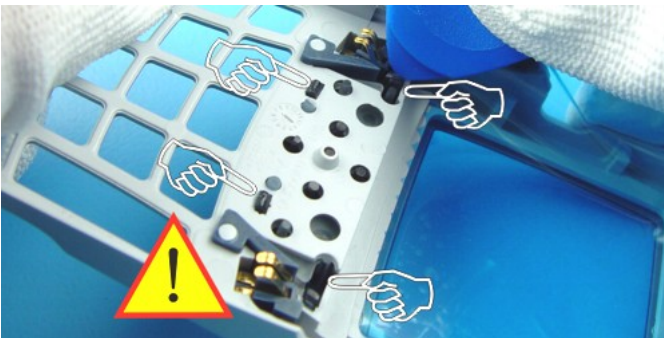
Keymat drops out when turning A-Cover.



Open the Flip Cover.



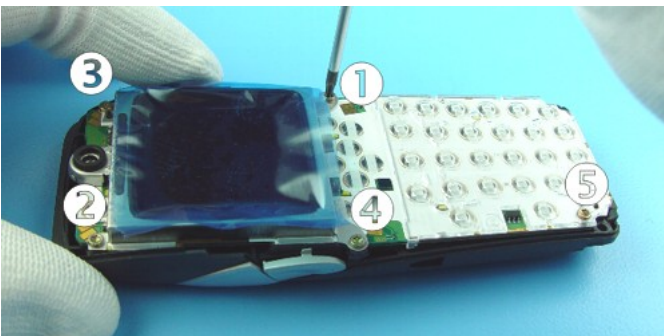
Separate A-Cover from Flip Cover as shown in the picture. Note, the right position of the Flip Hinges on reassembly.



Function Keys are attached with four snaps to A-cover. Use SRT-6 to release the snaps. Take care not to damage the spring contacts.



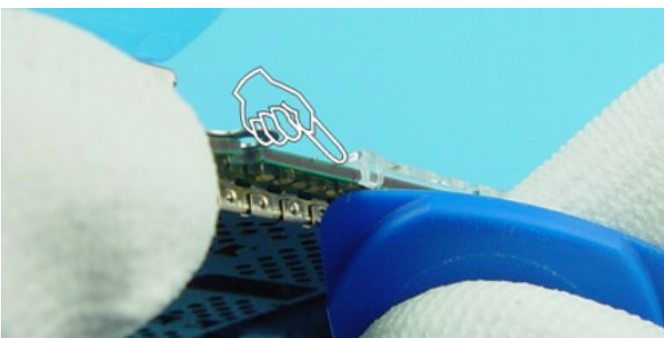
Remove Function Keys. **Use always new keys in reassembly!**



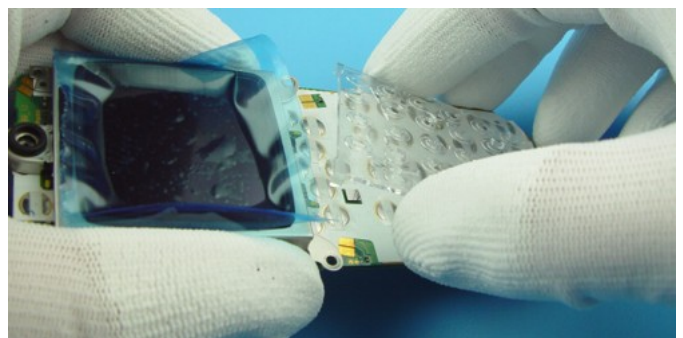
Unscrew the five TORX PLUS® size 6 screws, using the order shown. **For assembly, the reverse order and a torque of 17Ncm have to be used. Use always new screws.**



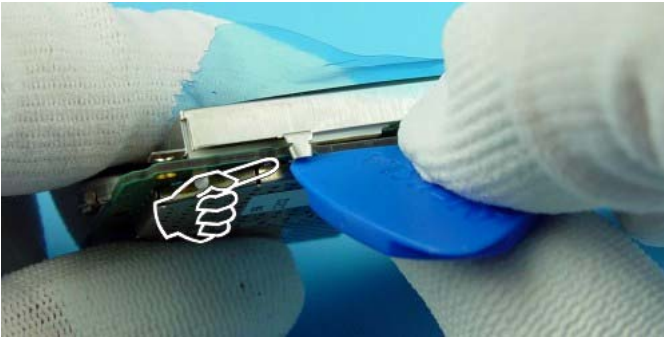
Lift the engine from B-Cover.



Open the Light Guide snaps.



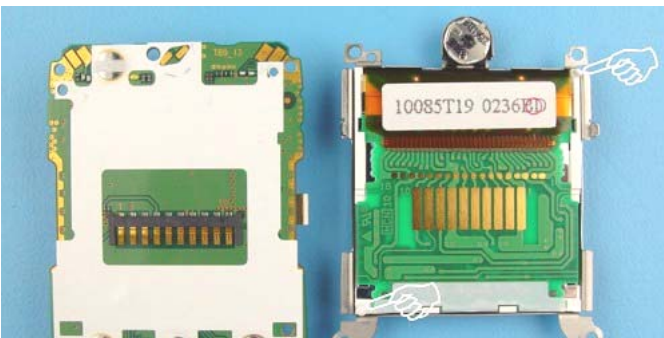
Remove the Light Guide.



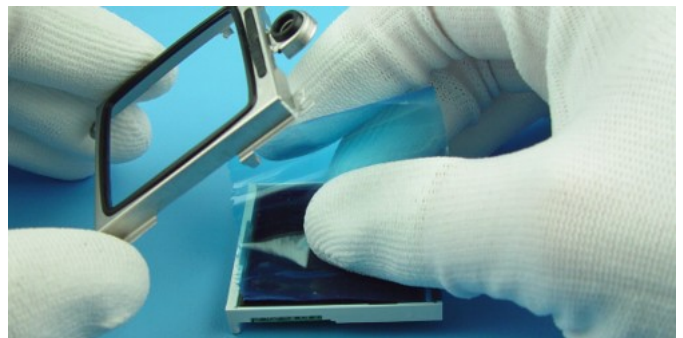
The LCD Metal Frame is attached with snaps to the Engine Module on both sides. SRT-6 can be used to release the snaps.



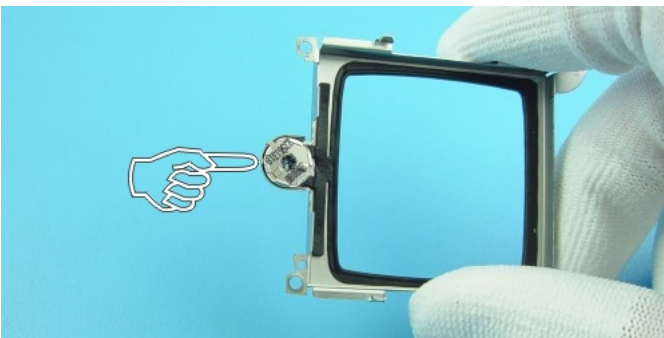
Release the snap on the other side of the engine and take away the LCD Module.



Note the right position of the LCD Module in LCD Metal Frame when assembling. Also take care not to damage the LCD spring contacts on Engine Module.



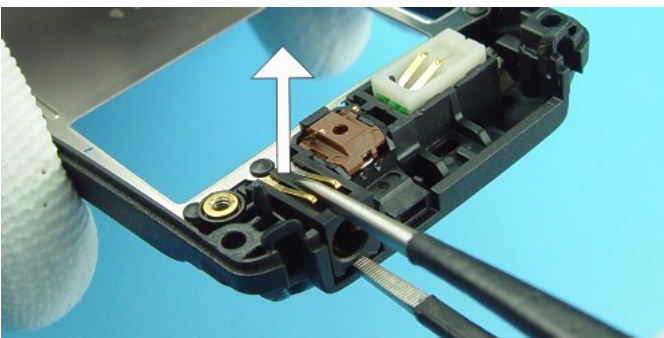
Separate the LCD Metal Frame from LCD Module and protect the LCD window again.



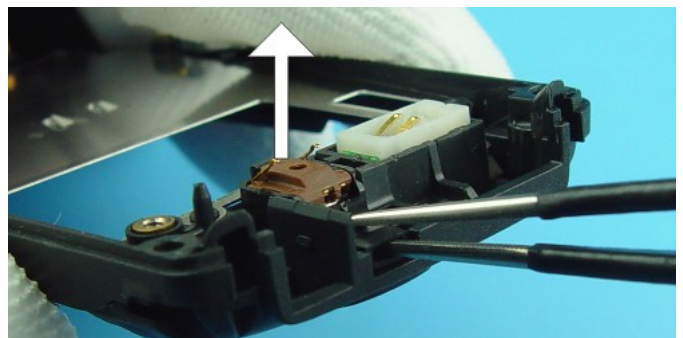
Do not remove the Earpiece from the LCD Frame, as they are supplied as one part.



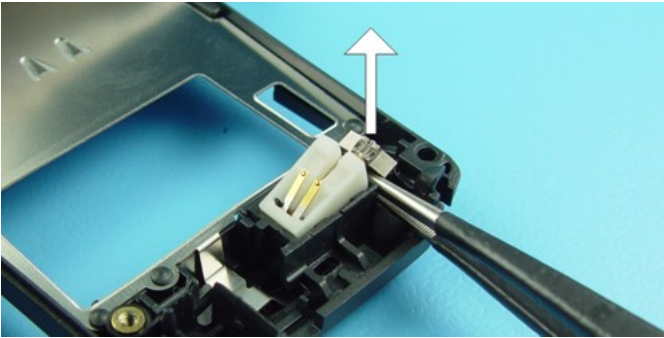
Volume Key can be removed easily.



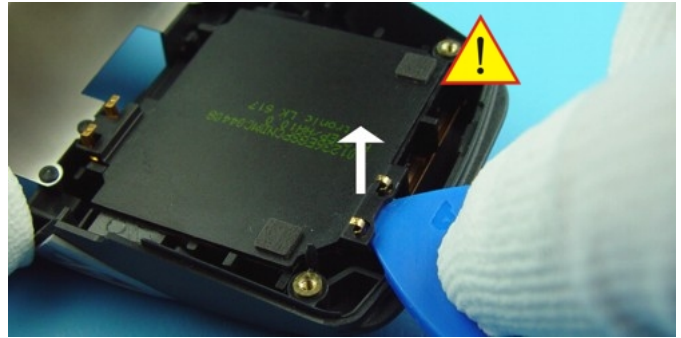
To remove the DC Jack, place tweezers between the spring contacts and under the Jack. You'll need to use additional force to pull the Jack upwards.



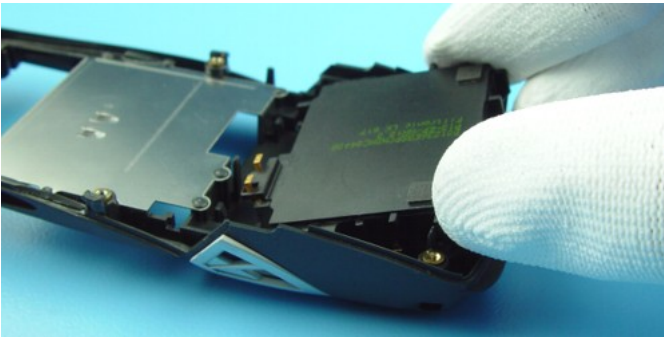
Use tweezers to pull up the Microphone.



Remove the Vibra Motor from its guidance.



Place the SRT-6 between the spring contacts and lift up the Antenna carefully. Do not damage the spring contacts and the Antenna Radiator, when removing the Antenna.



Remove the Antenna from B-Cover.



The Logo Bracket is attached with snaps to the B-Cover. Take care not to break the snaps when releasing the Bracket.



After releasing of the snaps, the Logo Bracket can be removed.

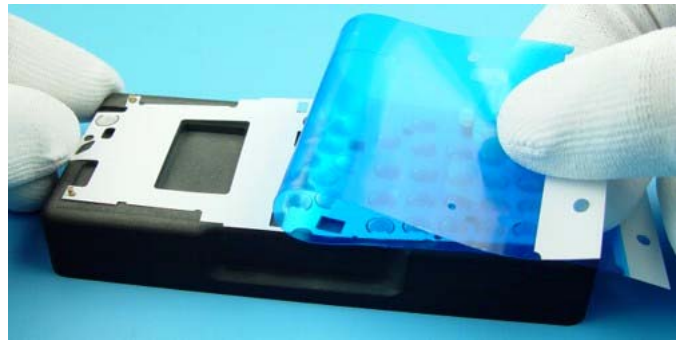
9. EXCHANGE OF DOME SHEET

It is very important to check the conditions of the Domesheet and the Engine Module. If small amount of any liquid is recognized, it is recommended to clean the PWB and to change the Domesheet.

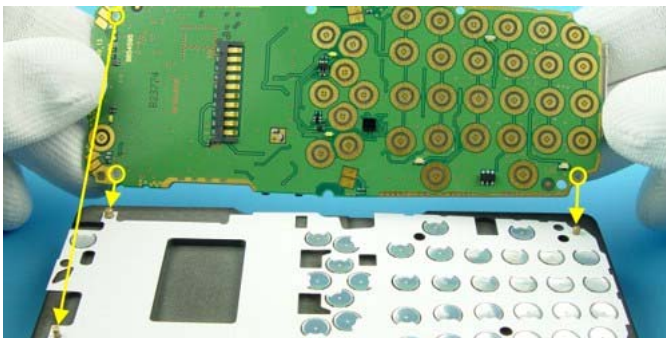
Please note: Any liquid damage is a non-warranty repair!



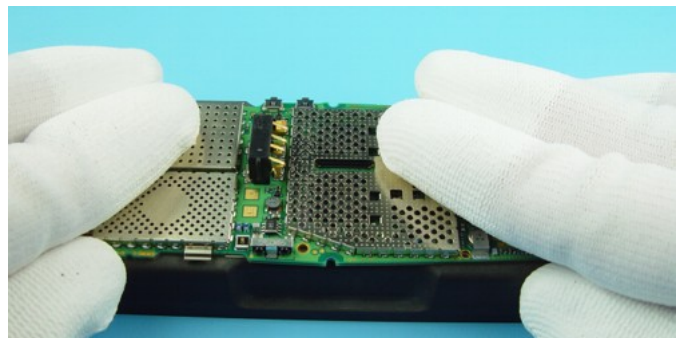
Remove the defective Domesheet carefully.



Put the new Domesheet onto the Domesheet Assembly Jig. Note the guiding pins. Remove the protection foil.



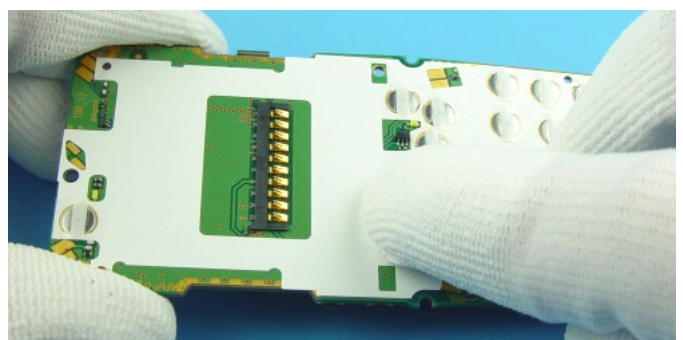
Place the Engine Module on the Jig. Note the guiding pins.



Press on the Engine Module evenly.



Lift the Engine Module with the new Domesheet from the Jig.








Check that the Domesheet is correctly stuck to the Engine Module. Do not damage the spring contacts of LCD connector.

10. IMPORTANT PRODUCT RELATED SERVICE BULLETINS

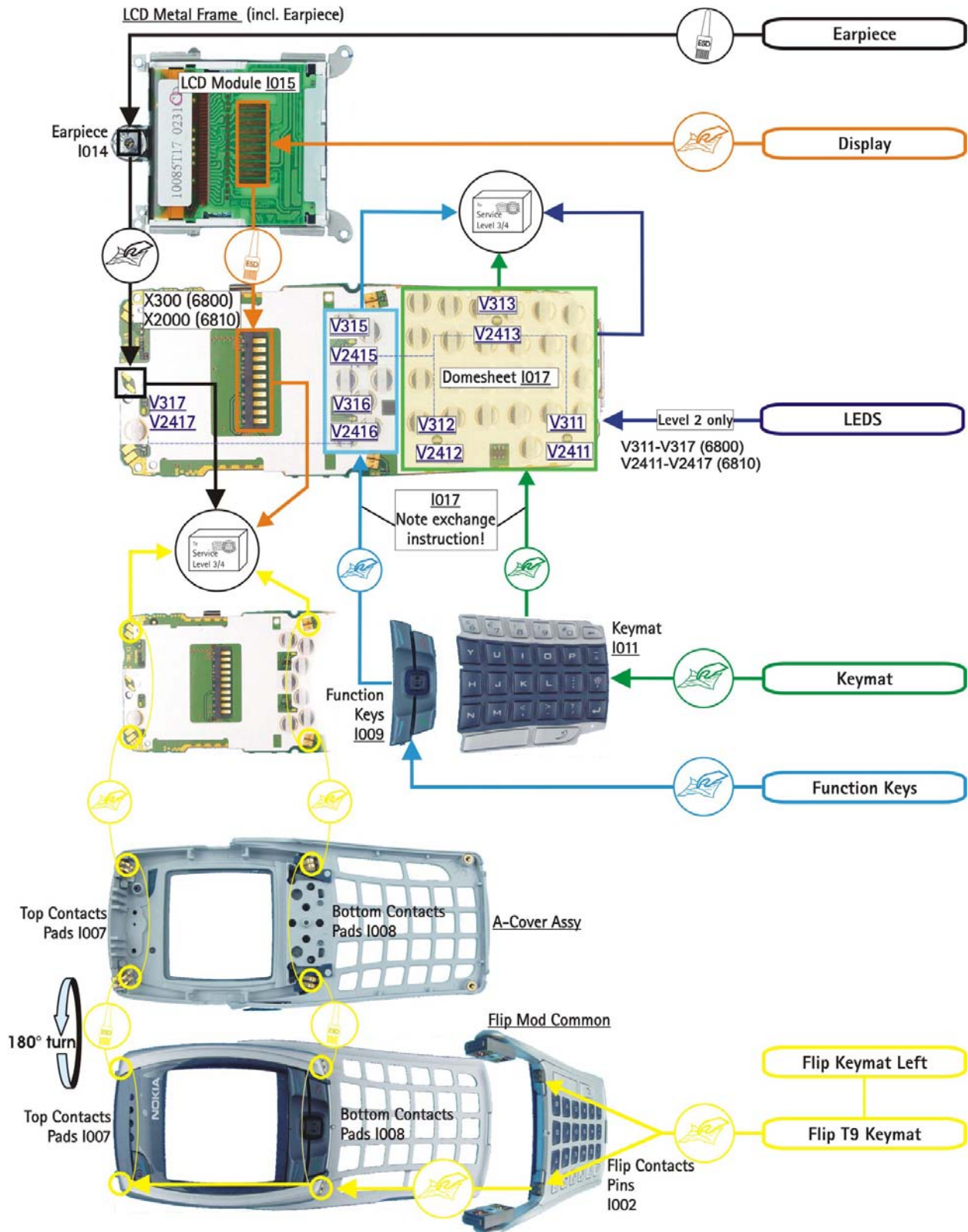
SB 010: BATTERY GASKET FOR SPARE B-COVER (NHL-6)

11. LEGEND FOR QUICK TROUBLE SHOOTER

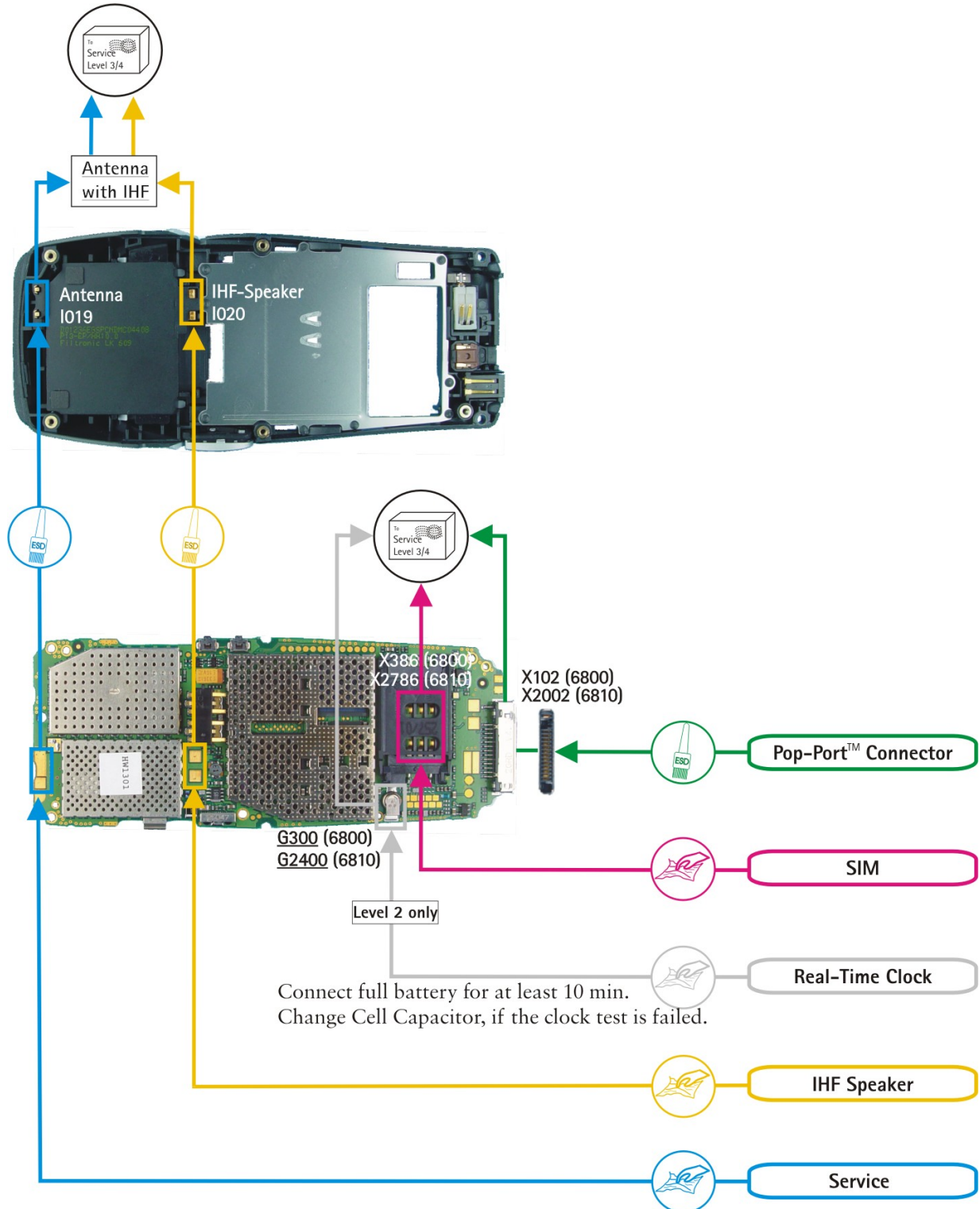
This legend is valid for all parts of the **Quick Trouble Shooter**

<p>Follow the steps until the problem is solved. If this doesn't help, you are not authorized to go forward. Only underlined components (e.g. <u>I023</u>) can be changed.</p>	
	<p>Follow the arrows step by step</p>
	<p>Pads or contacts: Check optical and mechanical condition particularly regarding to corrosion. Clean if necessary.</p>
	<p>Measure component for electrical functionality and change, if needed.</p>
	<p>No more actions possible, send product to the appropriate service suppliers with higher service level.</p>
	<p>Pads or contacts: Check optical and mechanical condition particularly regarding to corrosion. Clean with ESD brush only, if necessary.</p>

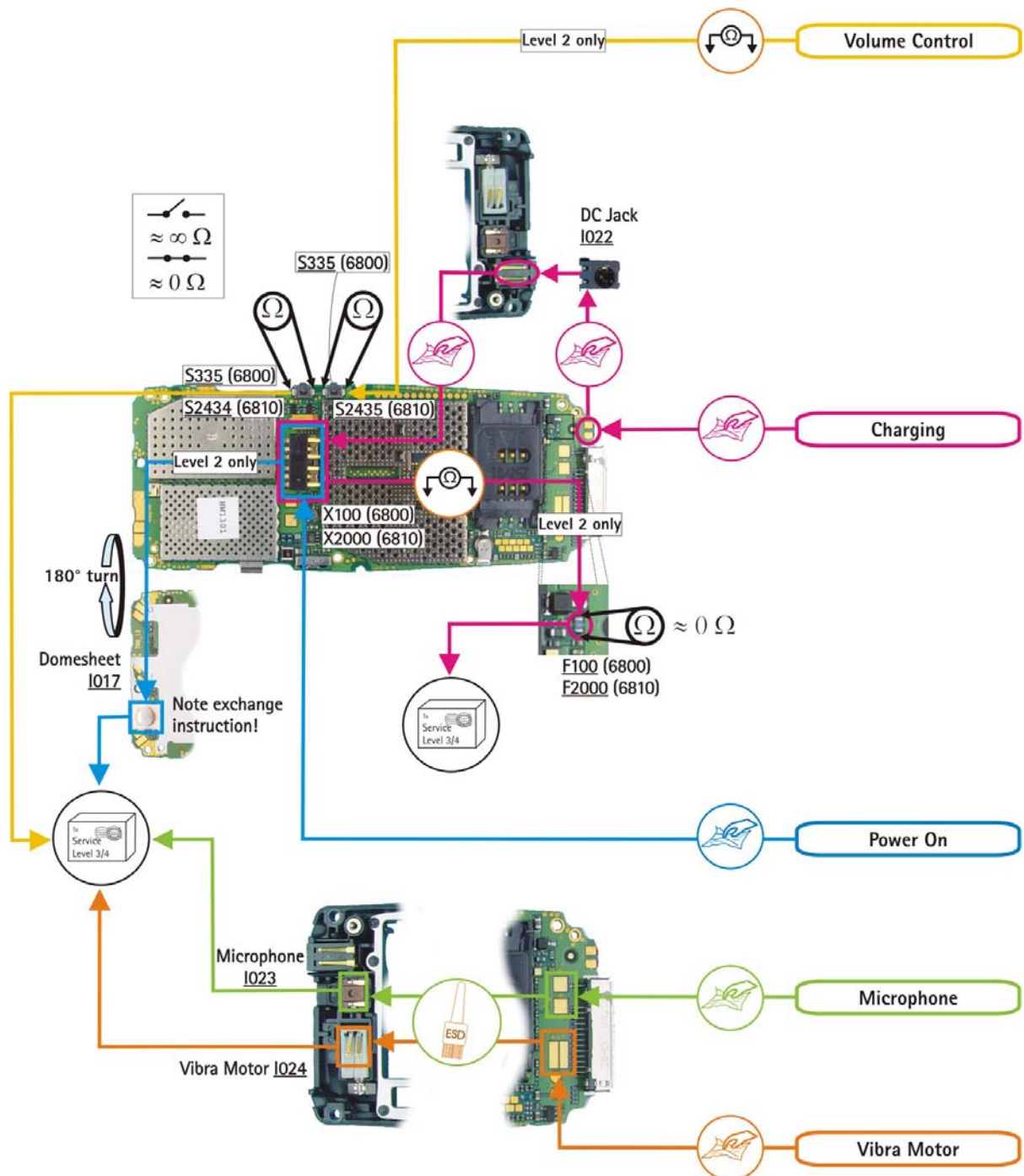
12. QUICK TROUBLE SHOOTER PART1



13. QUICK TROUBLE SHOOTER PART2



14. QUICK TROUBLE SHOOTER PART3



15. BLUETOOTH AND INFRARED GONOGO TEST

Bluetooth test for 6810 only

You need another Bluetooth device (e.g. 6310i) to do a GoNoGo test.

Make sure that Bluetooth is activated in the reference unit. The distance of the devices should be not more than 5m from each other.

Infrared test

You need another infrared device (e.g. 6310i) to do a GoNoGo test. The infrared windows of the devices must be directed to each other and should have a distance of approximate 15 cm. Make sure that infrared is activated in receiver device.

Warning: Do not point the IR (infrared) beam at anyone's eye or allow it to interfere with other IR devices. This device is a Class 1 Laser product.




Test unit



Reference unit, Bluetooth /infrared activated

Settings on the test unit:

- From Home Menu, push the Navigation key  up or down. This displays Phonebook entries.
- If phone and SIM memory is empty, create one new entry.
- Choose one phonebook entry and select **Details**.
- Select **Options**
- Select **Send bus. Card**

A) for infrared test: Select **Via infrared**

If sending of business card fails, make sure again that infrared windows are directed to each other and infrared is activated in reference device. Then try again sending.

Test was successful, if you get a confirmation message on receiver device.

You will **not** get a confirmation on sender device.

B) for Bluetooth test: Select **Via Bluetooth**

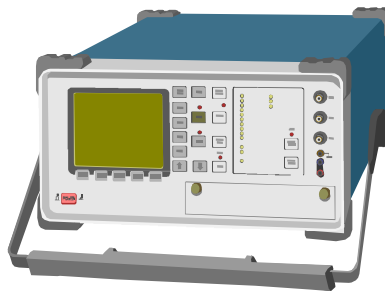
Search window appears, if all Bluetooth devices in range will be displayed, the test is successful!

- Press red receiver button for Home Menu.

16. GONOGO TEST

After the optical check a GoNoGo test has to be carried out if the unit has been unscrewed to guarantee the functionality of the phone.

Please refer to the actual information on Partner Web Site and Nokia Care Point. When using delivered tester support files, take care of the right setup according to the tester type and product type. Please refer to “Recommended Service Equipment” on Nokia Partner Web Site.



Mobile Phone Tester

17. BATTERY TEST

A battery tester lets you test the capacity of Nokia batteries.

Please refer to the actual information on Partner Web Site.



<http://www.astratec.co.uk/>



<http://www.cadex.com/>

18. SERVICE NOTES

We recommend using Service Notes when shipping phones to other service suppliers. It prevents the product from scratches, it is ESD-neutral and has the possibility to give valuable feedback of the fault symptom through a structured form. Please refer to the document [Service Notes for faulty NMP transceiver](#) on Partner Web Site to get further information.

Sender <i>Repair Center</i>	Our Ref. <i>4711</i>
Handled by _____	Product Code <i>050381</i>
Serial n.o.: <i>449333/20/975406/2</i>	Date <i>10.07.01</i>
Yes <input checked="" type="checkbox"/> Warranty Case <input type="checkbox"/> No	Inst <input type="checkbox"/> Instant Service <input type="checkbox"/> DOA

R Repair
RR Repair and Refurbishment
RO Refurbishment only
SW Software update
A Analysis
C Claim
24h 24 h Service
SR Special Request *Save User data*

A) EXISTENCE OF FAULT

1. <input checked="" type="checkbox"/> Continuous fault	2. <input type="checkbox"/> Intermittent fault	3. <input type="checkbox"/> Temperature
4. <input type="checkbox"/> By shock or vibration	5. <input type="checkbox"/> No clear fault	6. <input type="checkbox"/> Only as portable
7. <input type="checkbox"/> Only in a car	8. <input type="checkbox"/> Only in desktop	

B) SYMPTOM OF THE FAULT ON CMT-PART - Symptom Code _____


1. <input type="checkbox"/> Totally dead	2. <input type="checkbox"/> Selftest failure	3. <input type="checkbox"/> SIM Fail
4. <input checked="" type="checkbox"/> No service	5. <input type="checkbox"/> No calls in	6. <input type="checkbox"/> No calls out
7. <input type="checkbox"/> Keypad failure	8. <input type="checkbox"/> Display failure	9. <input type="checkbox"/> Audio failure
10. <input type="checkbox"/> Doesn't charge	11. <input type="checkbox"/> Overcharging	12. <input type="checkbox"/> Hand-free failure
13. <input type="checkbox"/> Burns fuses	14. <input type="checkbox"/> Accessory fail, which _____	
15. <input type="checkbox"/> Switches off	16. <input type="checkbox"/> Other _____	

C) OBSERVED OR MEASURED FAULT

1. <input checked="" type="checkbox"/> TX Power
2. <input type="checkbox"/> TX Phase error
3. <input type="checkbox"/> Bit Error Rate
4. <input type="checkbox"/> Burst Template
5. <input type="checkbox"/> Ramping spectra
6. <input type="checkbox"/> RX Quality
7. <input type="checkbox"/> RSSI
8. <input type="checkbox"/> Other _____

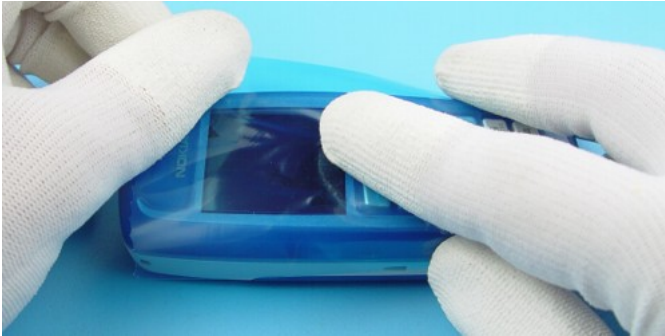
D) SYMPTOM OF THE FAULT ON PDA-PART - Symptom Code _____

1. <input type="checkbox"/> PDA doesn't start
2. <input type="checkbox"/> Internal error
3. <input type="checkbox"/> Keypad failure
4. <input type="checkbox"/> Display failure



19. FORWARDING OF REPAIRS

When it is necessary to forward of repairs to appropriate service supplier with higher service level we recommend using the offered swap phone cartons as described in Spare Parts SB-004.



Always Protect the window with a protection film.



Put the unit under the stretch film.



Add repair documentation e.g. filled-in service note into the swap carton.



Fold the swap carton as shown in Spare Parts SB-004.

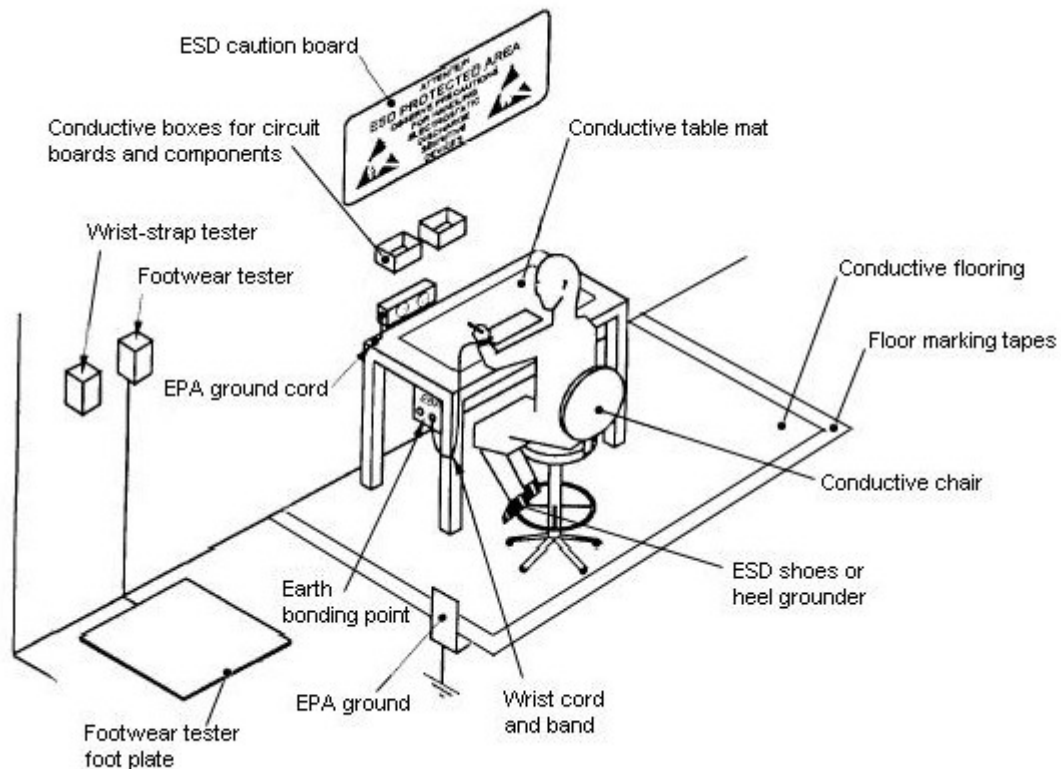


There are two different sizes of swap cartons for common mobile phones.

20. ESD PROTECTION REQUIREMENTS

Please refer to the Partner Web Site document

Service Supplier Requirements in folder General instructions.



- USE** Conductive bags and boxes
- USE** ESD compatible service tools
- USE** Conductive wastebaskets
- USE** ESD gloves when handling PWBs/PCBs
- USE** Cleaning material without changing el. Characteristics
- USE** Grounded service equipment, i.e. soldering station
- USE** ESD clothes such as coat or frock

- NO** Smoking
- NO** Drinking
- NO** Eating
- NO** Dust
- NO** Useless Items
- NO** Normal pressured air for cleaning modules/displays



The video covers general issues concerning Electro-Static Discharge (ESD)
source: Nokia Care Point