



MOTOROLA

Level 1 and 2 Service Manual

6809513A83-O

By <http://motorolarazr.forumcommunity.net>

MOTORAZR² v9



WCDMA 850/1900, WCDMA 2100
GSM 850/900/1800/1900 MHz EDGE, GPRS

MOTOROLA and the Stylized M Logo are registered in the US Patent & Trademark Office.
All other product or service names are the property of their respective owners.

The Bluetooth trademarks are owned by their proprietor and used by Motorola, Inc. under license.
© Motorola, Inc. 2007.
All rights reserved.

Mobile Devices Business,
Sawgrass International Concourse
789 International Parkway
Room S2C
Sunrise, FL 33325-6220

Contents

Introduction	2
Product Identification	2
Product Names	2
Regulatory Agency Compliance	2
Computer Program Copyrights	3
About this Service Manual	3
Warranty Service Policy	4
Parts Replacement	4
Specifications	6
Product Overview	9
Features	9
General Operation	10
Controls, Indicators, and Input / Output (I/O) Connections	10
Battery Function	13
Operation	13
Tools and Test Equipment	15
Disassembly	16
Removing and Replacing the Battery Cover and Battery	16
Removing and Replacing the Subscriber Identity Module (SIM)	18
Removing and Replacing the Rear Housing	19
Removing and Replacing the Transceiver Board Assembly	23
Removing and Replacing the Antenna	26
Removing and Replacing the Keypad	28
Removing and Replacing the Flip Assembly	35
Subscriber Identity Module (SIM) and Identification	71
SIM Card	71
Personality Transfer	71
Identification	71
Troubleshooting	73
Troubleshooting Chart	73
Programming: Software Upgrade and Flexing	75
Part Numbers	75
Exploded View Diagram	76
Exploded View Parts List	77
Accessories	80

Introduction

Motorola® Inc. maintains a worldwide organization that is dedicated to provide responsive, full-service customer support. Motorola products are serviced by an international network of company-operated product-care centers as well as authorized independent service firms.

Available on a contract basis, Motorola Inc. offers comprehensive maintenance and installation programs that enable customers to meet requirements for reliable, continuous communications.

To learn more about the wide range of Motorola service programs, contact your local Motorola products representative or the nearest Customer Service Manager.

Product Identification

Motorola products are identified by the model number on the housing. Use the entire model number when inquiring about the product. Numbers are also assigned to chassis and kits. Use these numbers when requesting information or ordering replacement parts.

Product Names

Product names are listed on the front cover. Product names are subject to change without notice. Some product names, as well as some frequency bands, are available only in certain markets.

Regulatory Agency Compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

- This device may not cause any harmful interference
- This device must accept interference received, including interference that may cause undesired operation

This class B device also complies with all requirements of the Canadian Interference-Causing Equipment Regulations (ICES-003).

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Computer Program Copyrights

The Motorola products described in this manual may include Motorola computer programs stored in semiconductor memories or other media that are copyrighted with all rights reserved worldwide to Motorola. Laws in the United States and other countries preserve for Motorola, Inc. certain exclusive rights to the copyrighted computer programs, including the exclusive right to copy, reproduce, modify, decompile, disassemble, and reverse-engineer the Motorola computer programs in any manner or form without Motorola's prior written consent. Furthermore, the purchase of Motorola products shall not be deemed to grant either directly or by implication, estoppel, or otherwise, any license or rights under the copyrights, patents, or patent applications of Motorola, except for a nonexclusive license to use the Motorola product and the Motorola computer programs with the Motorola product.

About this Service Manual

Using this service manual and the suggestions contained in it assures proper installation, operation, and maintenance. Refer questions about this manual to the nearest Customer Service Manager.

Audience

This service manual aids service personnel in testing and repairing MOTORAZR² V9 telephones. Service personnel should be familiar with electronic assembly, testing, and troubleshooting methods, and with the operation and use of associated test equipment.

Use of this manual assures proper installation, operation, and maintenance of Motorola products and equipment. It contains all service information required for the equipment described and is current as of the printing date.

Scope

This manual provides basic information relating to V9 telephones, and provides procedures and processes for repairing the units at Level 1 and 2 service centers including:

- Unit swap out
- Repairing of mechanical faults
- Basic modular troubleshooting
- Testing and verification of unit functionality
- Initiate warranty claims and send faulty modules to Level 3 or 4 repair centers

Conventions

The following special characters and typefaces are used in this manual to emphasize certain types of information.



Note: Emphasizes additional information pertinent to the subject matter.




Caution: Emphasizes information about actions that may result in equipment damage.



Warning: Emphasizes information about actions that may result in personal injury.



Keys to be pressed are represented graphically. For example, instead of “Press the End key”, you will see “Press ”.

Warranty Service Policy

The product is sold with the standard 12-month warranty terms and conditions. Accidental damage, misuse, and extended warranties offered by retailers are not supported under warranty. Non warranty repairs are available at agreed fixed repair prices.

Out-of-Box Failure Policy

The standard out of box failure criteria applies. Customer units that fail very early on after the date of sale, are to be returned to Manufacturing for root cause analysis, to guard against epidemic criteria. Manufacturing will bear the costs of early life failure.

Product Support

Customer's original units will be repaired but not refurbished as standard. Appointed Motorola Service Hubs will perform warranty and non-warranty field service for level 2 (assemblies) and level 3 (limited PCB component). The Motorola High Technology Centers will perform level 4 (full component) repairs.

Customer Support

Customer support is available through dedicated Call Centers and in-country help desks. Product Service training is available through the local Motorola Support Center.

Parts Replacement

When ordering replacement parts or equipment, include the Motorola part number and description used in the service manual.

When the Motorola part number of a component is not known, use the product model number or other related major assembly along with a description of the related

major assembly and of the component in question.

Replacement Parts Service Division (RPSD)

Order replacement parts, test equipment, and manuals from RPSD.

U.S.A.

Phone: 800-422-4210

FAX: 800-622-6210

Website: <http://businessonline.motorola.com>

Outside U.S.A.

Phone: 847-538-8023

FAX: 847-576-3023

EMEA

Phone: +49 461 803 1404

Website: <http://emeaonline.motorola.com>

Asia

Phone: +65 648 62995

Website: <http://asiaonline.motorola.com>

Specifications

Table 1. Specifications

Function	Specification
Frequency Range EGSM	TX: 880 - 915 MHz Frequency (MHz) = $880 + (0.2 \times n)$ where: $0 \leq n \leq 124$ Frequency (MHz) = $880 + (0.2 \times (n - 1024))$ where: $975 \leq n \leq 1023$ RX: 925 - 960 MHz Frequency (MHz) = $925 + (0.2 \times n)$ where: $0 \leq n \leq 124$ Frequency (MHz) = $925 + (0.2 \times (n - 1024))$ where: $955 \leq n \leq 1023$
Frequency Range DCS	TX: 1710 to 1785 MHz Frequency (MHz) = $1710.2 + (0.2 \times (n - 512))$ where: $512 \leq n \leq 885$ RX: 1805.2 to 1879.8 MHz Frequency (MHz) = $1805.2 + (0.2 \times (n - 512))$ where: $512 \leq n \leq 885$
Frequency Range PCS	TX: 1850 to 1910 MHz Frequency (MHz) = $1850.2 + (0.2 \times (n - 512))$ where: $512 \leq n \leq 810$ RX: 1930 to 1990 MHz Frequency (MHz) = $1930.2 + (0.2 \times (n - 512))$ where: $512 \leq n \leq 810$
Frequency Range WCDMA 2100	TX: 1920 to 1980 MHz Frequency (MHz) = $\text{UARFCN}^1 \div 5$, where: $9612 \leq \text{UARFCN}^1 \leq 9888$ RX: 2110 to 2170 MHz Frequency (MHz) = $\text{UARFCN}^1 \div 5$, where: $10562 \leq \text{UARFCN}^1 \leq 10838$
GSM 850 (North America)	TX: 824 - 849 MHz Frequency (MHz) = $824.2 + (0.2 \times (n - 128))$ where: $128 < n < 251$ RX: 869 - 894 MHz Frequency (MHz) = $869.2 + (0.2 \times (n - 128))$ where: $128 < n < 251$
WCDMA 850 (North America)	TX: 824 to 849 MHz Frequency (MHz) = $\text{UARFCN} \div 5$, where: $4132 < \text{UARFCN} < 4233$ Frequency (MHz) = $\text{UARFCN} \div 5 + 670.1$, where: $\text{UARFCN} = 782, 787, 807, 812, 837, 862$ RX: 869 to 894 MHz Frequency (MHz) = $\text{UARFCN} \div 5$, where: $4357 < \text{UARFCN} < 4458$ Frequency (MHz) = $\text{UARFCN} \div 5 + 670.1$, where: $\text{UARFCN} = 1007, 1012, 1032, 1037, 1062, 1087$
WCDMA 1900 (North America)	TX: 1850 to 1910 MHz Frequency (MHz) = $\text{UARFCN} \div 5$, where: $9262 < \text{UARFCN} < 9538$ Frequency (MHz) = $\text{UARFCN} \div 5 + 1850.1$, where: $\text{UARFCN} = 12, 37, 62, 87, 112, 137, 162, 187, 212, 237, 262, 287$ RX: 1930 to 1990 MHz Frequency (MHz) = $\text{UARFCN} \div 5$, where: $9662 < \text{UARFCN} < 9938$ Frequency (MHz) = $\text{UARFCN} \div 5 + 1850.1$, where: $\text{UARFCN} = 412, 437, 462, 487, 512, 537, 562, 587, 612, 637, 662, 687$
Channel Spacing	200 kHz (GSM, EGSM, DCS, PCS), 5 MHz UMTS 45 MHz WCDMA 850, 80 MHz WCDMA 1900
Channels	124 GSM, 174 EGSM, 374 DCS, 299 PCS carriers with 8 channels per carrier, 11 UMTS
Duplex Spacing	45 MHz GSM, 45 MHz EGSM, 95 MHz DCS, 80 MHz PCS, 190 MHz UMTS 45 MHz WCDMA 850 (North America), 80 MHz WCDMA 1900 (North America)
Modulation	GMSK AT BT = 0.3 (GSM, DCS, PCS), QPSK (UMTS), 8PSK for EDGE (GSM, EGSM, DCS, PCS)

Table 1. Specifications (Continued)

Transmitter Phase Accuracy	5 degrees RMS, 20 Degrees peak
Frequency Error	± 0.1 ppm
Input/Output Impedance	50 ohms (nominal)
Nominal Operating Voltage	3.6 Vdc $\pm 10\%$ (battery) +4.4 Vdc $\pm 10\%$ (external connector)
Dimensions (xyz)	53mm x 103mm x 13.4mm
Size	65 cc
Weight	125 g
Display	320x240 2.2" 262k color (Internal) 320x240 2.0" 262k color (External)
Battery Life (950mAh) ²	<p>EMEA WCDMA Talk Time: Up to 210 Min. WCDMA Standby: Up to 452 Hrs (Flip Open) 306 Hrs (Flip Closed). GSM Talk Time: Up to 357 Min. GSM Standby: Up to 452 Hrs (Flip Open) 300 Hrs (Flip Closed). North America WCDMA Talk Time: Up to 216 Min. WCDMA Standby: Up to 416 Hrs (Flip Open) 290 Hrs (Flip Close). GSM Talk Time: Up to 327 Min. GSM Standby: Up to 392 Hrs (Flip Open) 284 Hrs (Flip Close)</p> <p>Standby settings of GSM at DRx5 and WCDMA at K=7, talk-time settings of 50% DTX for GSM and average of 0 & 7dBm for WCDMA.</p>
Nominal Operating Temperature Range	-10° C to +55° C

GSM System Functions	Specification
Speech Coding Type	Regular Pulse excitation / linear predictive coding with long term prediction (RPE LPC with LTP)
Bit Rate	13.0 kbps
RF Power Output	32.5 dBm nominal GSM/EGSM, 29.5 dBm nominal DCS / PCS
Spurious Emissions	-36 dBm from 0.1 to 1 GHz, -30 dBm from 1 to 4 GHz
Receive Sensitivity	-102 dBm GSM, -102 dBm DCS / PCS
RX Bit Error Rate	< 2%

WCDMA System Functions	Specification
Speech Coding Type	Adaptive Multirate (AMR)
RF Power Output	22.8 dBm
Spurious Emissions	-36 dBm from 0.1 to 1 GHz, -30 dBm from 1 to 4 GHz
Error Vector Magnitude	< 17.5%
PN9 Bit Error Rate (BER)	PN9 Bit Error Rate (BER) 0.1% @ 12.2Kbps, -106.7 dBm (WCDMA2100) PN9 Bit Error Rate (BER) 0.1% @ 12.2Kbps, -104.7 dBm (WCDMA1900) PN9 Bit Error Rate (BER) 0.1% @ 12.2Kbps, -104.7 dBm (WCDMA850)
ACLR	-33 dBm @ ± 5 MHz, -43 dBm @ ± 10 MHz

Bluetooth System Functions	Specification
Frequency Range	2.402 GHz - 2.480 GHz in 79 1-MHz channels

Modulation	GFSK @ 1 MHz (base rate), pi/4 DQPSK @ 2EDR, 8DQPSK @ 3EDR
Transmitter Power	Class 2, -6 dBm to +4 dBm (+2 dBm nominal)
Compliance	Bluetooth Core Specification 2.0 + EDR

GPS System Functions	Specification
Receiver Input, L1 channel	1.575 GHz \pm 0.001 GHz

Product Overview

MOTORAZR² V9 mobile telephones feature Wideband Code Division Multiple Access (WCDMA) technology. V9 also supports High Speed Downlink Packet Access (HSPDA) a wireless radio broadband data standard adopted by many WCDMA mobile phone service providers. Compared to 1xEV-DO networks currently being used by CDMA operators, HSPDA is significantly faster, providing mobile devices with air interface speeds from 384kbps to 3.6Mbps.

The V9 mobile telephone provides Short Message Service (SMS) text messaging, and includes clock, alarm, datebook, calculator, and caller profiling personal management tools. The V9 also has a built in 2.0 Megapixel camera with 8X digital zoom, Bluetooth wireless connectivity and GPS on North American models. The phone provides 32 Embedded ring tones including VibraCall vibrating alert and 32 Downloadable/Customizable iMelody ring tones. The V9 is a dual mode phone that allows roaming within the WCDMA 850/1900 and 2100 MHz bands and GSM 900/1800 and 850/1900 MHz bands.

The V9 phone consists of a main housing assembly that contains the battery, battery cover, accessory connector, main circuit board, chassis, keypad, and internal antenna. The main display and external display, and speaker, are located on the flip. The camera, is located on the rear of the flip.

The main circuit board contains the Receiver, Transmitter, Synthesizer and Control Logic Circuitry which together comprise the phone electronics.

The main display is a 2.2" 320 x 240 850/1900 and 262k TFT LCD. The camera is a 2.0 mega pixel resolution, with 8X digital zoom.

Features

V9 telephones use advanced, self-contained, sealed, custom integrated circuits to perform the complex functions required for WCDMA communication. Aside from the space and weight advantage, microcircuits enhance basic reliability, simplify maintenance, and provide a wide variety of operational functions.

Features available in this product include:

- 240 x 320 262K TFT Main Display (2.2"), external display (2.0")
- 2.0 megapixel Camera (1600 x 1200 pixels)
- Polyphonic Speaker
- Messaging: SMS, MMS
- Audio CODECs: Windows WMA, MP3, AAC, AAC+, eAAC+, WAV
- Video: Capture/Playback, h.263, MPEG4 3GPP
- Connectivity: Bluetooth® Class 2, Full Speed USB Mobile Phone Tools, Moto-Sync
- Touch Sensitive buttons on CLI for access to pictures, music and video.
- Internal Memory 2GB or 4GB (depending on market) with external transflash memory card
- GPS receiver with built-in antenna (North America model only)

The V9 phone has a large external display on the outside of the flip. The phone's charging indicator, camera lens, and Bluetooth indicator are also located on the flip along with other external controls. The phone has a micro USB port, located on the left side of the phone.

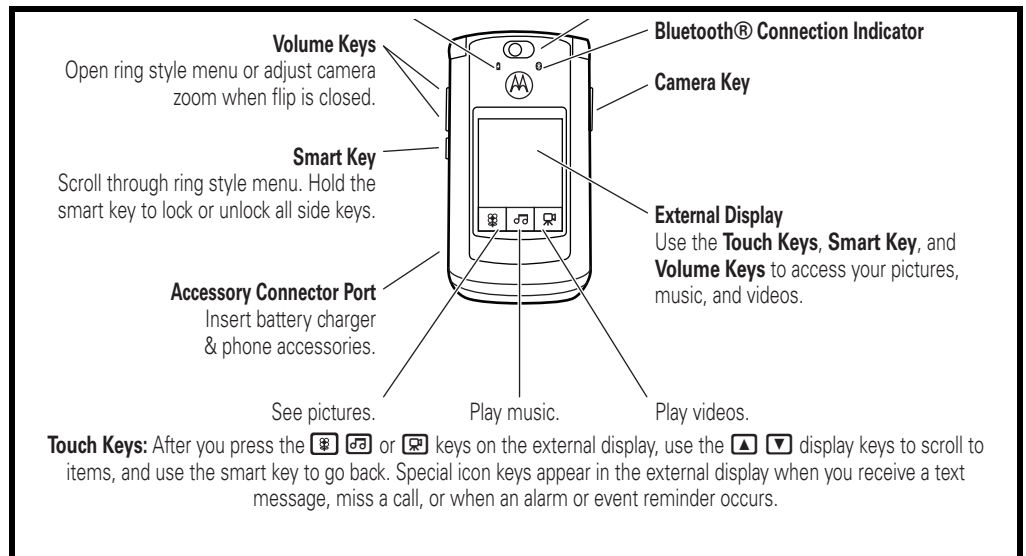


Figure 2. Additional Controls, indicators, and I/O

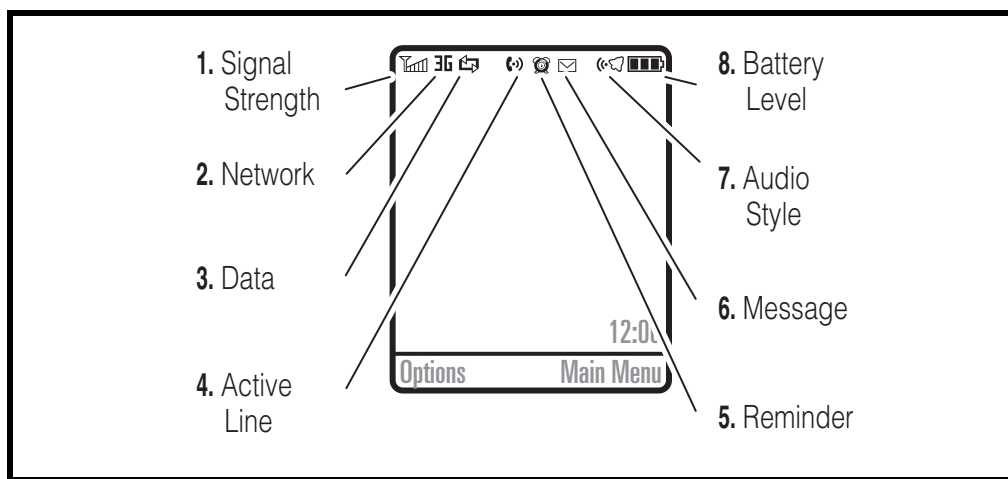
Color Display

The V9 wireless phones feature a 240 x 320 262K TFT Main Display (2.2"), external display (2.0").

The center key opens the initial menu structure, or allows access to a submenu.

“Soft keys” refer to non-labeled keys that correspond to text options displayed on the screen. The left and right soft keys perform the function shown in the corners of the display. The right key will usually select an option whereas the left key will usually exit a function or return to a previous screen.

Indicators, in the form of icons, display on the LCD. Figure 3 shows some of the icons that display on the LCD.



v479245

Figure 3. Icon Indicators



Whether a phone displays all indicators depends on the programming and services to which the user subscribes.

1 Signal Strength Indicator – Vertical bars show the strength of the network connection. You can't make or receive calls when or appears.

2 Network Indicator – Shows when your phone is using a network that is 3G (), Enhanced Data for GSM Evolution (EDGE,), or General Packet Radio Service (GPRS,).

3 Data Indicator – Shows connection status.

- / secure/unsecure packet data transfer
- / secure/unsecure application connection
- / secure/unsecure Circuit Switch Data (CSD) call
- / USB connect/transfer
- auto answer
- High-Speed Downlink Packet Access (HSDPA) data transfer
- Bluetooth® connection is active







4 Active Line Indicator – Shows to indicate an active call, or to indicate when call forwarding is on.

5 Reminder Indicator – Shows when you set an alarm, or an alert for a datebook event. Shows when a Java™ application is active.

6 Message Indicator – Shows when you receive a new message. Indicators can include:

- text or MMS message
- voice message
- ? voice & text message

7 Audio Indicator – Shows the audio style setting.

- | | |
|---|---|
|  loud ring |  vibrate & ring |
|  soft ring |  vibrate then ring |
|  vibrate |  silent |

8 Battery Level Indicator – Vertical bars show the battery charge level. Recharge the battery when your display shows Low Battery.

Battery Function

Battery Gauge

The telephone displays a battery level indicator icon in the idle screen to indicate the battery charge level. The gauge shows four levels: 100%, 66%, 33%, and Low Battery.

Battery Removal

Removing the battery causes the device to immediately shut down and any pending work (for example, partially entered phone book entries or outgoing messages) is lost.



To ensure proper memory retention, turn OFF the phone before removing the battery.

Operation

For detailed operating instructions, refer to the appropriate User's Guide.

Tools and Test Equipment

The following table lists tools and test equipment recommended for disassembly and reassembly of V9 telephones. Use either the listed items or equivalents.

Table 1. General Test Equipment and Tools

Motorola Part Number ¹	Description	Application
RSX4043-A	Torque Driver	Used to remove and replace screws
—	Torque Driver Bit T-5 Plus, Apex 440-6IP Torx Plus or equivalent	Used with torque driver
See Table 7	Rapid Charger	Used to charge battery and to power device
0180386A82	Antistatic Mat Kit (includes 66-80387A95 antistatic mat, 66-80334B36 ground cord, and 42-80385A59 wrist band)	Provides protection from damage to device caused by electrostatic discharge (ESD)
0-00-00-30005	Disassembly tool, plastic with flat and pointed ends (manual opening tool)	Used during assembly/disassembly of device
6680388B01	Tweezers, plastic	Used during assembly/disassembly
—	Digital Multimeter, HP34401A ²	Used to measure battery voltage
8102430Z04	GSM / DCS Test SIM	Used to enable manual test mode
19501980	Generic Press	
0-00-00-40869	P-Flex and CLI lens Press Fixture	
0-00-00-40870	Main Lens Press Fixture	
0-00-00-40871	Hand Held Speaker Press Fixture	
0-00-00-40872	Hinge Shaft Key Press Fixture	
0-00-00-40881	K-Flex / Earpiece gasket alignment fixture kit	
0-00-00-40880	Keypad Tab Bend Fixture	

1. To order in North America, contact Motorola Aftermarket and Accessories Division (AAD) at (800) 422-4210 or FAX (800) 622-6210; Internationally, AAD can be reached by calling (847) 538-8023 or faxing (847) 576-3023.

2. Not available from Motorola. To order, contact Hewlett Packard at (800) 452-4844.

AMS Software & Elektronik GmbH
 c/o Holger Grube
 Lise-Meitner-Straße 9
 D-24914 Flensburg Tel.: +49-461-90398-0
 Fax: +49-461-90398-50

Disassembly

The procedures in this section provide instructions for the disassembly of V9 telephones. Tools and equipment used for the phone are listed in Table 1, preceding.



Many of the integrated devices used in this equipment are vulnerable to damage from electrostatic discharge (ESD). Ensure adequate static protection is in place when handling, shipping, and servicing the internal components of this equipment.



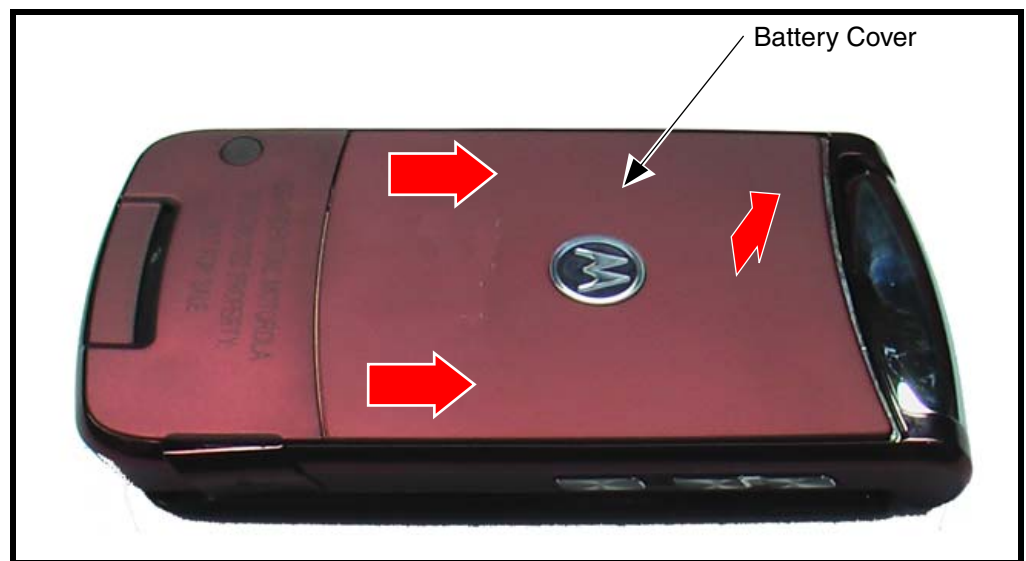
Avoid stressing the plastic in any way to avoid damage to either the plastic or internal components.

Removing and Replacing the Battery Cover and Battery



All batteries can cause property damage and/or bodily injury, such as burns if a conductive material, such as jewelry, keys, or beaded chains touch exposed terminals. The conductive material may complete an electrical circuit (short circuit) and become quite hot. Exercise care in handling any charged battery, particularly when placing it inside a pocket, purse, or other container with metal objects.

1. Ensure the phone is turned off.
2. Push the battery cover up (toward the top of the phone) to release (see Figure 1).

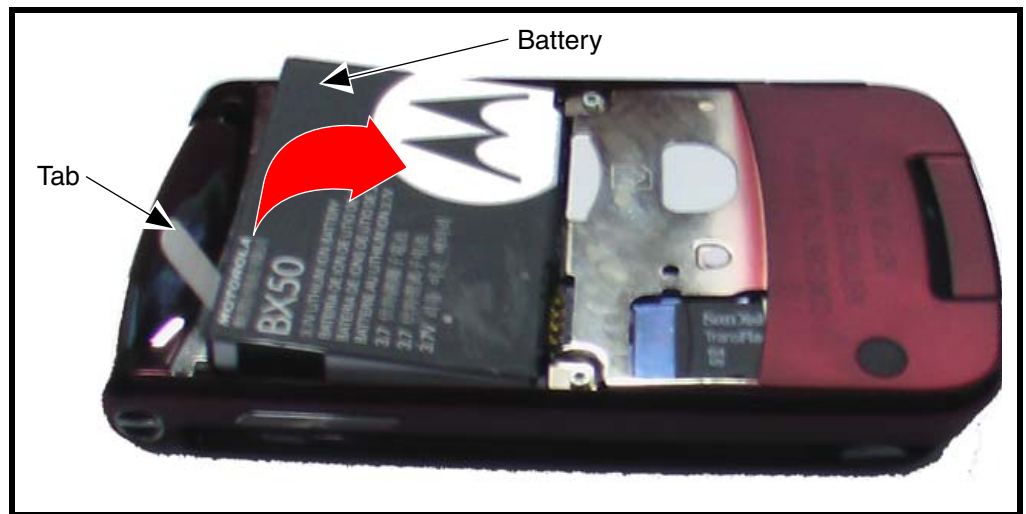


v477852

Figure 1. Removing the Battery Cover

3. Lift up and remove the battery cover.

4. Pull the tab on the label near the hinge, then remove the battery from the phone. See Figure 2.



v477855

Figure 2. Removing the Battery

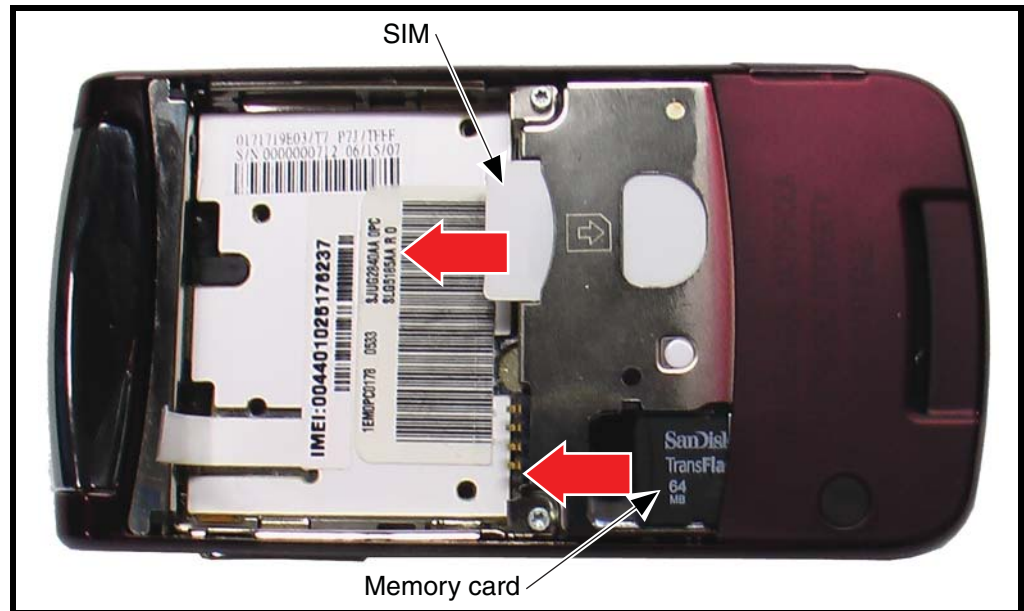


There is a danger of explosion if the Lithium Ion battery is replaced incorrectly. Replace only with the same type of battery or equivalent as recommended by the battery manufacturer. Dispose of used batteries according to the manufacturer's instructions.

5. To replace, align the battery with the battery compartment so the contacts on the battery match the battery contacts in the phone.
6. Insert the battery, contacts side first, into the battery compartment and push down followed by the opposite edge of the battery.
7. Insert the bottom edge of the of the battery cover into the rear housing, then push the top edge of the cover down and snap it into place.

Removing and Replacing the Subscriber Identity Module (SIM)

1. Remove the battery cover and battery as described in the procedures.
2. Slide the SIM card out of the SIM holder, as shown in Figure 3.



v477859

Figure 3. Removing the SIM

3. Carefully lift the SIM from the phone.
4. Lift the memory card grommet.
5. If a memory card is present. Slide it out the memory card slot as shown in Figure 3.
6. To replace, insert the SIM into the holder, ensuring the notched corner of the SIM is inserted first.
7. Replace the battery and battery cover as described in the procedures.

Removing and Replacing the Rear Housing



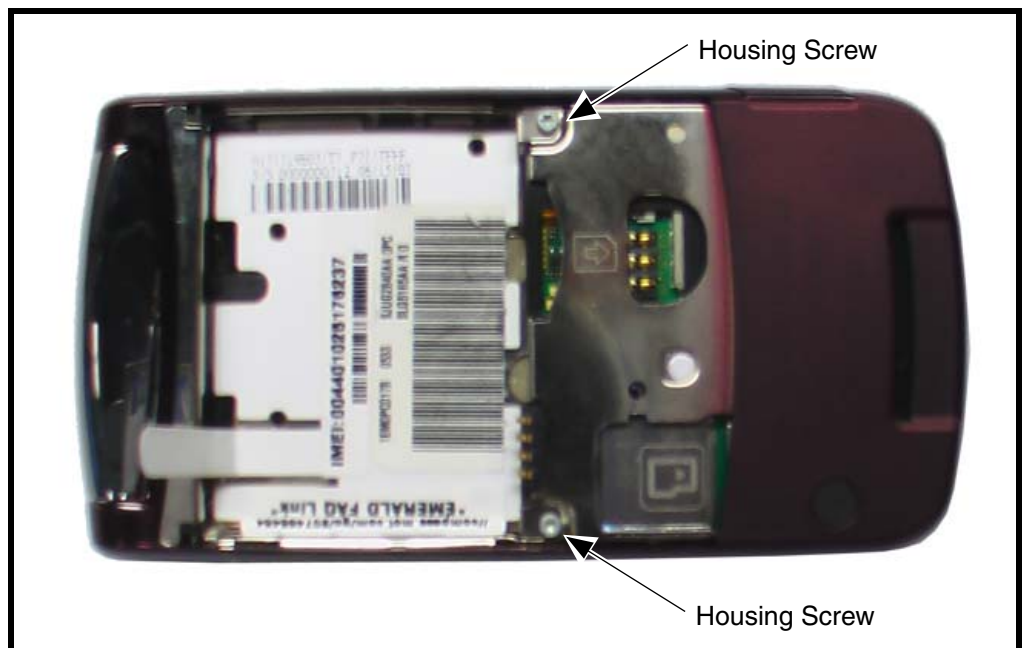
This product contains static-sensitive devices. Use anti-static handling procedures to prevent electrostatic discharge (ESD) and component damage.

1. Remove the battery cover, battery, and SIM as described in the procedures.



In addition to 2 screws, the rear housing assembly is fastened with plastic latches. These are fragile and should be released with care.

2. Using a Torx driver with a T-5 bit, remove the screws at each side of the phone. Retain the screws for reassembly. See Figure 4.



v477874

Figure 4. Removing the Rear Housing Screws

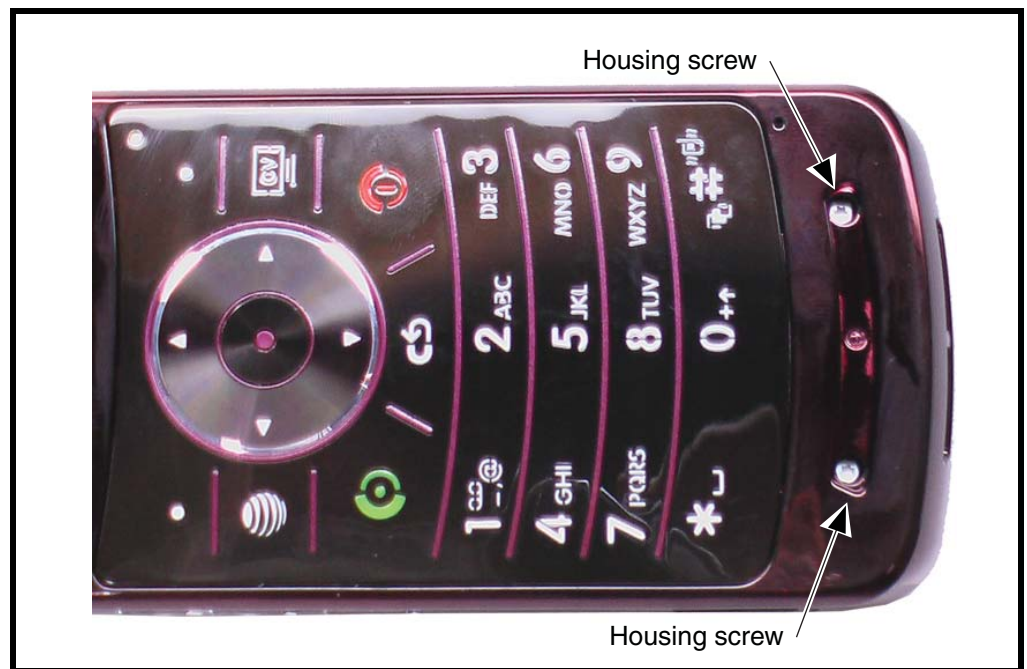
3. Turn the phone over so the keypad is facing upward.
4. Use the disassembly tool to remove the bumper pad below the keypad.

5. Use the T-5 driver to remove the two housing screws under the bumper pad (see Figures 5 and 6).



V462594

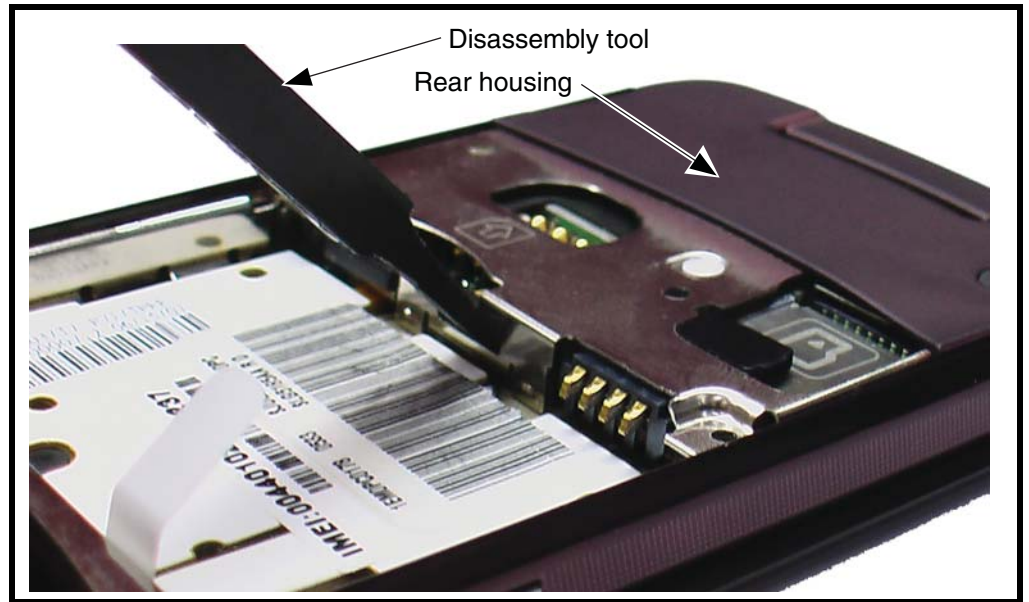
Figure 5. Removing the Bumper



V458596

Figure 6. Removing the Rear Housing Screws

6. Release the first housing latch by inserting the flat edge of the plastic disassembly tool at an angle through the slot on the rear housing then push away to disengage the two front snaps.

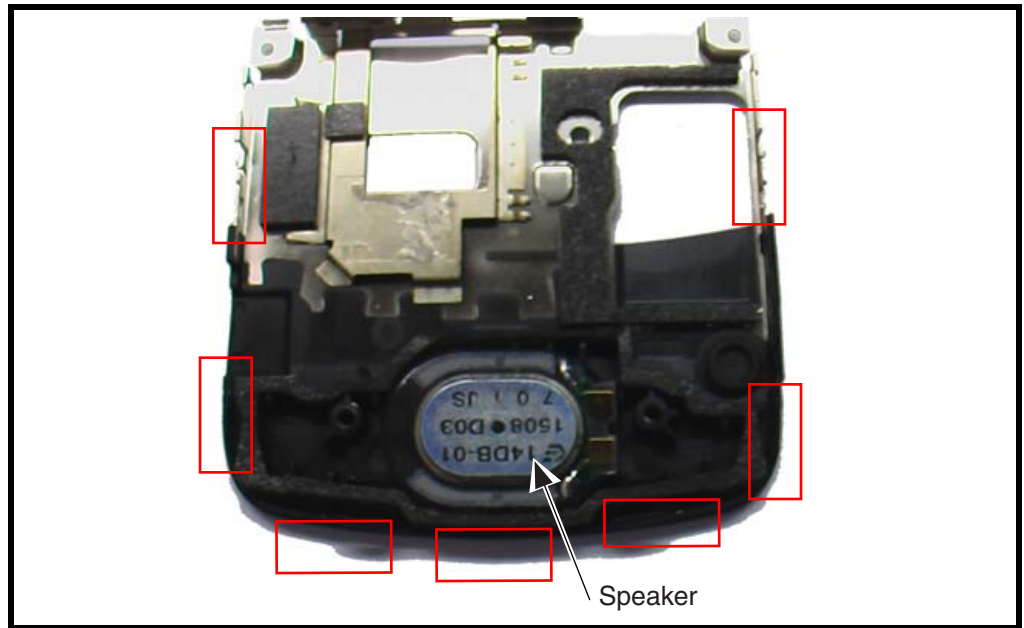


v470116

Figure 7. Removing the Rear Housing Latches

7. Lift housing using a black stick, lifting left corner first (A), then the right corner (B), to disengage the side snaps. See disassembly procedure.
8. Lift the rear housing assembly away from the phone through the trans flash card opening and slide under chassis.
9. Remove the speaker from rear housing. Retain speaker and install in the new rear housing.
10. To replace, carefully align the flex connector to its socket on the rear housing assembly, then gently press down on the flex connector until it is properly seated in its socket.
11. Rotate the rear housing assembly so it sits over the phone.

12. Align the housing latches with the corresponding openings on the front housing. Gently press the housings together until the catches snap into place.



v477898

Figure 8. Rear Housing Latches

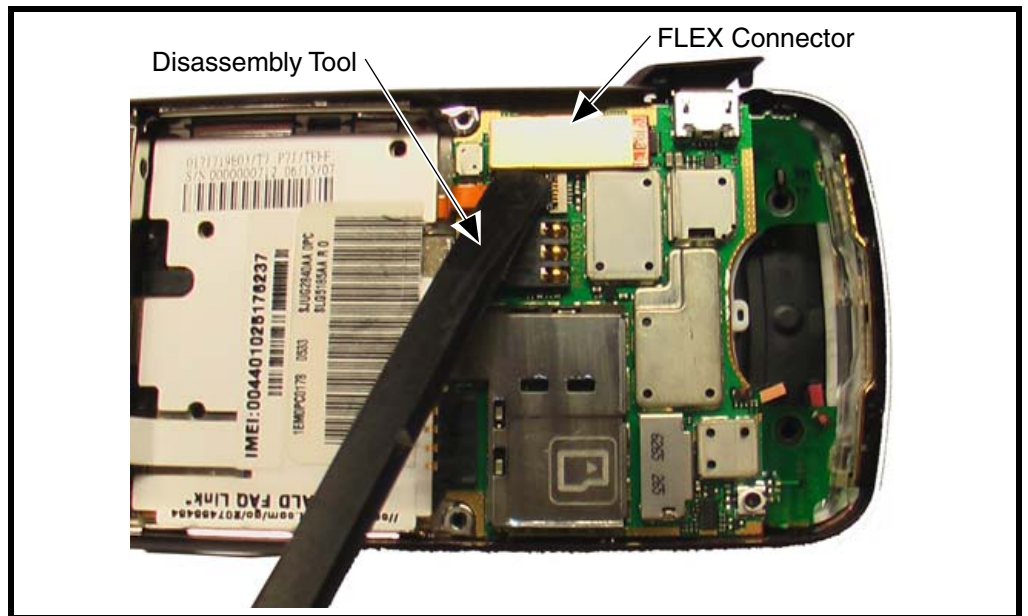
13. Place the speaker into the rear housing and press with service fixture.
14. Replace the 2 housing screws and tighten to a final torque setting of 1.0 inch pounds. Do not over tighten.
15. Replace the 2 housing screws below the keypad.
16. Replace the bumper pad.
17. Replace the USB grommet.
18. Replace the memory card, battery, and battery cover as described in the procedures.
19. Reinstall the rear housing assembly onto the phone.

Removing and Replacing the Transceiver Board Assembly



This product contains static-sensitive devices. Use anti-static handling procedures to prevent electrostatic discharge (ESD) and component damage.

1. Remove the battery cover, battery, SIM, and rear housing as described in the procedures.
2. Use the disassembly tool to unseat the display flex connector from it's socket on the transceiver board (see Figure 9).



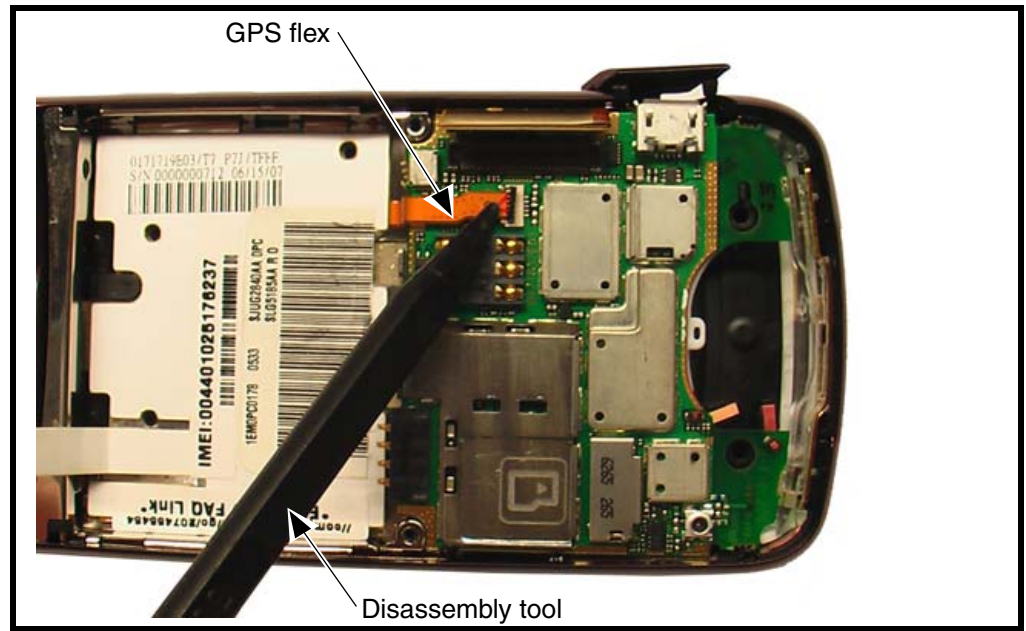
v479169

Figure 9. Unseating the Flex Connector



The flexible printed cable (FPC) (flex) is easily damaged. Exercise extreme care when handling.

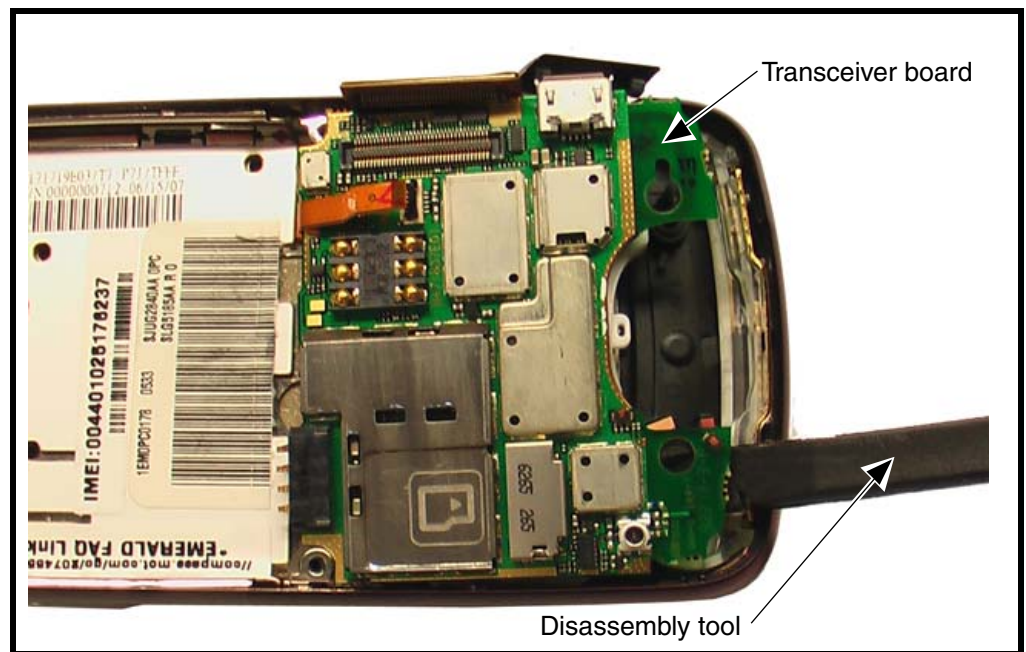
3. Release the GPS flex connector from its socket on the transceiver board.



v479170

Figure 10. Releasing the GPS Flex Connector (North America Region only)

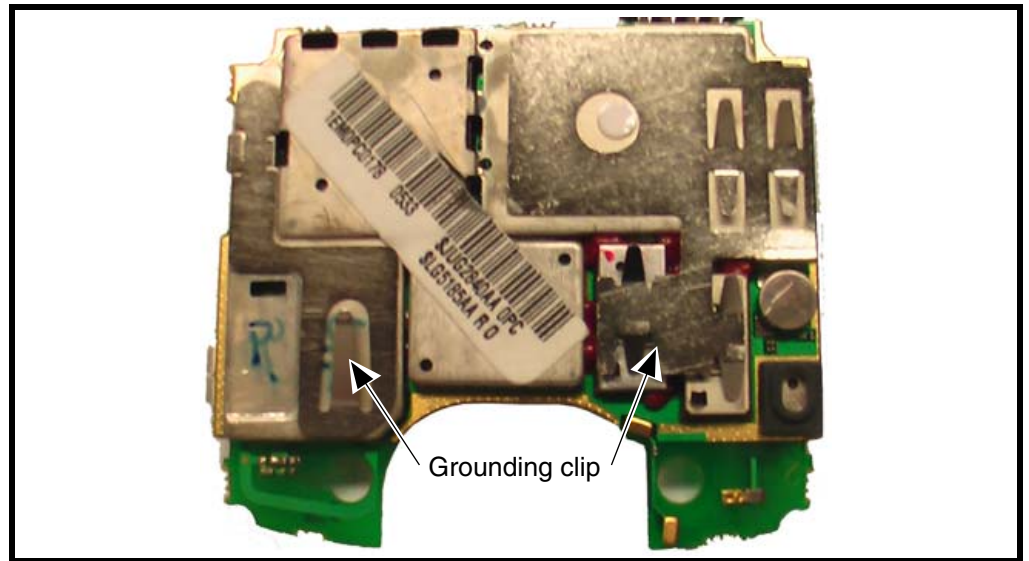
4. Lift the transceiver board assembly out of the front housing with the plastic tweezers. See Figure 11.



v470171

Figure 11. Removing the Transceiver PC board Assembly

5. To replace, install the grounding clip onto the transceiver board assembly. Use the latches (shown in the red areas) to secure the clip to the transceiver board.



v479175

Figure 12. Transceiver PC board Assembly Grounding Clip

6. Place the transceiver PCB into the housing.
7. Re-attach the flex connector to it's socket on the transceiver PCB.
8. Replace the rear housing, SIM, battery, and battery cover as described in the procedures.

Removing and Replacing the Antenna

1. Remove the battery cover, battery, SIM, and rear housing assembly as described in the procedures.
2. Use the disassembly tool to release the antenna assembly, as shown in Figure 13.

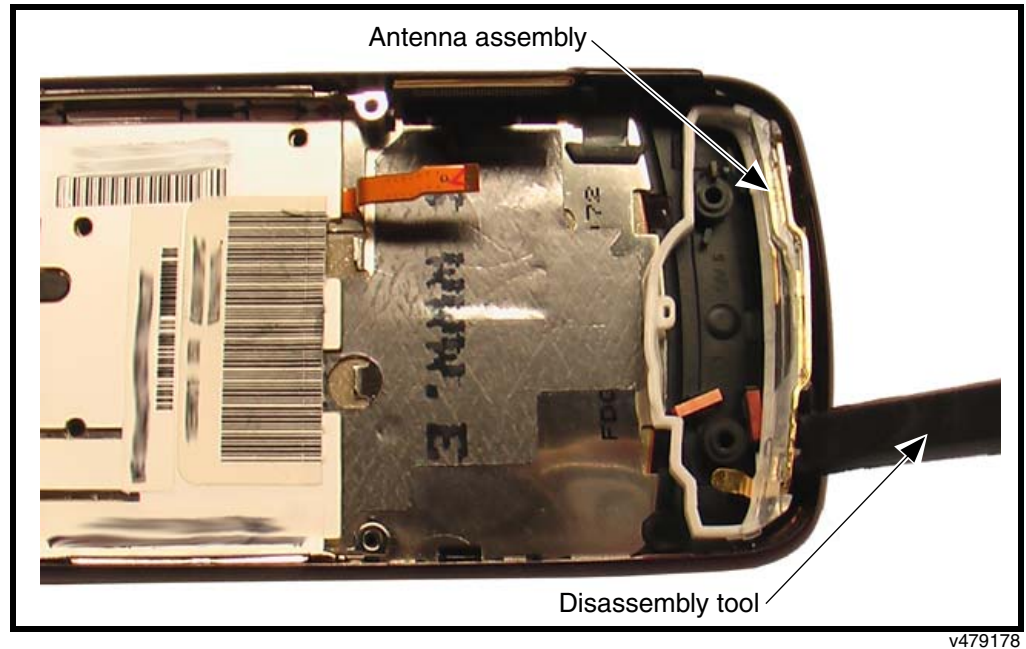


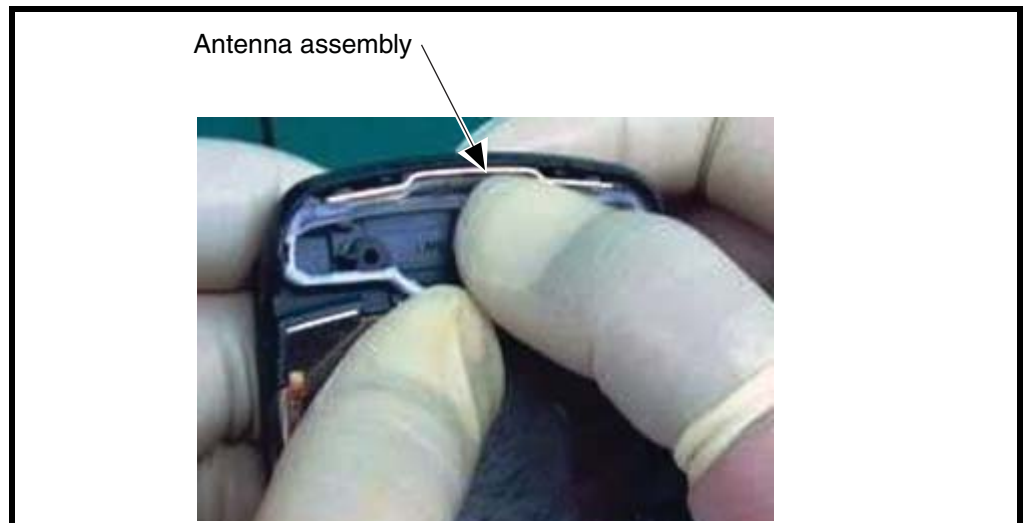
Figure 13. Removing the Antenna Assembly

3. Carefully lift the antenna assembly away from the phone.
4. To replace, align the antenna assembly to the phone.

5. Carefully press the antenna assembly into position until the antenna assembly latches snap into position (see Figure 14).



North America antenna assembly is different from Europe antenna assembly. They are not interchangeable.



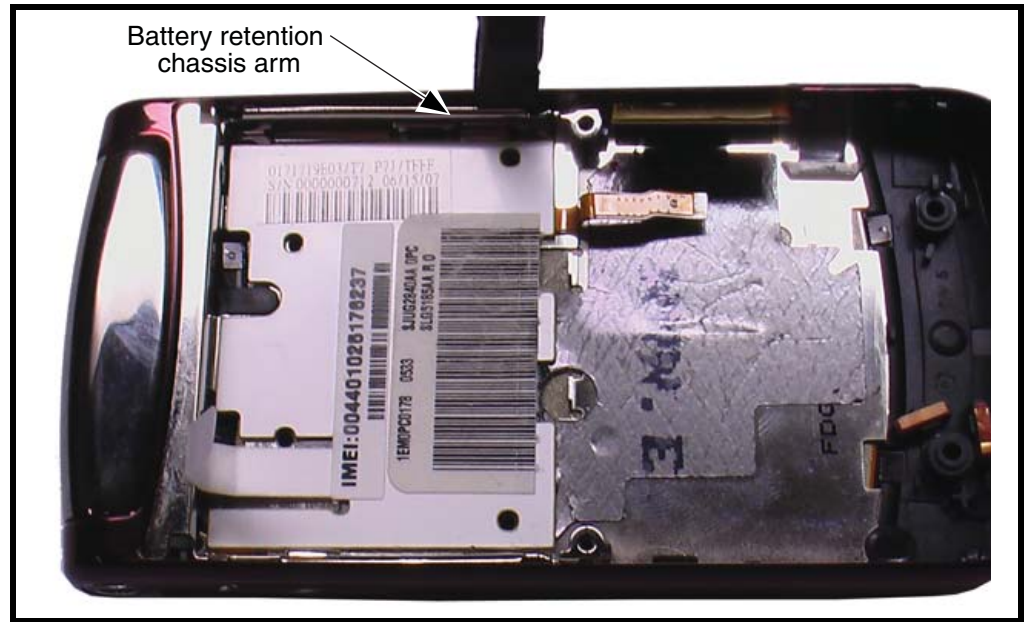
v498199

Figure 14. Installing the Antenna Assembly

6. Replace the transceiver board, rear housing assembly, memory card, battery and battery cover as described in the procedures.

Removing and Replacing the Keypad

1. Remove the battery cover, battery, memory card, rear housing assembly, and transceiver board assembly as described in the procedures.
2. Lift one arm of the battery retention chassis (BRC) from between the front housing wall and screw boss.
3. Ensure the bent tabs on the arms are released from the slots in the front housing chassis. Similarly, remove the BRC arm from the other side (see Figures 15 and 16).



v498200

Figure 15. Removing the Battery Retention Chassis Arm

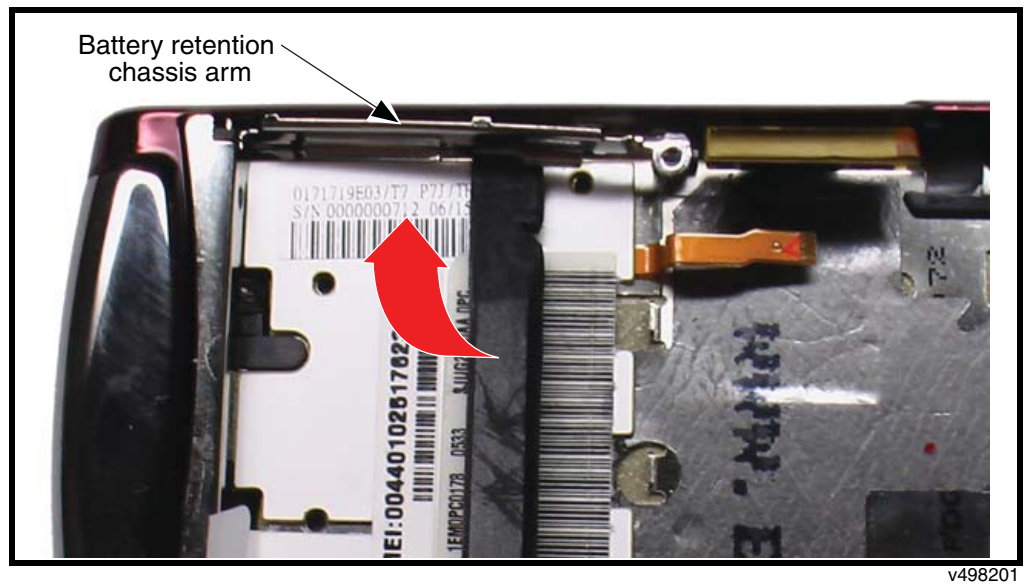
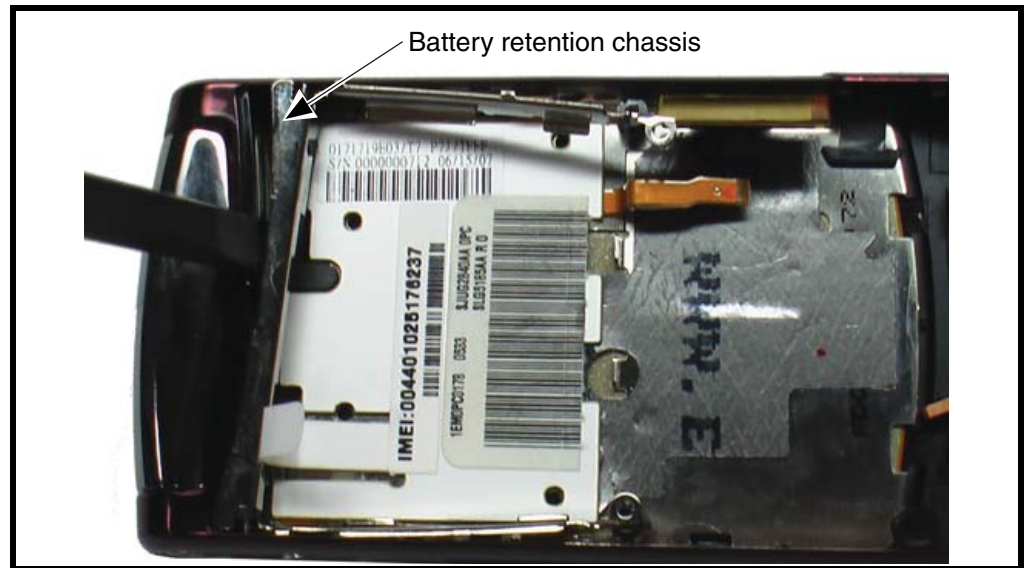


Figure 16. Removing the Battery Retention Chassis Arm

4. Pull one arm of the BRC to remove the BRC from the front housing (see Figure 17). The top portion of the BRC is adhered to the front housing with adhesive.

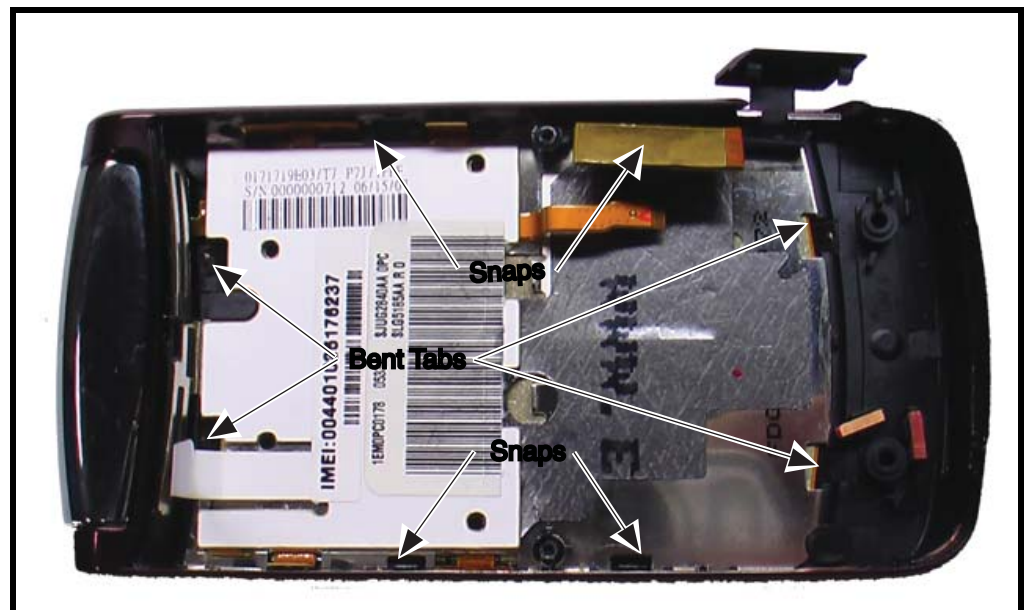
5. Ensure the adhesive is completely removed with the BRC. Scrap the used BRC.



V498202

Figure 17. Removing the Battery Retention Chassis

6. The keypad is secured by 4 bent tabs and 4 snaps (see Figure 18).



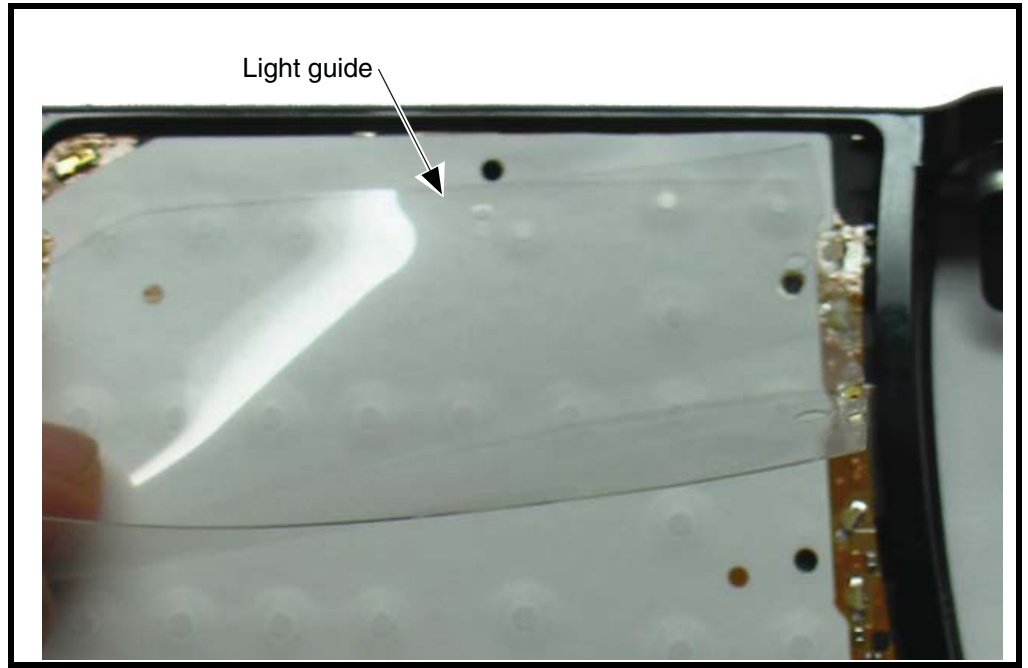
V479215

Figure 18. Location of Keypad Tabs and Snaps

7. Use a small flat tip screw driver to unbend the four tabs (see Figure 18).
8. Use a small flat tip screw driver to release the four side snaps. When the snap releases, press down slightly on the tab to push the keypad away from the front housing to prevent the snap from re-engaging. Extra caution should be taken

when releasing the snap behind the keypad flex connector - DO NOT DAMAGE THE FLEX.

9. Remove the light guide.



v498216

Figure 19. Removing the Light Guide from the Front Housing

10. To replace, install light guide into the front housing.
11. Place the keypad assembly into the front housing (see Figure 20).



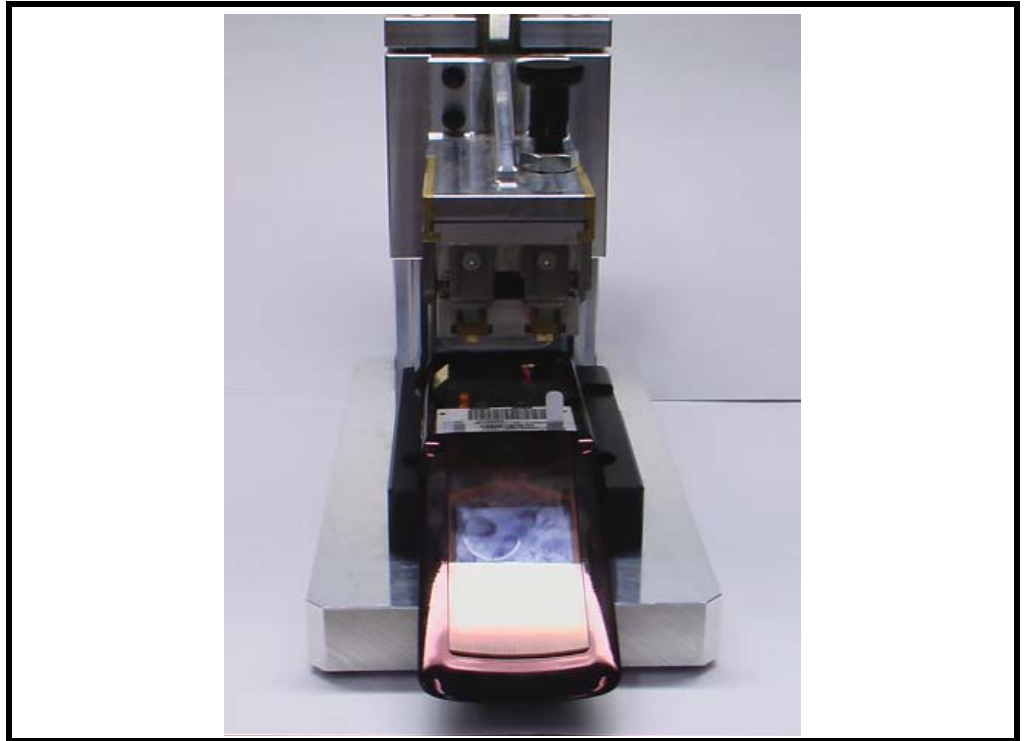
Install the keypad carefully to avoid scratching the housing surfaces.



Figure 20. Placing the Keypad into the Front Housing

12. Ensure that the keypad tabs near the corners and the keypad snaps along the sides of the keypad assembly are inserted carefully and correctly into the front housing.

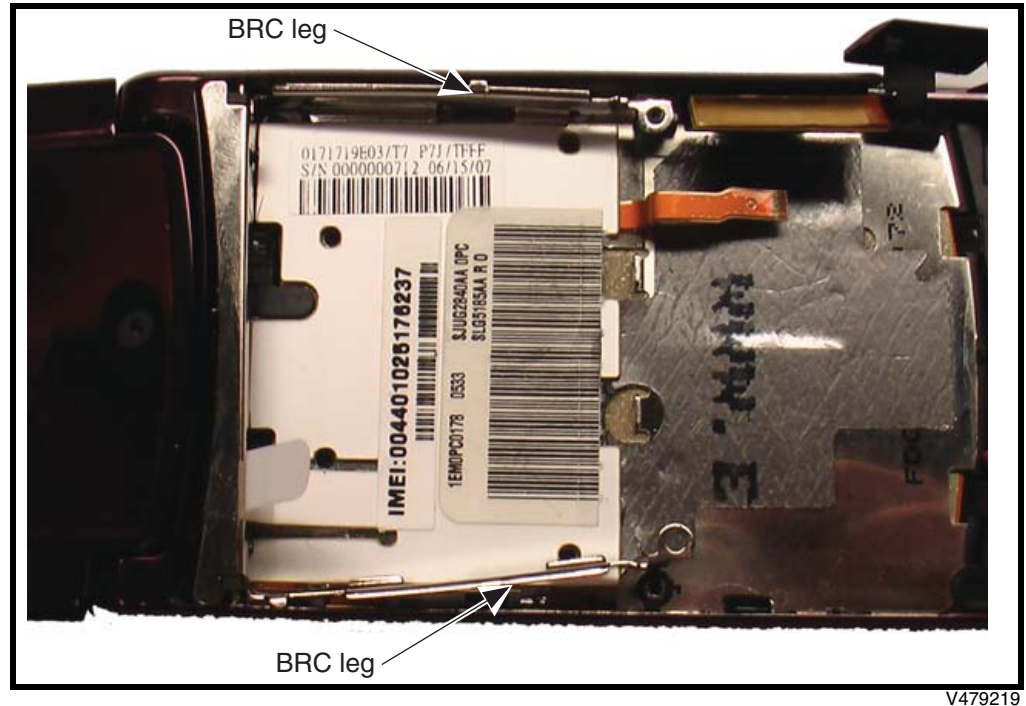
13. Place front housing into the keypad tab bend fixture and press (see Figure 21).



v492217

Figure 21. Keypad Tab Bend Fixture

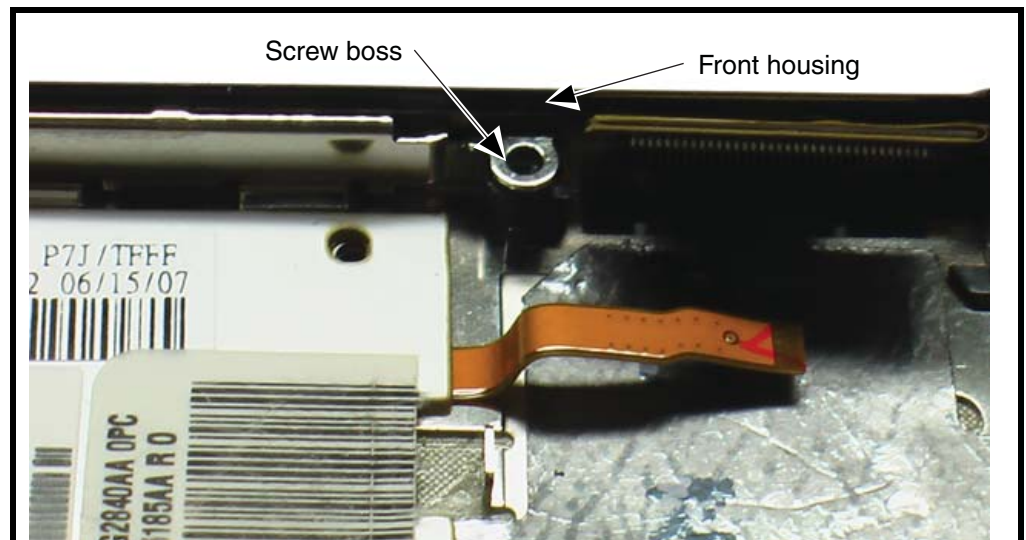
14. Remove the BRC from the tray and remove the adhesive liner on the top side.
15. Bend the BRC legs inward slightly and install into the flip front assembly (see Figure 22).



V479219

Figure 22. Installing the Battery Retention Chassis

16. Insert the end of the BRC into the slot between the screw boss and the wall of the front housing (see Figure 23).



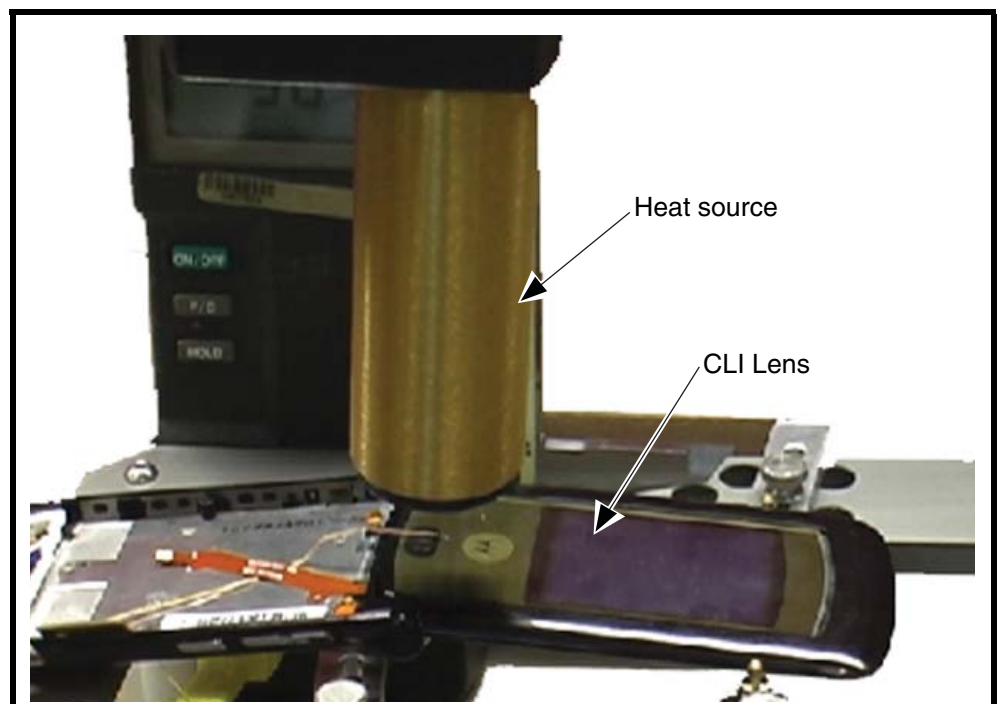
V479221

Figure 23. Installing the Battery Retention Chassis

17. Install the transceiver board assembly, rear housing assembly, SIM, battery, and battery cover, as described in the procedures.

Removing and Replacing the Flip Assembly

1. Remove the battery cover, battery, rear housing, antenna, and transceiver board assembly as described in the procedures.
2. Apply hot air (temperature 400 F) to the bottom of the CLI lens for 10-12 seconds at a distance of 1 inch.
3. Apply hot air (temperature 400 F) to the top of the CLI lens for 8-10 seconds at a distance of 1 inch. Do not apply hot air to the center of the lens. Do not heat the center of the lens.



v462467

Figure 24. Heating the CLI Lens



It is NOT necessary to remove the CLI lens assembly to get to the inside of the flip when servicing the main lens, flip inner, or imager flex assembly.

4. Using the black stick, pry the CLI lens up from the nose of the phone. The black stick should be inserted into the gap between the CLI lens and the flip outer at the tertiary porting of the earpiece speaker.

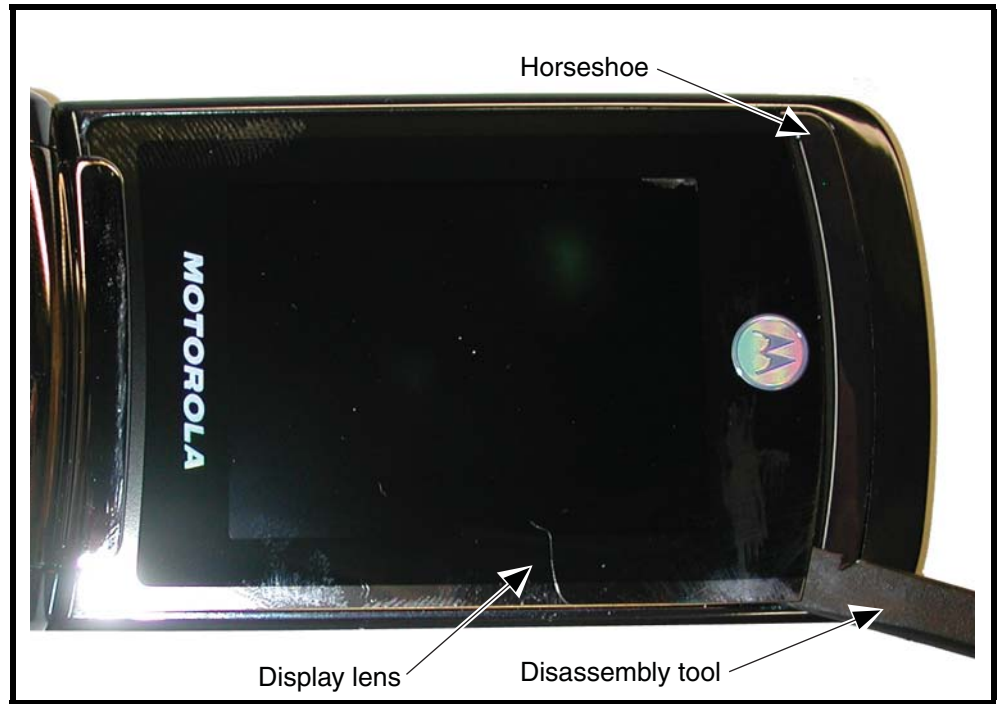


v461040

Figure 25. Prying the CLI Lens

5. Once the end of the CLI lens has been lifted sufficiently, slide the black stick up one edge of the lens to separate the lens from the P-flex. After doing one side repeat the process on the other side.
6. Pull the CLI lens off in the direction of the nose to the imager.
7. If necessary, use the heat gun to loosen the adhesive between the top portion of the lens and the P-flex by directing heat between the lens and the P-flex. Continue to pull on the lens while applying heat. When the CLI lens is removed, discard the lens, as it should not be reused.

8. Carefully slide a black stick or comparable tool under the top edge of the main lens just below the horseshoe. Be careful not to damage either the speaker porting mesh or the finish on decorated housings.

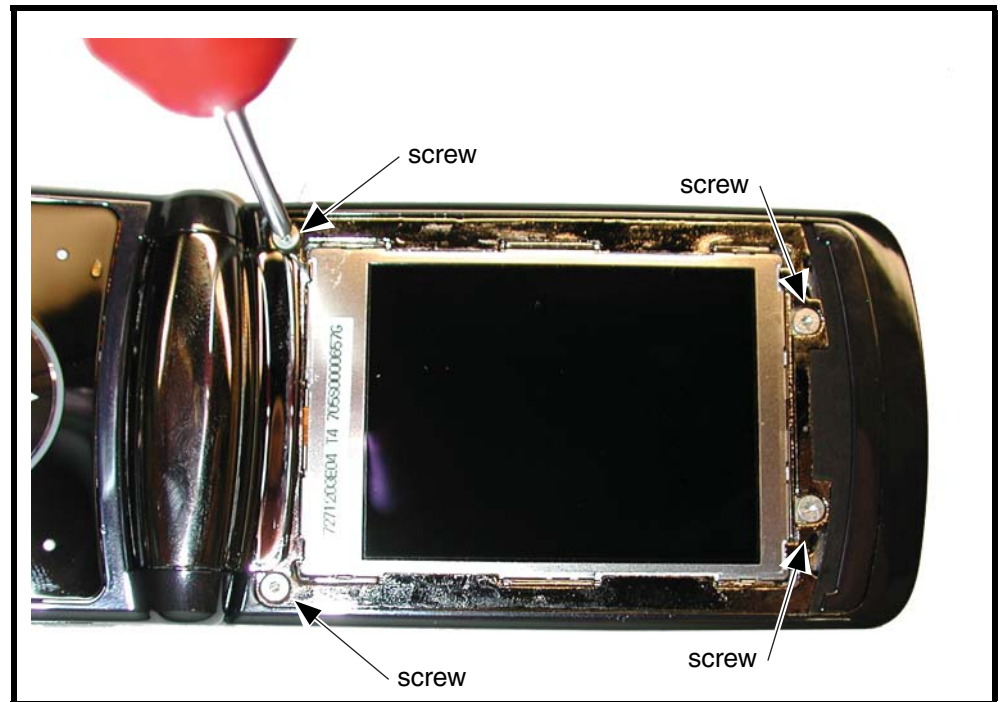


v461035

Figure 26. Removing the Display Lens

9. Grasp the main lens and peel off toward the flip barrel. After the main lens is completely removed, discard the lens, as it should not be reused.

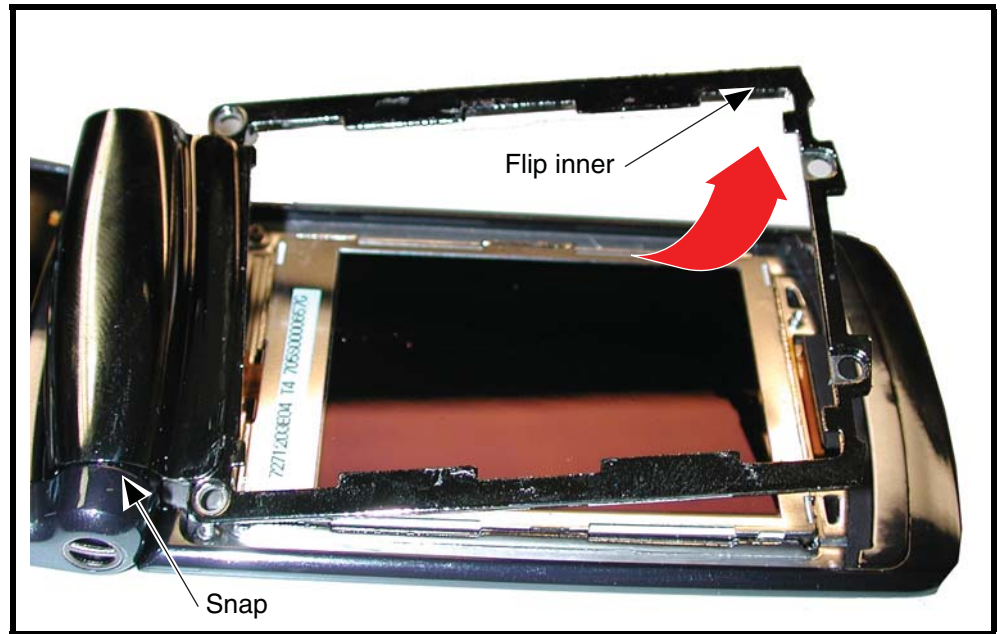
10. Use a driver with T5IP bit to remove the four flip inner screws.



v461036

Figure 27. Removing the Flip Inner Screws

11. Gently pry the flip inner off by pulling the left side of the flip inner up and rotating to the right side to release the snap at the right knuckle.



v461037

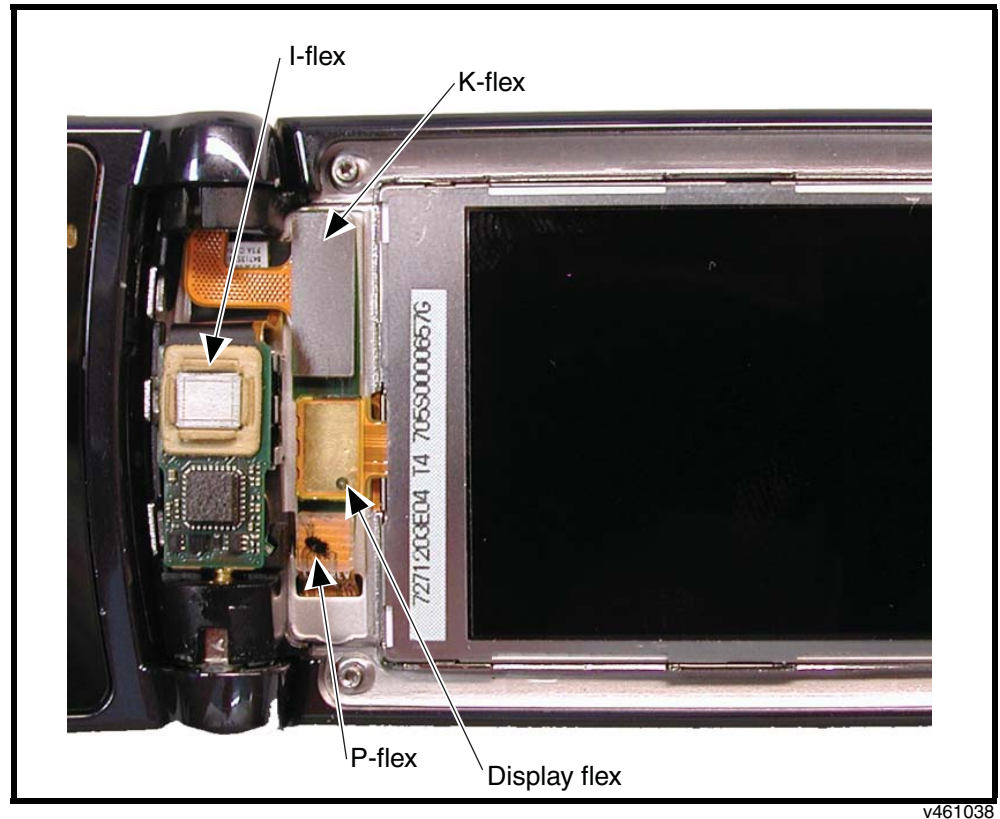
Figure 28. Removing the Flip Inner



The flexible printed cable (FPC) (flex) is easily damaged. Exercise extreme care when handling.

12. Remove the earpiece cover.

13. Disconnect the P-flex by lifting on the flex using a black stick or similar tool. It is important to disconnect the flex carefully to prevent damage to the receptacle pins (see Figure 29).



v461038

Figure 29. Removing the Flex Connectors



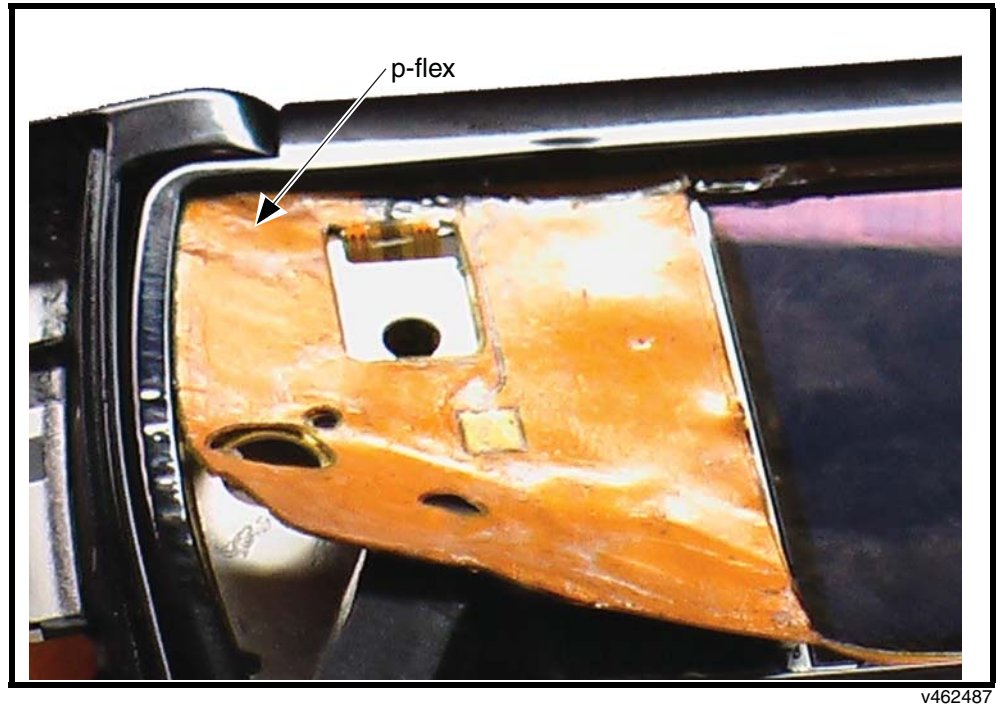
The flexible printed cable (FPC) (flex) is easily damaged. Exercise extreme care when handling.

14. Disconnect the 30 pin display flex connector (see Figure 29).
15. Disconnect the 54 pin K-flex connector (see Figure 29).
16. Disconnect the 10 pin P-flex connector (see Figure 29). Remove the connector at the long edge.
17. Remove the I-flex by lifting the imager out of the socket. Ensure the I-flex clears the alignment post below the K-flex tail. Lift the I-flex out so it is free of the K-flex tail, then slide the I-flex out from under the display flex tail.

18. Peel back the P-flex from the perimeter of the display bezel.



The speaker will separate from the P-flex during the removal process.



v462487

Figure 30. Removing the P-Flex



The flexible printed cable (FPC) (flex) is easily damaged. Exercise extreme care when handling.

19. Push the tandem display away from the flip outer by pressing on the CLI display. Be careful not to put excessive pressure on the display. Once the display is free from the flip outer, remove excess adhesive from the bezel so the display can be reused.

20. Use the disassembly tool to remove the vibrator assembly (see Figure 31).

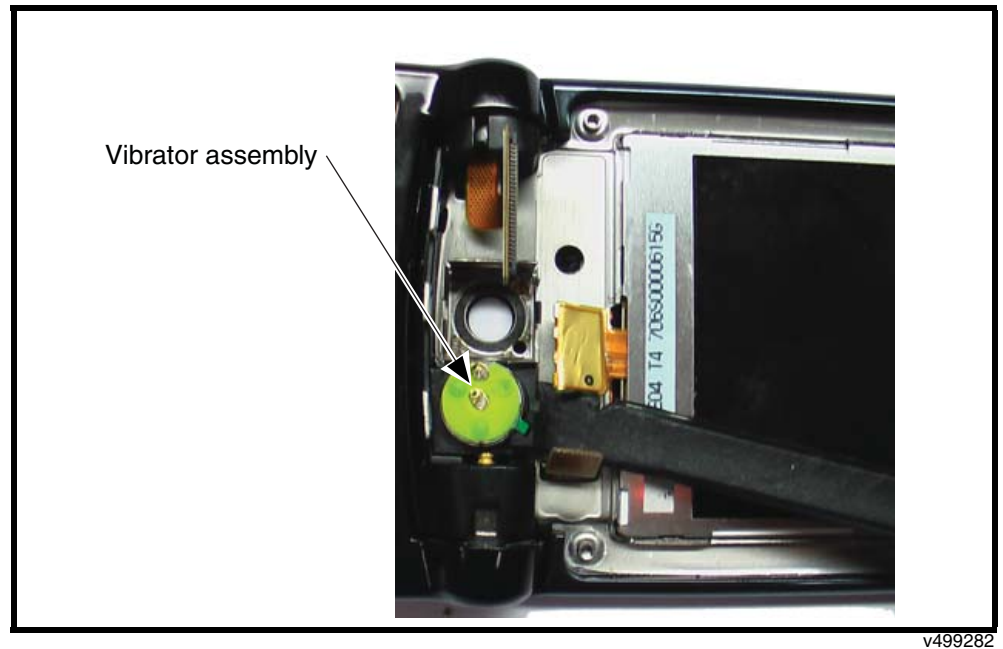


Figure 31. Removing the Vibrator Assembly

v499282

21. Separate the horseshoe assembly from the flip assembly, as shown. Remove the horseshoe assembly from the flip (see Figure 32).

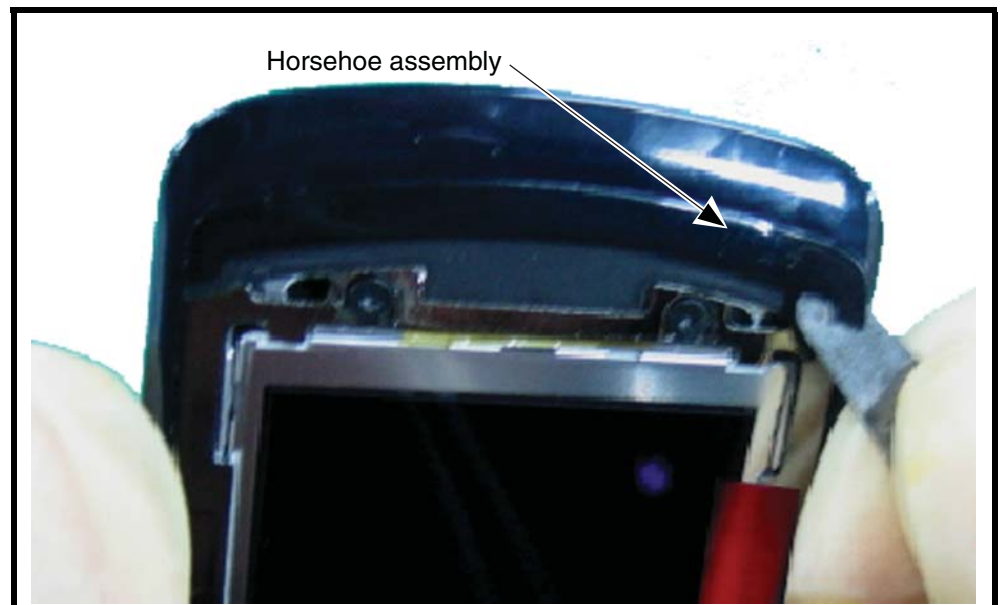
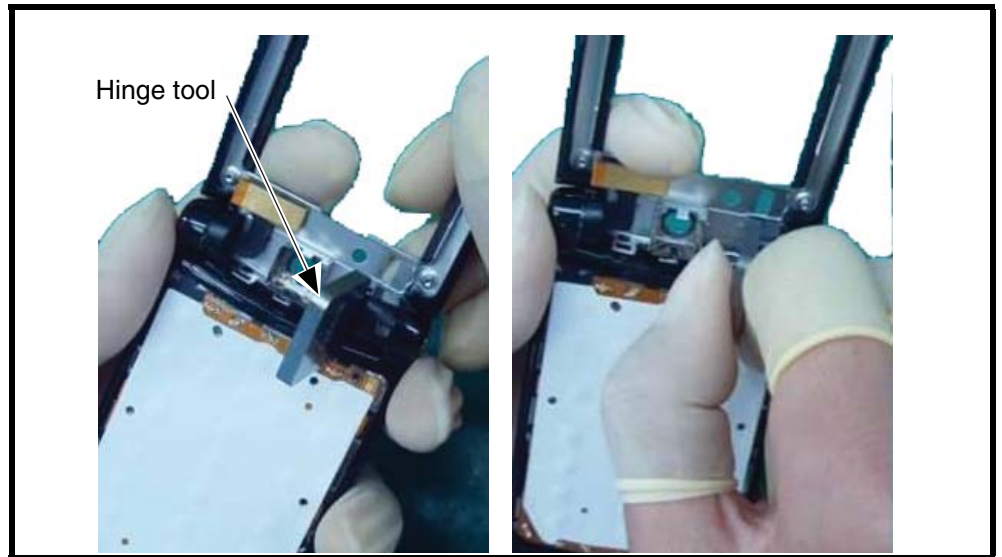


Figure 32. Removing the Horseshoe Assembly

v462490

22. Remove and scrap the earpiece cover.

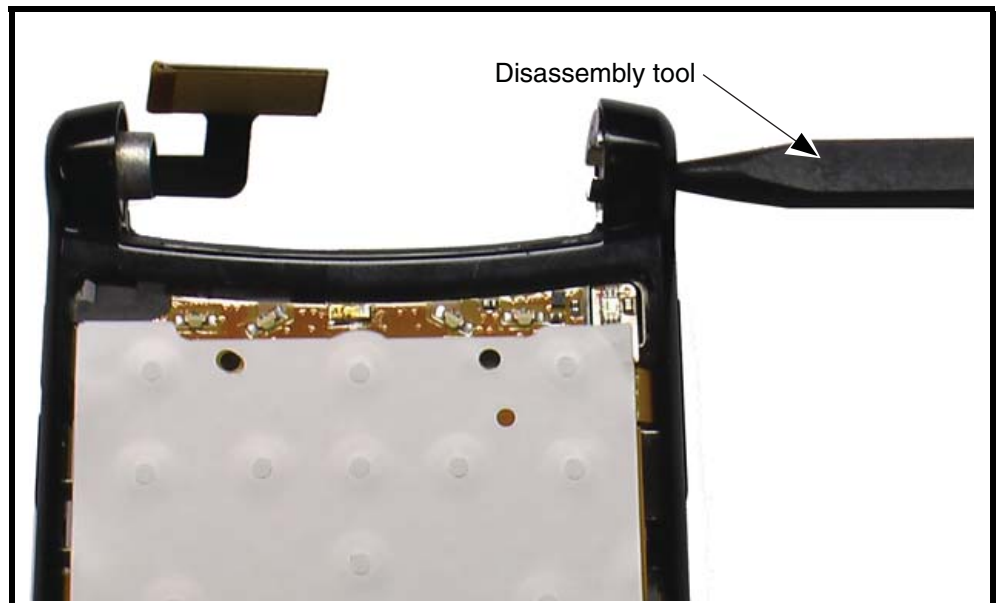
23. Slide hinge tool over end of hinge and pull away from outside of phone. This will release the front housing from the flip outer.



v499323

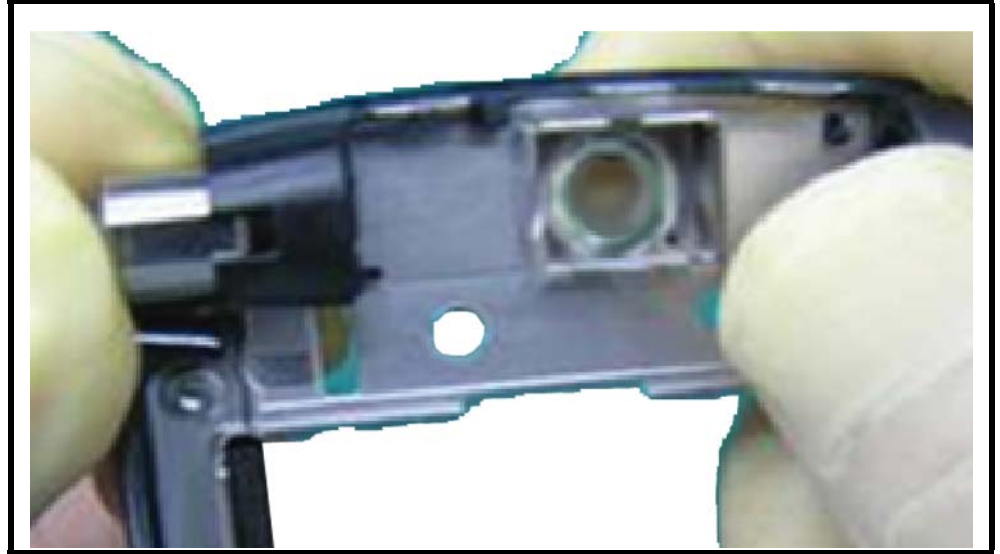
Figure 33. Removing the Flip Hinge

24. Remove the lanyard collar and hinge.



v499325

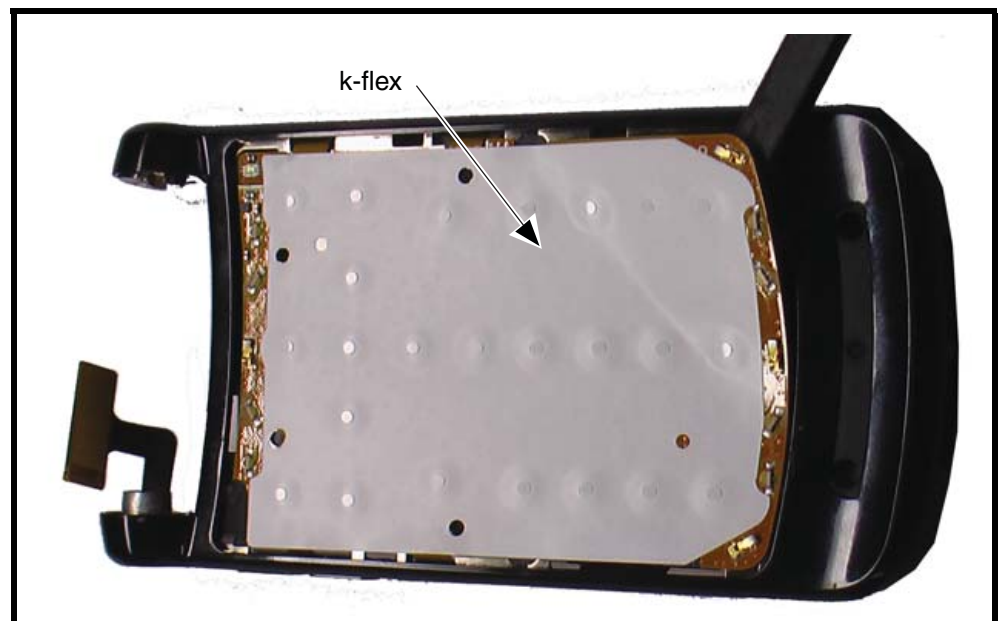
Figure 34. Removing the Lanyard Collar



v462492

Figure 35. Removing the Sleeve

25. Insert the disassembly tool under the k-flex to separate it from the front housing. Peel the k-flex by hand to remove it from the front housing (see Figure 36).



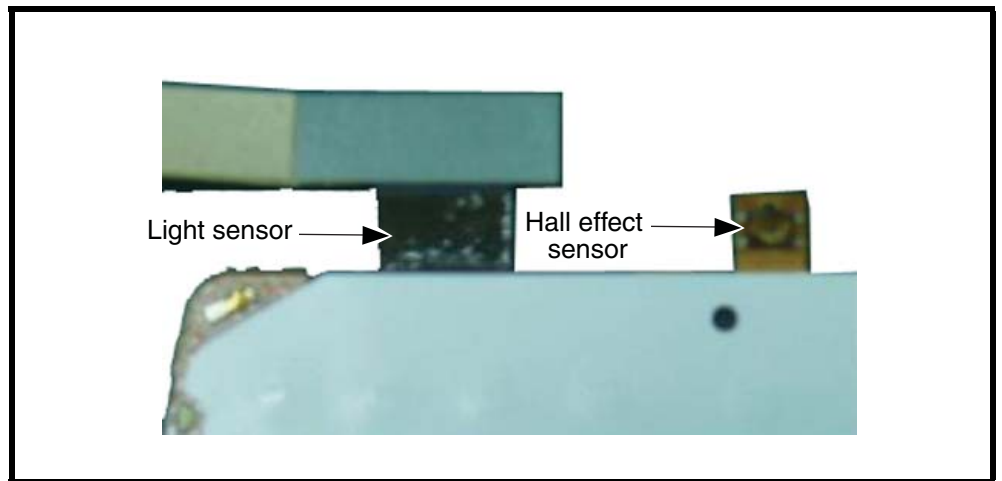
v499335

Figure 36. Removing the K-Flex

Assemble the Flip

Only a keypad flex with the EGC1702 treatment must be used.

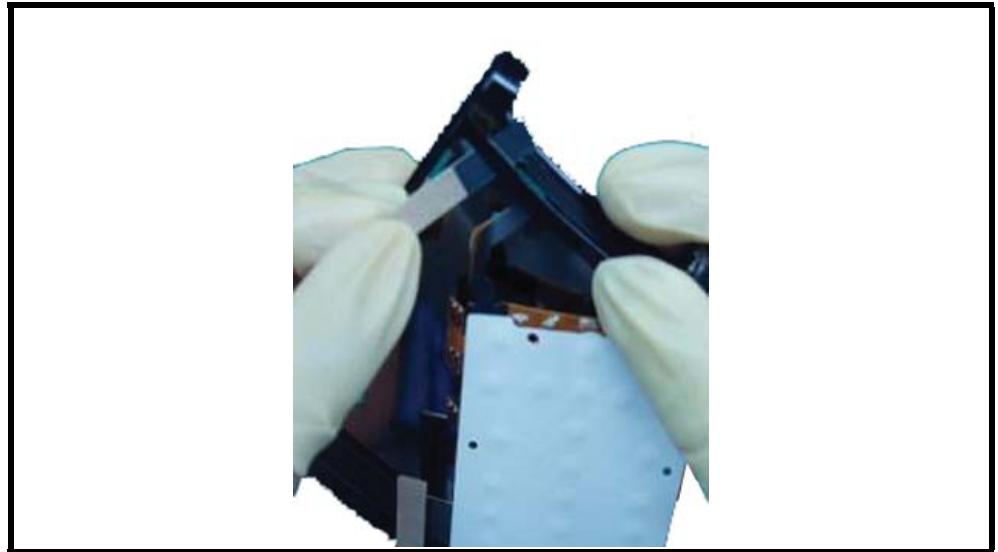
1. Place the front housing into the fixture. Use the alignment pins to align the front housing to the fixture.
2. Peel off the liner on the left side of the keypad flex.
3. Protect the 50 pin flex by covering it with insulating tape. The tape should align to the edge of the Mylar popple dome. (see Figure 37).



v499336

Figure 37. Protecting the K-Flex Sensors

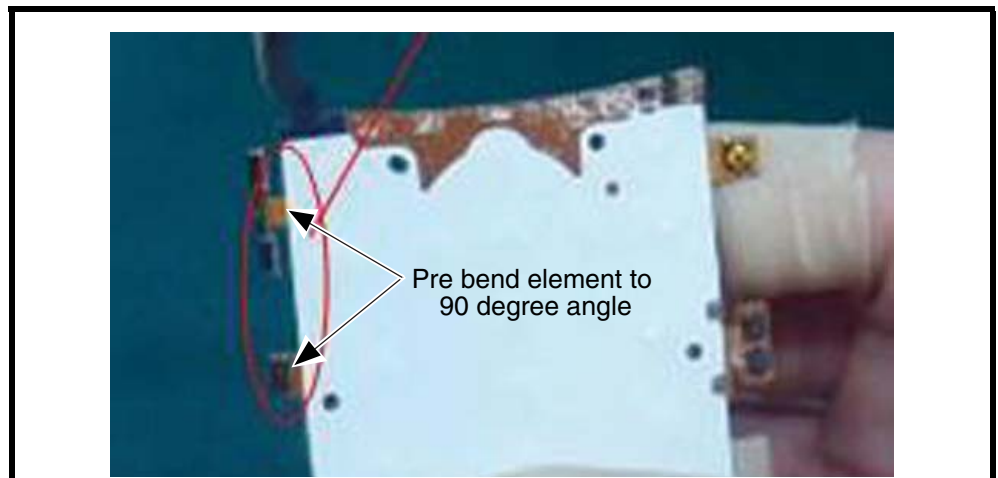
4. Guide the connector through the housing opening during assembly. Use extreme care when bending the flex.



v499337

Figure 38. K-flex Connector

5. Pre-bend the left element to a 90 degree angle.



v499343

Figure 39. Bending the K Flex Left Element

6. Insert the K-flex connector and left element into the front housing.
7. Peel away the liner on the right side of the K-flex.
8. Bend the right element to a 90 degree angle.

9. Place the front housing into the service fixture.

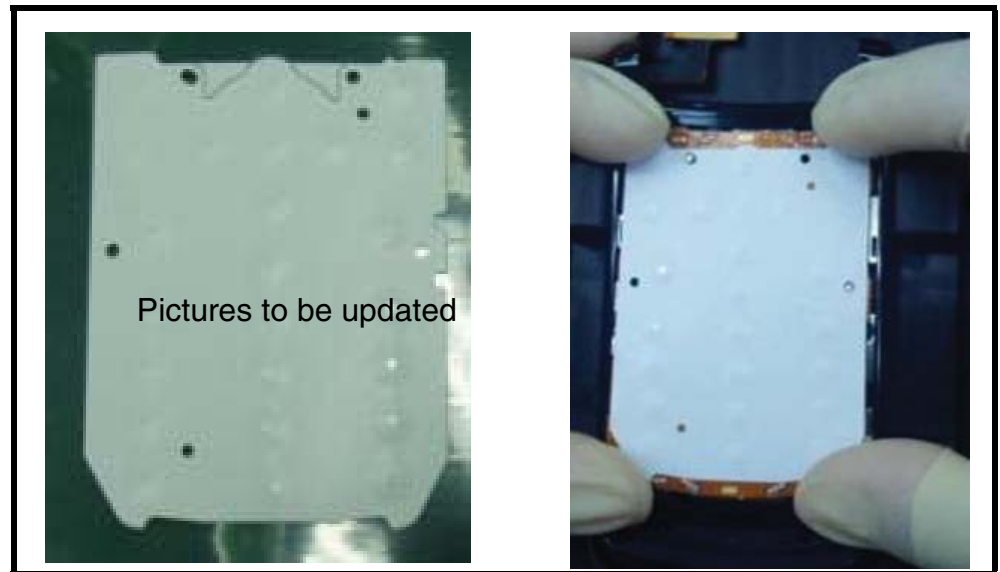


v473809

Figure 40. Front Housing Assembly in the Service Fixture

10. Insert the right side of the K-flex into the front housing.
11. Align and then stick the K-flex onto the front housing. Ensure alignment features are used. Press the K-flex at the corners to ensure proper adhesion to the front housing.

12. Place the mylar on the K-Flex and press evenly to ensure proper adhesion.

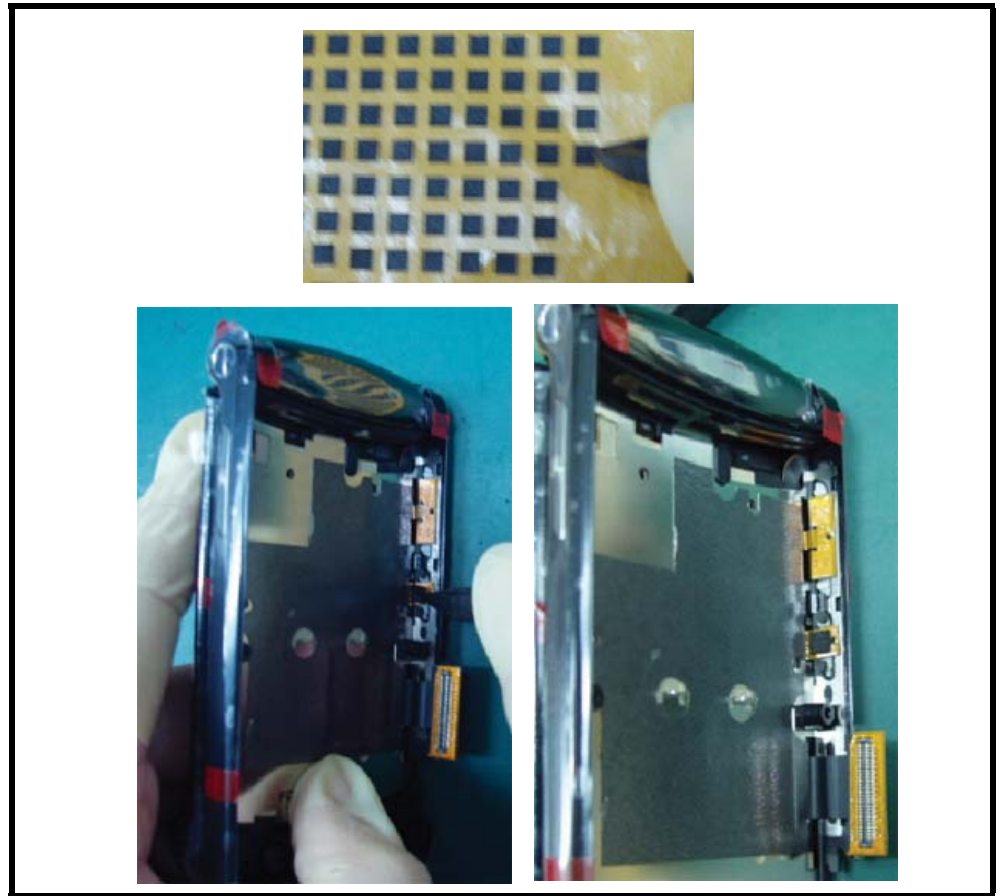


v499344, v499359

Figure 41. Attaching the Mylar to the K-Flex

13. Remove the front housing from the fixture.
14. Install the K-Flex side key pads on the smart key only.

15. Peel a smart key keypad flex pad from its liner.

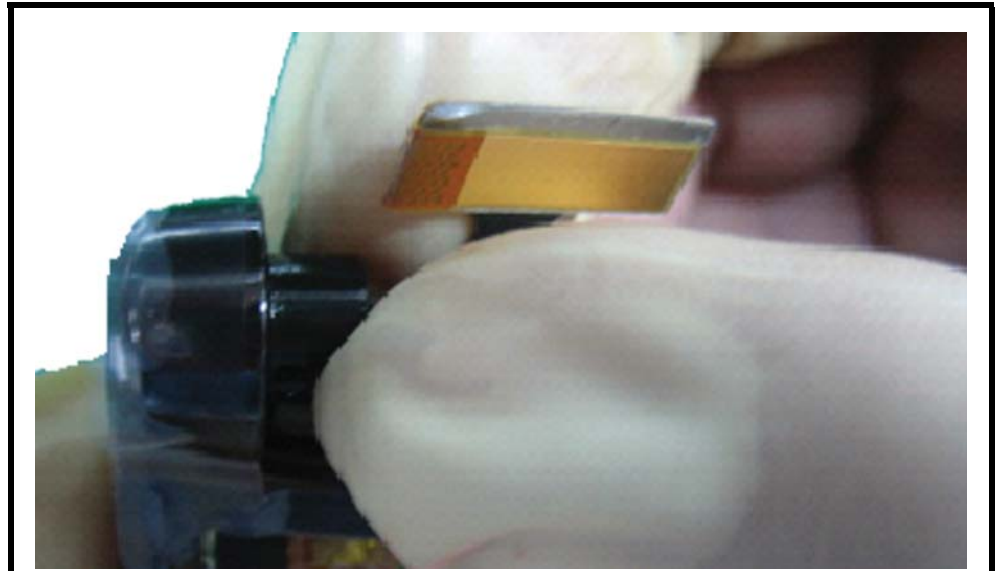


v499402

Figure 42. Installing the Smart Key Keypad Flex Pad

16. Use the tweezers to stick the keypad flex pad to the side of the phone chassis as shown.

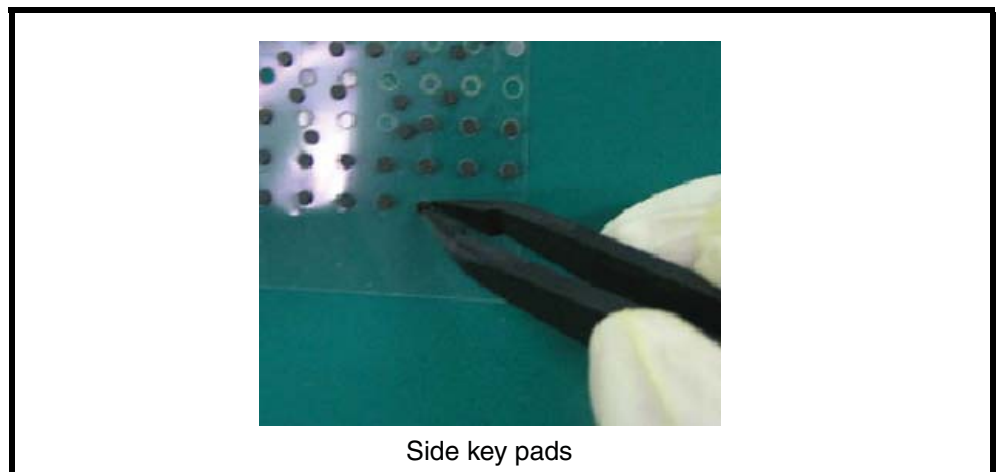
17. Place the housing sleeve to the front housing assembly. Ensure there is no damage to the K-flex. Press the housing sleeve into place in the front housing.



v462530

Figure 43. Installing the Housing Sleeve

18. Inspect the assembly before proceeding to the next step.
19. Peel off side key pad from liner.



Side key pads

v512036

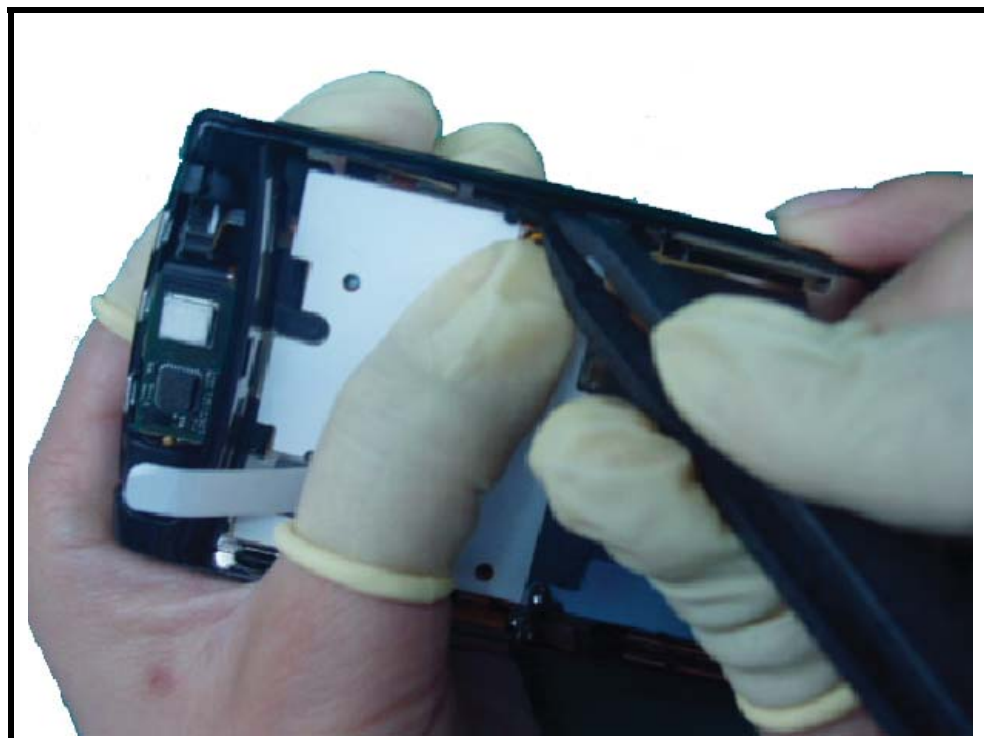
Figure 44. Peeling the Side Key Pads

20. Stick pad onto each side key.



Figure 45. Installing the Side Key Pads

21. Install the side keys onto the phone chassis with tweezers.



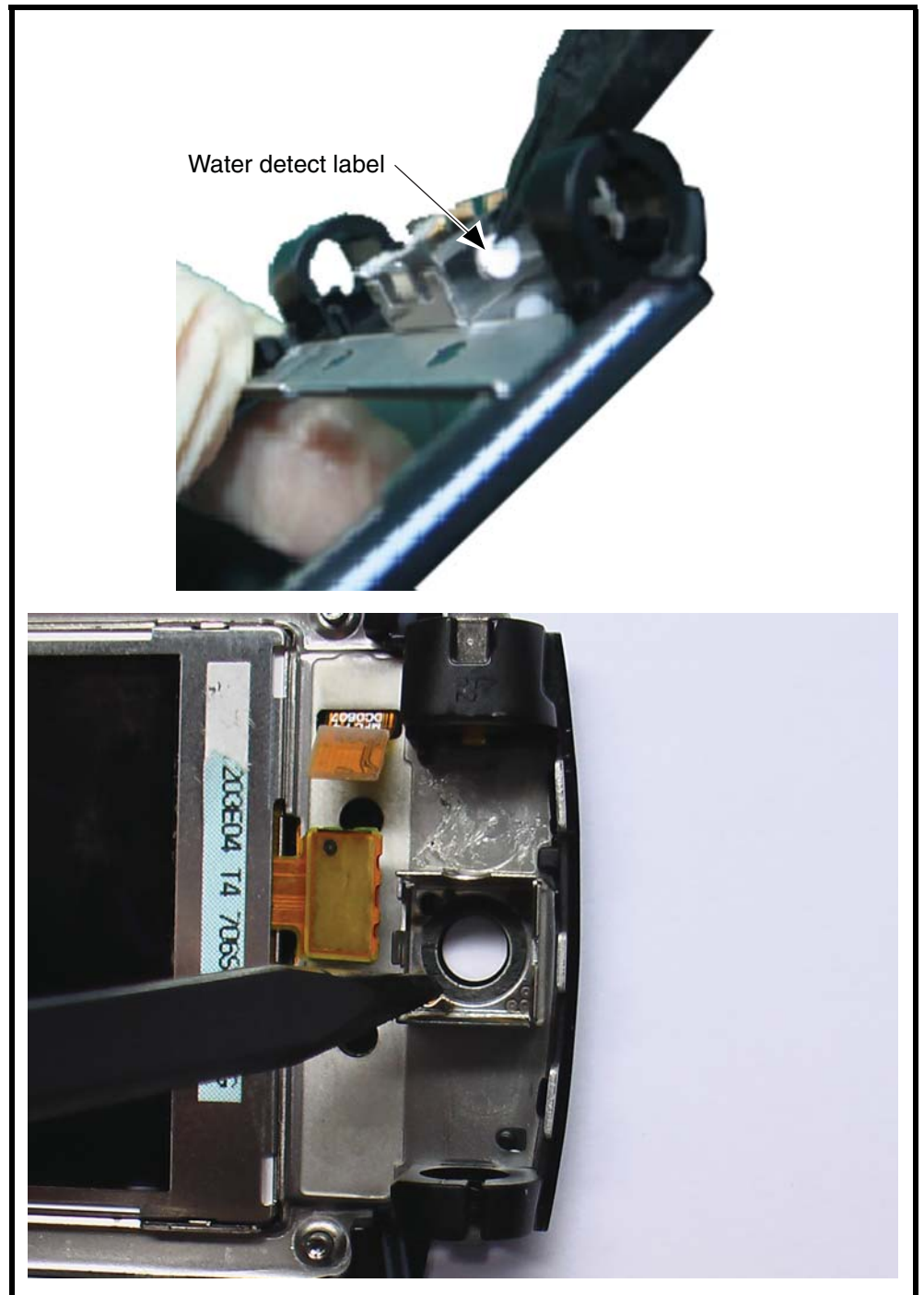
v512034

Figure 46. Installing the Side Key

Assemble the Camera Gasket and Water Label

1. Peel the liner from the camera gasket and place the camera gasket into the fixture with the adhesive side facing upwards.
2. Place the flip outer assembly. Use the fixture to correctly align the outer assembly.

3. Place the water detect label and attach it to the camera shield.

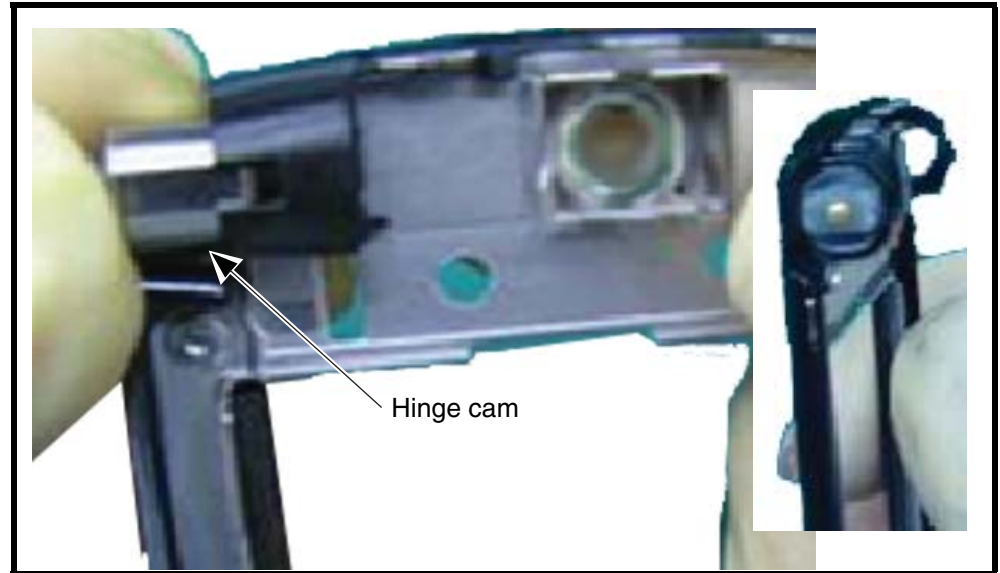


v470168, v462533

Figure 47. Installing the Water Label

Assemble the Hinge

1. Insert the flip hinge cam into the flip outer assembly. The hinge center must remain horizontal (see Figure 48).



v462534 v462535

Figure 48. Installing the Flip Hinge Cam

2. Press the hinge into the flip outer.

Lubrication

1. Apply 3.5 mg of Nygel 744 lubricating grease on both sides of the hinge mechanism.

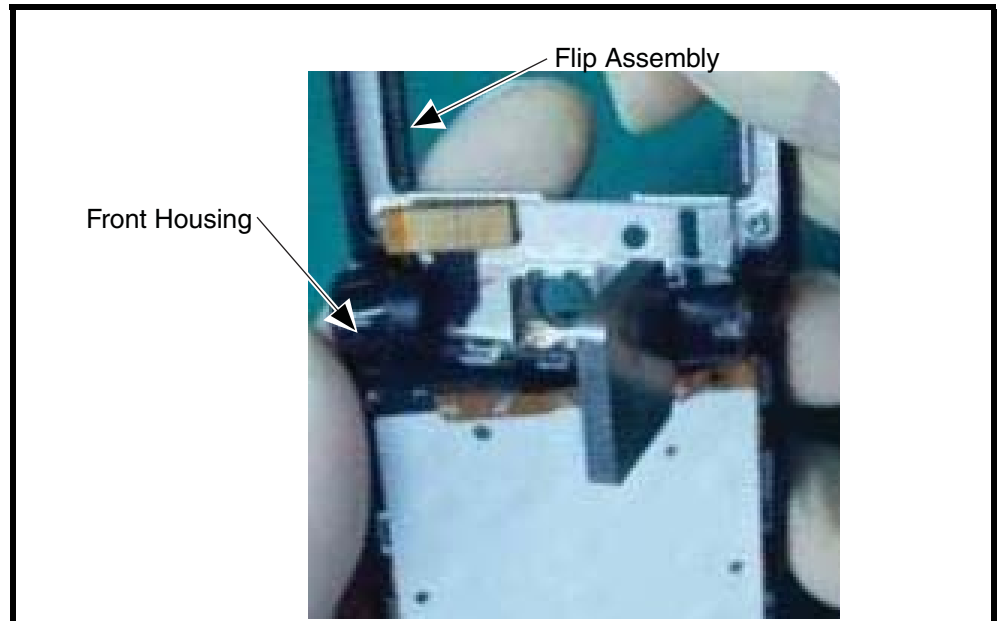


v462536

Figure 49. Lubricating the Flip Hinge

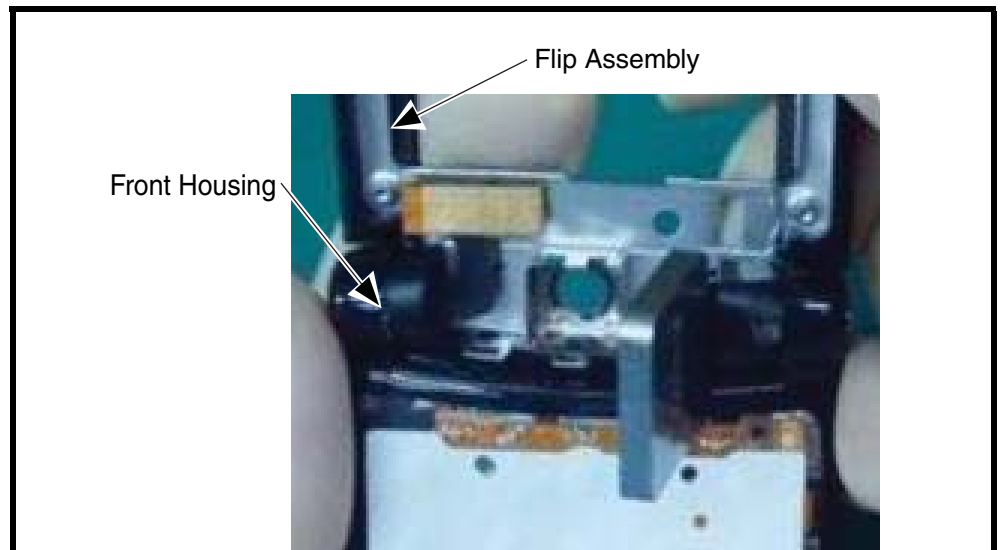
Assembly of Flip to front housing.

1. Assemble flip outer assembly to the front housing.

**Figure 50. Installing the Flip Assembly**

v499377

2. Insert flex into flip outer housing.
3. Align the hinge with the opening in the front housing.

**Figure 51. Aligning the Flip Assembly to the Front Housing**

v4993780

4. Remove the hinge tool.

5. Check flip for proper movement.

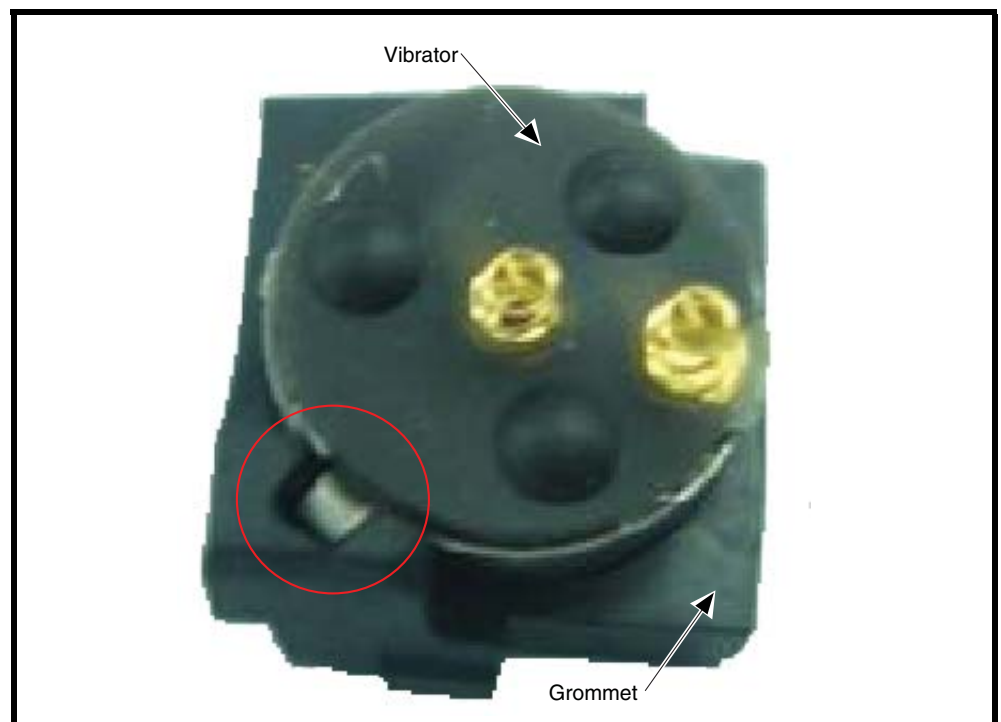


v499376

Figure 52. Inspecting the Flip Assembly

Vibrator Assembly

1. Assemble the vibrator to the vibrator grommet. Vibrator and vibrator grommet must be aligned, as shown.



v462578

Figure 53. Installing the Vibrator Grommet

2. Peel away the vibrator adhesive and attach it to the vibrator assembly.
3. Place the vibrator assembly into the flip assembly. The vibrator springs should be on the right side of the vibrator assembly.

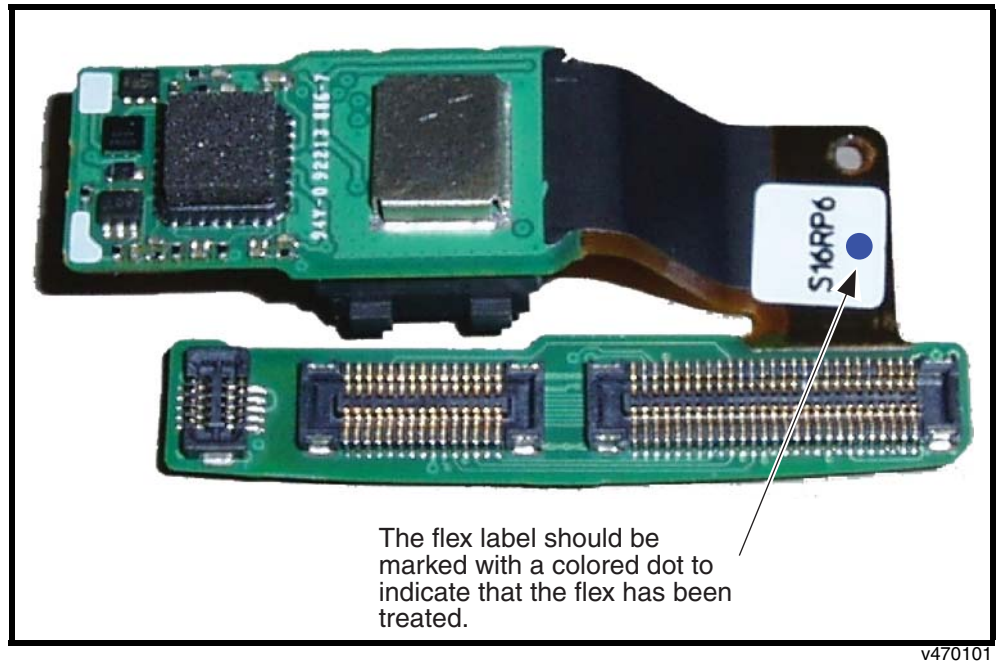


v499375

Figure 54. Installing the Vibrator Assembly

I-Flex and Display Assembly

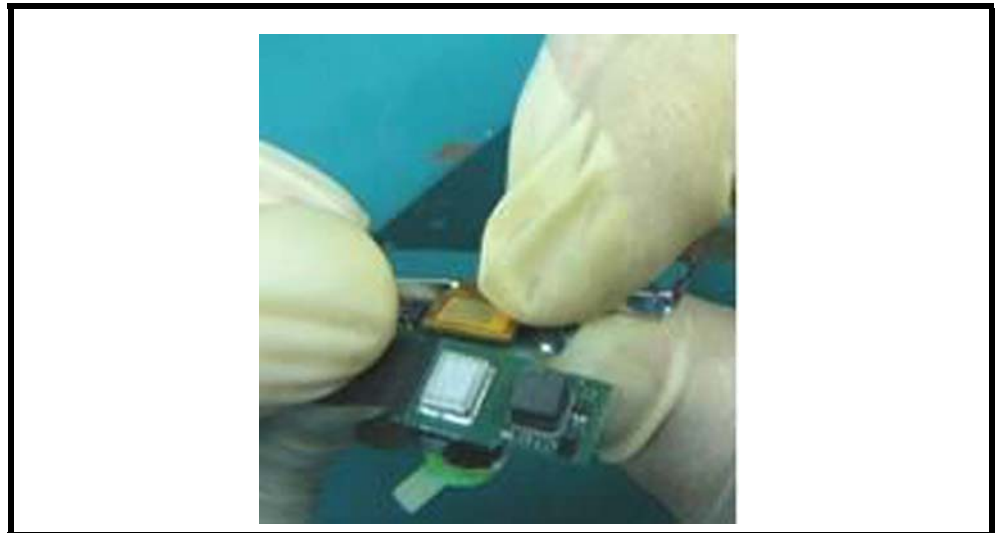
Only a keypad flex with the EGC1702 treatment must be used.



v470101

Figure 55. EGC1702 Treated Imager Flex

1. Connect the imager flex assembly to the LCD.



v470099

Figure 56. Connecting the Imager Flex Assembly

2. Peel away the liner from the camera, camera gasket and the LCD.
3. Place the LCD assembly into the flip assembly.
4. Connect the K-flex connector.
5. Clean dust and foreign matter from the LCD and display lens with an ionized air gun.

P-Flex Assembly and CLI Lens

1. Peel the liner away from the speaker.

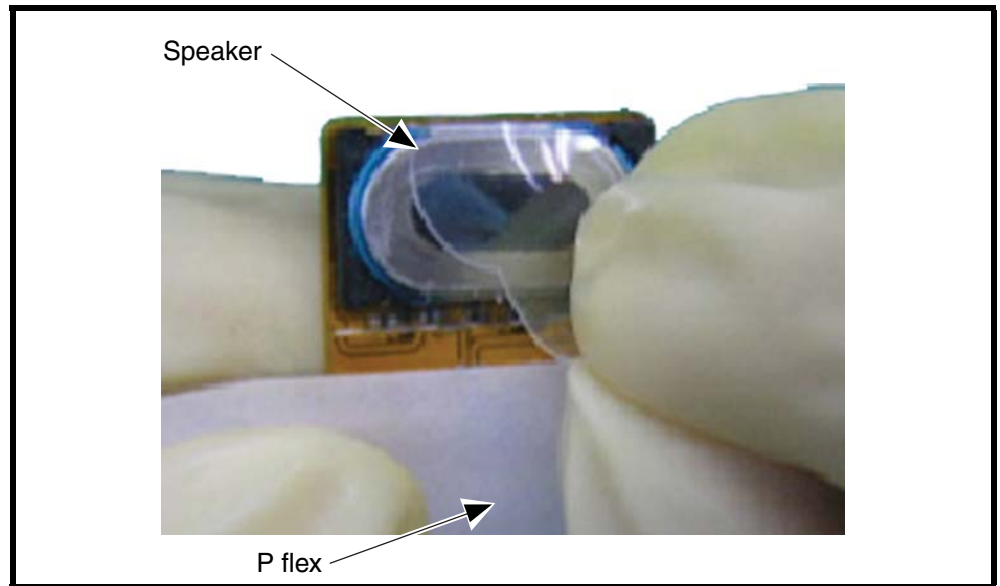
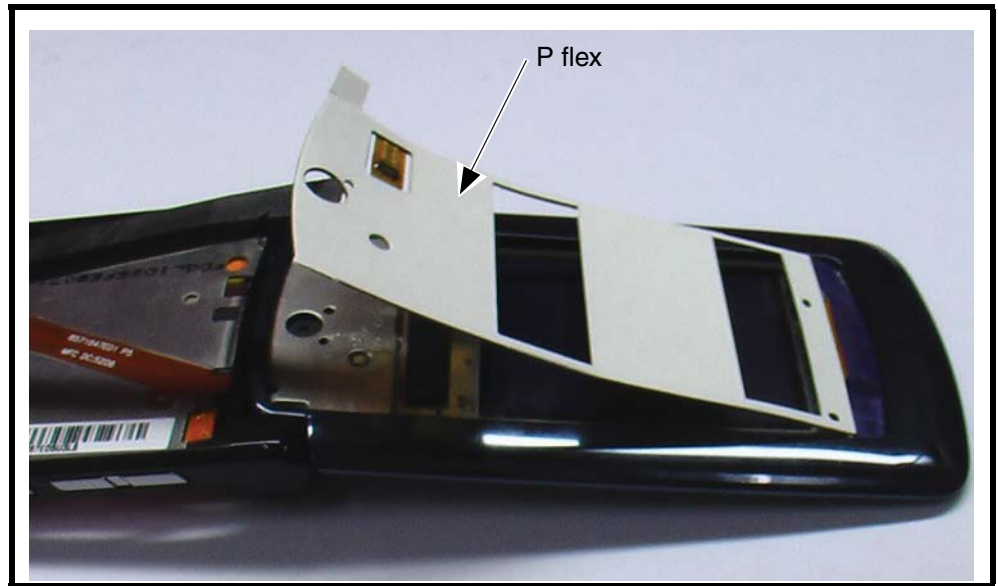


Figure 57. Preparing the Speaker

v462543

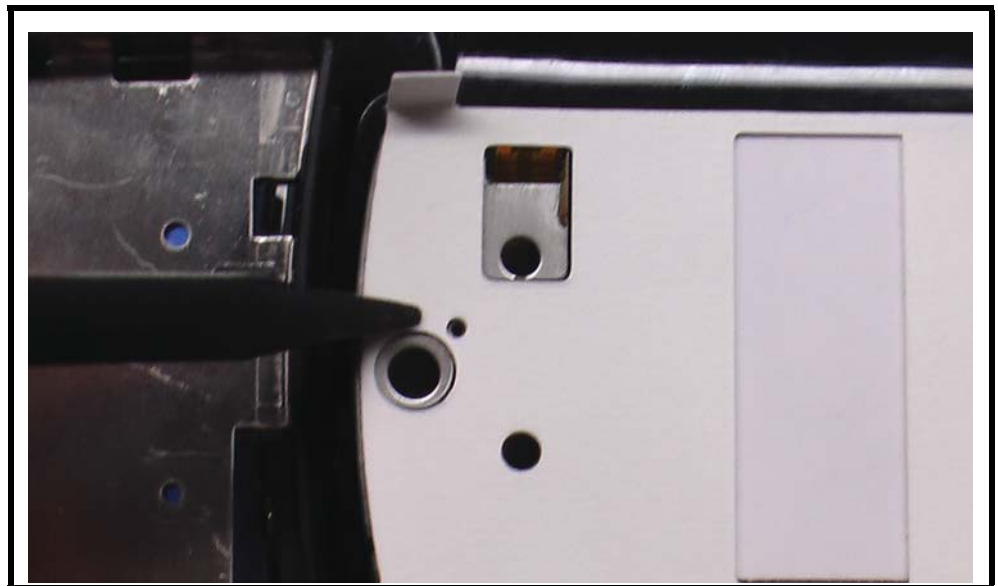
2. Remove the P-Flex bottom liner and insert. Ensure the P-Flex connector passes through the housing.



v470104

Figure 58. Installing the Speaker

3. Align the P-flex using 3 holes on the housing to align and adhere the P-flex to the flip assembly.

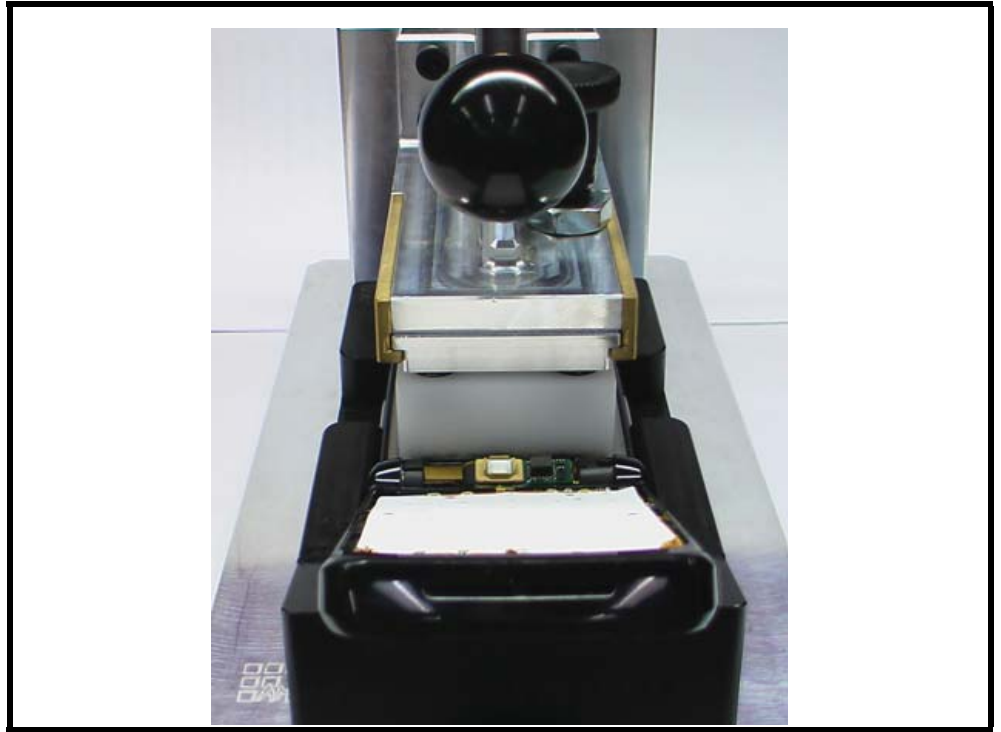


v470103

Figure 59. Attaching the P-Flex

4. Remove the top liner from the CLI lens.
5. Align the CLI lens to the flip outer assembly.

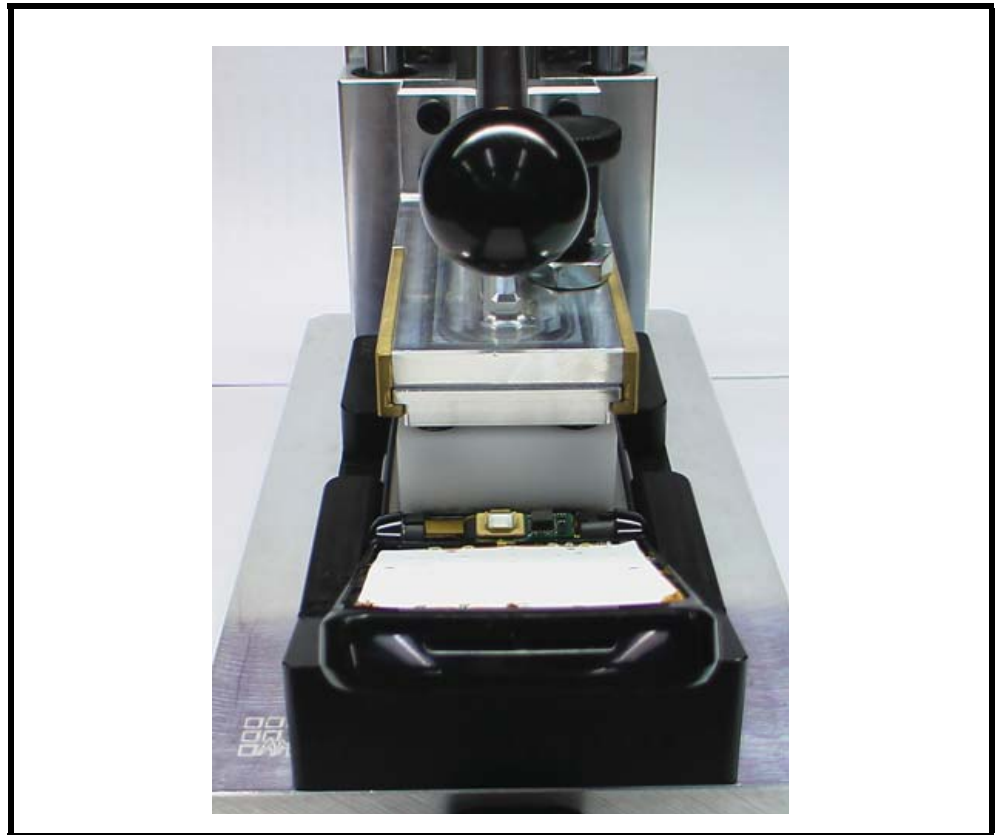
6. Place the flip assembly press fixture to attach the CLI lens to the flip assembly.



v499374

Figure 60. CLI Lens Press Fixture Opened

7. Close the press fixture and hold for 16 seconds.



v499373

Figure 61. CLI Lens Press Fixture Closed

8. Open the fixture and remove the flip assembly.
9. Connect the P-Flex to the I-Flex.

Earpiece Cover

1. Insert the earpiece cover into the fixture with the front side facing upward.

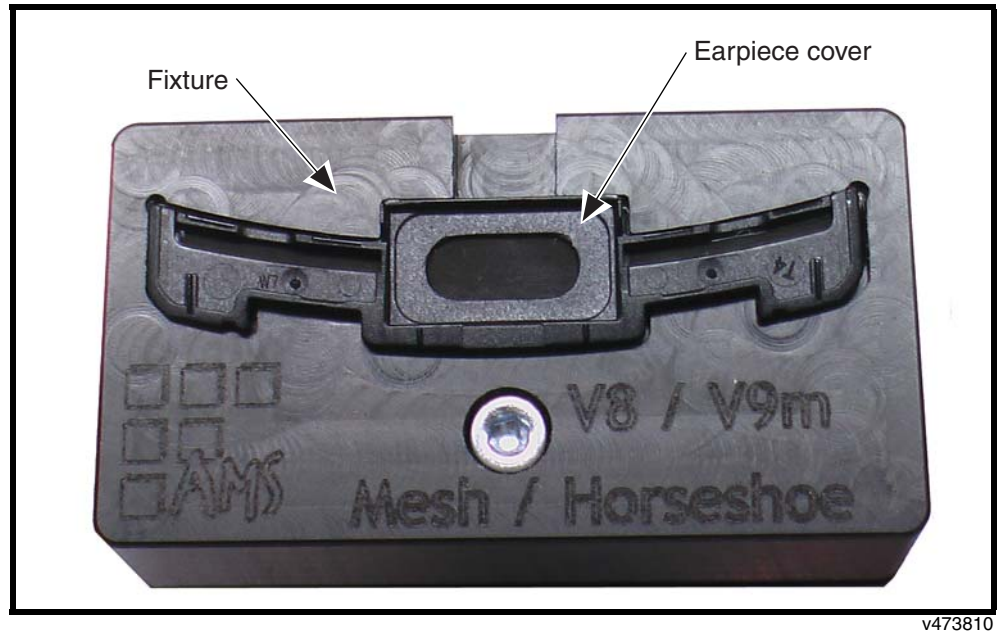
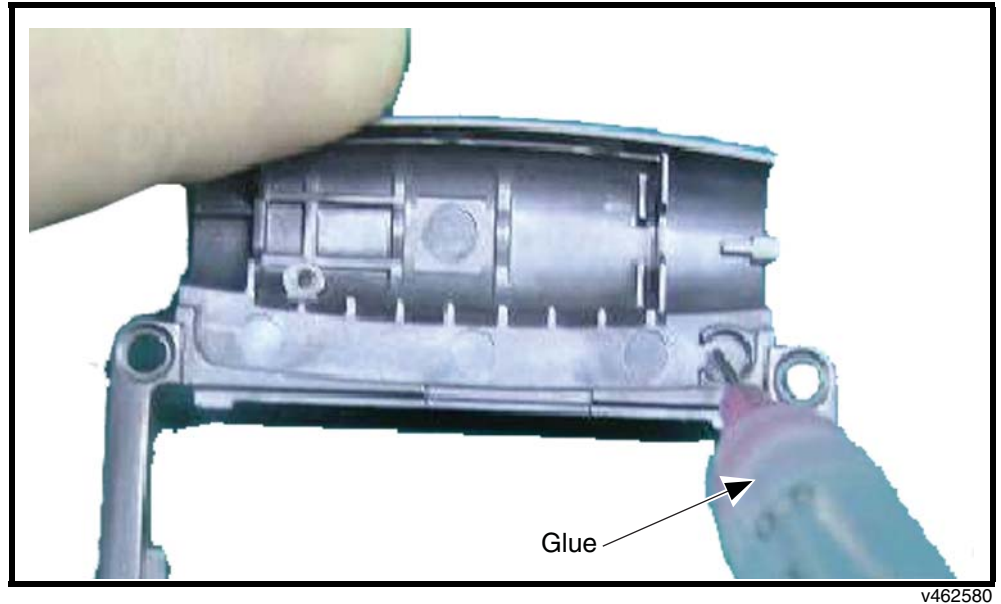


Figure 62. Earpiece Cover in the Fixture

2. Activate the press fixture to adhere the speaker mesh to the earpiece cover.
3. Remove the earpiece cover from the fixture and inspect earpiece cover for damage.

Magnet

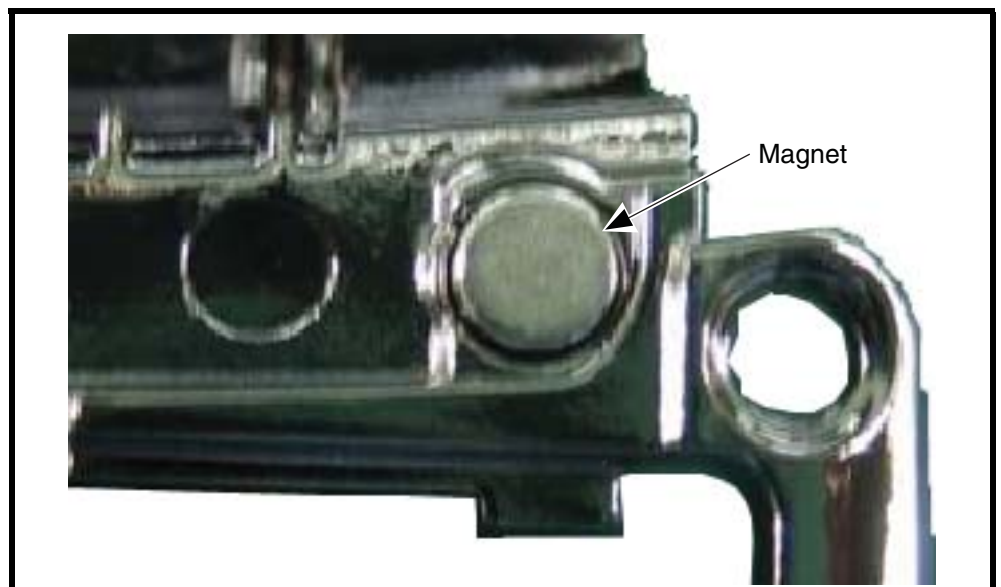
1. Apply 1.4 mg \pm .2 mg glue to the flip inner assembly.



v462580

Figure 63. Installing Magnet Glue to the Flip Inner Assembly

2. Place the magnet onto the flip inner assembly. Wipe away any excess glue.



v462581

Figure 64. Installing the Magnet to the Flip Inner Assembly

3. Attach the 10 pin pad the to the back of the 10 pin connector.

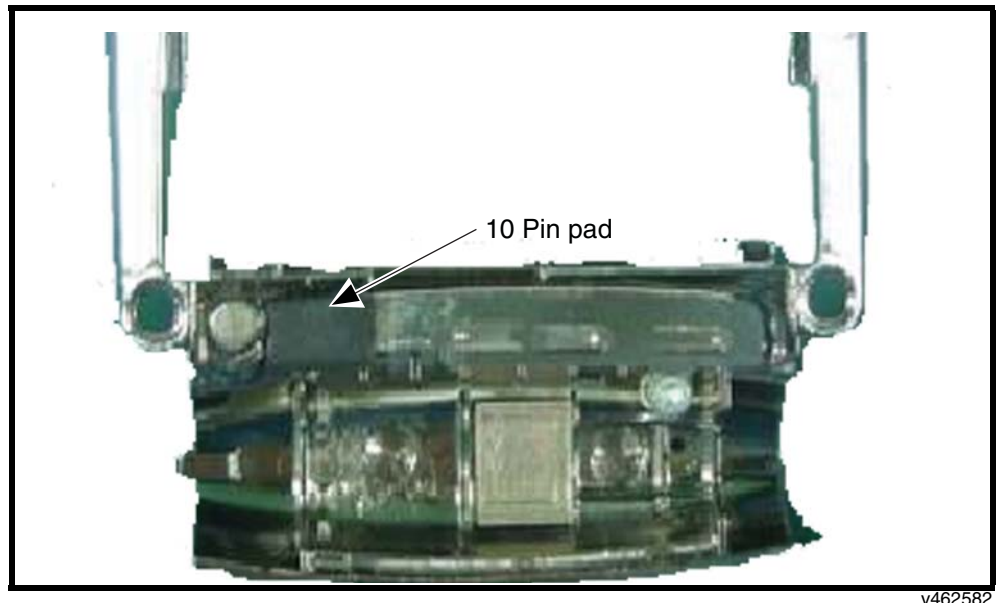


Figure 65. installing 10 Pin Pad

v462582

Grounding Clip

1. Install the grounding clip and secure with T5 IP driver.

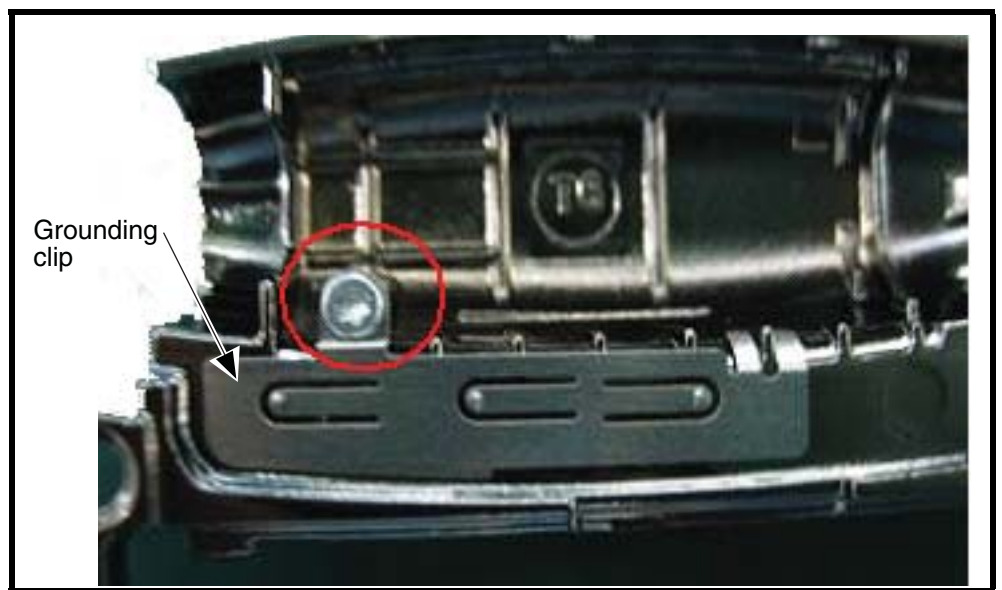
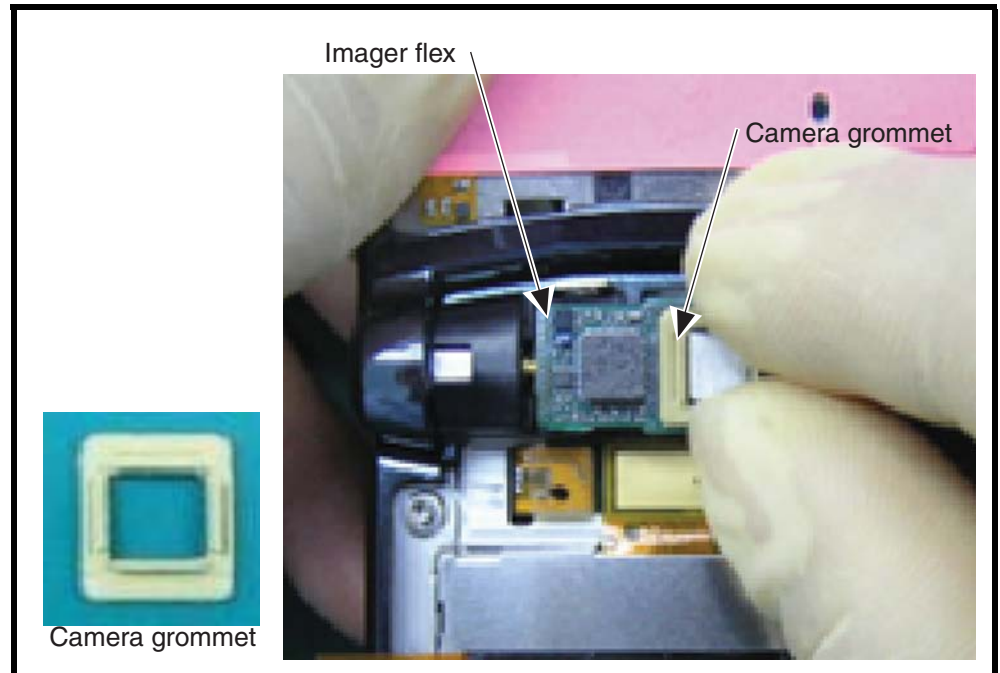


Figure 66. Installing Grounding Clip

v462583

Flip Inner

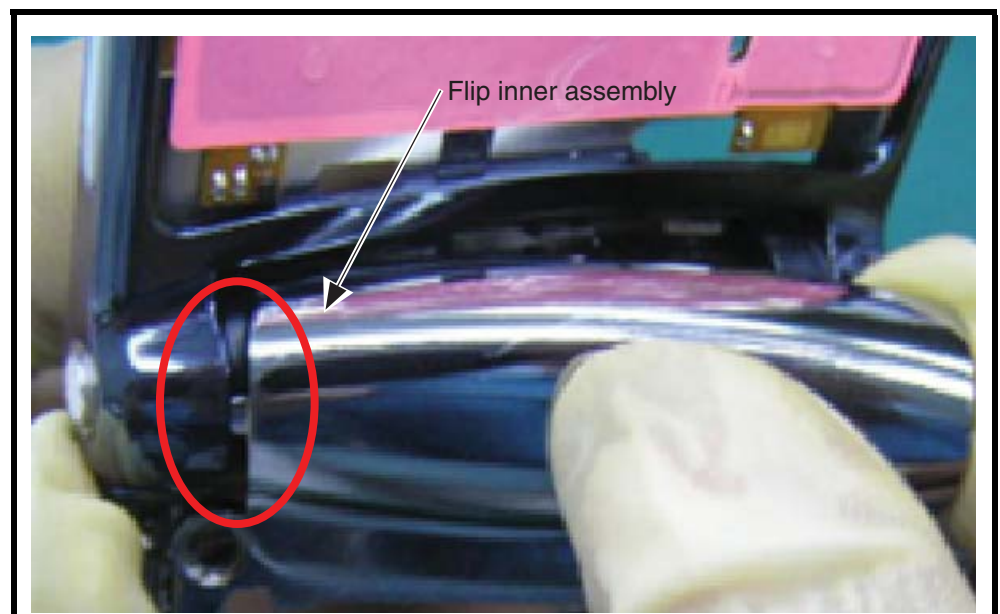
1. Assemble the camera upper grommet to the imager flex assembly.



v463166

Figure 67. Installing Camera Upper Grommet

2. Assemble the flip inner assembly to the flip assembly.

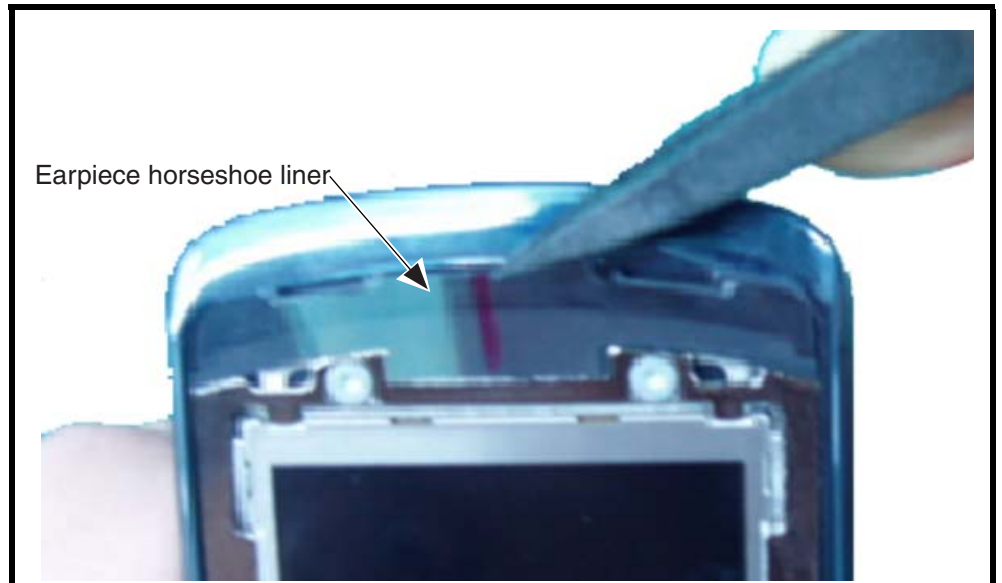


v463167

Figure 68. Installing the Flip Inner Assembly

Horseshoe and Main Lens

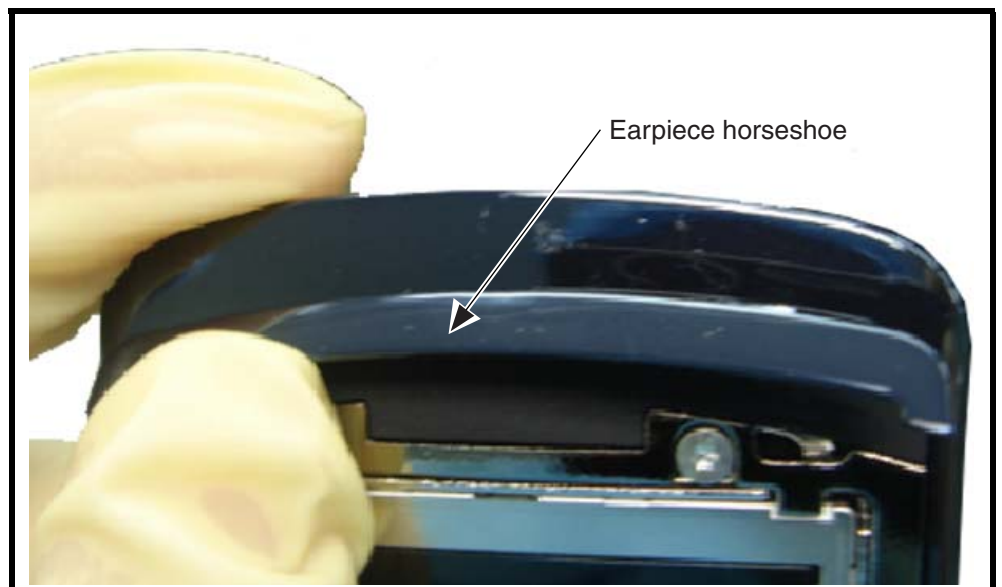
1. Peel the liner away from the earpiece horseshoe (see Figure 69).



v463168

Figure 69. Removing the Earpiece Horseshoe Liner

2. Insert the two ends of the earpiece horseshoe into the flip assembly.



v463169

Figure 70. Installing the Earpiece Horseshoe

3. Peel away the liner from the LCD. Use an air gun to blow away any dust or foreign matter.



v463170

Figure 71. Removing the LCD Liner

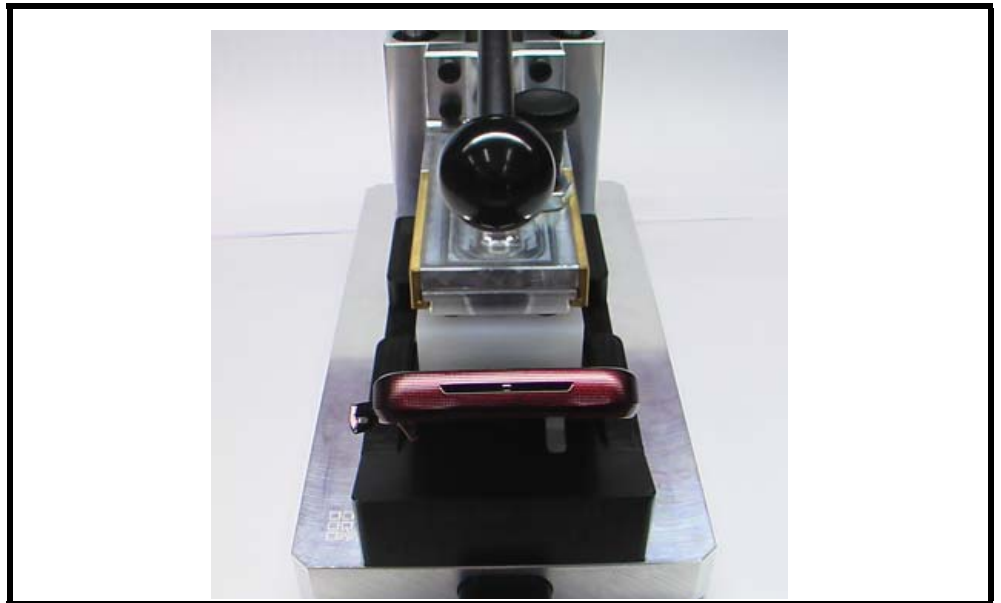
4. Peel away the liner from the main lens. Use an air gun to blow away any dust or foreign matter.
5. Attach the main lens to the LCD. Align the main lens to the flip inner assembly.



v463171

Figure 72. Attaching the Main Lens

6. Place phone in the fixture.



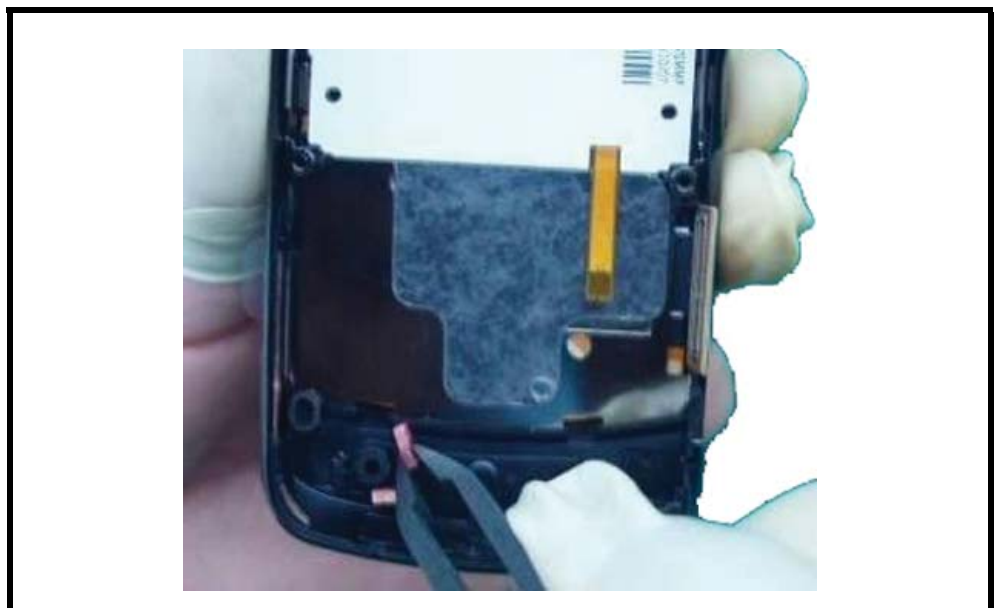
v499371

Figure 73. Pressing the Main Lens

7. Close the fixture and hold for 13 seconds
8. Open the fixture and remove the phone.

Speaker Contacts

1. Use the plastic tweezers to install the speaker contacts in the front housing.



v499370

Figure 74. installing Speaker Contacts

2. Replace the transceiver board, antenna, rear housing, battery, and battery cover as described in the procedures.

Subscriber Identity Module (SIM) and Identification

SIM Card

A SIM is required to access the existing local GSM network, or remote networks when traveling (if a roaming agreement has been made with the provider).

The SIM contains:

- All the data necessary to access GSM services.
- The ability to store user information, such as phone numbers.
- All information required by the network provider to provide access to the network.

Personality Transfer

A personality transfer is required when a phone is express exchanged or when the main board is replaced. Personality transfers reproduce the customer's original personalized details, such as menu and stored memory, such as phone books, or even just program a unit with basic user information, such as language selection. V9 telephones use Motorola® Phone Tools™ synchronization software to effect a personality transfer.

Identification

Each Motorola GSM device is labeled with a variety of identifying numbers. The following information describes the current identifying labels.

Mechanical Serial Number (MSN)

The Mechanical Serial Number (MSN) is an individual unit identity number and remains with the unit throughout the life of the unit.

The MSN can be used to log and track a unit on Motorola's Service Center Database. The MSN is divided into 4 sections, as shown in Figure 75.

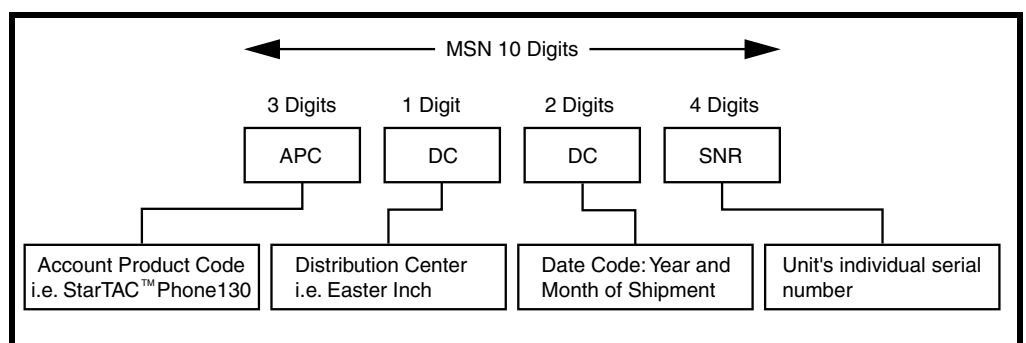


Figure 75. MSN Label breakdown

000807a

International Mobile Station Equipment Identity (IMEI)

The International Mobile station Equipment Identity (IMEI) number is an individual number unique to the PCB and is stored within the unit's memory.

The IMEI uniquely identifies an individual mobile station and thereby provides a means for controlling access to GSM networks based on mobile station types or individual units. The full IMEI structure is listed in Table 2.

Table 2. IMEI Number Breakdown

TAC	Serial Number	Check Digit
NNXXXXXX	ZZZZZZ	A

Where

TAC Type Allocation Code, formerly known as Type Approval Code

NN Reporting body identifier

XXXXXX Type Identifier

ZZZZZZ Individual unit serial number

A Phase 1 = 0.

Phase 2 = check digit defined as a function of all other IMEI digits

Other label number configurations present are:

- **TRANSCIEVER NUMBER:** Identifies the product type. Normally the SWF number. (i.e. V100).
- **PACKAGE NUMBER:** Identifies the equipment type, mode, and language in which the product is shipped.

Troubleshooting

Troubleshooting Chart

Table 3. Level 1 and 2 Troubleshooting Chart

SYMPTOM	PROBABLE CAUSE	VERIFICATION AND REMEDY
1. Telephone will not turn on or stay on.	a) Battery either discharged or defective.	Measure battery voltage across a 50 ohm (>1 Watt) load. If the battery voltage is <3.25 Vdc, recharge the battery using the appropriate battery charger. If the battery will not recharge, replace the battery. If battery is not at fault, proceed to b.
	b) Battery connectors open or misaligned.	Visually inspect the battery connectors on both the battery and the telephone. Realign and, if necessary, either replace the battery or refer to a Level 3 Service Center for the battery connector replacement. If battery connectors are not at fault, proceed to c.
	c) Transceiver board assembly defective.	Remove the transceiver board assembly. Substitute a known good assembly and temporarily reassemble the unit. Press and hold the PWR button; if unit turns on and stays on, disconnect the dc power source and reassemble the telephone with the new transceiver board assembly. Verify that the fault has been cleared.
2. Telephone exhibits poor reception or erratic operation, such as calls frequently dropping or weak or distorted audio.	a) Antenna assembly defective.	Check to make sure that the antenna pin is properly connected to the transceiver board assembly. If connected properly, substitute a known good antenna. If the fault is still present, proceed to b.
	b) Transceiver board assembly defective.	Replace the transceiver board assembly (refer to 1c). Verify that the fault has been cleared and reassemble the unit with the new transceiver board assembly.
3. Display is erratic, or provides partial or no display.	a) Transceiver board connections faulty.	Remove rear chassis assembly from unit, check general condition of flexible printed cable (flex). If the flex is good, check that the flex connector is fully pressed down. If not, check connector to transceiver board connections. If faulty connector, replace the transceiver board assembly. If connector is not at fault, proceed to b.
	b) Flip assembly defective.	Temporarily replace the flip assembly with a known good assembly. If fault has been cleared, reassemble with the new flip assembly. If fault not cleared, proceed to c.
	c) Transceiver board assembly defective.	Replace the transceiver board assembly (refer to 1c). Verify that the fault has been cleared and reassemble the unit with the new transceiver board assembly.
4. Incoming call alert transducer audio distorted or volume is too low.	Faulty transceiver board assembly.	Replace the transceiver board assembly (refer to 1c). Verify that the fault has been cleared and reassemble the unit with the new transceiver board assembly.

Table 3. Level 1 and 2 Troubleshooting Chart (Continued)

SYMPTOM	PROBABLE CAUSE	VERIFICATION AND REMEDY
5. Telephone transmit audio is weak. (usually indicated by called parties complaining of difficulty in hearing voice).	a) Transceiver board assembly defective.	Replace the transceiver board assembly (refer to 1c). Verify that the fault has been cleared and reassemble the unit with the new transceiver board assembly.
6. Receive audio from earpiece speaker is weak or distorted.	a) Connections to or from transceiver board assembly defective.	Gain access to the transceiver board assembly as described in the procedures. Check flex and the flex connector from the flip assembly to the transceiver board assembly. If flex is at fault, replace flip assembly. If flex connector is at fault, proceed to d. If connection is not at fault, proceed to b.
	b) Flip assembly defective.	Temporarily replace the flip assembly with a known good assembly. If fault has been cleared, reassemble with the new flip assembly. If fault not cleared, proceed to c.
	c) Antenna assembly defective.	Check to make sure the antenna is installed correctly. If the antenna is installed correctly, substitute a known good antenna assembly. If this does not clear the fault, reinstall the original antenna assembly and proceed to d.
	d) Transceiver board assembly defective.	Replace the transceiver board assembly (refer to 1c). Verify that the fault has been cleared and reassemble with the new transceiver board assembly.
7. Telephone will not recognize or accept SIM.	a) SIM defective.	Check the SIM contacts for dirt. Clean if necessary and check if fault has been cleared. If the contacts are clean, insert a known good SIM into the telephone. Power up the unit and confirm that the SIM has been accepted. If the fault no longer exists, replace the defective SIM. If the SIM is not at fault, proceed to b.
	b) Transceiver board assembly defective.	Replace the transceiver board assembly (refer to 1c). Verify that the fault has been cleared and reassemble the unit with the new transceiver board assembly.
8. Phone does not sense when flip is opened or closed (usually indicated by inability to answer incoming calls by opening the flip, or inability to make outgoing calls).	a) Flip assembly defective.	Temporarily replace the flip assembly with a known good assembly. If fault has been cleared, reassemble with the new flip assembly. If fault not cleared, proceed to b.
	b) Transceiver board assembly defective.	Replace the transceiver board assembly (refer to 1c). Verify that the fault has been cleared and reassemble the unit with the new transceiver board assembly.

Table 3. Level 1 and 2 Troubleshooting Chart (Continued)

SYMPTOM	PROBABLE CAUSE	VERIFICATION AND REMEDY
9. Vibrator feature not functioning.	Transceiver board assembly defective.	Replace the transceiver board assembly (refer to 1c). Verify that the fault has been cleared and reassemble the unit with the new transceiver board assembly.
10. Internal Charger not working.	Faulty charger circuit on transceiver board assembly.	Test a selection of batteries in the rear pocket of the desktop charger. Check LED display for the charging indications. If these are charging properly, then the internal charger is at fault. Replace the transceiver board assembly (refer to 1c). Verify that the fault has been cleared and reassemble the unit with the new transceiver board assembly.
11. Real Time Clock resetting when standard battery is removed.	Lithium button cell in the display board may be depleted.	Refer service to a Level 3 service center for replacement.

Programming: Software Upgrade and Flexing

Contact your local technical support engineer for information about equipment and procedures for flashing and flexing.

Part Numbers

The following information is provided as a reference for the parts associated with V9 telephones.

Exploded View Diagram

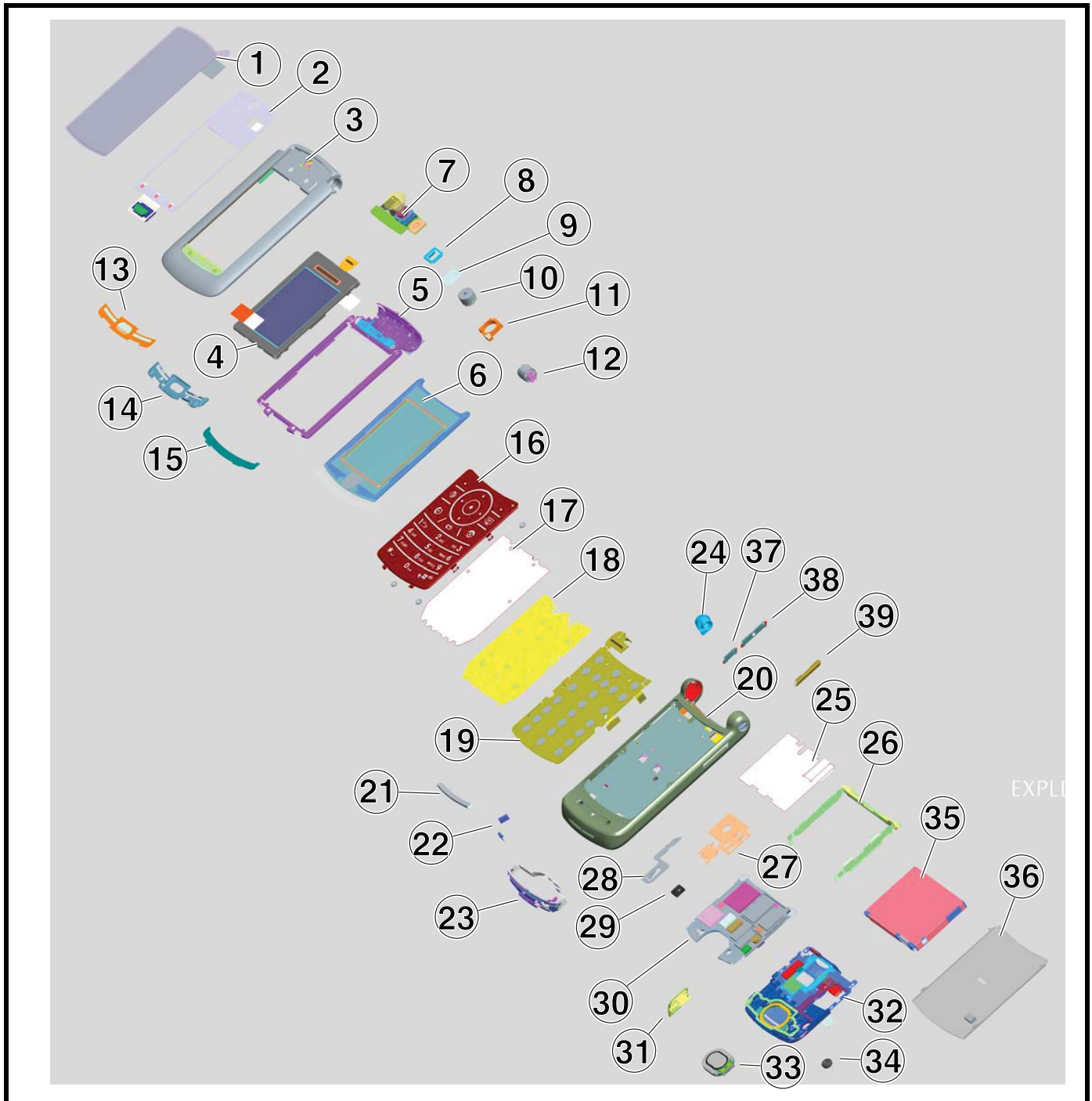


Figure 76. Exploded View Diagram

v479230

Exploded View Parts List

The following part numbers are provided only for reference. Please contact your local Motorola parts organization for current part number information.

Table 4. Parts List

Item #	Motorola Part Number	Detailed Part Description	SJUG2840AA	SJUG3841AA	SJUG3886AA	SJUG4069AA	SJUG4080AA
1	6171034G01	LENS ASSEMBLY,CLI,DECORATED,SPUN DPG, MOGEM		X			
1	6171034G04	LENS ASSEMBLY,CLI,DECORATED,SPUN MGY, MOGEM	X				X
1	6171034G05	LENS ASSEMBLY,CLI,DECORATED,SPUN GPT, MOGEM			X	X	
2	8471442E01	FLEX,PERSONALITY ASSY	X	X	X	X	X
3	1571355E02	HOUSING ASSEMBLY,OUTSIDE FLIP,DARK PEARL GREY,FINISHED		X			
3	1571355E05	HOUSING ASSEMBLY,OUTSIDE FLIP, MAHOGANY, FINISHED	X				X
3	1571355E06	HOUSING ASSEMBLY,OUTSIDE FLIP, GRAPHITE, FINISHED			X	X	
4	7271203E02	DISPLAY,LCD,PANEL MOUNT,33.84X45.12,262K TFT,240X320,ASSEMBLY,MODULE TANDEM	X	X	X	X	X
5	0171609E01	ASSEMBLY,FLIP,INNER ASSEMBLY	X	X	X	X	X
6	6171435E02	LENS ASSEMBLY, DISPLAY,PLASTIC-POLYCARBONATE, MAIN,		X			
6	6171435E05	LENS ASSEMBLY, DISPLAY,PLASTIC-POLYCARBONATE,MAIN, MAHOGANY	X				X
6	6171435E06	LENS ASSEMBLY, DISPLAY,PLASTIC-POLYCARBONATE, MAIN, GRAPHITE			X	X	
7	0171004R01	CAMERA,FLEX PCB, IMAGER ASSEMBLY WITH EGC, SERVICE	X	X	X	X	X
8	0571584E01	GROMMET,CUSTOM,CONDUCTIVE ELASTOMER, UPPER CAMERA	X	X	X	X	X
9	0771141F01	BRACKET ASSEMBLY,MOUNTING,SINGAPORE VIBRATOR SPACER	X	X	X	X	X
10	5971886E01	ALERT DEVICE,VIBRATOR,.75V,LIN 8MM DIAMETER X 5MM	X	X	X	X	X
11	0571351E01	GROMMET,THERMOPLASTIC RUBBER,CAMERA/ VIB BASE	X	X	X	X	X
12	5571666E01	HINGE, FLIP	X	X	X	X	X
13	3271428E01	GASKET,PLASTIC-POLYESTER,FLIP INNER, EAR PIECE PORT	X		X		X
13	3271428E02	GASKET,PLASTIC-POLYESTER,FLIP INNER, EARPIECE PORT, DARK PEARL BLUE		X			
13	3271428E03	GASKET,PLASTIC POLYESTER,FLIP INNER,EARPIECE PORT,CALIFORNIA DREAM				X	
15	1371840E07	ESCUTCHEON,EARPIECE,HORSESHOE DECORATED, MAHOGANY RED,DARKENED	X				X
15	1371840E08	ESCUTCHEON,EARPIECE,HORSE SHOE,DARK PEARL GREY DARKENED		X			
15	1371840E11	ESCUTCHEON,EARPIECE,HORSESHOE,GRAPHITE GREY,DARKENED			X	X	

Table 4. Parts List (Continued)

Item #	Motorola Part Number	Detailed Part Description	SJUG2840AA	SJUG3841AA	SJUG3886AA	SJUG4069AA	SJUG4080AA
16	3871954E02	KEYPAD,MAIN ASSY, NA,TELSTRA,DARK PEARL GREY DARKENED		X			
16	3871954E04	KEYPAD,MAIN ASSY,ATT MAHOGANY DARKENED	X				
16	3871954E17	KEYPAD,MAIN ASSY,2100 GRAPHITE DARKENED			X	X	
16	3871954E18	KEYPAD,MAIN ASSY,2100 MAHOGANY, STROKE DARKENED					X
17	6171095R01	LIGHTGUIDE, SINGLE, CITIZEN,				X	
17	6171871E01	LIGHTGUIDE ASSEMBLY,SINGLE,SHEET	X	X	X		X
18	4071943E01	KEYPAD SWITCH,METAL DOME,24,PRESS,ARRAY W/PLUNGERS	X	X	X	X	X
19	8471924E01	FLEX,KEYPAD,ASSEMBLY	X	X	X		X
19	8471924E03	FLEX,KEYPAD,ASSEMBLY				X	
20	0171495R03	FRONT HOUSING ASSY,MAHOGANY, NA SERVICE	X				
20	0171495R04	FRONT HOUSING ASSY,GRAPHITE, NA SERVICE			X		
20	0171495R08	FRONT HOUSING ASSY, GRAPHITE, EMEA SERVICE				X	
20	0171495R05	FRONT HOUSING ASSY, DARK PEARL GREY, NA SERVICE		X			
20	0171495R09	FRONT HOUSING ASSY, MAHOGANY, EMEA SERVICE					X
21	7571599E02	BUMPER, RUBBER,FLIP,STOP, DARK PEARL GREY LIGHT		X			
21	7571599E05	BUMPER,RUBBER,FLIP,STOP,MAHOGANY LIGHT	X				X
21	7571599E06	BUMPER,RUBBER,FLIP,STOP,GRAPHITE LIGHT			X	X	
22	3987404Y03	CONNECTOR ELASTOMERIC,BOARD TO BOARD,1CONT,GOLD,CONTACT SPEAKER	X	X	X	X	X
23	0171083F01	ASSEMBLY,ANTENNA,ENDO,	X	X	X		
23	0171083F02	ASSEMBLY,ANTENNA,ENDO,TMO				X	X
24	4371600E01	BUSHING,ZINC,HOUSING,COLLAR FLIP INNER BARREL	X	X	X	X	X
25	5471313G01	LABEL,BATTERY,COMPARTMENT, 2100				X	X
25	5471048F01	LABEL,BATTERY,COMPARTMENT,	X	X	X		
26	0171081F01	ASSEMBLY, CHASSIS, BATTERY RETENTION	X	X	X	X	X
27	3971220G01	CONTACT,SPRING,5CONT,BOOTSTRAP, EMEA				X	X
28	3971219G01	CONTACT,SPRING,1CONT,BOOTSTRAP,ARGON		X	X		
29	3271135F01	GASKET,SILICONE,MIC BOOT,	X	X	X	X	X
30	SLG5185AA-	ASSEMBLY,PWA,TRANSCEIVER,3G,MAIN	X	X	X		
30	SLG5212AA-	ASSEMBLY,PRINTED CIRCUIT BOARD, TRANSCEIVER, 3G, EMEA				X	X
31	0571133F01	GROMMET,PLASTIC-POLYCARBONATE,USB,		X			
31	0571133F03	GROMMET,PLASTIC-POLYCARBONATE,USB, MAHOGANY,	X				X
31	0571133F04	GROMMET,PLASTIC-POLYCARBONATE,USB, GRAPHITE,			X	X	
32	0171010G14	ASSEMBLY,HOUSING,BACK,GRAPHITE,BASE OUTER,EMEA W/O SPEAKER, SERVICE				X	

Table 4. Parts List (Continued)

Item #	Motorola Part Number	Detailed Part Description	SJUG2840AA	SJUG3841AA	SJUG3886AA	SJUG4069AA	SJUG4080AA
32	0171010G13	ASSEMBLY,HOUSING,BACK,MAHOGANY,BASE OUTER, NA W/O SPEAKER, SERVICE					X
32	0171718E13	ASSEMBLY,HOUSING,BACK,MAHOGANY,BASE OUTER, ATT,NA W/O SPEAKER, SERVICE	X				
32	0171718E14	ASSEMBLY,HOUSING,BACK,GRAPHITE,BASE OUTER,NA, W/O SPEAKER, SERVICE			X		
32	0171718E17	ASSEMBLY,HOUSING,BACK,DARK PEARL GREY OUTER, NA, W/O SPEAKER, SERVICE		X			
33	5071508D03	LOUDSPEAKER,DYNAMIC,600-7000, 8OHM,.5W,CONTACT,3X14X20	X	X	X	X	X
34	0571134F04	GROMMET,THERMOPLASTIC RUBBER, RF, GRAPHITE,			X	X	X
34	0571134F07	GROMMET,THERMOPLASTIC RUBBER, RF, UNDECORATED,	X				
34	0571134F08	GROMMET,THERMOPLASTIC RUBBER,RF,DARK PEARL GREY DARKENED,		X			
35	SNN5807A	ASSEMBLY,BATTERY,LITHIUM ION,BX50,920MAH	X	X	X	X	X
36	SHN0768A	ASSEMBLY,HOUSING,BATTERY DOOR,ATT MOHAGANY	X				
36	SHN0913A	ASSEMBLY,HOUSING,BATTERY DOOR,DARK PEARL GREY,TELSTRA		X			
36	SHN0999A	ASSEMBLY,HOUSING,BATTERY DOOR,GRAPHITE			X	X	
36	SHN0998A	ASSEMBLY,HOUSING,BATTERY DOOR, MAHOGANY					X
37	3871031F02	BUTTON,SMART,PUTTY GREY	X	X	X	X	X
38	3871033F02	BUTTON,VOLUME,PUTTY GREY EMERALD	X	X	X	X	X
39	3871032F02	BUTTON,SIDE,CARRIER,PUTTY GREY	X	X	X	X	X
N/A	3271255F01	GASKET,FOAM,PAD,BUTTON	X	X	X	X	X
N/A	0371359E01	SCREW,MACHINE,M1.4X.3,1.3MM,STAR,PAN,STE EL,ZINC PLATED	X	X	X	X	X
N/A	0371373E04	SCREW,MACHINE,M1.6X.64,4.4MM,STAR,BUTTON ,STEEL	X	X	X	X	X
N/A	1171145F01	PROTECTIVE LINER,PLASTIC-POLYETHYLENE, REAR HSG,	X	X	X		
N/A	1171145F02	PROTECTIVE LINER,COVER,PLASTIC-POLYETHYLENE, REAR HSG,				X	X
N/A	1171348F01	PROTECTIVE LINER,COVER,PLASTIC-POLYETHYLENE, FRONT HOUSING, LEFT	X	X	X	X	X
N/A	1171349F01	PROTECTIVE LINER,COVER,PLASTIC-POLYETHYLENE, FRONT HOUSING,RIGHT	X	X	X	X	X
N/A	1171484E01	PROTECTIVE LINER,COVER,ANT, OUTER	X	X	X	X	X
N/A	1171485E01	PROTECTIVE LINER,COVER,PLASTIC-POLYETHYLENE, FLIP FRONT,OUTER	X	X	X	X	X
N/A	1171787K01	TAPE,FLEX,POLYIMIDE FILM,K-FLEX KAPTON,	X	X	X	X	X
N/A	5471536C01	LABEL,ADHESIVE,WATER DETECT, 3MM X .26	X	X	X	X	X
N/A	3971784F01	CONNECTOR,COMPRESSION,GROUND,ARGON,		X	X		

The "Replacement Parts Service Division (RPSD)" section on page 5 provides information about ordering replacement parts.



There is a danger of explosion if the Lithium Ion battery pack is replaced incorrectly. Replace only with the same type of battery or equivalent as recommended by the battery manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Accessories

Table 5. Accessories

Description	Kit Number
Automotive & Navigation	
Bluetooth Car Kit - HF850	98675H
T305 Portable Bluetooth Hands-Free Speaker, Bluetooth Car Kit, Mid Tier	SYN1716
BT Pro-Install Car Kit IHF1000r	98676K
Bluetooth Automotive Music & Handsfree System T605	CFLN6400AA
Data & Business Communications	
Bluetooth Class 1 USB Adapter PC850	SYN1244
Data Cable Mini USB/USB/Serial	SKN6371
Digital Accessories	
Motorola Phone Tools Phase 4	SVN5539
MobileVoice (Wireless BT Headsets)	
Mono Bluetooth Headset	SYN1971
Bluetooth Headset - MiniBlue H9 (Includes headset, charger base, and extra ear tips)	SJ0095A
Bluetooth Headset -Black Licorice-H800	SYN1626
Bluetooth Headset-Fire Red-H800	SYN1640
Bluetooth Headset-Silver Moss-H800	SYN1641
Bluetooth Headset-Silver Quartz-H800	SYN1642
Bluetooth Headset RAZR H3 Black	SYN1437
Bluetooth Headset RAZR H3 Silver	SYN1438
Bluetooth Headset - Plum - H700	SYN1818
Bluetooth Headset - Dark Pearl Blue - H800	SYN1639
Bluetooth Headset - Fire Red - H700	SYN1820
Bluetooth Headset H555 Black/Black (RAZR)	SYN1854
Bluetooth Headset H670 Black Slate (Canary)	SYN1853
Bluetooth Headset - Pale Lilac - H350	SYN1948
Bluetooth Headset Blue H700 (Verizon only in North America)	SYN1618
Bluetooth Headset H505 EZ Pair - Black Gloss	SYN1949
Bluetooth Headset H505 EZ Pair - Pink	SYN1965
Bluetooth Headset H550 Silver (SLVR)	SYN1822
Bluetooth Headset H555 Silver/Black (RAZR)	SYN1821
Bluetooth Headset H670 Cosmic Blue (Canary)	SYN1855
Bluetooth Headset H670 Silver Quartz (Canary)	SYN1852
Bluetooth Headset Black H700 (not available in North America)	SYN1509
Bluetooth Headset - H700 (silver)	SYN1311

Table 5. Accessories (Continued)

Description	Kit Number
Bluetooth Headset - H605	SYN1303
Bluetooth Headset - HS850 (Refresh - Black)	SYN1107
Bluetooth Headset - HS850 (Refresh - Blue)	SYN1226
Bluetooth Headset (Pearl Dark Gray) - H300	SYN1297
Bluetooth Headset (Pink) - H300	SYN1417
Bluetooth Headset (Pure White) - H300	SYN1416
Bluetooth Mono Headset, Nickel- H500	SYN1290
Bluetooth Headset H3 Cherry Red	SYN1736
Bluetooth Headset Dark Pearl Grey H3	SYN1507
Bluetooth Headset H350 Dark Pearl Grey	SYN1763
Bluetooth Headset H350 Sapphire Blue	SYN1738
Bluetooth Headset H350 Silver Quartz	SYN1765
Bluetooth Headset H350 Silver Sail	SYN1764
Bluetooth Headset H350 Black	SYN1439
Bluetooth Headset Soft touch Black H500	SYN1374
Bluetooth Headset H500 Fire Red	SYN1667
Bluetooth Headset H500 Pink	SYN1436
Oakley RAZRWIRE (Mercury: NA) - H7	98679H
Oakley RAZRWIRE (Pewter/Black: NA) - H7	98677H
Oakley RAZRWIRE (Platinum/Rootbeer: NA) - H7	98678H
Music & Entertainment	
Headset - Neckloop	SYN7875
Headset Mono One Touch w/ Send-End (EMU)	SYN0896
JBL On Tour Mobile portable speaker US Kit	OnTourMBBLK
JBL On Tour Mobile speaker PRC kit	CH1414A
Adapter EMU to 2.5mm stereo	SYN1505
Adapter EMU to 3.5 mm	SYN1504
Stereo Headset - EMU	SYN1301
Personalization	
Cleaner - Screen - V3	SYN1223
Lanyard - Silver	AAYN4402
Wristyard - Silver	AAYN4403
Belt Clip - All Plastic - Cost Reduced (Black)	SYN9853
Power	
Charger Adapter EMU/CE (Y-cable)	SKN6185
Charger Adapter EMU/EMU (Y-cable)	SKN6222
Battery-Only-Charger - Razor V3, South Asia plug	CHPN4613
Battery-Only-Charger V3 (BR) batty US plug	CHPN4613
Battery BR91 (RZ9) Li-Ion 1480 mAh - VZW	SNN5788
Dual Charging Adapter - EMU/EMU/MU YCABLE	SKN6243
Battery BZ60 Li-Ion 940mAh	SNN5789
P320 desktop BOC (battery-only-charge), platform, EMU	SPN5394
P320 desktop BOC, platform, EMU, Chinese label	SPN5395
P790 Portable Charger	SPN5353
Standard Car Charger EMU - P310	SYN1630

Table 5. Accessories (Continued)

Description	Kit Number
Travel Charger EMU Mid-Rate Switcher - Argentina	SPN5192
Travel Charger EMU Mid-Rate Switcher - BRAZIL	SPN5187
Travel Charger EMU Mid-Rate Switcher - EURO	SPN5189
Travel Charger EMU Mid-Rate Switcher - MEXICO	SPN5186
Travel Charger EMU Mid-Rate Switcher - PRC	SPN5188
Travel Charger EMU Mid-Rate Switcher - US ENG	SPN5185
Travel Charger EMU Rapid Switcher - Argentina	SPN5197
Travel Charger EMU Rapid Switcher - BRAZIL	SPN5196
Travel Charger EMU Rapid Switcher - MEXICO	SPN5200
Travel Charger EMU Rapid Switcher - PRC	SPN5198
Travel Charger EMU Rapid Switcher - US	SPN5202
Vehicle Power Adapter EMU - VC700	SYN0847

A

alert settings 13
antenna, removing and replacing 26

B

battery
 function 13
 gauge 13
 removing 16
battery housing
 removing 16

C

Canadian Interference-Causing Equipment regulations 2
copyrights
 computer software 3

D

disassembly 16

E

exploded view diagram 76
exploded view parts list 77

F

FCC rules 2
flip assembly, removing and replacing 35

I

identification 71
 international mobile station equipment identity 72
 mechanical serial number 71
 product 2
IMEI 72
Introduction 2

K

keypad, removing and replacing 28

M

menu
 structure diagram 13
MSN 71

N

names
 product 2

O

operation 10
 controls, indicators, and I/O 10
overview, product 9

P

part numbers
 accessories 80
parts 75
 exploded view diagram 76
 exploded view parts list 77
product
 identification 2
 names 2
product overview 9
 features 9

R

rear housing
 removing 19
regulatory agency compliance 2
removing
 antenna 26
 battery 13, 16
 battery housing 16
 flip assembly 35
 keypad 28
 rear housing 19
 SIM 18
 transceiver board assembly 23
replacement parts
 ordering 4
replacing
 antenna 26
 battery 16
 flip assembly 35
 keypad 28
 rear housing 19
 SIM 18
 transceiver board assembly 23

S

serial number
 mechanical 71
service manual

- about 3
- audience 3
- conventions 4
- scope 3
- service policy 4
 - customer support 4
 - out of box failure 4
 - product support 4
- shut down
 - upon battery removal 13
- SIM card 71
 - personality transfer 71
 - replacing 18
- SIM, removing and replacing 18
- specifications 6
- support
 - customer 4
 - product 4

T

- tools and test equipment 15
- transceiver board assembly, removing and replacing 23
- troubleshooting 73

U

- user interface diagrams 13

W

- warranty service 4



MOTOROLA