Doro Leva L20/L21

Repair Manual DFC-0520

English

Contents

Repair disclaimer

Self-service repair is not recommended unless you have the necessary technical knowledge and experience to safely handle electronic components. Attempting repairs without proper expertise can result in damage to the device, personal injury, or voiding of any applicable warranty.

By choosing to proceed with a self-repair, you acknowledge and accept all risks and responsibilities associated with the process.

About this document

This document provides step-by-step instructions for repairing and maintaining the Leva L20/L21. It is designed to support both professional technicians and private individuals who wish to perform their own repairs.

Scope

This guide covers:

- Safe disassembly and reassembly procedures
- Replacement of specific hardware components
- Basic troubleshooting and visual inspections

This guide does not cover:

- Advanced electrical diagnostics
- Software-level repairs or firmware issues
- Modifications outside manufacturer specifications

Who can use this document

This guide is intended for:

- Technicians and repair professionals
- End customers interested in do-it-yourself repairs, as encouraged by the EcoDesign directive

How the guide is structured

The document is divided into the following main sections:

- General precautions
- Tools and materials required
- Component-specific replacements
- Disassembly Procedures
- Assembly Instructions
- Troubleshooting

Each chapter includes checklists, simple step-by-step instructions, and references to related sections within this document.

General precautions

Before you service the product, read the full set of precautions in this document.

Use caution before you start to repair

⚠ CAUTION

Opening or repairing a device could cause electric shock, device damage, fire, personal injury risks, and other hazards.

- Make sure that the work surface is clean and free of debris to prevent contamination of internal components.
- Wear an ESD wrist strap to prevent electrostatic discharge damage to sensitive electronic components.
- Always perform repairs in a clean, dry space with good ventilation and no combustible materials.
- Make sure no cables or components are damaged during removal. Damaged cables and components must be replaced.
- Ensure that there are no additional screws or small parts left in the device after assembly.
- Always ensure that screws are securely fastened.
- Disconnect the device from all power sources before any disassembly.

Batteries

Batteries should be handled with care, and could be dangerous if not in normal condition.

⚠ CAUTION

- Discharge the battery before you attempt repair.
- Never bend, dent, puncture, or use tools to pry the battery.
- To prevent damage, store replaced batteries in the replacement packaging directly after being replaced.
- If the battery shows signs of swelling or damage, or if the device feels hot or emits a strong odour, don't attempt disassembly. Please reach out to Doro support.
- If a battery starts to vent, cover it in sand or use gloves and pliers to dispose the battery in a fire safe container as soon as possible.
- Be careful with the following unacceptable battery conditions: pouch damage, line protrusion, scratch, contamination mark, dot protrusion, dent, bubbling, imprinted line, swelling or electrolyte leakage.
- Do not shortcut the battery terminals or damage the battery, as it could result in fire or overheating.
- Do not throw the old battery in regular trash. Dispose of the battery according to local regulations.

Glass handling

⚠ CAUTION

- Wear protective gloves and safety glasses when you handle broken glass parts.
- Apply protective film when you remove damaged glass parts.
- Place the damaged glass part in the spare part packaging directly after replacement to prevent injury.

Tools and fixtures

The use of correct tools and fixtures is strongly recommended for all device repairs.

⚠ CAUTION

- We don't recommend repairs without the correct tools and fixtures.
- Improper use of tools and fixtures may result in injury, damage to the product, tools, fixtures, or spare parts.

Hinge separation precaution

⚠ CAUTION

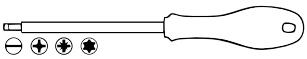
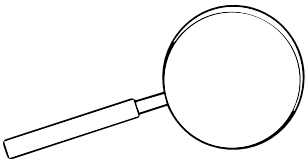
Separating the top and bottom halves is difficult, do not do it unless necessary. This task is not required for most repairs, even if pictures display the cabinets as separated. Separation is only needed to replace:

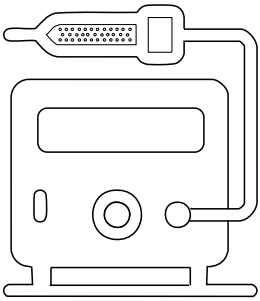
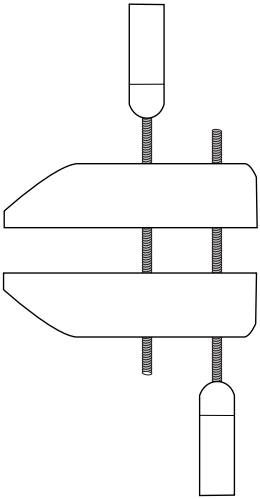
- The **Hinge φ5.8**
- The **Assembly clamshell**
- The **Main FPC**
- The **C cabinet**

Tools and materials required

Tools

The tools listed are basic tools that can be used to do a repair, reuse or upgrade.

Tool type	Illustration (informative example)	Reference
Screwdriver (for slotted heads, cross recess or hexalobular recess heads)		ISO 2380, ISO 8764, ISO 10664
Prying lever		
Tweezers		
Magnifying glass		
Plectrum		
Suction cup with keyring		

Hot air rework station		
Fixture		

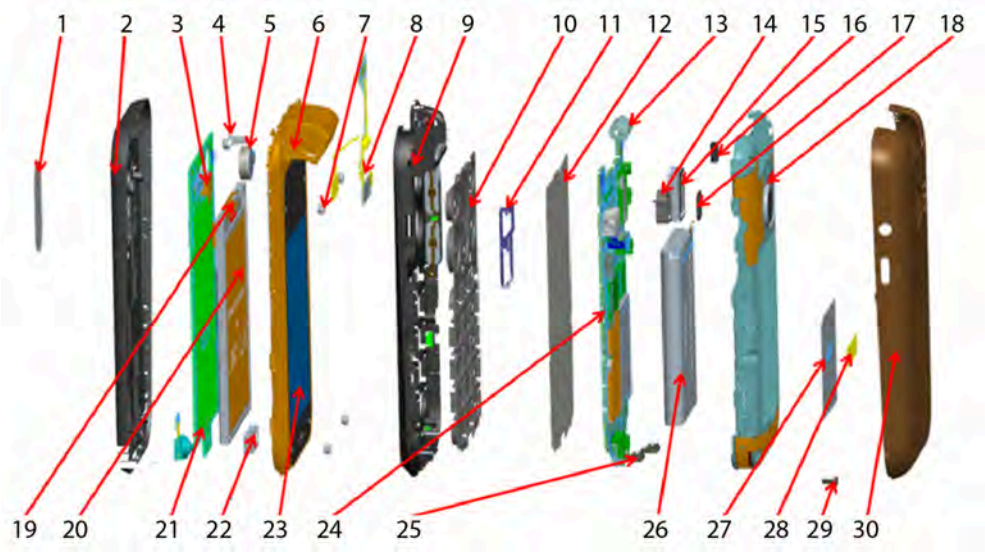
Materials

Material type	Illustration (informative example)	Reference
Isopropanol		

Spare parts list

This document does not include the complete Spare Parts List. The Spare Parts List covers all components of the product and can be found at: https://www.doro.com/repair/

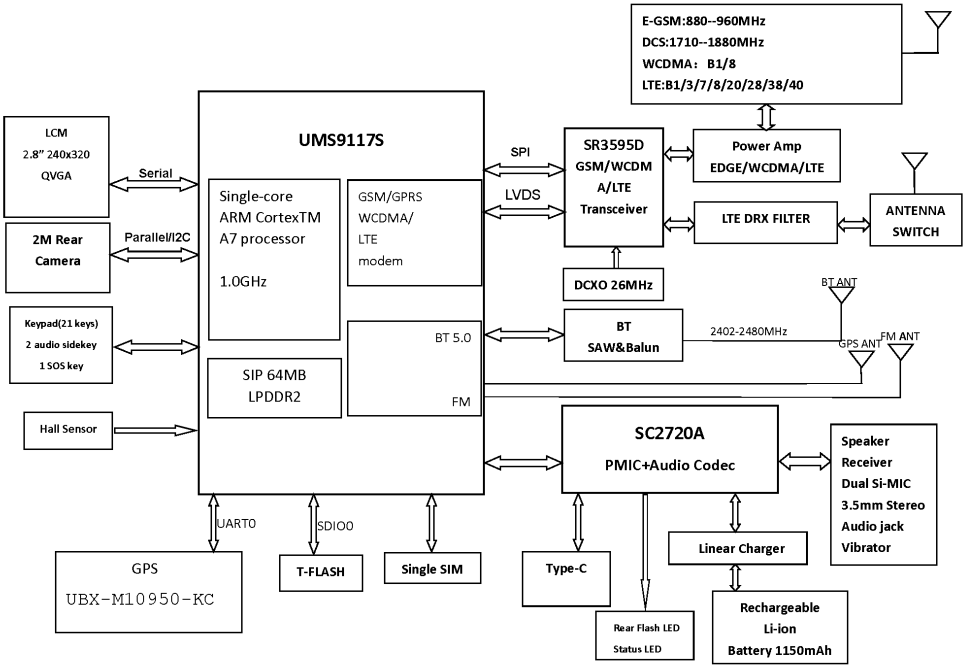
Exploded view



No	Part name	Qty
1	B_CAM WIN GF28A1 PMMA BK DORO RoHS	1
2	Assembly clamshell up	1
3	Camera	1
4	Sealing rubber hinge	1
5	Motor	1
6	Assembly clamshell	1
7	Screw rubber cover	4
8	Main FPC	1
9	C cabinet	1
10	Keypad	1
11	Sealing rubber USB jack	1
12	Dome foil	1
13	Hinge ϕ5.8	1
14	SOS key frame	1
15	Speaker	1
16	Main FPC wrap foam	1

No	Part name	Qty
17	SOS FPC	1
18	Assembly lower housing	1
19	Magnet	1
20	Main LCD 2.8	1
21	SUB PCB	1
22	Receiver	1
23	Main LCD glass window	1
24	Assembly PCBA HW3011	1
25	Sealing rubber cradle connectors	1
26	Battery LEVA DBAE-1150A	1
27	IMEI label 31*31.3mm	1
28	Waterproof label D=2,5mm SKD RoHS	1
29	Screw T1.4*3.5	11
39	Battery cover	1

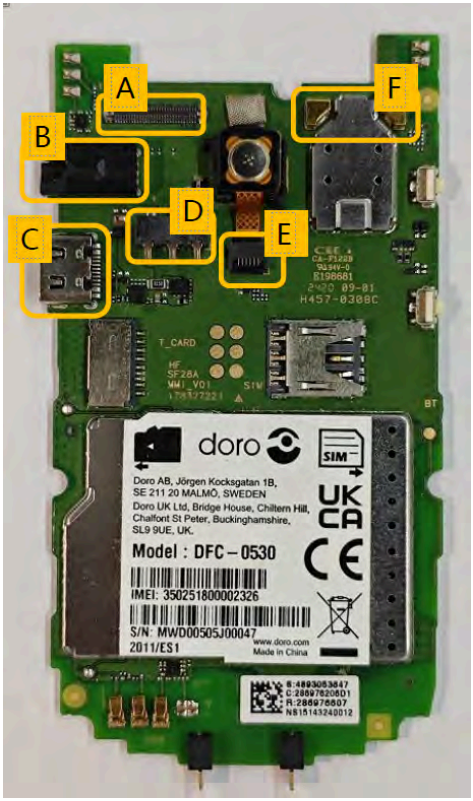
Block diagram



Parts location

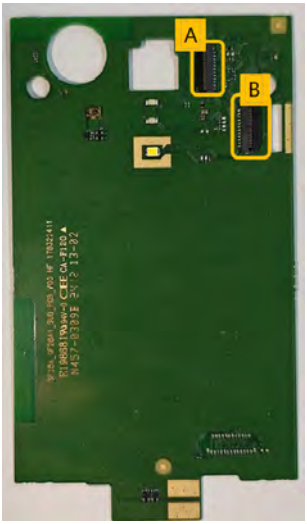
Main PCB

A. FPC Link connector
B. Audio Jack 3.5 mm
C. USB-C connector
D. Battery connector
E. SOS FPC connector
F. Speaker Pad



Sub PCB

A. Camera connector
B. LCD connector
C. FPC Link connector
D. Battery connector
E. Motor pad



How to turn on and off the Leva L20/L21

Before performing any repair, the device must be turned off to prevent damage to internal components and to ensure safety during disassembly.

After the repair is completed and the device is fully reassembled, you will need to turn it on again to verify that it is functioning as expected.

Turn on the phone

1. Press and hold until the display lights up.

Turn off the phone

1. Press and hold
2. Press **OK** to turn off the phone.

Repair instructions for professional repairers and end-users

How to replace the Battery LEVA DBAE-1150A

Purpose

This procedure explains how to replace the **Battery LEVA DBAE-1150A** of the device.

Prerequisites

The following disassembly sections needs to be done before continuing

- *Disassemble the Battery cover*, p.52

Tools and equipment

No tools are required for this procedure. Tools used in earlier procedures are listed in their respective chapters.

Spare parts

Qty	Spare part	Information
1	Battery LEVA DBAE-1150A	

Safety and precautions

- Do not puncture or bend the **Battery LEVA DBAE-1150A**.
- Do not throw the old battery in regular trash. Recycle it according to local regulations for electronic waste and batteries.

Procedure overview

This procedure shows how to remove the **Battery LEVA DBAE-1150A** and install a new. No tools are needed.

Step-by-step instructions

Remove the Battery LEVA DBAE-1150A

1. Insert your finger into the notch below the **Battery LEVA DBAE-1150A**.
2. Push the **Battery LEVA DBAE-1150A** outward, then lift it out.

Note!
You can now access the **SIM card** slot, if a SIM card is installed. To remove the **SIM card**, slide it sideways out of the slot. To install a new **SIM card**, slide it into the empty slot.

Install a new battery

1. Align the **Battery LEVA DBAE-1150A** with its compartment, with the contacts facing inward.
2. Slide the **Battery LEVA DBAE-1150A** into place.

Reassembly reference

Assemble the Battery cover, p.114

Troubleshooting and tips

How to replace the Main LCD 2.8

Purpose

Replace the **Main LCD 2.8** if it is cracked, unresponsive, or has display issues such as dead pixels or backlight failure.

Prerequisites

- *Disassemble the Battery cover*, p.52
- *Disassemble the Battery LEVA DBAE-1150A*, p.55
- *Disassemble the top half of the device*, p.70

Tools and equipment

Type	Illustration (informative example)	Reference
Tweezers		
Plectrum		

Spare parts

Qty	Spare part	Information
1	**Main LCD 2.8**	

Safety and precautions

See *General precautions*, p.5.

Do not separate the top and bottom halves unless necessary. See *Hinge separation precaution*, p.8.

- Avoid touching the display surface to prevent smudges or damage.

Procedure overview

To replace the LCD, first disconnect the flex cable. Then remove the damaged LCD. Install the new LCD and reconnect the flex cable.

Step-by-step instructions

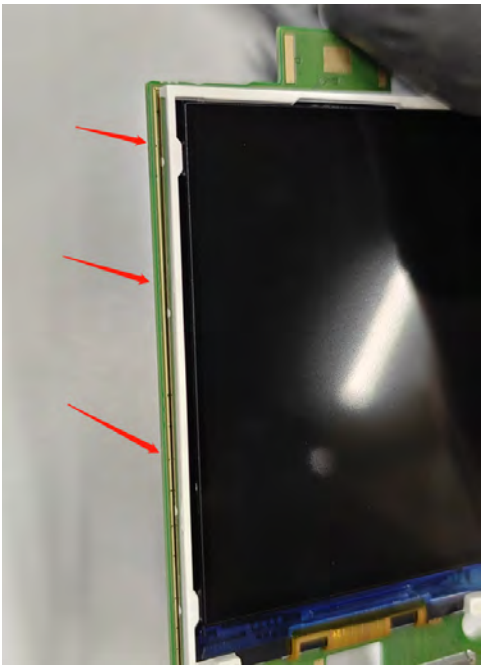
Remove the Main LCD 2.8

1. Open the ZIF connector that holds the LCD flex cable in place. Use **Tweezers**.

2. Disconnect the flex cable and feed it through the opening to the other side.
3. Separate the **Main LCD 2.8** from the **SUB PCB** using a **Plectrum**.

Install the new Main LCD 2.8

1. Place the **Main LCD 2.8** on the **SUB PCB**. Make sure to align the screen with the locator lines.



2. Feed the flex cable through the opening to the other side of the **SUB PCB** and connect it to the ZIF connector. Align the white line on the cable with the edge of the connector to ensure correct insertion depth. Use **Tweezers**.

3. Close the ZIF-connector.

Reassembly reference

Assemble the top half of the device, p.95

Assemble the Battery LEVA DBAE-1150A, p.112

Assemble the Battery cover, p.114

Troubleshooting and tips

Repair instructions for professional repairers only

How to replace the Audio jack 3.5 mm

Purpose

Removing and installing the **Audio jack 3.5 mm** is necessary to replace a damaged jack and restore audio functionality.

Prerequisites

- *Disassemble the Battery cover*, p.52.
- *Disassemble the Battery LEVA DBAE-1150A*, p.55
- *Disassemble the Assembly lower housing*, p.58
- *Disassemble the Assembly PCBA HW3011*, p.62
- *Disassemble the components of the Assembly PCBA HW3011*, p.64

Tools and equipment

Type	Illustration (informative example)	Reference
Hot air rework station		
Fixture		
Tweezers		
Flux		

Spare parts

Qty	Spare part	Information
1	Audio jack 3.5 mm	

Safety and precautions

⚠ CAUTION

General advice when using a hot air rework station

- PCB's is basically a heatsink where heat spreads quickly throughout the PCB. Make sure your hot air rework station has sufficient power to quickly melt the solder.
- Use a suitable nozzle and heat-resistant protection to shield nearby components.

See *General precautions*, p.5.

Procedure overview

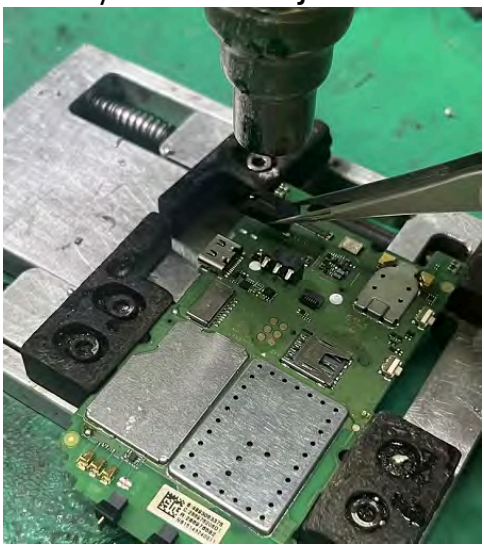
This procedure describes how to remove the **Audio jack 3.5 mm** from the **Assembly PCBA HW3011** using a hot air rework tool. After removal, a new **Audio jack 3.5 mm** is aligned with the solder pads and soldered in place.

Step-by-step instructions

1. Place the **Assembly PCBA HW3011** in the fixture.
2. Set the **Hot air rework station** to an appropriate temperature.
3. Apply flux around the solder joints on the **Audio jack 3.5 mm**.

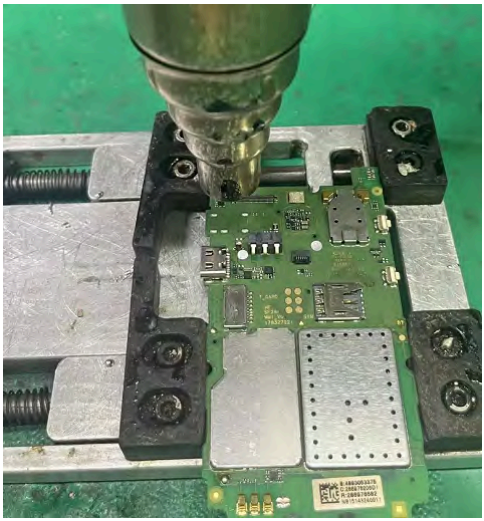
4. Heat the joints until the solder softens.

5. Use **Tweezers** to carefully lift the **Audio jack 3.5 mm**.

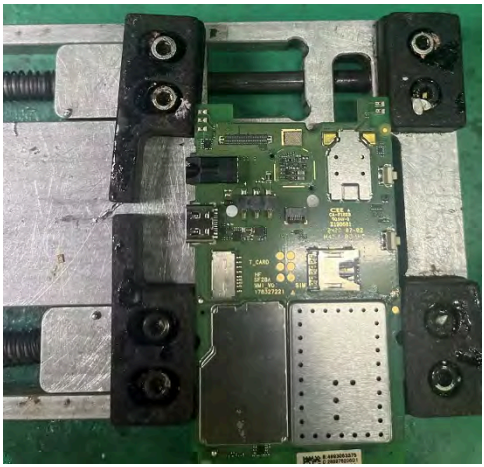


6. Apply a small amount of flux to the pads.

7. Add tin to the pads if needed.
8. Heat the pads until the solder softens.



9. Place the new **Audio jack 3.5 mm** on the pads.
10. Heat until the solder flows and the joints are fully formed.



Reassembly reference

- *Assemble the components of the Assembly PCBA HW3011*, p.101
- *Assemble the Assembly PCBA HW3011*, p.107
- *Assemble the Assembly lower housing*, p.109
- *Assemble the Battery LEVA DBAE-1150A*, p.112
- *Assemble the Battery cover*, p.114

Troubleshooting and tips

How to replace the USB-C connector

Purpose

Removing and installing the **USB-C connector** is necessary to replace a damaged connector and restore charging functionality.

Prerequisites

- *Disassemble the Battery cover*, p.52.
- *Disassemble the Battery LEVA DBAE-1150A*, p.55
- *Disassemble the Assembly lower housing*, p.58
- *Disassemble the Assembly PCBA HW3011*, p.62
- *Disassemble the components of the Assembly PCBA HW3011*, p.64

Tools and equipment

Type	Illustration (informative example)	Reference
Hot air rework station		
Fixture		
Tweezers		
Flux		

Spare parts

Qty	Spare part	Information
1	USB-C connector	

Safety and precautions

⚠ CAUTION

General advice when using a hot air rework station

- PCB's is basically a heatsink where heat spreads quickly throughout the PCB. Make sure your hot air rework station has sufficient power to quickly melt the solder.
- Use a suitable nozzle and heat-resistant protection to shield nearby components.

See *General precautions*, p.5.

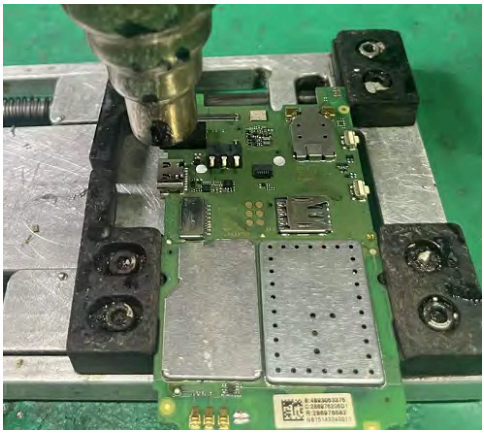
Procedure overview

This procedure describes how to remove the **USB-C connector** from the **Assembly PCBA HW3011** using a hot air rework tool. After removal, a new **USB-C connector** is aligned with the solder pads and soldered in place.

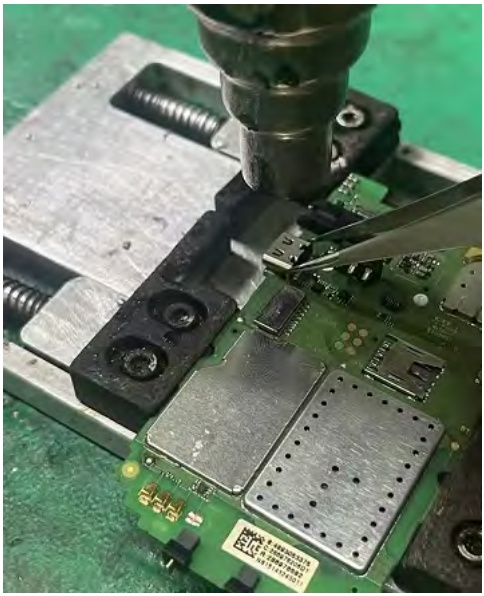
Step-by-step instructions

1. Place the **Assembly PCBA HW3011** in the fixture.
2. Set the **Hot air rework station** to an appropriate temperature.
3. Apply flux around the solder joints on the **USB-C connector**.

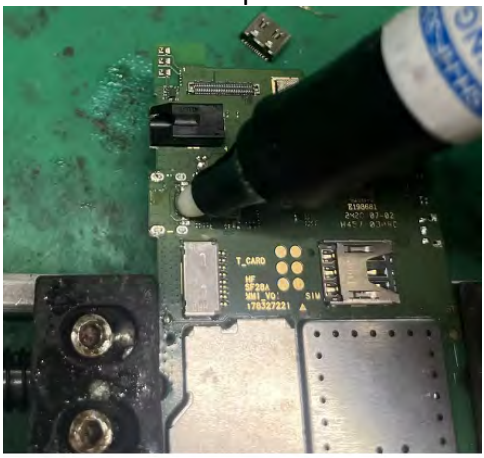
4. Heat the joints until the solder softens.



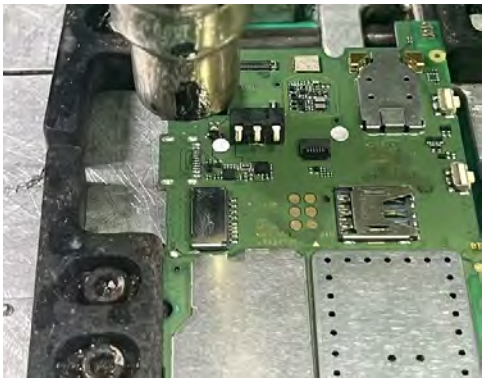
5. Use **Tweezers** to carefully lift the **USB-C connector**.



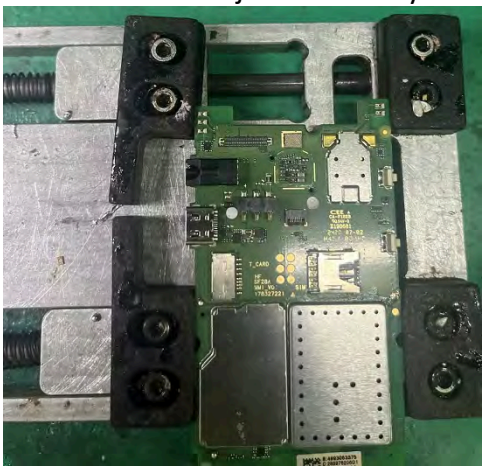
6. Apply a small amount of flux to the pads.



7. Add tin to the pads if needed.
8. Heat the pads until the solder softens.



9. Place the new **USB-C connector** on the pads.
10. Heat until the solder flows and the joints are fully formed.



Reassembly reference

- *Assemble the components of the Assembly PCBA HW3011*, p.101
- *Assemble the Assembly PCBA HW3011*, p.107
- *Assemble the Assembly lower housing*, p.109
- *Assemble the Battery LEVA DBAE-1150A*, p.112
- *Assemble the Battery cover*, p.114

Troubleshooting and tips

How to replace the Microphone

Purpose

Removing and installing the **Microphone** is necessary to replace a damaged **Microphone** and restore audio input functionality.

Prerequisites

- *Disassemble the Battery cover*, p.52.
- *Disassemble the Battery LEVA DBAE-1150A*, p.55
- *Disassemble the Assembly lower housing*, p.58
- *Disassemble the Assembly PCBA HW3011*, p.62
- *Disassemble the components of the Assembly PCBA HW3011*, p.64

Tools and equipment

Type	Illustration (informative example)	Reference
Hot air rework station		
Fixture		
Tweezers		
Flux		

Spare parts

Qty	Spare part	Information
1	Microphone	

Safety and precautions

⚠ CAUTION

General advice when using a hot air rework station

- PCB's is basically a heatsink where heat spreads quickly throughout the PCB. Make sure your hot air rework station has sufficient power to quickly melt the solder.
- Use a suitable nozzle and heat-resistant protection to shield nearby components.

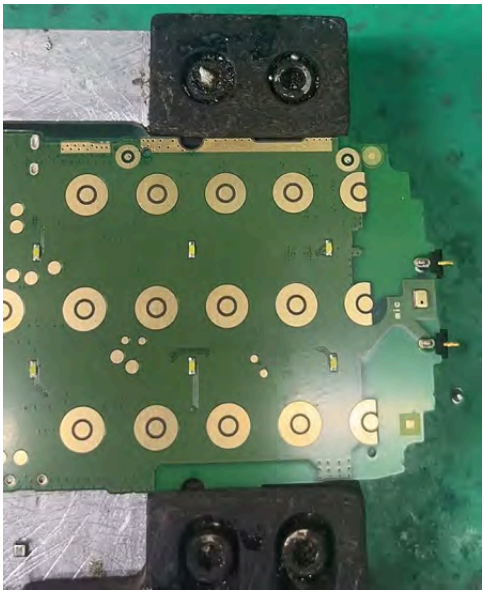
See *General precautions*, p.5.

Procedure overview

This procedure describes how to remove the **Microphone** from the **Assembly PCBA HW3011** using a hot air rework tool. After removal, a new **Microphone** is aligned with the solder pads and soldered in place.

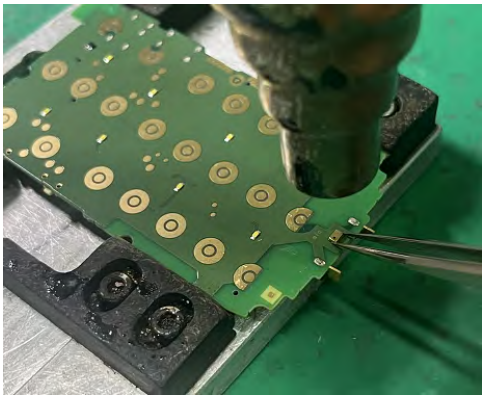
Step-by-step instructions

1. Place the **Assembly PCBA HW3011** in the fixture.

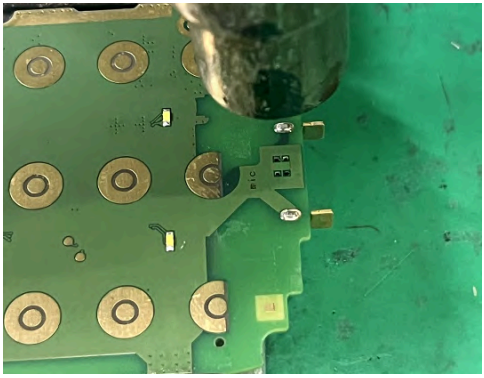


2. Set the **Hot air rework station** to an appropriate temperature.
3. Apply flux around the solder joints on the **Microphone**.
4. Heat the joints until the solder softens.

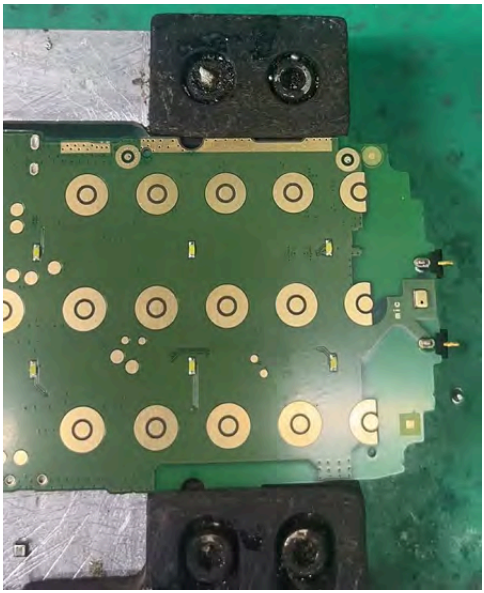
5. Use **Tweezers** to carefully lift the **Microphone**.



6. Apply a small amount of flux to the pads.
7. Add tin to the pads if needed.
8. Heat the pads until the solder softens.



9. Place the new **Microphone** on the pads.
10. Heat until the solder flows and the joints are fully formed.



Reassembly reference

- *Assemble the components of the Assembly PCBA HW3011*, p.101
- *Assemble the Assembly PCBA HW3011*, p.107
- *Assemble the Assembly lower housing*, p.109
- *Assemble the Battery LEVA DBAE-1150A*, p.112
- *Assemble the Battery cover*, p.114

Troubleshooting and tips

How to replace the SubMicrophone

Purpose

Removing and installing the **Sub Microphone** is necessary to replace a damaged **Sub Microphone** and restore audio input functionality.

Prerequisites

- *Disassemble the Battery cover*, p.52.
- *Disassemble the Battery LEVA DBAE-1150A*, p.55
- *Disassemble the Assembly lower housing*, p.58
- *Disassemble the Assembly PCBA HW3011*, p.62
- *Disassemble the components of the Assembly PCBA HW3011*, p.64

Tools and equipment

Type	Illustration (informative example)	Reference
Hot air rework station		
Fixture		
Tweezers		
Flux		

Spare parts

Qty	Spare part	Information
1	Microphone	

Safety and precautions

⚠ CAUTION

General advice when using a hot air rework station

- PCB's is basically a heatsink where heat spreads quickly throughout the PCB. Make sure your hot air rework station has sufficient power to quickly melt the solder.
- Use a suitable nozzle and heat-resistant protection to shield nearby components.

See *General precautions*, p.5.

Procedure overview

This procedure describes how to remove the **Sub Microphone** from the **Assembly PCBA HW3011** using a hot air rework tool. After removal, a new **Sub Microphone** is aligned with the solder pads and soldered in place.

Step-by-step instructions

1. Place the **Assembly PCBA HW3011** in the fixture.

2. Set the **Hot air rework station** to an appropriate temperature.
3. Apply flux around the solder joints on the **Sub Microphone**.
4. Heat the joints until the solder softens.

5. Use **Tweezers** to carefully lift the **Sub Microphone**.

6. Apply a small amount of flux to the pads.
7. Add tin to the pads if needed.
8. Heat the pads until the solder softens.

9. Place the new **Sub Microphone** on the pads.
10. Heat until the solder flows and the joints are fully formed.

Reassembly reference

- *Assemble the components of the Assembly PCBA HW3011*, p.101
- *Assemble the Assembly PCBA HW3011*, p.107
- *Assemble the Assembly lower housing*, p.109
- *Assemble the Battery LEVA DBAE-1150A*, p.112
- *Assemble the Battery cover*, p.114

Troubleshooting and tips

How to replace the Side key switch

Purpose

Removing and installing the **Side key switch** is necessary to replace a damaged key and restore proper key function.

Prerequisites

- *Disassemble the Battery cover*, p.52.
- *Disassemble the Battery LEVA DBAE-1150A*, p.55
- *Disassemble the Assembly lower housing*, p.58
- *Disassemble the Assembly PCBA HW3011*, p.62
- *Disassemble the components of the Assembly PCBA HW3011*, p.64

Tools and equipment

Type	Illustration (informative example)	Reference
Hot air rework station		
Fixture		
Tweezers		
Flux		

Spare parts

Qty	Spare part	Information
1	Side key switch	

Safety and precautions

⚠ CAUTION

General advice when using a hot air rework station

- PCB's is basically a heatsink where heat spreads quickly throughout the PCB. Make sure your hot air rework station has sufficient power to quickly melt the solder.
- Use a suitable nozzle and heat-resistant protection to shield nearby components.

See *General precautions*, p.5.

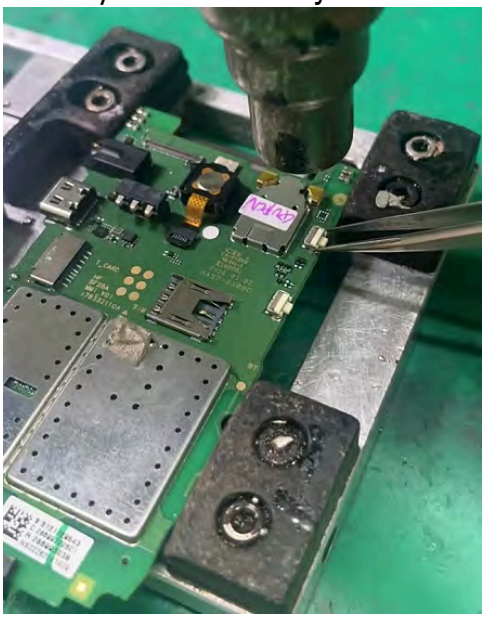
Procedure overview

This procedure describes how to remove the **Side key switch** from the **Assembly PCBA HW3011** using a hot air rework tool. After removal, a new **Side key switch** is aligned with the solder pads and soldered in place.

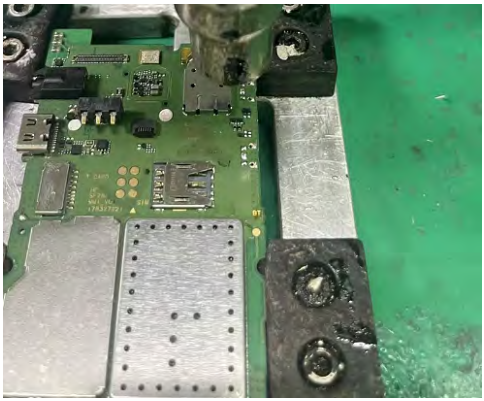
Step-by-step instructions

1. Place the **Assembly PCBA HW3011** in the fixture.
2. Set the **Hot air rework station** to an appropriate temperature.
3. Apply flux around the solder joints on the **Side key switch**.
4. Heat the joints until the solder softens.

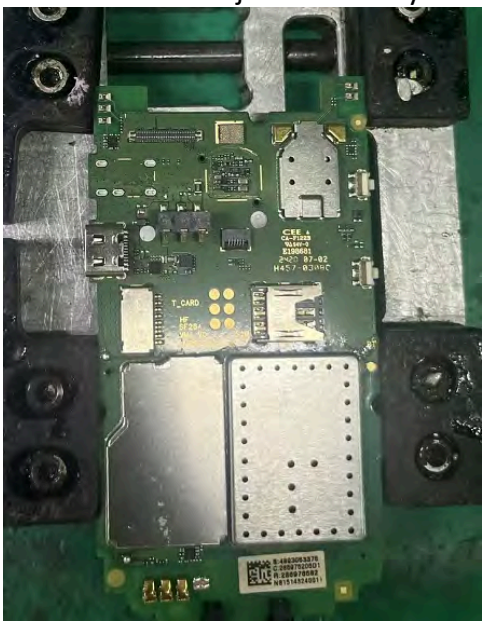
5. Use **Tweezers** to carefully lift the **Side key switch**.



6. Apply a small amount of flux to the pads.
7. Add tin to the pads if needed.
8. Heat the pads until the solder softens.



9. Place the new **Side key switch** on the pads.
10. Heat until the solder flows and the joints are fully formed.



Reassembly reference

- *Assemble the components of the Assembly PCBA HW3011*, p.101
- *Assemble the Assembly PCBA HW3011*, p.107
- *Assemble the Assembly lower housing*, p.109
- *Assemble the Battery LEVA DBAE-1150A*, p.112
- *Assemble the Battery cover*, p.114

Troubleshooting and tips

How to replace the Charging bottom pins

Purpose

Removing and installing the **Charging bottom pins** is necessary to replace damaged pins and restore charging functionality.

Prerequisites

- *Disassemble the Battery cover*, p.52.
- *Disassemble the Battery LEVA DBAE-1150A*, p.55
- *Disassemble the Assembly lower housing*, p.58
- *Disassemble the Assembly PCBA HW3011*, p.62
- *Disassemble the components of the Assembly PCBA HW3011*, p.64

Tools and equipment

Type	Illustration (informative example)	Reference
Hot air rework station		
Fixture		
Tweezers		
Flux		

Spare parts

Qty	Spare part	Information
1	Charging bottom pins	

Safety and precautions

⚠ CAUTION

General advice when using a hot air rework station

- PCB's is basically a heatsink where heat spreads quickly throughout the PCB. Make sure your hot air rework station has sufficient power to quickly melt the solder.
- Use a suitable nozzle and heat-resistant protection to shield nearby components.

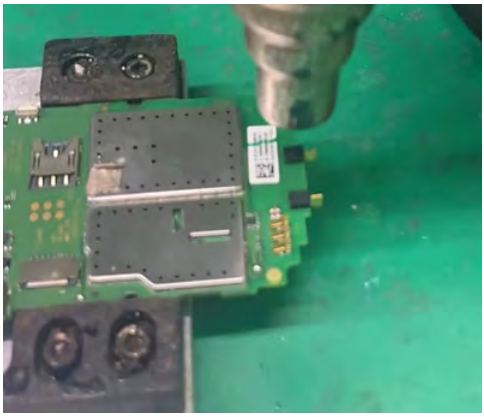
See *General precautions*, p.5.

Procedure overview

This procedure describes how to remove the **Charging bottom pins** from the **Assembly PCBA HW3011** using a hot air rework tool. After removal, the new **Charging bottom pins** are aligned with the solder pads and soldered in place.

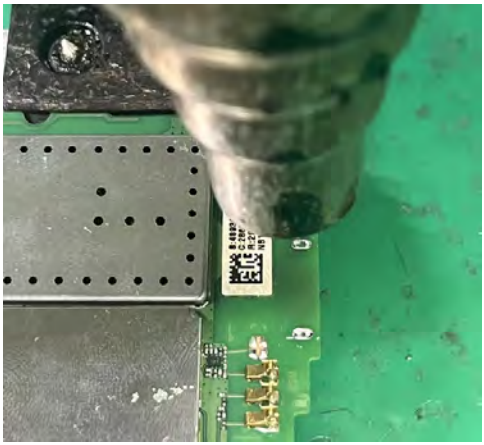
Step-by-step instructions

1. Place the **Assembly PCBA HW3011** in the fixture.
2. Set the **Hot air rework station** to an appropriate temperature.
3. Apply flux around the solder joints on the **Charging bottom pins**.
4. Heat the joints until the solder softens.

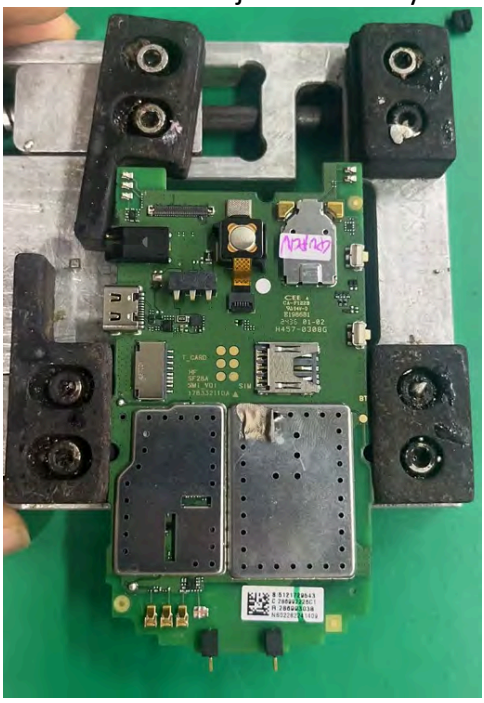


5. Use **Tweezers** to carefully lift the **Charging bottom pins**.

6. Apply a small amount of flux to the pads.
7. Add tin to the pads if needed.
8. Heat the pads until the solder softens.



9. Place the new **Charging bottom pins** on the pads.
10. Heat until the solder flows and the joints are fully formed.



Reassembly reference

- *Assemble the components of the Assembly PCBA HW3011*, p.101
- *Assemble the Assembly PCBA HW3011*, p.107

- *Assemble the Assembly lower housing*, p.109
- *Assemble the Battery LEVA DBAE-1150A*, p.112
- *Assemble the Battery cover*, p.114

Troubleshooting and tips

Disassembly

Disassemble the Battery cover

Purpose

Removing the **Battery cover** is typically the first step in disassembling the phone. It allows access to the **Battery LEVA DBAE-1150A**, **SIM card**, and internal screws that secure the **Assembly lower housing**.

Tools and equipment

Type	Illustration (informative example)	Reference
Plectrum		

Spare parts

Qty	Spare part	Information
1	Battery cover	

Safety and precautions

See *General precautions*, p.5.

- Do not insert the tool too deep to avoid scratching internal components.
- Avoid forcing the cover to prevent breaking plastic clips.

Pre-removal checklist

- Turn off the phone.
- Disconnect from charger or any peripherals.

Procedure overview

Remove the back cover by inserting a **Plectrum** into the side notch and gently releasing the clips along the edges.

Step-by-step instructions

1. Turn the phone so that the back side faces up.
2. Locate the notch on the left side of the phone.

3. Insert a **Plectrum** into the notch and gently slide it along the edges to lift the **Battery cover**.

After-removal checks

- Check that no clips are broken.

Troubleshooting tips

- **The Battery cover is hard to remove:** Make sure you are using the notch on the left side of the phone. Slide the Plectrum gently along the edge.

Related information

Disassemble the Battery LEVA DBAE-1150A

Purpose

Removing the **Battery LEVA DBAE-1150A** is necessary to safely continue with internal repairs. It disconnects the power source and prevents short circuits or electrical damage. The battery also blocks access to components like the **SIM card** and other internal parts.

Tools and equipment

No tools are required for this procedure. Tools used in earlier procedures are listed in their respective chapters.

Spare parts

Qty	Spare part	Information
1	Battery LEVA DBAE-1150A	

Safety and precautions

See *General precautions*, p.5.

- Do not puncture or bend the **Battery LEVA DBAE-1150A**.
- Avoid contact with the battery terminals.

Pre-removal checklist

- Turn off the phone.
- *Disassemble the Battery cover*, p.52.

Procedure overview

Step-by-step instructions

1. Insert your finger into the notch below the **Battery LEVA DBAE-1150A**.

2. Push the **Battery LEVA DBAE-1150A** outward, then lift it out.

Note!
You can now access the SIM card, if one is installed. To remove the SIM card, slide it sideways into the battery compartment.

After-removal checks

- Make sure the battery compartment is clean and undamaged.
- Check the **Battery LEVA DBAE-1150A** for any signs of swelling or damage.

Troubleshooting tips

Related information

Disassemble the Assembly lower housing

Purpose

Removing the **Assembly lower housing** is required to access and replace internal components. It is a key step in most repairs after the battery has been removed.

Tools and equipment

Type	Illustration (informative example)	Reference
Plectrum		
Screwdriver		

Spare parts

Qty	Spare part	Information
1	Assembly lower housing	
7	Screw T1.4*3.5	

Safety and precautions

See *General precautions*, p.5.

- Do not use metal tools to pry open the housing, as they may damage the casing or internal components.
- Avoid applying excessive force that could crack the plastic.

Pre-removal checklist

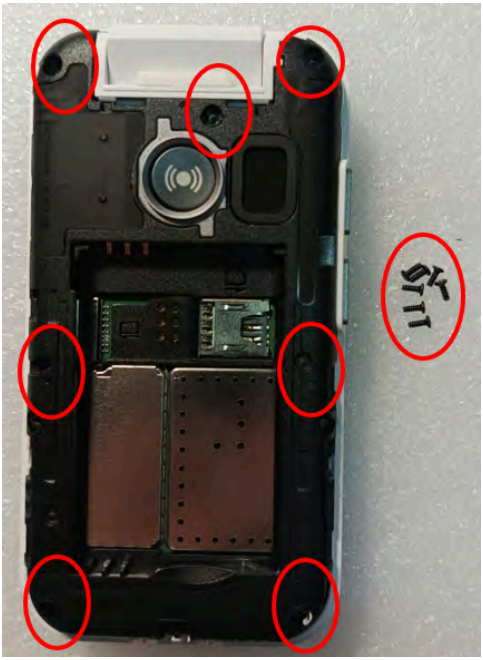
- Turn off the phone.
- *Disassemble the Battery cover*, p.52.
- *Disassemble the Battery LEVA DBAE-1150A*, p.55.

Procedure overview

The **Assembly lower housing** is held in place by seven screws and plastic clips. The screws must be removed first, the housing can then be gently pried open using a **Plectrum**.

Step-by-step instructions

1. Remove the seven (7) **Screw T1.4*3.5**.



2. Insert the **Plectrum** at the bottom of the device and gently pry open the **Assembly lower housing**. Start at the bottom, continue along the sides, and work your way around.

3. Remove the **Assembly lower housing**.

After-removal checks

- Inspect the **Assembly lower housing** for cracks or damage.

Troubleshooting tips

- **The screws are hard to remove:** Use the correct screwdriver size and apply downward pressure while turning.

Related information

Disassemble the Assembly PCBA HW3011

Purpose

Removing the **Assembly PCBA HW3011** is necessary to complete the disassembly of the device or access internal components for repair or replacement.

Tools and equipment

Type	Illustration (informative example)	Reference
Tweezers		

Spare parts

Qty	Spare part	Information
1	Assembly PCBA HW3011	

Safety and precautions

See *General precautions*, p.5.

- Avoid touching components directly.

Pre-removal checklist

- *Disassemble the Battery cover*, p.52
- *Disassemble the Battery LEVA DBAE-1150A*, p.55
- *Disassemble the Assembly lower housing*, p.58

Procedure overview

In this step, you disconnect the **FPC LINK SF28A GF28A1 6L HOLE V01A**, the **Assembly PCBA HW3011** can then be lifted using **Tweezers**.

Step-by-step instructions

1. Disconnect the **FPC LINK SF28A GF28A1 6L HOLE V01A** using **Tweezers**.

2. Grip the edge of the **Assembly PCBA HW3011** and lift it gently.

After-removal checks

Troubleshooting tips

Related information

Disassemble the components of the Assembly PCBA HW3011

Purpose

Removing these components is necessary when replacing individual parts connected to the **Assembly PCBA HW3011**. Disassembling them allows for targeted replacement or further breakdown of the device.

Tools and equipment

Type	Illustration (informative example)	Reference
Tweezers		

Spare parts

Qty	Spare part	Information
1	SOS FPC	
1	SOS key frame	
1	Sealing rubber USB jack	
1	Sealing rubber cradle connectors	
1	Dome foil	
1	Assembly PCBA HW3011	

Safety and precautions

See *General precautions*, p.5.

- Avoid pulling on cables or components with force.
- Do not touch connector pins or contact surfaces.

Pre-removal checklist

- *Disassemble the Battery cover*, p.52
- *Disassemble the Battery LEVA DBAE-1150A*, p.55
- *Disassemble the Assembly lower housing*, p.58
- *Disassemble the Assembly PCBA HW3011*, p.62

Procedure overview

This procedure describes how to remove components mounted on the **Assembly PCBA HW3011**, including the **SOS FPC**, **Dome foil** and rubber parts. All components are removed using tweezers.

Step-by-step instructions

Remove the SOS FPC and SOS key frame

1. Open the ZIF connector that holds the flex **SOS FPC** cable in place. Use **Tweezers**.

2. Disconnect the flex cable.
3. Remove the **SOS FPC** and the **SOS key frame**.


doro
SIM
Doro AB, Jörgen Kocksgatan 1B,
SE 211 20 MALMÖ, SWEDEN
Doro UK, Suite 025, Thames Valley Park,
400 Thames Valley Park Drive,
Earley, Reading, RG6 1PT, UK
Model : DFC – 0520
IMEI: 351738480006527
S/N: MWC00506J00989
3011/ES2
www.doro.com
Made in China
T_CARD
BT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SIM
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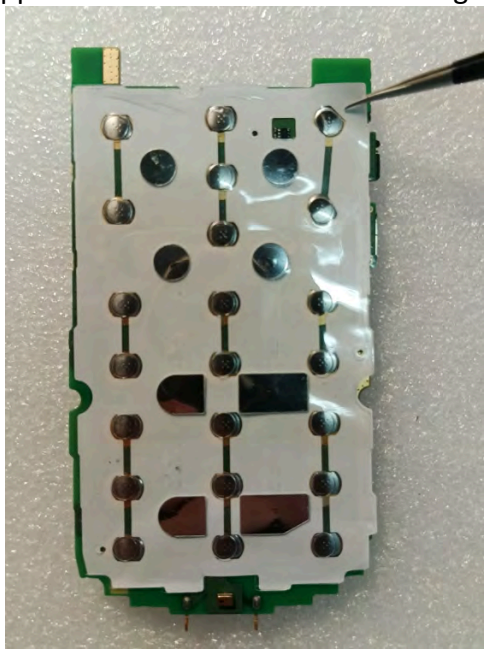
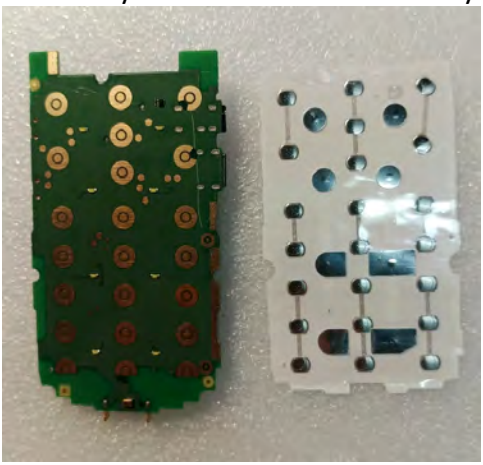
Earley, Reading, RG6 1PT, UK
Model : DFC – 0520
IMEI: 351738480006527
S/N: MWC00506J00989
3011/ES2
www.doro.com
Made in China
T_CARD
BT

Remove the Dome foil

1. Grip one of the upper corners of the **Dome foil** using **Tweezers**.



2. Pull the **Dome foil** carefully downwards until it is fully removed.



Remove the rubber parts

1. Grip the **Sealing rubber USB jack** and remove it. Use **Tweezers**.

2. Grip the **Sealing rubber cradle connectors** and remove them.

After-removal checks

- Check that no adhesive residue remains on the **Assembly PCBA HW3011**.
- Check that the ZIF connectors is undamaged.

Troubleshooting tips

- **The flex cable does not come out easily:** Make sure the ZIF connector is fully open.
- **The connector is hard to open:** Use a finer-tipped Tweezers and apply gentle upward pressure.

Related information

Disassemble the top half of the device

Purpose

This procedure describes how to disassemble the top half of the device to remove the **SUB PCB** and the **Camera**.

Tools and equipment

Type	Illustration (informative example)	Reference
Tweezers		
Screwdriver		
Plectrum		

Spare parts

Qty	Spare part	Information
1	C cabinet	
4	Screw T1.4*3.5	
1	Screw rubber cover	
1	Camera	
1	SUB PCB	
1	Assembly clamshell	

Safety and precautions

See *General precautions*, p.5.

⚠ CAUTION

Separating the top and bottom halves is difficult, do not do it unless necessary. This task is not required for most repairs, even if pictures display the cabinets as separated. Separation is only needed to replace:

- The **Hinge φ5.8**
- The **Assembly clamshell**
- The **Main FPC**
- The **C cabinet**

- Avoid excessive force when separating the housing to prevent deformation.

Pre-removal checklist

- *Disassemble the Battery cover*, p.52
- *Disassemble the Battery LEVA DBAE-1150A*, p.55
- *Disassemble the Assembly lower housing*, p.58
- *Disassemble the Assembly PCBA HW3011*, p.62

Procedure overview

The procedure covers the disassembly of the **Assembly clamshell** to access and remove the **SUB PCB** and **Camera**. The steps involve separating the housing, removing screws and connectors, and detaching internal components.

Step-by-step instructions

Separating the Assembly clamshell from the C cabinet

1. Use **Tweezers** to push the flap hinge into the **Assembly clamshell**.

2. Separate the **Assembly clamshell** and the **C cabinet**.

Remove the Assembly clamshell up

Note!
You do not need to remove the **Main LCD glass window**. If the glass is damaged, replace the **Assembly clamshell up** instead.

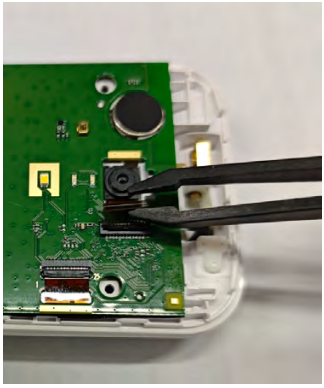
1. Remove the four (4) **Screw rubber cover** using **Tweezers**.
2. Remove the four (4) **Screw T1.4*3.5** with a **Screwdriver**.

3. Carefully separate the **Assembly clamshell up** from the **Assembly clamshell** along the edge with a **Plectrum**.

Remove the Camera

1. Open the ZIF connector that holds the camera flex cable in place. Use **Tweezers**.

2. Disconnect the flex cable.



3. Lift the **Camera** using **Tweezers**.

Remove the SUB PCB

1. Separate the **SUB PCB** from the **Assembly clamshell**.

2. Disconnect the **FPC LINK SF28A GF28A1 6L HOLE V01A** using **Tweezers**.

After-removal checks

Troubleshooting tips

- **The connector is hard to open:** Use a finer-tipped **Tweezers** and apply gentle upward pressure.
- **The flex cable does not come out easily:** Make sure the ZIF connector is fully open.

Related information

Disassemble the Main LCD 2.8

Note!
If the outer LCD glass is cracked or broken, the **Assembly clamshell** must be replaced.

Purpose

Removing the **Main LCD 2.8** is necessary when replacing a broken or malfunctioning screen, or when disassembling the phone completely.

Tools and equipment

Type	Illustration (informative example)	Reference
Tweezers		
Plectrum		

Spare parts

Qty	Spare part	Information
1	Main LCD 2.8	

Safety and precautions

See *General precautions*, p.5.

Do not separate the top and bottom halves unless necessary. See *Hinge separation precaution*, p.8.

- Avoid touching the display surface to prevent smudges or damage.

Pre-removal checklist

- *Disassemble the Battery cover*, p.52
- *Disassemble the Battery LEVA DBAE-1150A*, p.55
- *Disassemble the Assembly lower housing*, p.58
- *Disassemble the Assembly PCBA HW3011*, p.62
- *Disassemble the top half of the device*, p.70

Procedure overview

In this step, you disconnect the LCD flex cable from the **SUB PCB** and remove the **Main LCD 2.8** itself.

Step-by-step instructions

1. Open and the ZIF connector that holds the LCD flex cable in place. Use **Tweezers**.

2. Disconnect the flex cable and feed it through the opening to the other side.
3. Separate the **Main LCD 2.8** from the **SUB PCB** using a **Plectrum**.

After-removal checks

Troubleshooting tips

- **The flex cable does not come out easily:** Make sure the ZIF connector is fully open.
- **The cable is hard to grip:** Use angled Tweezers for better control.

Related information

Disassemble the Receiver and Motor

Purpose

Removing the **Receiver** and **Motor** is necessary when replacing defective components or performing a full disassembly of the phone.

Tools and equipment

Type	Illustration (informative example)	Reference
Tweezers		

Spare parts

Qty	Spare part	Information
1	Receiver	
1	Motor	
1	Main FPC	

Safety and precautions

See *General precautions*, p.5.

Do not separate the top and bottom halves unless necessary. See *Hinge separation precaution*, p.8.

- Avoid applying excessive force when prying.

Pre-removal checklist

- *Disassemble the Battery cover*, p.52
- *Disassemble the Battery LEVA DBAE-1150A*, p.55
- *Disassemble the top half of the device*, p.70

Procedure overview

In this step, you remove the **Receiver**, **Motor** and **Main FPC** from the **Assembly clamshell up**. The components can be lifted out using **Tweezers**.

Step-by-step instructions

1. Remove the **Receiver** from the **Assembly clamshell up**, use **Tweezers**.

2. Remove the **Motor** from the **Assembly clamshell up**.

3. Remove the **Main FPC** from the **Assembly clamshell up**.

After-removal checks

Troubleshooting tips

- **The component feels stuck:** Rock it gently from side to side before lifting.

Related information

Disassemble the Keypad and Speaker

Purpose

Removing the **Keypad** and **Speaker** is necessary to complete the disassembly of the device or replace damaged components.

Tools and equipment

Type	Illustration (informative example)	Reference
Tweezers		

Spare parts

Qty	Spare part	Information
1	Speaker	
1	Keypad	

Safety and precautions

See *General precautions*, p.5.

Do not separate the top and bottom halves unless necessary. See *Hinge separation precaution*, p.8.

Pre-removal checklist

- *Disassemble the Battery cover*, p.52
- *Disassemble the Battery LEVA DBAE-1150A*, p.55
- *Disassemble the Assembly lower housing*, p.58
- *Disassemble the Assembly PCBA HW3011*, p.62

Procedure overview

This procedure describes how to remove the **Keypad** and the **Speaker**. The **Keypad** is removed by lifting it out of the **C cabinet**, and the **Speaker** is lifted from its slot in the **Assembly lower housing** using **Tweezers**.

Step-by-step instructions

1. Remove the **Keypad** from the **C cabinet**.

2. Remove the **Speaker** from the **Assembly lower housing** using **Tweezers**.

After-removal checks

Troubleshooting tips

Related information

Assembly

Assemble the Keypad and Speaker

Purpose

Describes how to correctly reinstall the **Keypad** and **Speaker** after internal repairs or inspections.

Tools and equipment

Type	Illustration (informative example)	Reference
Tweezers		

Spare parts

Qty	Spare part	Information
1	Keypad	
1	Speaker	

Safety and precautions

See *General precautions*, p.5.

Preassemble checklist

Procedure overview

In this step, you reinstall the **Keypad** and the **Speaker**. The **Keypad** is placed into position in the **C cabinet**, and the **Speaker** is inserted into its slot in the **Assembly lower housing** and pressed gently into place.

Step-by-step instructions

1. Place the **Speaker** into its slot in the **Assembly lower housing** using **Tweezers**.

2. Place the **Keypad** into the **C cabinet**.

Post-assembly checks

- Check that the **Keypad** is flat and aligned.

Troubleshooting and tips

- **The Speaker does not stay in place:** Ensure the housing is clean and press gently until it stays in place.

Related information

Assemble the Receiver and Motor

Purpose

Describes how to correctly reinstall the **Receiver** and **Motor** after internal repairs or inspections.

Tools and equipment

Type	Illustration (informative example)	Reference
Tweezers		

Spare parts

Qty	Spare part	Information
1	Motor	
1	Receiver	

Safety and precautions

See *General precautions*, p.5.

Preassemble checklist

Procedure overview

In this step, you reinstall the **Receiver** and **Motor** to the **Assembly clamshell up**. They are put into their slots using **Tweezers**.

Step-by-step instructions

1. Place the **Receiver** into its slot in the **Assembly clamshell up**, use **Tweezers**.

2. Place the **Motor** into its slot in the **Assembly clamshell up**.

3. Install the **Main FPC**.

Post-assembly checks

Troubleshooting and tips

- **The component does not stay in place:** Ensure the housing is clean and press gently until it stays in place.

Related information

Assemble the Main LCD 2.8

Purpose

Describes how to correctly reinstall the **Main LCD 2.8** after internal repairs or inspections.

Tools and equipment

Type	Illustration (informative example)	Reference
Tweezers		

Spare parts

Qty	Spare part	Information
1	Main LCD 2.8	

Safety and precautions

See *General precautions*, p.5.

- Avoid touching the display surface to prevent smudges or damage.

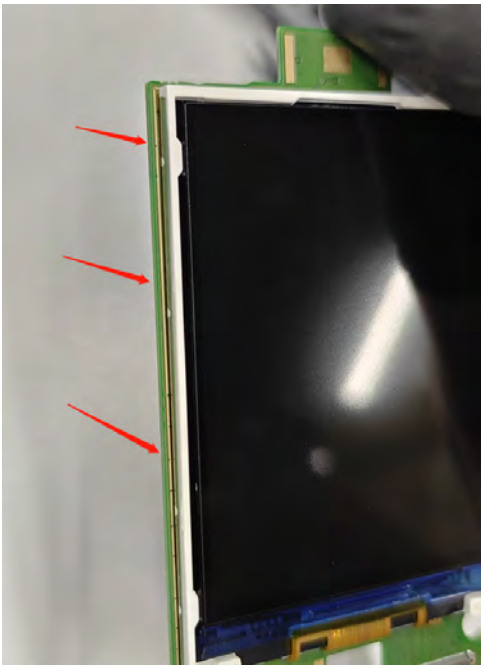
Preassemble checklist

Procedure overview

In this step, you place the **Main LCD 2.8** back onto the **SUB PCB** and re-connect the flex cable to the ZIF connector.

Step-by-step instructions

1. Place the **Main LCD 2.8** on the **SUB PCB**. Make sure to align the screen with the locator lines.



2. Feed the flex cable through the opening to the other side of the **SUB PCB** and connect it to the ZIF connector. Align the white line on the cable with the edge of the connector to ensure correct insertion depth. Use **Tweezers**.

3. Close the ZIF-connector.

Post-assembly checks

Check that the flex cable is fully inserted and the ZIF connector is closed.

- Check that the **Main LCD 2.8** is aligned and seated properly.
- Check that the flex cable is fully inserted and the ZIF connector is closed.

Troubleshooting and tips

- **You see smudges or dust**: Gently clean the **Main LCD 2.8** surface before continuing.
- **The cable does not go in fully:** Check that the ZIF connector is fully open before inserting it.

Related information

Assemble the top half of the device

Purpose

Describes how to correctly reassemble the top half of the device after internal repairs or inspections.

Tools and equipment

Type	Illustration (informative example)	Reference
Tweezers		
Screwdriver		

Spare parts

Qty	Spare part	Information
1	Assembly clamshell	
1	C cabinet	
4	Screw T1.4*3.5	
1	Screw rubber cover	
1	Camera	
1	SUB PCB	

Safety and precautions

See *General precautions*, p.5.

Preassemble checklist

Procedure overview

This procedure describes how to install the **SUB PCB** and the **Camera** to the **Assembly clamshell**. Then, install the **C cabinet** to the **Assembly clamshell** and secure it with screws. Finally, assemble the top half of the device with the rest of the phone.

Step-by-step instructions

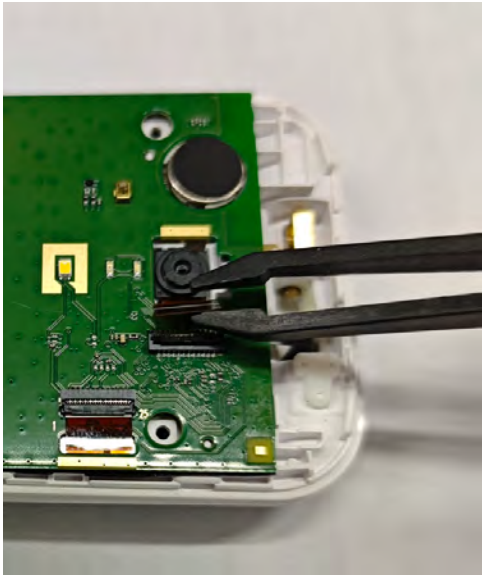
Install the SUB PCB

1. Connect the **FPC LINK SF28A GF28A1 6L HOLE V01A**.

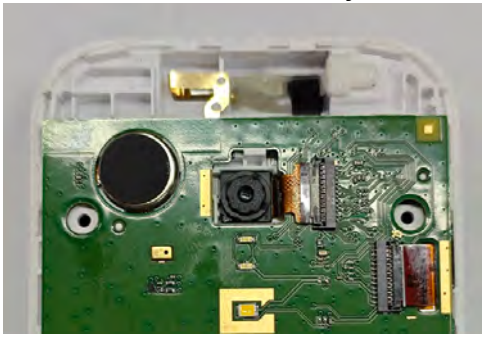
2. Place the **SUB PCB** into the **Assembly clamshell**, use **Tweezers**.

Install the Camera

1. Insert the camera flex cable into the ZIF connector. Align the white line on the cable with the edge of the connector to ensure correct insertion depth. Use **Tweezers**.



2. Close the ZIF-connector.
3. Place the **Camera** in its slot in the **Assembly clamshell**, use **Tweezers**.



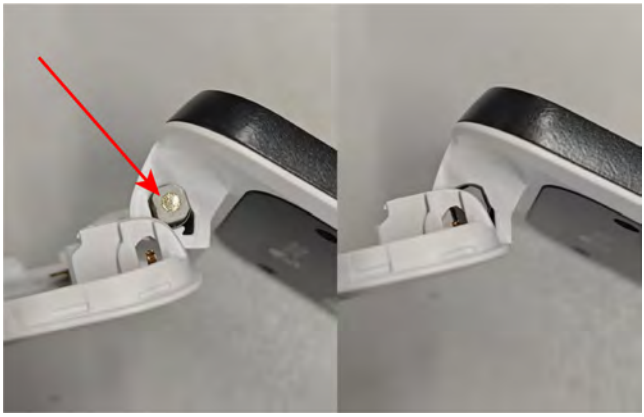
Install the Assembly clamshell up

1. Put the **Assembly clamshell up** in place.
2. Insert and tighten the four (4) **Screw T1.4*3.5** with a **Screwdriver**.

3. Press the four (4) **Screw rubber cover** into place.

Reconnect the Assembly clamshell to the C cabinet

1. Install the **Assembly clamshell** into the **C cabinet**. Use **Tweezers** to push the flap hinge into the designated slot.



Post-assembly checks

- Confirm that the flex cable is inserted to the correct depth and the ZIF connector is closed.

- Confirm that the device closes properly without gaps or resistance.
- Check that all four screws are tightened and the screw covers are fully pressed into place.

Troubleshooting and tips

- **Camera does not sit flat**: Ensure no debris is under the module and that it is correctly positioned.
- **Screw covers pop out**: Press straight down with **Tweezers** until flush.

Related information

Assemble the components of the Assembly PCBA HW3011

Purpose

Describes how to correctly reinstall the components of the **Assembly PCBA HW3011** after internal repairs or inspections.

Tools and equipment

Type	Illustration (informative example)	Reference
Tweezers		

Spare parts

Qty	Spare part	Information
1	SOS FPC	
1	SOS key frame	
1	Sealing rubber USB jack	
1	Sealing rubber cradle connectors	
1	Dome foil	
1	Assembly PCBA HW3011	

Safety and precautions

See *General precautions*, p.5.

- Avoid pulling on cables or components with force.
- Do not touch connector pins or contact surfaces.

Preassemble checklist

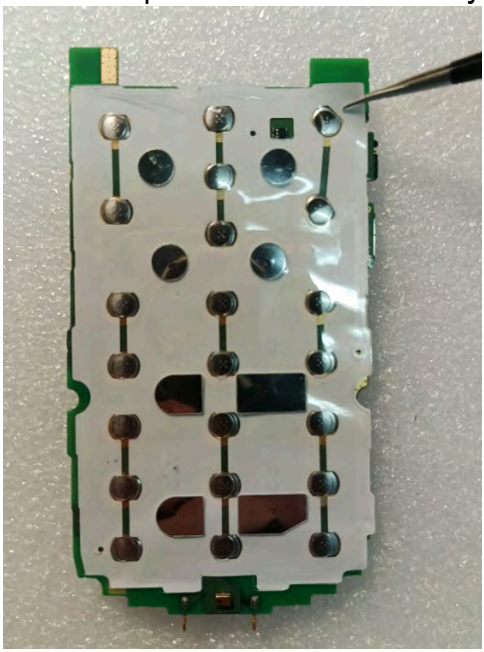
Procedure overview

In this step, the **Dome foil** is installed by pressing it into place on the **Assembly PCBA HW3011**. The **SOS FPC** is positioned correctly and connected via the flex cable. Finally, the rubber parts are placed in their designated positions.

Step-by-step instructions

Install the Dome foil

1. Align the **Dome foil** with its position on the **Assembly PCBA HW3011**.



2. Press the **Dome foil** down, starting from one side and working across to ensure full adhesion.

Install the SOS key frame and SOS FPC

1. Place the **SOS key frame** and **SOS FPC** on the **Assembly PCBA HW3011** using **Tweezers**.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2. Insert the flex cable into the ZIF connector. Align the white line on the cable with the edge of the connector to ensure correct insertion depth.
3. Close the ZIF connector.

Install the rubber parts

1. Place the **Sealing rubber USB jack** and the **Sealing rubber cradle connectors** onto their positions on the **Assembly PCBA HW3011** using **Tweezers**.


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Earley, Reading, RG6 1PT, UK.
Model : DFC – 0520
IMEI: 351738480006527
S/N: MWC00506J00989
3011/ES2
Made in China

Post-assembly checks

- Confirm that the **Dome foil** is fully adhered with no lifted edges.
- Confirm that the flex cable is fully inserted and the ZIF connector is closed.

Troubleshooting and tips

- **The flex cable does not stay in place:** Ensure the ZIF connector is fully open before inserting it.
- **The rubber parts do not sit flat:** Check for dirt or misalignment and re-position carefully.

Related information

Assemble the Assembly PCBA HW3011

Purpose

Describes how to correctly reinstall the **Assembly PCBA HW3011** after internal repairs or inspections.

Tools and equipment

Type	Illustration (informative example)	Reference
Tweezers		

Spare parts

Qty	Spare part	Information
1	Assembly PCBA HW3011	

Safety and precautions

See *General precautions*, p.5.

- Avoid touching component surfaces or contact points.

Preassemble checklist

Procedure overview

In this step, you reconnect the **FPC LINK SF28A GF28A1 6L HOLE V01A** to the **Assembly PCBA HW3011** and place it back into the **C cabinet**.

Step-by-step instructions

1. Place the **Assembly PCBA HW3011** in the **C cabinet** .

2. Connect the **FPC LINK SF28A GF28A1 6L HOLE V01A** to the **Assembly PCBA HW3011** using **Tweezers**.

Post-assembly checks

- Check that the **Assembly PCBA HW3011** is flat and aligned with the housing.

Troubleshooting and tips

- **The Assembly PCBA HW3011 does not sit flat**: Check for debris or misaligned parts beneath it.
- **The Assembly PCBA HW3011 is difficult to position:** Tilt it slightly and lower it carefully into place.

Related information

Assemble the Assembly lower housing

Purpose

Describes how to correctly reinstall the **Assembly lower housing** after internal repairs or inspections.

Tools and equipment

Type	Illustration (informative example)	Reference
Screwdriver		

Spare parts

Qty	Spare part	Information
1	Assembly lower housing	
7	Screw T1.4*3.5	

Safety and precautions

See *General precautions*, p.5.

- Avoid pinching any parts when pressing **Assembly lower housing** into place.
- Use only gentle, even pressure to avoid damaging clips or plastic edges.

Preassemble checklist

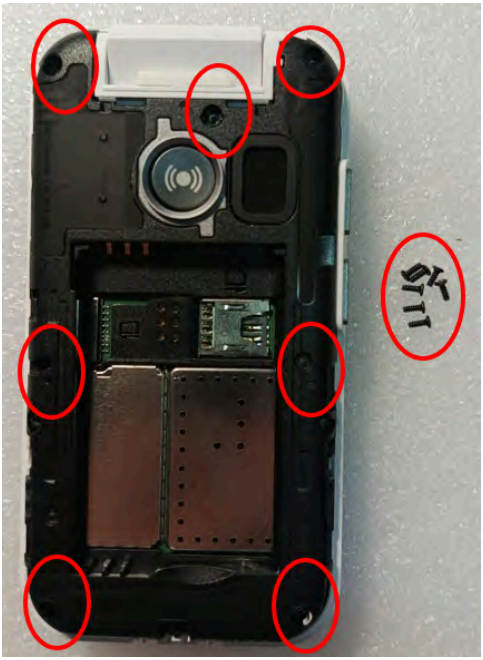
Procedure overview

In this step, you attach the **Assembly lower housing** back onto the phone. It is secured with screws and plastic clips.

Step-by-step instructions

1. Align the **Assembly lower housing** with the **C cabinet**.
2. Press it gently into place, starting from one side and working around the edges until all clips are engaged.

3. Insert and tighten the seven (7) screws to secure the **Assembly lower housing**.



Post-assembly checks

- Check that all screws are installed.
- Check that the housing is fully closed and no parts are pinched.

Troubleshooting and tips

- **The Assembly lower housing does not close properly:** Check for misaligned components or cables obstructing the fit.
- **A clip does not snap into place:** Apply gentle pressure closer to the clip and check alignment.

Related information

Assemble the Battery LEVA DBAE-1150A

Purpose

Describes how to correctly reinstall the **Battery LEVA DBAE-1150A** after internal repairs or inspections.

Tools and equipment

No tools are required for this procedure. Tools used in earlier procedures are listed in their respective chapters.

Spare parts

Qty	Spare part	Information
1	Battery LEVA DBAE-1150A	

Safety and precautions

See *General precautions*, p.5.

Preassemble checklist

- Check that the **Battery LEVA DBAE-1150A** is clean and undamaged before installation.
- Align the **Battery LEVA DBAE-1150A** correctly to avoid damaging the contacts.

Procedure overview

In this step, you insert the **Battery LEVA DBAE-1150A** back into the phone. The **Battery LEVA DBAE-1150A** slides into position and clicks into place without tools.

Step-by-step instructions

Note!

If you want to install a SIM card, slide the SIM card into its slot before reattaching the **Battery LEVA DBAE-1150A**.

1. Align the **Battery LEVA DBAE-1150A** with its compartment, with the contacts facing inward.
2. Slide the **Battery LEVA DBAE-1150A** into place.

Post-assembly checks

Troubleshooting and tips

- The **Battery LEVA DBAE-1150A** does not fit: Check that it is oriented correctly.

Related information

Assemble the Battery cover

Purpose

Describes how to correctly reinstall the **Battery cover** after internal repairs or inspections.

Tools and equipment

No tools are required for this procedure. Tools used in earlier procedures are listed in their respective chapters.

Spare parts

Qty	Spare part	Information
1	Battery cover	

Safety and precautions

See *General precautions*, p.5.

- Do not use excessive force when pressing the **Battery cover** into place.

Preassemble checklist

Procedure overview

In this step, you reattach the **Battery cover** cover by aligning it with the back of the phone and pressing along the edges until all clips snap into place.

Step-by-step instructions

1. Align the **Battery cover** with the back of the phone.
2. Press along the edges until all clips click into place.

Post-assembly checks

Troubleshooting and tips

- **The Battery cover does not snap into place:** Check for obstructions or misalignment.
- **One side will not close:** Press gently and evenly around the edge until it locks.

Related information

Troubleshooting

> ⚠ **CAUTION**
>
> This section is for technicians and repair professionals only.

You can retrieve diagnostic information by running a failure analysis on the device. This process identifies faults and error codes that help determine the appropriate repair actions.

To run the failure analysis tool:

1. Press ***#15963#** .
2. Select **Item test** to test a specific function or component, then follow the on-screen instructions.

Press **Return** to exit the tool.

Reset software

For the full manual with all functions and features, see *Appendix*, p.116.

Appendix

The Leva L20/L21 user manual covers phone functions, settings, and instructions on how to update the software and firmware. The manual is available at: https://www.doro.com/

Spare parts list, electronic board diagrams (spare parts location), wiring and connection diagrams, are available online at: https://www.doro.com/repair/

English

Version 1.1

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