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# SERVICE MANUAL Level 1&2



RM-43 /RM-158



#### **Transceiver characteristics:**

#### Band:

- RM-43: GSM/GPRS/EDGE 900/1800/1900MHz +2100 WCDMA

- RM-158: GSM/GPRS/EDGE 900/1800/1900MHz

Camera: 2 Megapixel, 20x stepless digital zoom

Display: Active matrix color display with 262.144 colors,

resolution 176 x 208 pixel

Bluetooth

WLAN (only RM-43)

USB

Visual Radio + Media Player

Memory Capacity: about 16 MB internal memory + 4 GB Hard Drive

Enhanced music features: 8-band Equalizer, Stereo Widening Loudness, Balance

#### Transceiver with BL-5C 970 mAh Li-Ion battery pack

Talk time	Standby	Note
up to 4h (GSM)	up to 190h (GSM)	Depends on network parameters

#### **Environmental characteristics:**

Lead-free soldered



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# **CHANGE HISTORY**

Status	Version No.	Date	Comments
Draft	0.1	03.Mrz.2006	Initial draft
Approved	1.0	28.Mrz.2006	Approval
Approved	2.0	24.Apr.2006	RM-158 added
Approved	3.0	27.Apr.2006	Operating Band corrected and Battery capacity in the Tools chapter changed



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# 1. INTRODUCTION

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

While every effort 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 always watch out for the newest version.

## **Warnings and Cautions**

Please refer to the phone's user's guide for instructions relating to operation, care, and maintenance, which include 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
- 2. THE IMMUNITY OF VEHICLE ELECTRONIC SYSTEMS TO RF ENERGY. THE CELLULAR TELEPHONE MUST NOT BE OPERATED IN AREAS LIKELY TO CONTAIN POTENTIALLY EXPLOSIVE ATMOSPHERES, EG PETROL STATIONS (SERVICE STATIONS), BLASTING AREAS ETC.
- 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. Use only approved components as specified in the parts list.
- 4. Ensure all components, modules, screws, and insulators are correctly re–fitted after servicing and alignment.
- 5. Ensure all cables and wires are repositioned correctly.



Electrostatic discharge can easily damage the sensitive components of electronic products. Therefore, every Service Supplier must observe the precautions, mentioned in the appropriate "Service Partner Requirements", available on NOKIA Online. Also see ESD Protection Requirements in this Service Manual.

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## 2. GENERAL REPAIR INFORMATION

This section provides useful repair information how to carry out repairs:

- Make sure your testing equipment is functioning properly before beginning repair work.
- To familiarize yourself with the NOKIA product read the tutorials or user's guide on <a href="https://www.nokia.com">www.nokia.com</a> -->Support--> Phones, by selecting the Phone Model.
- Before starting repairs you must observe ESD precautions such as being in your ESD Protected Area and connecting your wristband.
- Use gloves to avoid corrosion and fingerprints.
- Cover windows and displays with a protective film to avoid dust and scratches.
- Use a lint-free cloth (e.g. Micro-Fibre cloth) to clean the LCD.
- When cleaning the pads use a soft cloth/ESD brush and Isopropanol. Do not use a glass fiber pencil: this scratches the surface and will corrosion.
- Non-faulty mechanical parts (except shielding lids and bent parts or soldered components), may be reused if they are not soldered.
- When removing the shielding lids make sure to replace them with new ones, otherwise the high-frequency leakage can affect the device.
- Always use original NOKIA spare parts.
- Check the soldering joints of the parts concerned with regard to the fault symptom (e.g. soldered connectors or switches) and resolder them if necessary (Level 2 only).
- Remove excess soldering flux after repair.
- Observe the torque requirements when assembling the unit.
- Preferably use your own equipment for testing. E.g. if the customer complains about charger function, please test the
  phone with your own charger to determine if the malfunction is being caused by phone or charger causes the malfunction.
- A SIM card is needed for all GoNoGo tests.
- When doing the fault log entries, always note the Item code of the part that caused the malfunction. Also, fill in the
  appropriate part code from the assembly if needed.
- Please be aware that some malfunctions may be software related and solved by an update.
- There are several documents available on NOL which must be followed:
- First, pay attention to the latest content pages of Service Bulletins, which are always available for each folder on NOKIA Online. Make sure your documentation is up to date.
- The service level indicator at the bottom of each document displays the appropriate target group.

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 Software Service Bulletins etc...

Use General SB-217 as a reference or overview.

Please also check NOKIA Online (NOL) for latest news and files on a regular basis.

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## 3. PATHFINDER FOR WORKSHOP STAFF

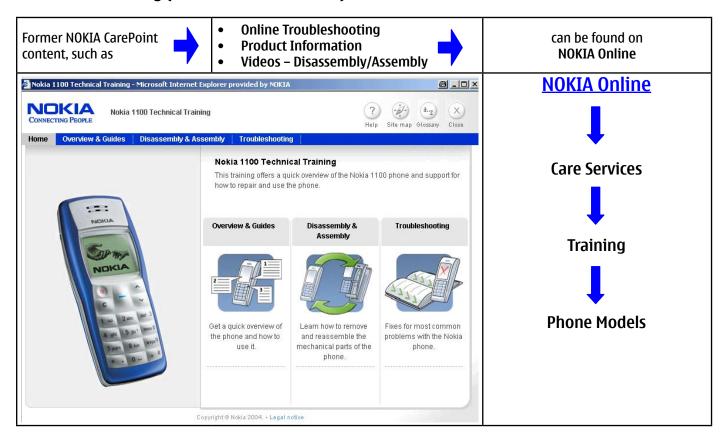
In addition to the information in this Service Manual, there are other instructions and data, which must be followed. Main documentation database is **NOKIA Online** with the purpose of serving different multimedia content, like video clips or interactive tutorials.

It is mandatory to watch for newest technical and organizational information on a daily basis to be updated as required (see "Latest files in Support Library"). New information must be processed and implemented as soon as possible. When logged into NOL you can also find needed information in different folders like:



Service Manuals Service Bulletins Software Repair Information

## Level 1&2 e-learning (former NOKIA CarePoint) on NOKIA Online



Level 1&2 e-learning courses offer a quick overview of the NOKIA phone and support on repair and testing.

Overview & Guides	Disassembly & Assembly	Troubleshooting
Basic information about the phone, features, and technologies	Instructions on disassembling and as- sembling the phone	Step-by-step instructions on locating and repairing the most common prob-
		lems with the phone

To reduce the server traffic we recommend downloading the newest version of large files like videos, Phoenix packages, or Service Manuals only once to distribute it internally for further use.



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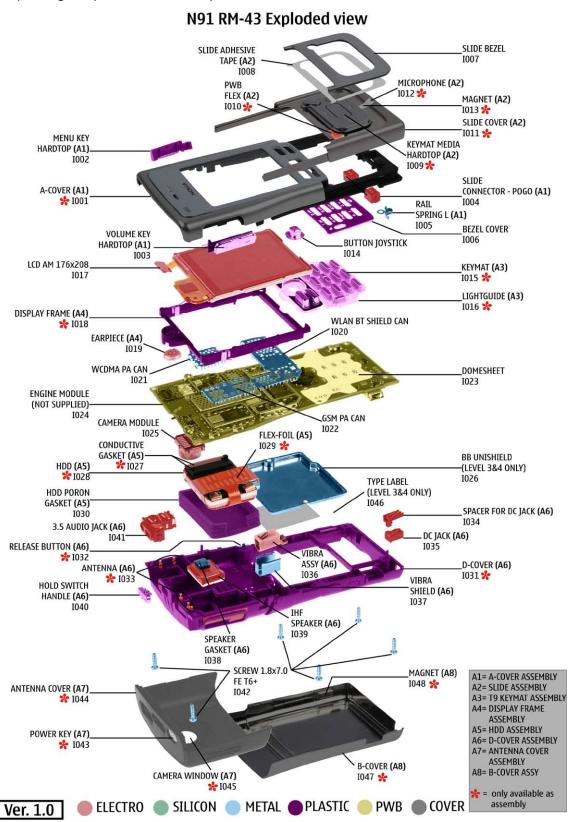
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# 4. EXPLODED VIEW AND COMPONENT DISPOSAL

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 NOL.



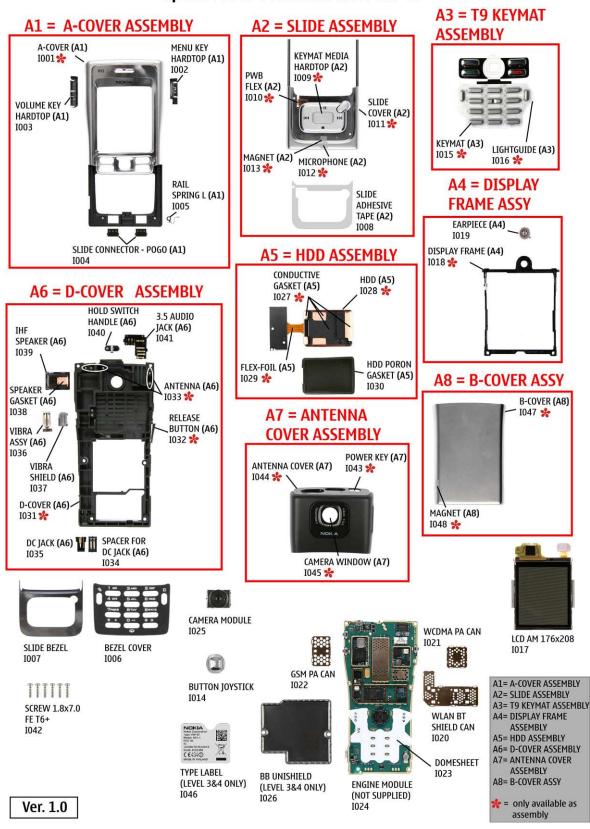
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## 5. SPARE PARTS OVERVIEW

# Spare Parts overview N91 RM-43





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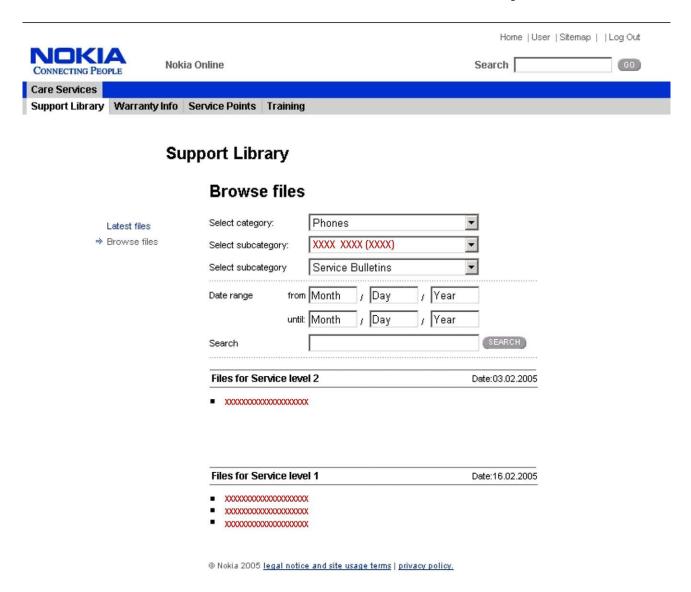
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## 6. SPARE PARTS LIST

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

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

Therefore, Service Bulletins on NOL have to be checked on daily basis.



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# 7. SERVICE TOOLS

FLS-4S  User Guide	<b>FLS-4S incl. ACF-8, Driver and User Guide</b> Dongle and flash device incorporated into one package, developed specifically for POS use.
	ACF-8 Universal Power Supply is used to power FLS-4S.
	<b>Travel Charger AC-4</b> Small and lightweight charger for fast charging of your phone battery.
	Internal Battery BL-5c Inserted under the back cover, this Li-Ion 970 mAh battery provides power in a lightweight package.
	Headset HS-28 Comfortable earphones combined with excellent audio quality provide a pleasurable listening experience. Control your music and calls remotely, and use it together with compatible headphones of your own choice. Available in Nokia N91 sales package.
	SS-15X Camera removal tool. One side is for disassembly, the other side for assembly.
	<b>DKE-2</b> USB Cable



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	SS-93 Opening Tool
	RJ-85 Soldering Jig
30. 31.0 Cy 2 Cy	Lead-free Solder Wire Mandatory for lead-free products (Level 2 only).
	NOKIA opening tool SRT-6 NOKIA No. 0770431     Tonichi torque driver NOKIA No. 6901525     Hoya micro Fibre cloth MX304



- <u>Dastex</u> gloves S, M, XL
- Artilux goggles AH166
- Wera bit T5 867/4TX 5x50
- Wera 867/4 6IP; 50mm (Torx 6 PLUS®)
- Wera bit T6 867/4TX 6x50
- Wera 867/1 5IP; 25mm (Torx 5 PLUS®)
- 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



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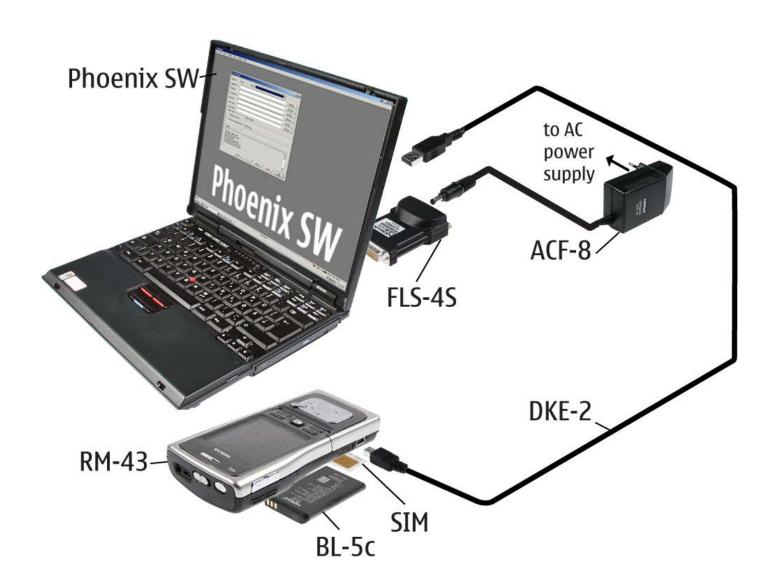
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# 8. SW-UPDATE

# Flash Concept – (Point of Sales)

To use the FLS-4S Flash Dongle you should follow the user's guide inside the sales package. Always check for the latest version of flash software, which is available on **NOKIA Online**.



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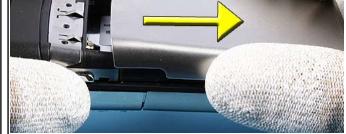
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# 9. DISASSEMBLY INSTRUCTION









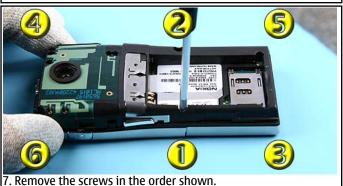
3. Also protect the CAMERA WINDOW with a plastic film.

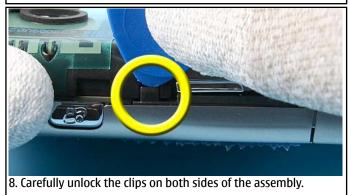
4. Unlock and remove the B-COVER ASSY.





both sides.





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9. Open the assembly before continuing.



10. Push down the KEYMAT while lifting of the SLIDE ASSEMBLY.



11. Protect the inner side window with a plastic film.



12. Protect the LCD with a plastic film, too.



13. Pull out the VOLUME KEY HARDTOP...



15. Unlock the RAIL SPRING L.

16. Pull it out carefully with tweezers.

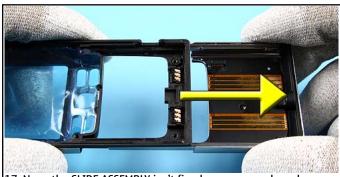


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17. Now, the SLIDE ASSEMBLY isn't fixed anymore and can be removed easily.





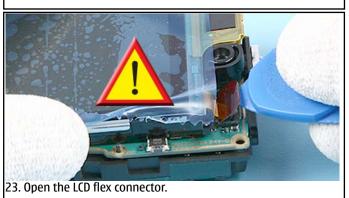
19. Carefully release the adhered SLIDE BEZEL as shown.

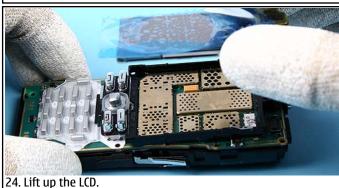




21. Remove the adhesive residue.







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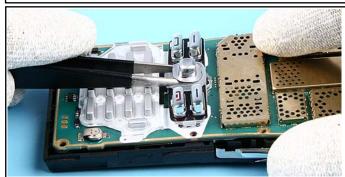
25. Remove the DISPLAY FRAME ASSEMBLY.



26. Note the grounding clips of the DISPLAY FRAME ASSEMBLY when removing the EARPIECE.



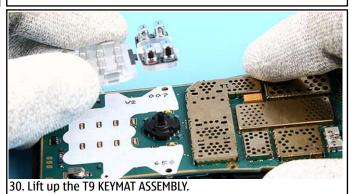
27. Lift up and remove the EARPIECE with tweezers carefully.



28. Use the tweezers when lifting off the BUTTON JOYSTICK.



29. Take care of the T9 KEYMAT ASSEMBLY.



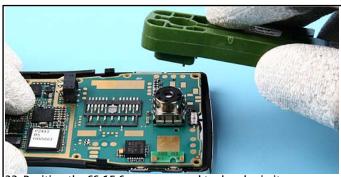


31. Remove the ENGINE MODULE.

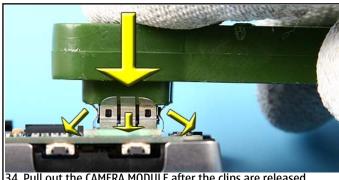


32. Use an A-COVER as support when removing the CAMERA MODULE.

**Multimedia Creation & Support** 



33. Position the SS-15 Camera removal tool and grip it.



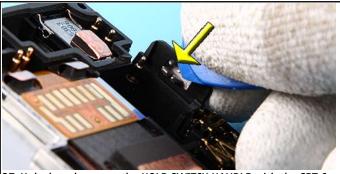
34. Pull out the CAMERA MODULE after the clips are released.



35. Remove the VIBRA ASSY.



36. Pull out the VIBRA SHIELD. Mind the grounding clips.

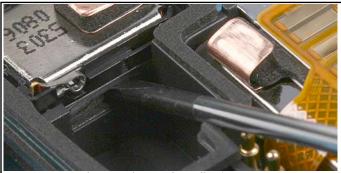


37. Unlock and remove the HOLD SWITCH HANDLE with the SRT-6.



20. He a the sletted serve udriver to release the INT CDFAVED

39. Use the slotted screwdriver to release the IHF SPEAKER.



40. Note not to damage the speaker adhesive.



41. Carefully remove the IHF SPEAKER. Do not touch the menbrane.



42. Unlock the SPACER FOR DC JACK carefully, prevent bending the spring contacts.



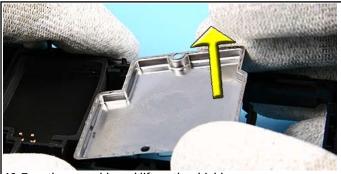
43. Use the DC Plug to lever out the DC JACK first.



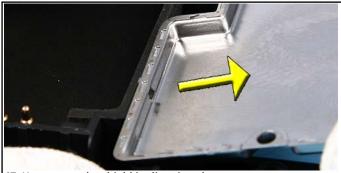
44. Then pull it out with the tweezers.



45. Unlock the BB UNISHIELD.



46. Turn the assembly and lift up the shield.



47. Now, move the shield in direction shown.



48. Unlock the HDD ASSEMBLY by using a slotted screwdriver.



49. Note not to destroy the fixing joint.





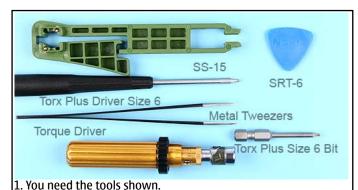
51. Lift out the HDD ASSEMBLY. Never remove it by pulling at the flex foil.

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# **10.ASSEMBLY INSTRUCTION**

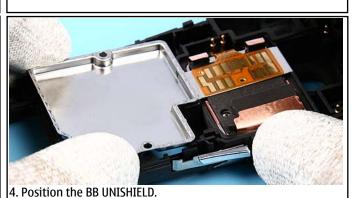


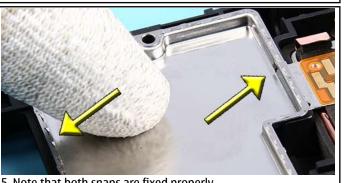


ASSEMBLY and fix it. Do not push down the conductive tape.



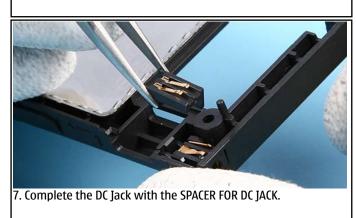
3. Flip the connector plate of the HDD ASSEMBLY. Do not touch the pads. Fix the connector plate.











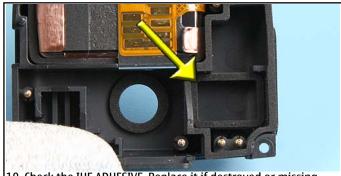


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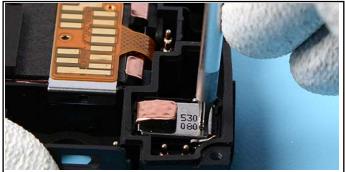
9. Check the SPACER FOR DC JACK for correct positioning as shown.



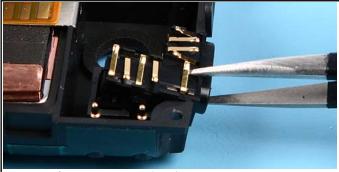
10. Check the IHF ADHESIVE. Replace it if destroyed or missing.



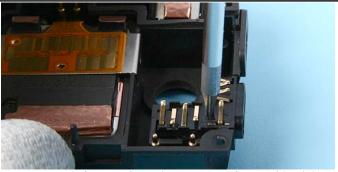
11. Place the IHF SPEAKER. Always use a new IHF SPEAKER GASKET when replacing the speaker.



12. Push the IHF SPEAKER slightly into its place. Note the spring contacts.



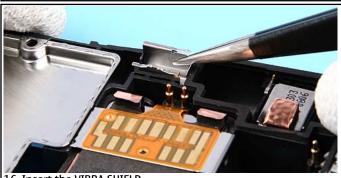
13. Insert the 3,5 AUDIO JACK into its compartment.



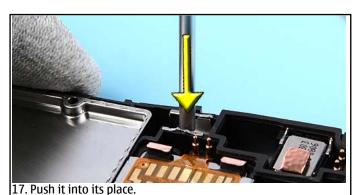
14. Note not to damage the spring contacts when pushing it into its place.



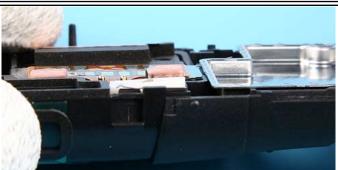
15. Mind the correct position when placing the HOLD SWITCH HANDLE.



16. Insert the VIBRA SHIELD.



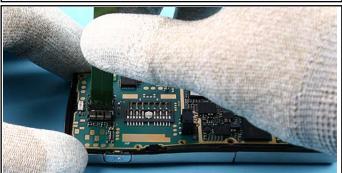




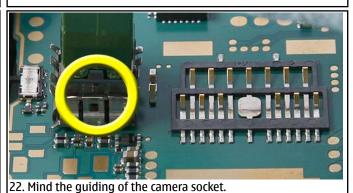
19. Always check the correct position as shown here before continuing.



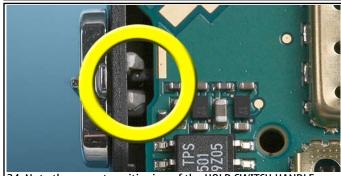
20. Use the A-COVER as support when replacing the CAMERA MODULE.



21. Use the SS-15 to replacing the CAMERA MODULE.



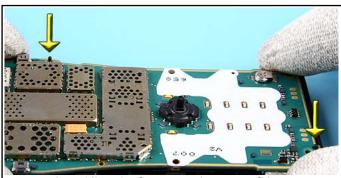
23. Place the ENGINE MODULE into the D-COVER ASSEMBLY.



24. Note the correct positioning of the HOLD SWITCH HANDLE.

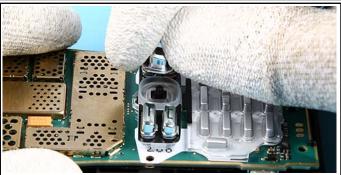
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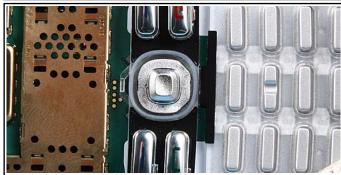


25. Note the guiding pins for correct placement of the ENGINE MODULE.





27. Fix the BUTTOM JOYSTICK.



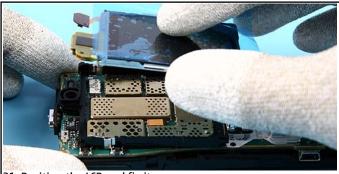
28. Mind the correct placement as shown.



29. Place the Earpiece into the Display Frame Assy. Do not bend the grounding clips. Mind the guiding pin of the EARPIECE.



30. Now fit the DISPLAY FRAME ASSEMBLY over the ENGINE MODULE.

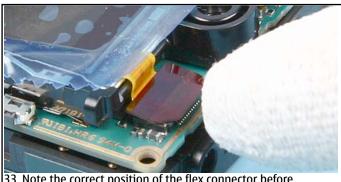


31. Position the LCD and fix it.



32. Close the display flex connector.

**Multimedia Creation & Support** 



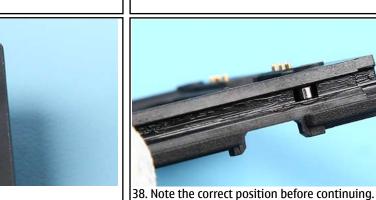
33. Note the correct position of the flex connector before continuing.





35. Align and fix it.









39. Place the VOLUME KEY HARDTOP.





41. Place the MENU KEY HARDTOP.



42. Remove the plastic film from the LCD.



43. Now place the SLIDE ASSEMBLY.



44. Lock the clips.



45. Note that both clips are locked properly.



46. Insert the screws. To prevent damaging the plastic threads, turn the screws slightly left first. Then tighten them in the shown order with a torque of 30 Ncm.



47. Place the BEZEL COVER at the shown side first.



48. Now push down the other side slightly.

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49. Check that the MENU KEY HARDTOP....





51. Place a piece of plastic film while assembling the SLIDE AS-SEMBLY. Remove the plastic film carefully while shifting the parts together .



52. Check the functionality of the RAIL SPRING. The SLIDE ASSEM-BLY must be stop safely at the end position.



53. Place the ANTENNA COVER ASSEMBLY beginning from the top.



54. Note the correct positioning of the ANTENNA COVER ASSEMBLY.



55. Assemble the B-COVER ASSEMBLY.



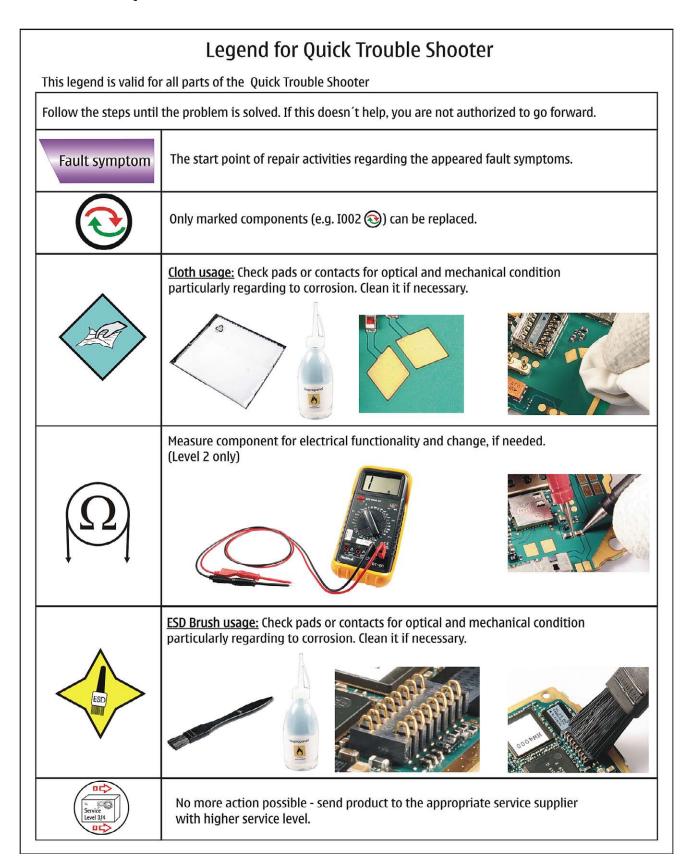
56. Check the windows for cleanness.

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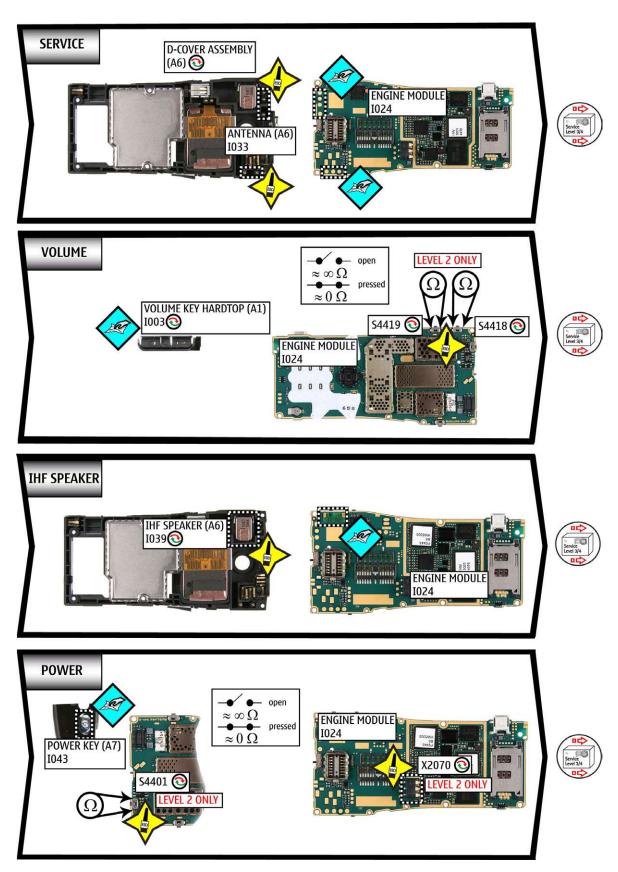
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# 11.LEGEND FOR QUICK TROUBLE SHOOTER



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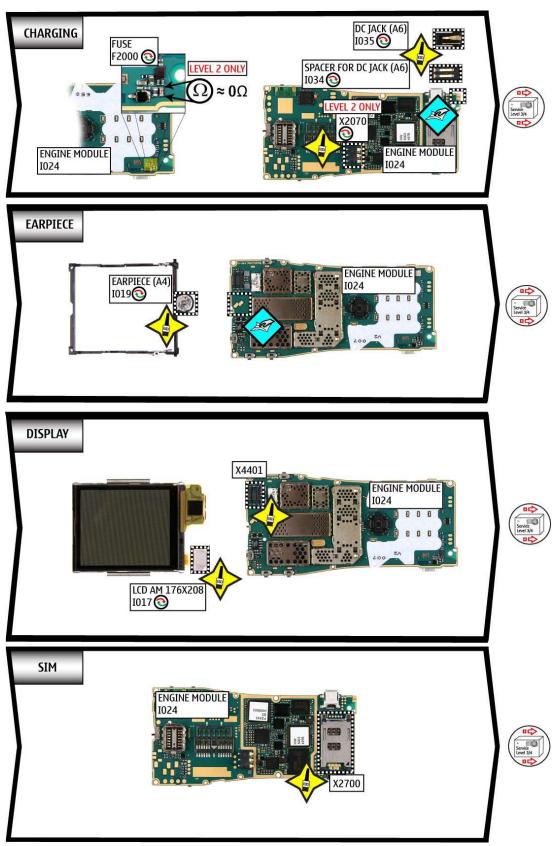


**Multimedia Creation & Support** 

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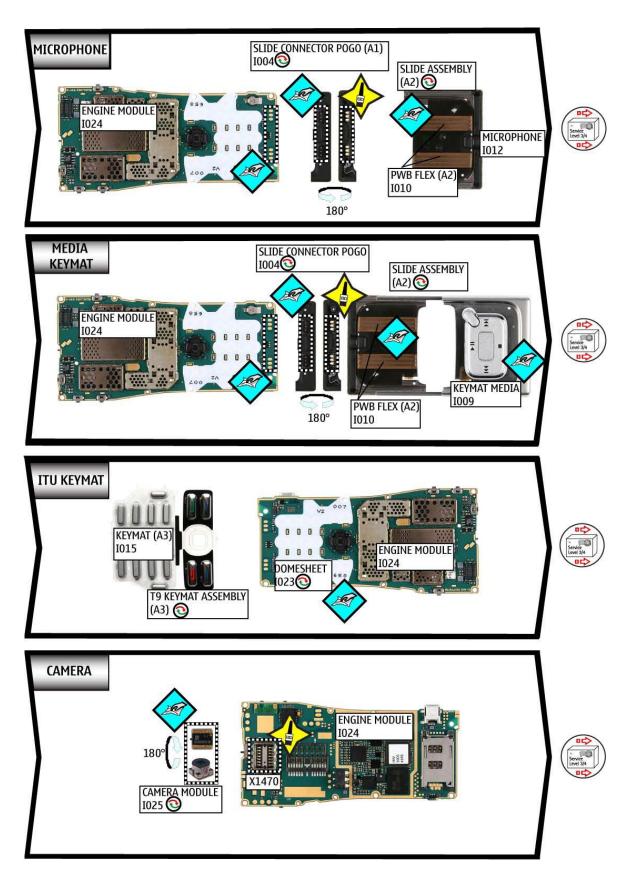
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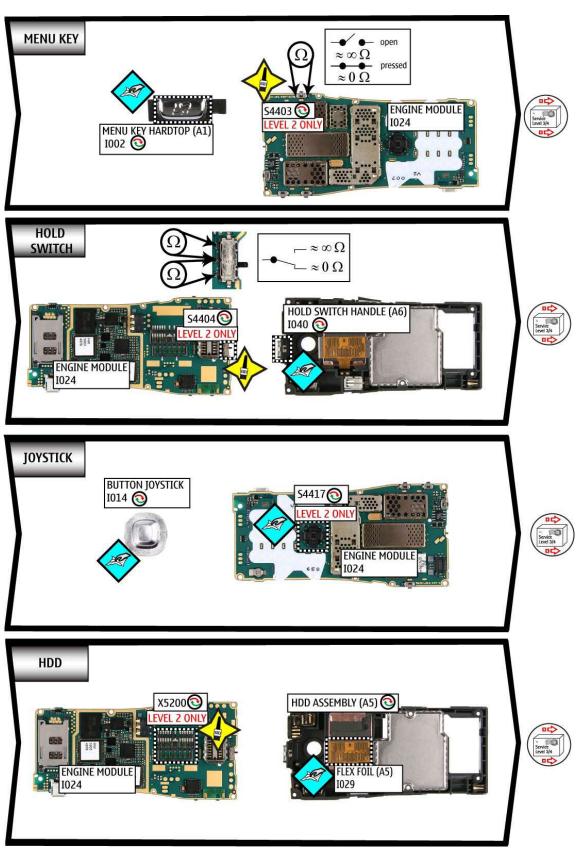




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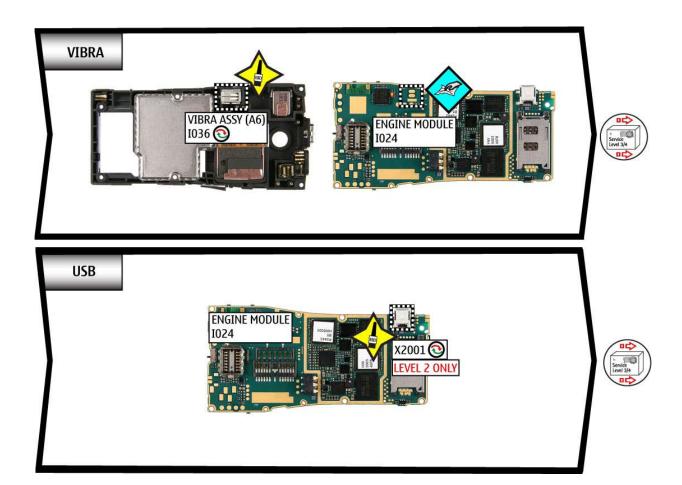




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# 17. CAMERA GONOGO TEST

Before starting the GoNoGo test, check that camera window is clean. If not, clean the window with cloth.



- Unlock the Keypad
- Press the red receiver button to reach the Home Menu
- Press the Menu Key and select **Cameras**
- Press down the Joystick to take a photo This Image will be saved to Gallery into the Photos folder automatically. Test was successful, if the Image appears on your Display. The camera is ok.
- **Select Options**
- Select Go to Media gallery
- Select the picture you want to delete

Select Options

Select Delete

Select Yes

If the test is failed see Quick Trouble Shooter.

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# 18.BLUETOOTH GONOGO TEST

#### **Bluetooth test**

You need another Bluetooth device (e.g. 6230) 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.







Reference unit; Bluetooth activated

Test unit

## Settings on the test unit:

- Unlock the Keypad
- Press the red End key to reach the Home Menu
- Press the Menu Key and select Phonebook
   If phone and SIM memory is empty, create one new entry.
- Select an entry
- Select Options
- Select Send
- Select Bluetooth

Search window appears and shows all Bluetooth units in range.

Choose one unit and press Select

Test was successful, if you get the message "Business card received" on the Reference unit.

Press red End key of the Test unit to reach the Home Menu

Note: If the Bluetooth is activated, switch it off!



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# **19.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 NOKIA Online. 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 Online.



**Mobile Phone Tester** 

# **20.BATTERY TEST**

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

Please refer to the actual information on NOKIA Online.



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



http://www.cadex.com/