MOTOROLA

MOTOKRZR™ K1

Wireless Telephone

GSM 850/900/1800/1900 MHz GPRS

Contents

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 allow 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 a label usually located under the battery. 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.

Product Changes

When electrical, mechanical or production changes are incorporated into Motorola products, a revision letter is assigned to the chassis or kit affected, for example; -A, -B, or -C, and so on.

The chassis or kit number, complete with revision number, is imprinted during production. The revision letter is an integral part of the chassis or kit number and is also listed on schematic diagrams and printed-circuit board layouts.

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

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. Refer questions about this manual to the nearest Customer Service Manager.

Audience

This manual aids service personnel in testing and repairing K1 telephones. Service personnel should be familiar with electronic assembly, testing, and troubleshooting methods, and with the operation and use of associated test equipment.

Scope

This manual provides basic information relating to K1 telephones, and also provides procedures and processes for repairing the phones 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 which may result in equipment damage.

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

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

Information from a screen is shown in text as similar as possible to what displays on the screen. For example, PHONEBOOK.

Information that you need to type is printed in **boldface type.**

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. Return customer units that fail very early on after the date of sale to Manufacturing for root cause analysis, to guard against epidemic criteria. Manufacturing to 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). Motorola High Tech 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.

In the U.S.A., to contact Motorola, Inc. on your TTY, call: 800-793-7834.

Replacement Parts Service Division (RPSD)

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

U.S.A.	**Outside U.S.A.**
Phone: 800-422-4210	Phone: 847-538-8023
FAX: 800-622-6210	FAX: 847-576-3023

Website: http://businessonline.motorola.com

EMEA

Phone: +49 461 803 1404

Website: http://emeaonline.motorola.com

Asia

Phone: +65 648 62995

Website: http://asiaonline.motorola.com

Specifications

General Function	Specification
Frequency Range GSM 850	824-848 MHz Tx 869-893 MHz Rx
Frequency Range GSM 900	880-915 MHz Tx (with EGSM) 925-960 MHZ Rx
Frequency Range DCS 1800	1710-1785 MHz Tx 1805-1880 MHz Rx
Frequency Range PCS 1900	1850-1910 MHz Tx 1930-1990 MHz Rx
Channel Spacing	200 kHz
Channels	174 EGSM, 374 DCS, 374 PCS, 124 GSM 850 carriers with 8 channels per carrier
Modulation	GMSK at BT = 0.3
Transmitter Phase Accuracy	5 Degrees RMS, 20 Degrees peak
Duplex Spacing	45 MHz
Frequency Stability	± 0.10 ppm of the downlink frequency (Rx)
Operating Voltage	+3.2V dc to +5.5V dc (battery) +4.8V dc to +6.5V dc (external connector)
Transmit Current Drain	101-260 mA average talk current drain
Stand-by Current drain	5 mA (DRX2), 2 mA (DXR9) typical
Temperature Range	-10° C to +55° C (+15° F to +130° F)
Dimensions, with 750 mAh Li Ion battery	42 mm x 103 mm x 16 mm (2.08 inches x 3.85 inches x 0.54 inches)
Size (Volume)	63 cc (3.96 in^3), with battery
Weight	90 grams (3.17 oz), with battery
Battery Life, with standard 750 mAh Li-Ion Battery	Talk Time 200 - 400 minutes Standby time 200 -300 hours All talk and standby times are approximate and depend on network configuration, signal strength, and features selected. Standby times are quoted as a range from DRX=2 to DRX=9. Talk times are quoted as a range from DTX off to DTX on.
Battery Charge Time	4 hours to 90% of 750 mAh capacity
Alert volume	Max 95 dB @ 5cm, 0.5 Watts input

Transmitter Function	Specification
RF Power Output	32 dBm nominal GSM 850/900, 29 dBm nominal GSM 1800/1900
Output Impedance	50 ohms nominal
Spurious Emissions	-36 dBm from 0.1 to 1 GHz, -30 dBm from 1 to 4 GHz

Receiver Function	Specification
Receive Sensitivity	Better than -103 dBm
RX Bit Error Rate (100k bits) Type II	< 2%

Speech Coding Function	Specification
Speech Coding Type	Regular pulse excitation/linear predictive coding with long term prediction (RPE LPC with LTP)
Bit Rate	13.0 kbps

Speech Coding Function	Specification
Frame Duration	20 ms
Block Length	260 bits
Classes	Class 1 bits = 182 bits; Class 2 bits = 78 bits
Bit Rate with FEC Encoding	22.8 kbps

Product Overview

Motorola K1 telephones represent the thinnest and slenderest system for mobile communications (GSM) general packet radio service (GPRS) wireless application protocol (WAP)-enabled mobile phones. The K1 phones incorporate a new user interface (UI) for easier operation, allow short message service (SMS) text messaging, and include personal information manager (PIM) functionality.

The K1 is a quad-band phone that allows roaming within the GSM 900 MHz, GSM 850 MHz, 1800 MHz digital cellular system (DCS), and 1900 MHz PCS bands.

K1 telephones support EDGE, GPRS and SMS in addition to traditional circuit switched transport technologies.

K1 telephones have a clam form factor. They feature an anodized aluminum housing and have an externally viewable 96x80 1.0" 65K CSTN external display for caller identification and date/time, an internal 176x220 1.9" 262K TFT display, and the speaker located in the flip. The bottom part of the clam (front housing) contains the keypad, transceiver printed circuit board (PCB), microphone, flex connection, external accessory connector, smart button, volume buttons, and voice button. The standard 750 mAh Lithium Ion (Li Ion) battery fits behind a removable back cover.

The phone accepts both 3V and 1.8V mini subscriber identity module (SIM) cards which fit into the SIM holder next to the battery. The antenna is internal. Inexpensive direct connection to a computer or handheld device via USB or Bluetooth™ for data and fax calls, and for synchronizing phonebook entries with Mobile Phone Tools software, can be accomplished by using the optional data cable and soft modem.

Features

K1 telephones use advanced, self-contained, sealed, custom integrated circuits to perform the complex functions required for GSM GPRS 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 family of telephones include:
- Ultra Slim form factor
- EDGE for high speed data access (class 12)
- Video Capture & Playback MPEG4 (15 fps CIF)
- Audio/Video streaming (3GPP)
- Video Progressive Download
- Dedicated Carrier Key
- Integrated Stereo Bluetooth Connectivity (Class 2)
- 2MP digital camera with 8x digital zoom
- MicroSD slot for upgradeable memory
- Push To Share (images, video, audio files)
- Dynamic Idle
- 22MB of embedded end user memory
- Rich, pre-loaded J2ME™ games, screen savers
- Downloadable themes, ringer tones, images, animations
- Image borders, text overlay, image editing
- Midi, MP3, AAC, AAC+ Enhanced, iTunes music player
- PIM functionality with Picture Caller ID
- Voice memo & enhanced predictive text

- Enhanced voice recognition
- Record up to 25 minutes of video on embedded memory
- Firmware Over-The Air (FOTA)
- UI Skinning
- Motosync – contacts (calendar, emails TBC)

Speaker Dependent Voice Activation and Voice Note Recording

Voice tags can be used for voice dialing up to 20 phone numbers in the phone book and for creating up to 5 voice shortcuts for menu items. The phone must be "trained" by the voice tag being read into the phone's memory twice before it is recognized.

You can add voice tags to the phone's memory using the usual name addition methods (i.e., via the phone book menu structure or with the shortcut editor).

▶ *You cannot place or receive calls while adding voice tags to the phone's memory.*

▶ *Because the GSM standard does not provide the option to store voice tags onto the SIM card, voice tags are added to the phone's memory.*

K1 telephones also include a voice recorder that allows up to 2 minutes of personal messages to be recorded. This feature has a complete set of record, playback, and management tools that make it easy to store and maintain a list of personal memos.

Wireless Access Protocol (WAP) 2.0 Compliancy

In the WAP environment, access to the Internet is initiated in wireless markup language (WML), which is derived from hypertext markup language (HTML). The request is passed to a WAP gateway which retrieves the information from the server in standard HTML (subsequently filtered to WML) or directly in WML if available. The information is then passed to the mobile subscriber via the mobile network.

The K1 microbrowser can be configured for baud, idle timeout, line type, phone number, and connection type.

▶ *Bitmap image data will download as text. If the image is larger than the screen, only part of the image will display.*

▶ *When the user receives a call while in browser mode, the browser will pause and allow the user to resume after completing the call.*

SIM Application Toolkit™ - Class 2

SIM Application Toolkit is a value-added service delivery mechanism that allows GSM operators to customize the services they offer their customers, from the occasional user who requests sports news and traffic alerts, to a high call time business user who receives stock alerts and checks flight times. Operators can now create their own value-added services menu quickly and easily in the phone. The customized menu will appear as the first menu and may be updated over-the-air with new services when customers request them.

Simplified Text Entry

There are three different ways to enter text using the phone keypad:

- iTAP™ predictive text entry. Press a key to generate a character and a dynamic dictionary uses this to build and display a set of word or name options. The iTAP™ feature may not be available on the phone in all languages.
- Tap. Press a key to generate a character.
- Numeric. The keypad produces numeric characters only. For some text areas this is the only method available; for example, phone numbers.

Caller Line Identification

Upon receipt of a call, the calling party's phone number is compared to the phone book. If the number matches a phone book entry, that name will be displayed. If there is no phone book entry, the incoming phone number will be displayed. In the event that no caller identification information is available, the Incoming Call message is displayed.

▶ *User must subscribe to a caller line identification service through their service provider.*

Other Features

Detailed descriptions of these and other K1 features can be found in the appropriate user's guide listed in the "Related Publications" section toward the end of this manual.

General Operation

Controls, Indicators, and Input / Output (I/O) Connections

The K1 series telephone's controls are located on the sides of the flip and on the keypad. Indicators, in the form of icons, are displayed on the LCD (see Figure 2). K1 phones have an audible alert transducer on the top and I/O connectors, consisting of a charger/accessory port, located on the side of the phone. See Figure 1.
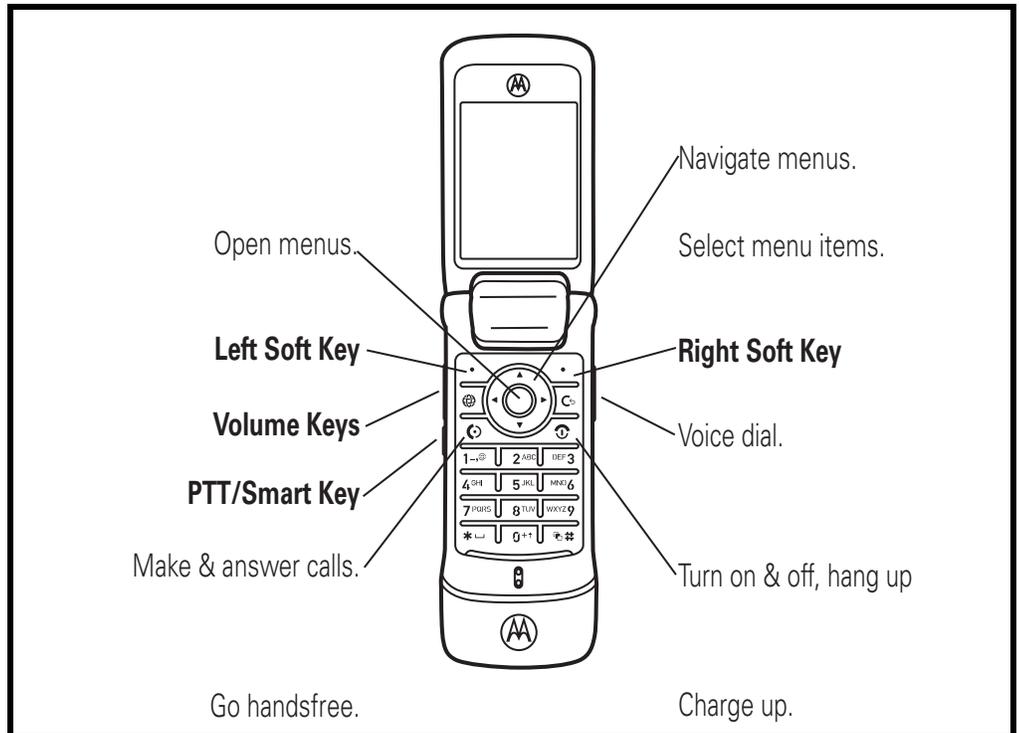

060580o

Figure 1. Controls, indicators, and I/O

"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.

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

Color Display

The K1 wireless phones feature a 64k color Thin Film Transistor (TFT) 176x220 pixel display.

Display animation makes the phone's menus move smoothly as the user scrolls up and down. Turn animation off to conserve the battery.
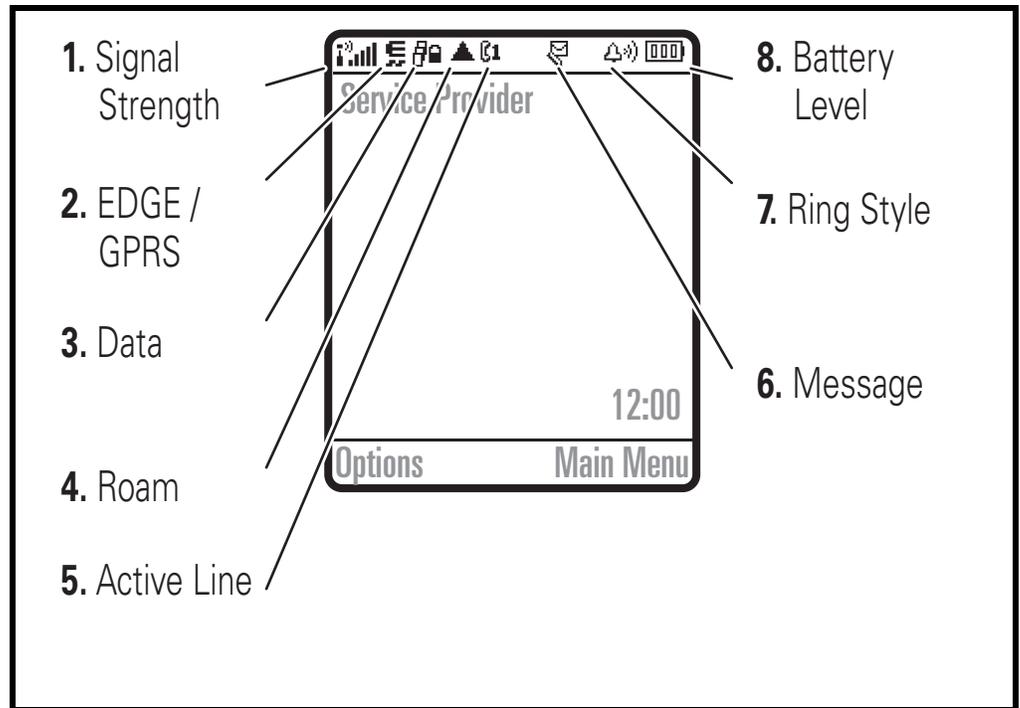
Figure 2. Icon Indicators

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

Figure 2 shows some common icons displayed on the LCD.

1. **Data Indicator —** Shows connection and data transmission status. The Bluetooth™ wireless connection indicator 🅱 shows when a Bluetooth connection is active. Other indicators can include:

     𝄳 = secure packet data transfer
     ↗ = unsecure packet data transfer
     ▣▸ = secure application connection
     ▤▸ = unsecure application connection
     ⇄ = secure Circuit Switch Data (CSD) call
     ⇆ = unsecure CSD call

2. **EDGE/GPRS Indicator —** Shows that your phone is using a high-speed General Packet Radio Service (GPRS) network connection. GPRS allows faster data transfer speeds. Other indicators can include:

     ▦ = GPRS PDP context active
     ⊡ = GPRS packet data available

3. **Signal Strength Indicator —** Vertical bars show the strength of the network connection. You cannot make or receive calls when i^3 or i^3X displays.

4. **Roam Indicator —** The roam indicator shows when your phone is seeking or using another network outside your home network.

5. **Active Line Indicator —** Shows ⟨⟩ to indicate an active call, or ⟨⟩ to indicate that call forwarding is on. Indicators for dual-line-enabled SIM cards can include:

       ⊞ = GPRS PDP context active
       ⊡ = GPRS packet data available
       ⟨1 = line 1 active   ⟨2 = line 2 active
       ⟨1⟩ = line 1 active, call forward on
       ⟨2⟩ = line 2 active, call forward on

6. **Messaging Presence Indicator —** Shows when instant messaging is active. Indicators can include:

       🖑 = IM active 🗨 = available for IM
       🗨 = busy 🗨 = invisible to IM
       🖑 = available for phone calls
       🖧 = offline

When a Java™ application is active, the Java midlet indicator ☕ displays in this location.

7. **Message Indicator —** Displays when you receive a new message. Indicators can include:

       🖃 = text message
       🖂 = voicemail message
       🖃 = voicemail and text message
       🖄 = IM message
       💬 = active chat session

8. **Battery Level Indicator —** Vertical bars show the battery charge level. Recharge the battery when Low Battery displays and the battery alert sounds.

9. **9. Ring Style Indicator —** Shows the ring style setting.

       △⟩ = loud ring △⟩ = soft ring
       ⦚⦚ = vibrate ⟩△ = vibrate then ring
       ⦚△⦚ = vibrate & ring △⟩ = silent

Alert Settings

K1 telephones include up to 32 preset alert tones and vibrations that can be applied to all alert events at the same time.

▶   *Pressing any volume key mutes the alert.*

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.

If the battery is removed while receiving a message, the message will be lost.

Operation

For detailed operating instructions, refer to the appropriate User's Guide listed in the Related Publications section toward the end of this manual.

Tools and Test Equipment

The following table lists tools and test equipment recommended for disassembly and reassembly of K1 telephones. Use either the listed items or equivalents.

Table 1. General Test Equipment and Tools

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)
6680388B67	Disassembly tool, plastic with flat and pointed ends (manual opening tool)	Used during assembly/disassembly of device
6680388B01	Tweezers, plastic	Used during assembly/disassembly
	Tweezers, metal	Used during assembly/disassembly
—	Digital Multimeter, HP34401A[2]	Used to measure battery voltage
19501980[3]	Generic Press Fixture	Must be used to install keypad mylar
0-00-00-40853[3]	K1 Lens- and Trim Ring Press Tool	Must be used to install lens and trim ring
0-00-00-40852[3]	K1 and Acoustic Gasket Alignment- and Press Too	Must be used to install Acoustic Gasket
8102430Z04	GSM / DCS Test SIM	Used to enable manual test mode

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.
3. Available at the AMS Online-shop 62.214.1.200 (for access, please contact your local Motorola parts representative)

Disassembly

The procedures in this section provide instructions for the disassembly of K1 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. Press in and hold the battery door latch, as shown in Figure 1.

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Figure 1. Removing the Battery Cover

3. Rotate the battery cover upward and lift it completely off the phone.

4.   Lift the edge of the battery first, then lift the battery from the phone. See Figure 2.

061259o

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 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.
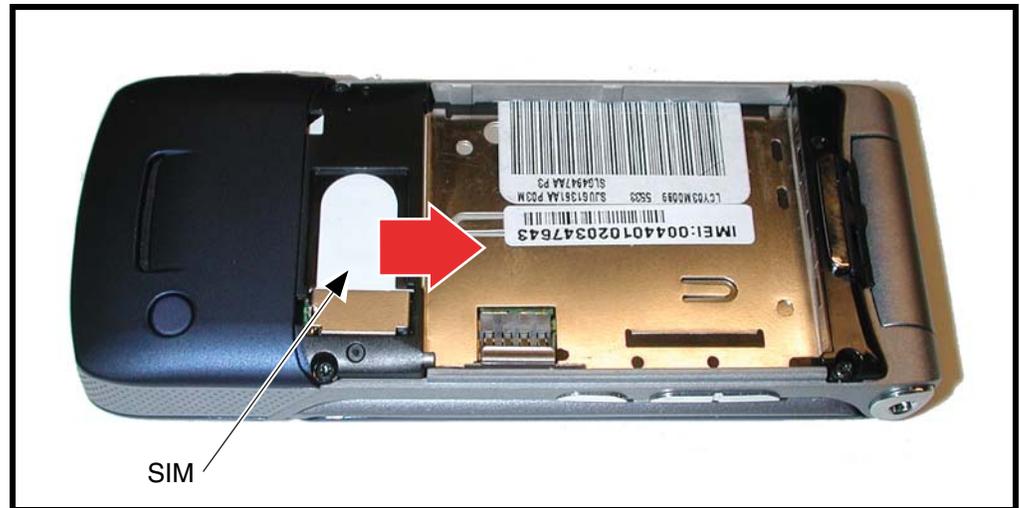
061260o

Figure 3. Removing the SIM

2. Slide the SIM card toward the phone's battery compartment, as shown in Figure 3.
3. Carefully lift the SIM from the phone.
4. To replace, insert the SIM into the holder, ensuring the keyed corner of the SIM faces the outward edge of the phone (see Figure 4).
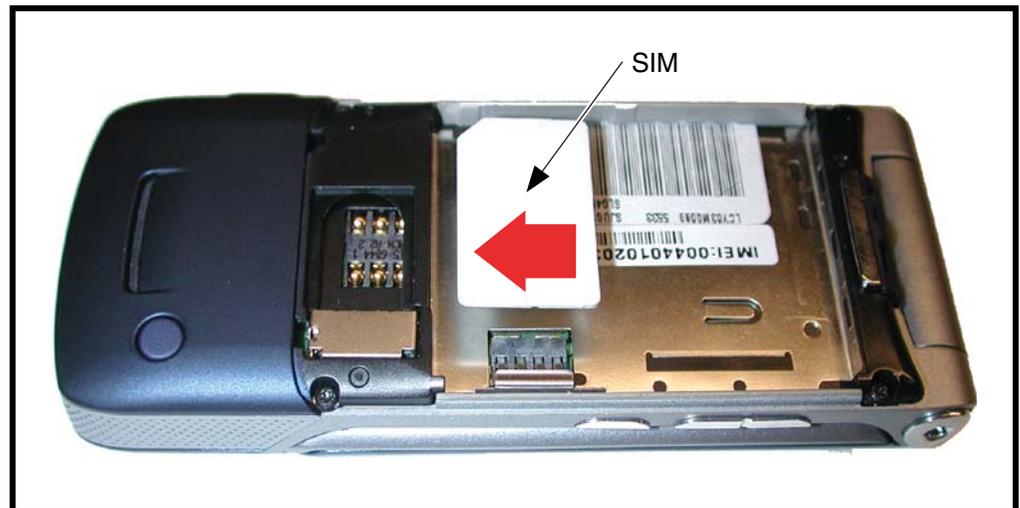
061261o

Figure 4. Inserting the SIM

5. Replace the battery and battery cover as described in the procedures.

Removing and Replacing the Trans Flash Memory Module

1. Remove the battery cover and battery, as described in the procedures.
2. Slide the Trans Flash memory module out of its socket to release, as shown in Figure 5.
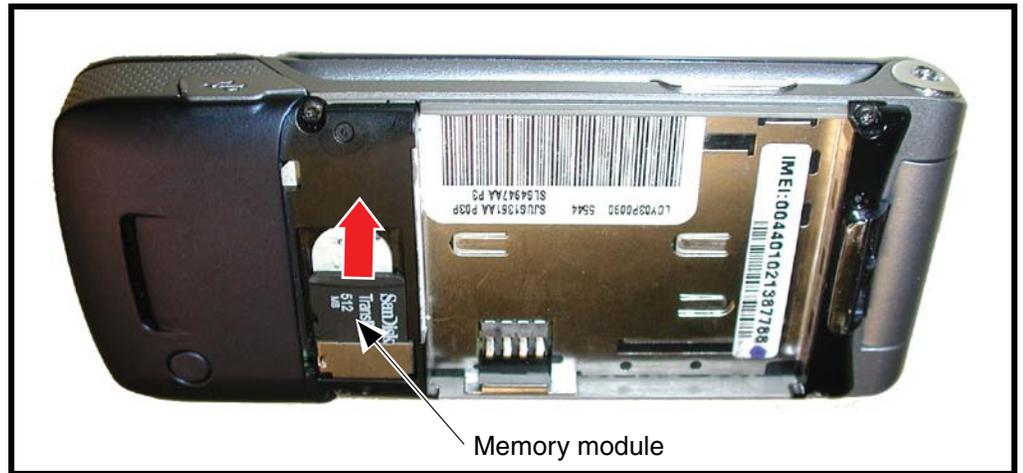
Figure 5. Removing the Trans Flash Memory Module

3. Use the plastic tweezers to carefully lift the memory module out of the phone.
4. To replace, align the memory module according to the diagram in the phone.
5. Place the memory module into it's slot with the contacts facing down.
6. Slide the memory module all the way into position, as shown in Figure 5.
7. Reinstall 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 6.
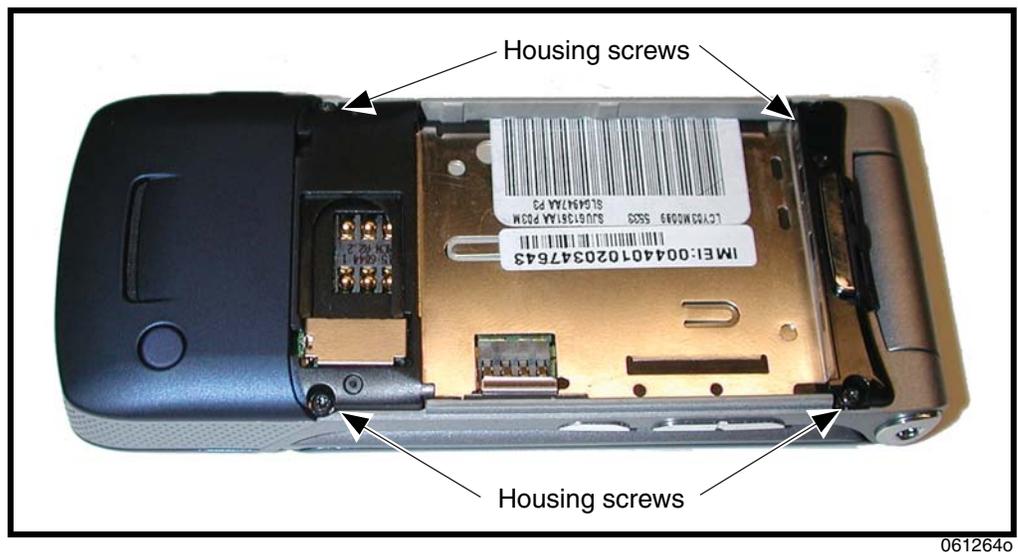
061264o

Figure 6. Removing the Rear Housing Screws

3. Release the four housing latches by inserting the pointed end of the plastic disassembly tool into the openings on the rear housing.
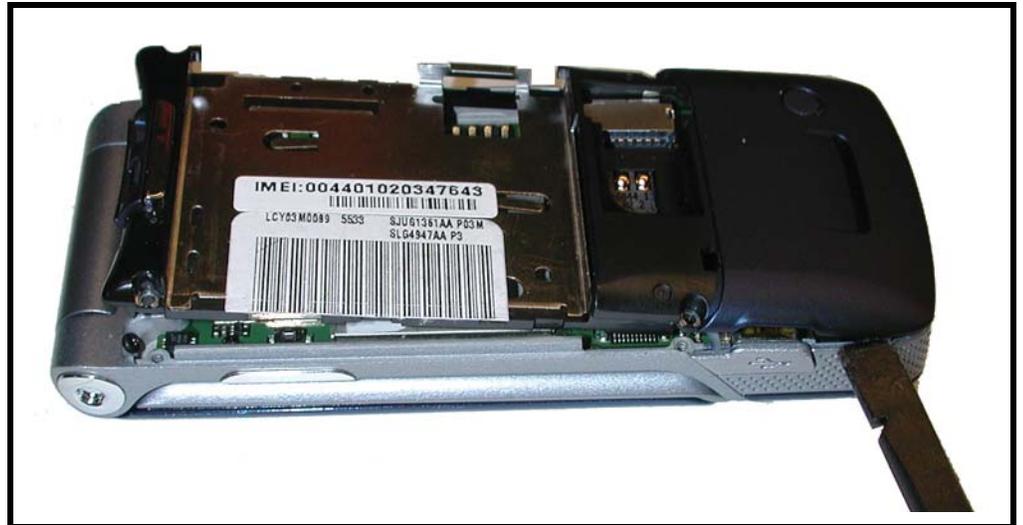
061265o

Figure 7. Removing the Rear Housing Latches

4. Carefully rotate the rear housing away from the front housing and flip assembly.
5. Lift the rear housing assembly away from the phone.
6. To replace, align the housing latches with the corresponding openings on the front housing. Gently press the housings together until the catches snap into place.
7. Replace the 2 housing screws and tighten to a final torque setting of 16 Ncm (1.5 inch pounds). Do not over tighten.
8. Replace the SIM, battery, and battery cover as described in the procedures.

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, antenna, rear housing and battery tray as described in the procedures.
2. Use the disassembly tool to unseat the display flex connector from its socket on the transceiver board assembly (see Figure 8).
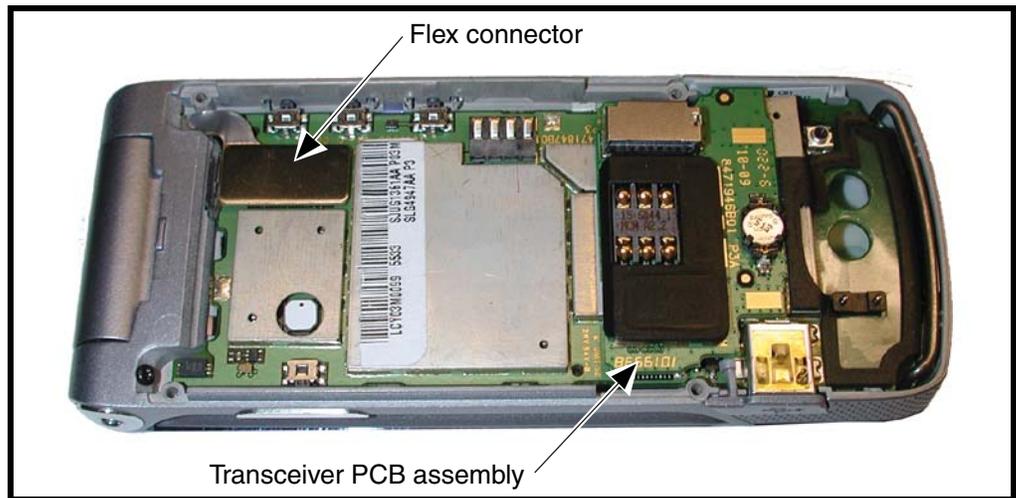
061266o

Figure 8. Removing the Flex Connector

3. Remove the USB grommet from the front housing.

4.   Use the disassembly tool to lift the transceiver board assembly out of the front housing.
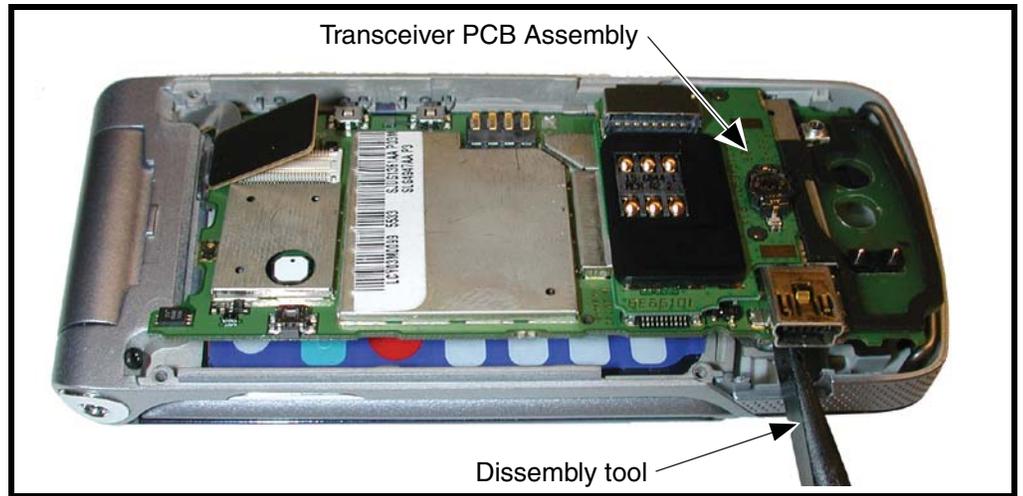
Figure 9. Removing the Transceiver PC Board Assembly

5.   To replace, place transceiver board into the front housing. Tip the PCB in on an angle, first inserting the side with three side switches. Take care to clear the side keys with the PCB or damage will result. Slowly angle the PCB until it is flat in the housing. The top of the PCB must fit around the screw bosses of the front housing.

6.   Connect the flex connector to the transceiver board assembly.

7.   Connect the USB grommet to the front housing.

8.   Replace the rear housing, SIM, battery, and battery cover as described in the procedures.

Removing and Replacing the Keypad

1. Remove the battery cover, battery, SIM card, antenna, rear housing, and transceiver PC board, as described in the procedures.
2. Using disassembly tool, gently lift up the keypad and remove it from the front housing, as shown in Figure 10.
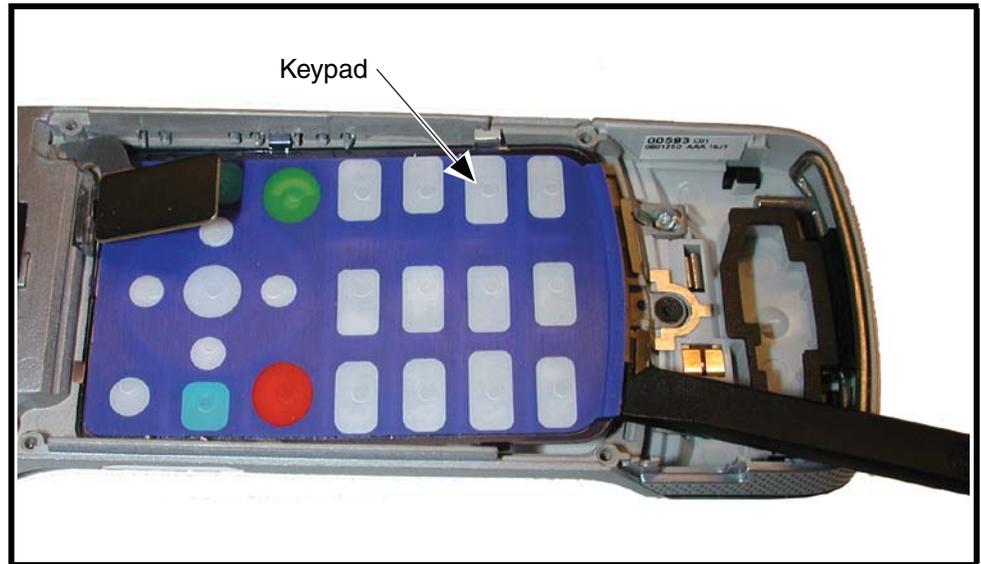
Keypad

061268o

Figure 10. Removing and Replacing the Keypad

3. To replace, align the keypad with the front housing and press it into place.
4. Replace the transceiver PC board, 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, transceiver PC board assembly, as described in the procedures.
2. Use the plastic tweezers to remove the rubber gasket in front of the antenna assembly. Do not re-use the gasket if damaged during removal.
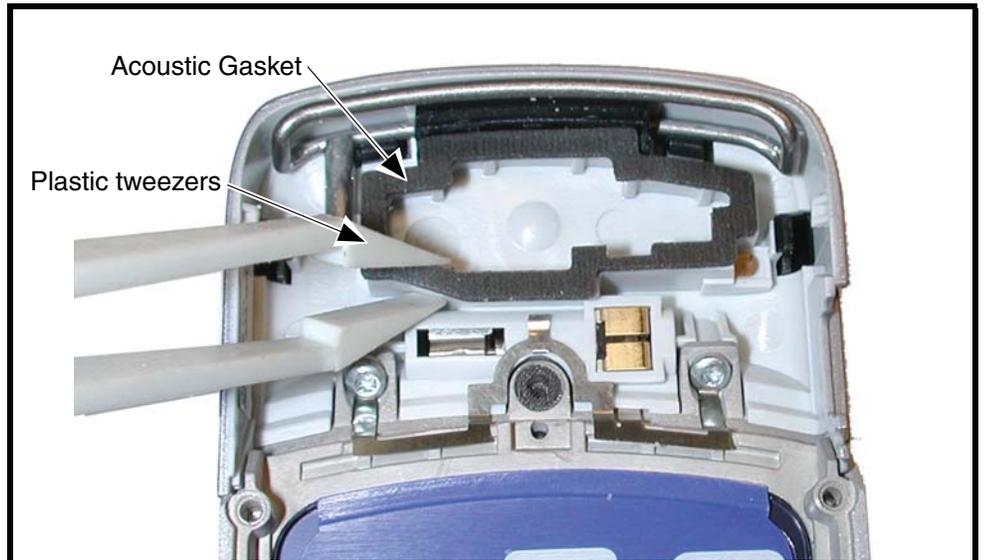
061311o

Figure 11. Removing the Acoustic Gasket

3. Use the disassembly tool to pry the antenna assembly out of the front housing (see Figure 12).
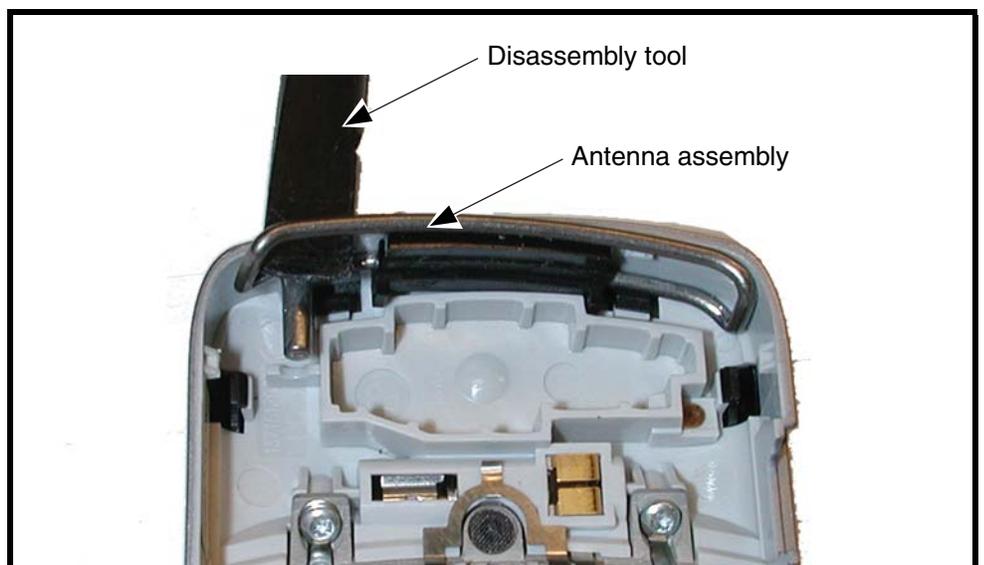
061312o

Figure 12. Removing and Replacing the Keypad

4. To replace, Use a new acoustic gasket if previous gasket was damaged during removal. Expose the adhesive on the acoustic gasket and place into position on the walls of the acoustic chamber.

5. Carefully align the antenna assembly to the front housing. Carefully lower the antenna assembly into position in the front housing. Avoid damage to the acoustic gasket while installing the antenna assembly.

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

Removing and Replacing the Keypad Mylar

⚠️ *It is mandatory that the following special tools must be used when following this procedure:*

K1 EL and Acoustic Gasket Alignment- and Press Tool - part number 0-00-00-40852

Generic Press Fixture - part number 19501980 Available at the AMS Online-shop 62.214.1.200 (for access please contact your local Motorola contact)

The K1 EL and acoustic gasket alignment and press tool must be used for this replacement procedure.

Figure 13. K1 EL and Acoustic Gasket Alignment and Press Tool

1. Remove the keypad mylar and or the acoustic gasket with plastic tweezers, as shown.
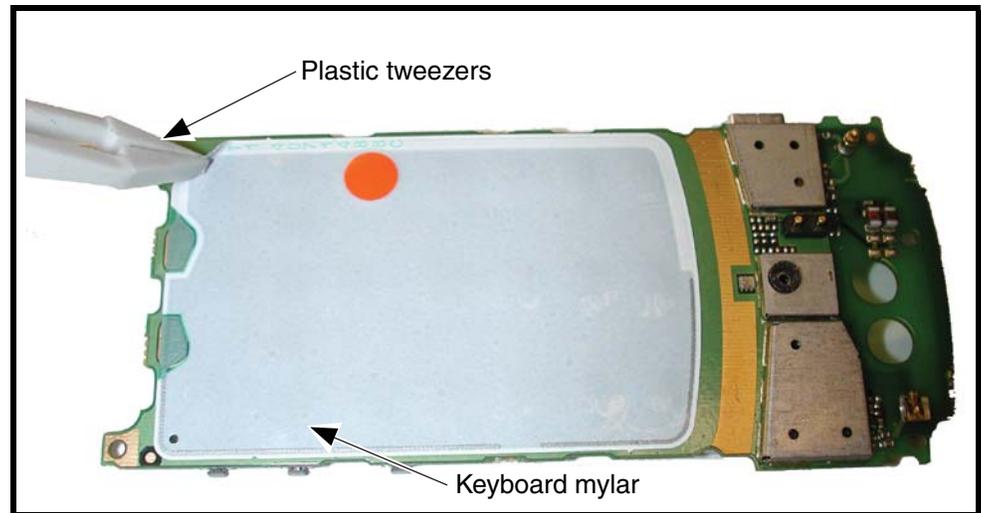
Figure 14. Removing the Keypad Mylar

061580o

2. To replace the keypad mylar, use the K1 EL and Acoustic Gasket Alignment-and Press tool.
3. Peel off the adhesive liner from the bottom side of the keypad mylar. Place the keypad into the fixture. Align the keypad using the fixture alignment pins.
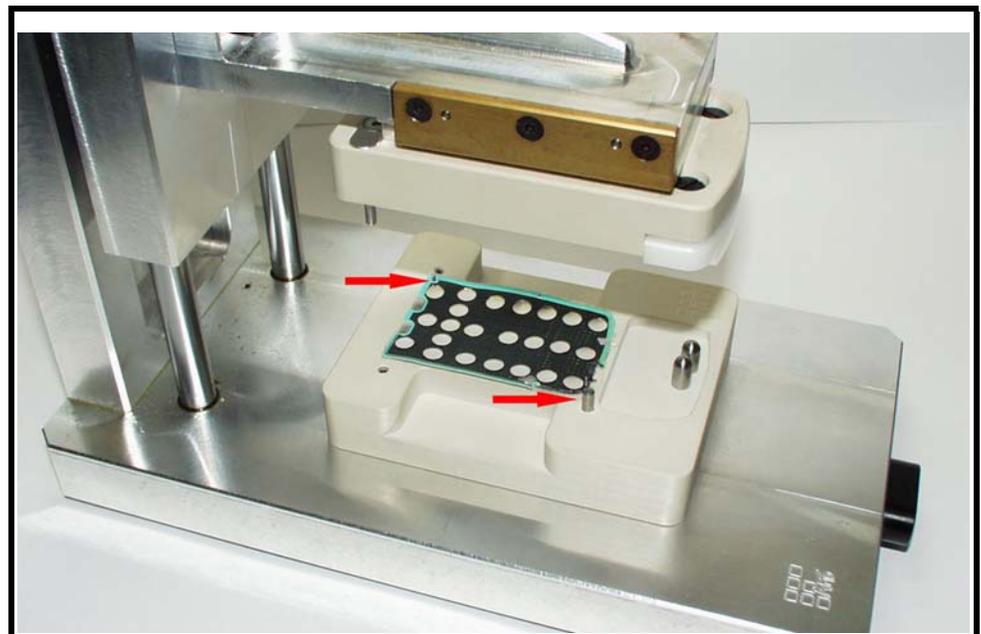

Figure 15. Keypad Mylar Alignment

061928o

4. Clean the mylar area on the main PCB, and then place it on top of the keypad mylar using the fixture alignment pins.
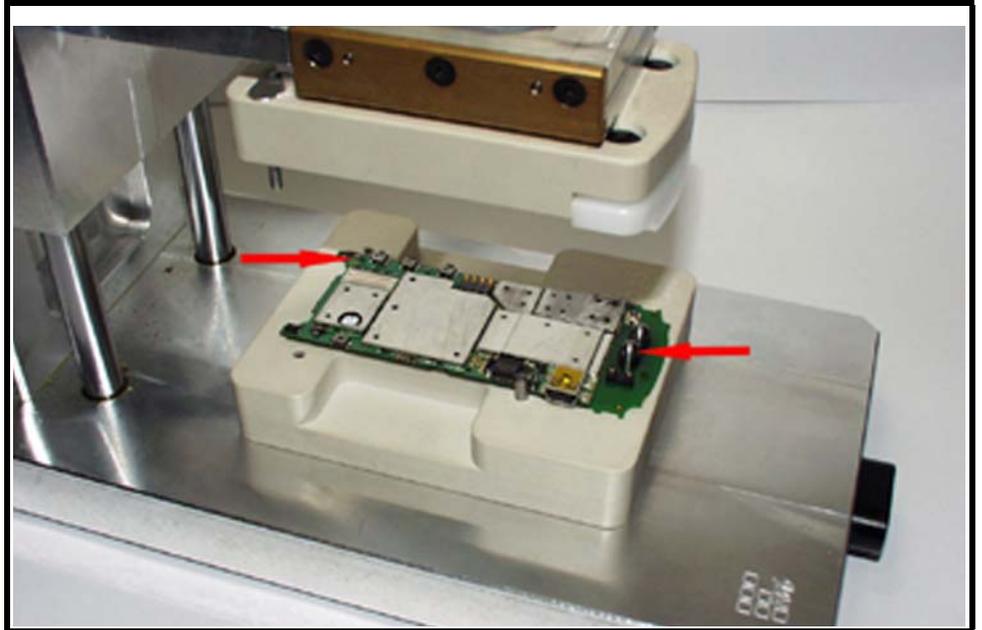
061929o

Figure 16. PCB Alignment

5. Place the acoustic gasket onto the PCB and align the gasket using the alignment pins.
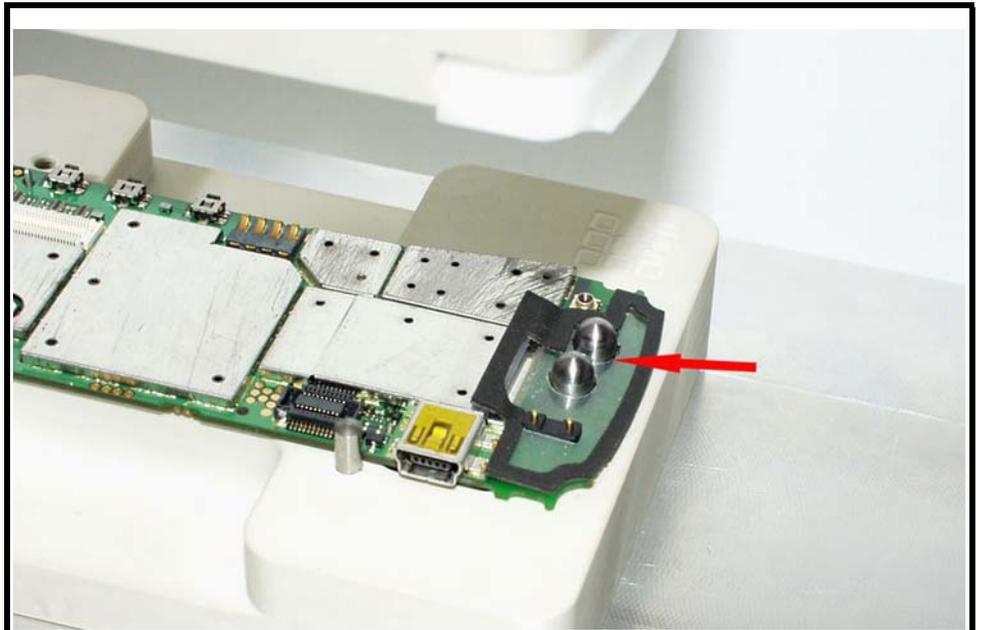
061930o

Figure 17. Acoustic Gasket Alignment

6. Close the fixture for 15 seconds.
7. Open the fixture and check the assembly for correct positioning of the mylar and acoustic gasket on the PCB.
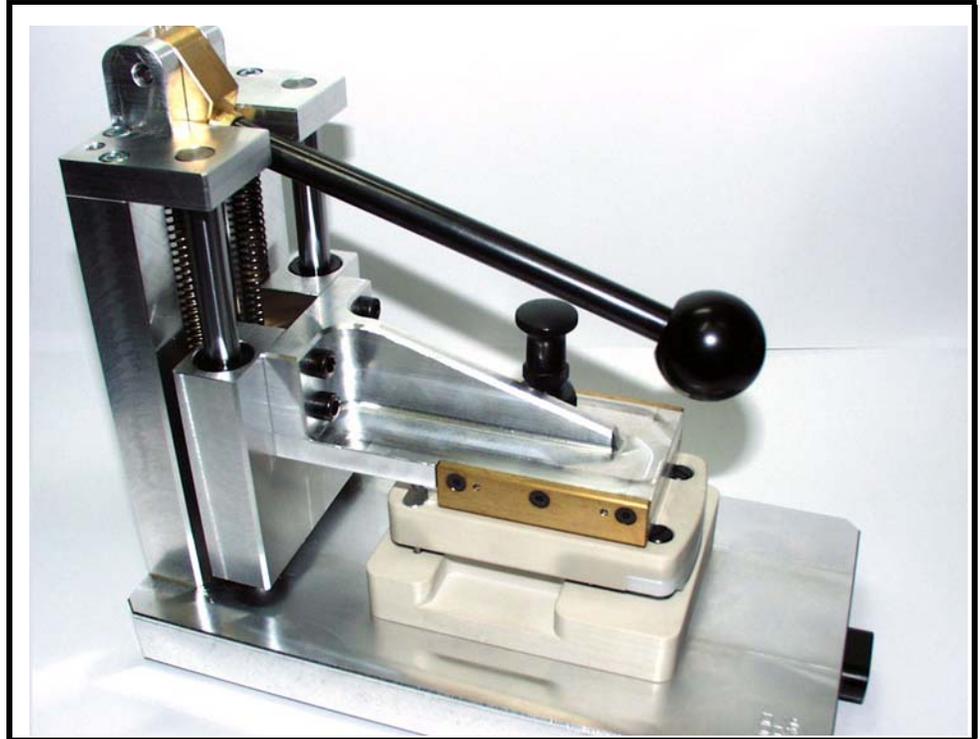
061931o

Figure 18. El Mylar and Acoustic Gasket Press Fixture Closed

Removing and replacing the Acoustic Gasket

1. Remove the acoustic gasket with tweezers, as shown below.
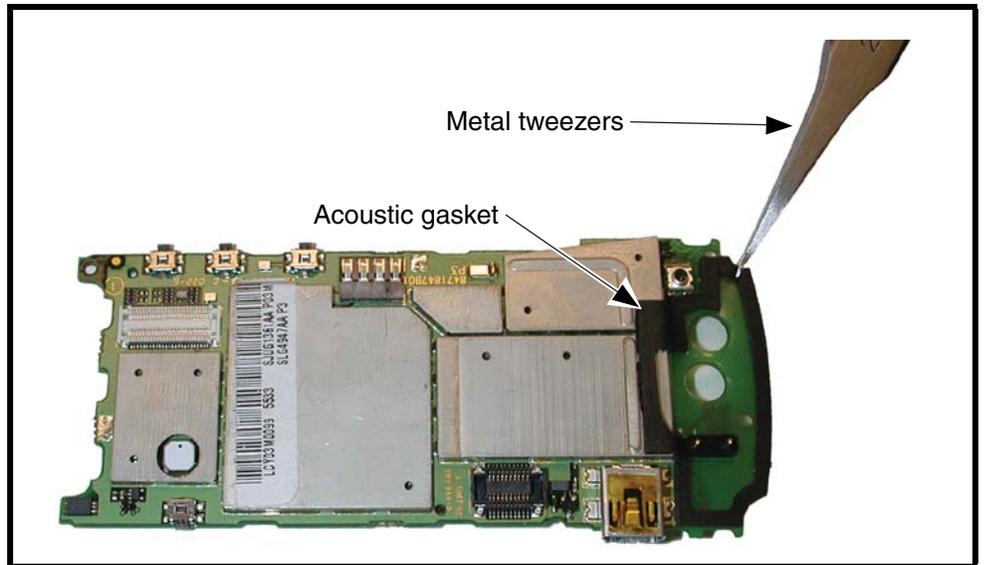
**Figure 19. Removing the Acoustic Gasket**

2. To replace the acoustic gasket use the K1 EL mylar and Acoustic Gasket alignment and press fixture.
3. Place the main PCB into the fixture. Use the alignment pins to ensure correct PCB position in the fixture.

4.   Place the acoustic gasket onto the PCB and align the gasket using the alignment pins.

061930o

Figure 20. Acoustic Gasket Alignment

5.   Close the fixture for 15 seconds.

6. Open the Fixture and check the assembly for correct positioning of the acoustic gasket on the PCB.
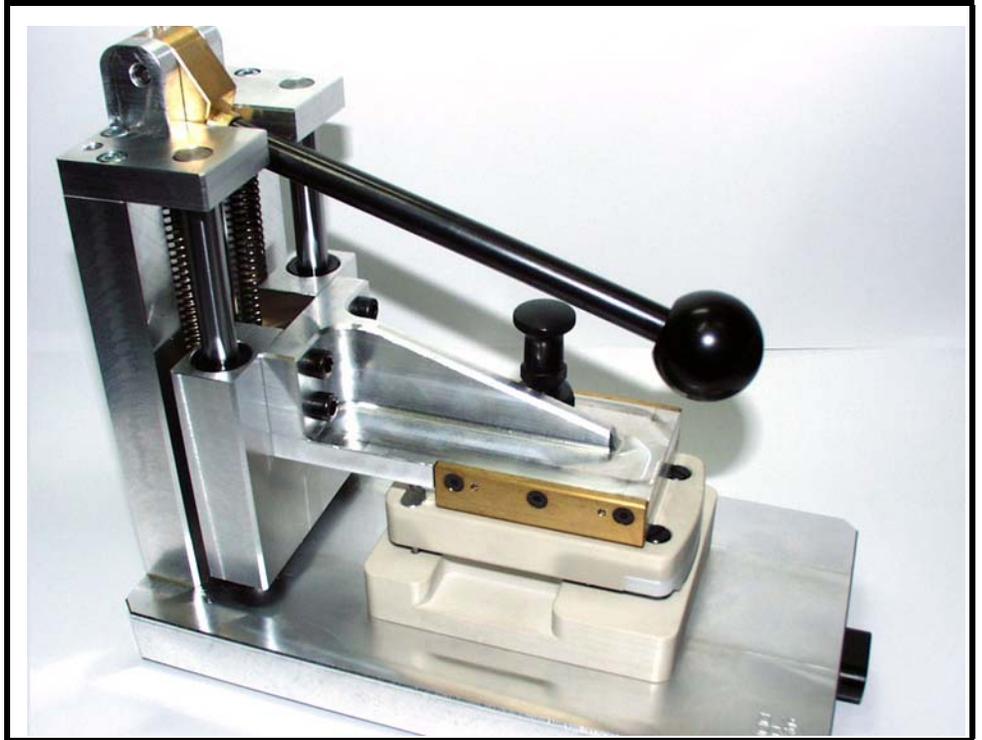
061931o

Figure 21. Press Fixture Operation

Removing and Replacing the Flip Assembly Cover

1. Remove the battery cover, battery, SIM, rear housing, and transceiver board assembly as described in the procedures.
2. Use the disassembly tool to release the flip assembly bezel latches at the top and along the sides of the flip assembly.

Flip cover bezel

Disassembly tool

061269o

Figure 22. Removing the Flip Assembly Bezel

3. Carefully lift the flip assembly bezel from the flip assembly.
4. Use the T-5 driver to remove the 4 screws from the flip assembly (see Figure 23). Retain the screws for reassembly.

Flip assembly screws

Flip assembly screws
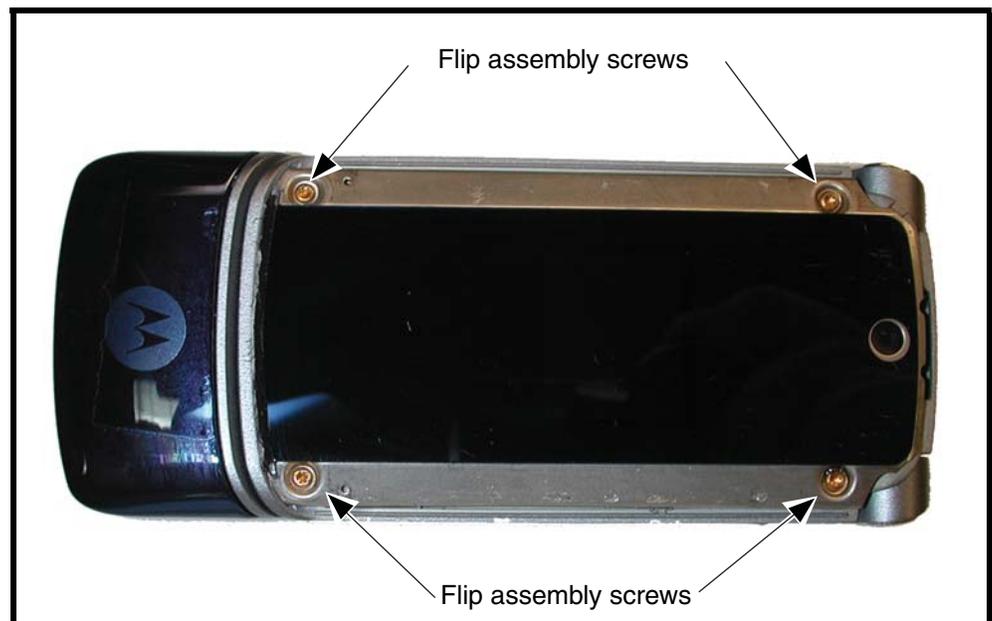
061270o

Figure 23. Removing the Flip Assembly Screws

5. Lift the flip cover away from the flip assembly. Be careful not to damage the display flex cable.
6. To replace, insert and tighten the 4 flip assembly screws with the T-5 driver. Tighten to final torque setting of 16 Ncm (1.5 inch lbs.).
7. Align the flip assembly bezel to the flip assembly.
8. Carefully press flip bezel onto the flip cover. Ensure that the flip bezel latches engage properly onto the flip assembly.
9. Replace the transceiver board assembly, rear housing, battery, and battery as described in the procedures.

Removing and Replacing the Camera Assembly

1. Remove the battery cover, battery, SIM, antenna, rear housing, and transceiver board assembly, flip assembly cover, and CLI lens cover as described in the procedures.

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

2. Use the disassembly tool to unseat the camera assembly connector (see Figure 17).
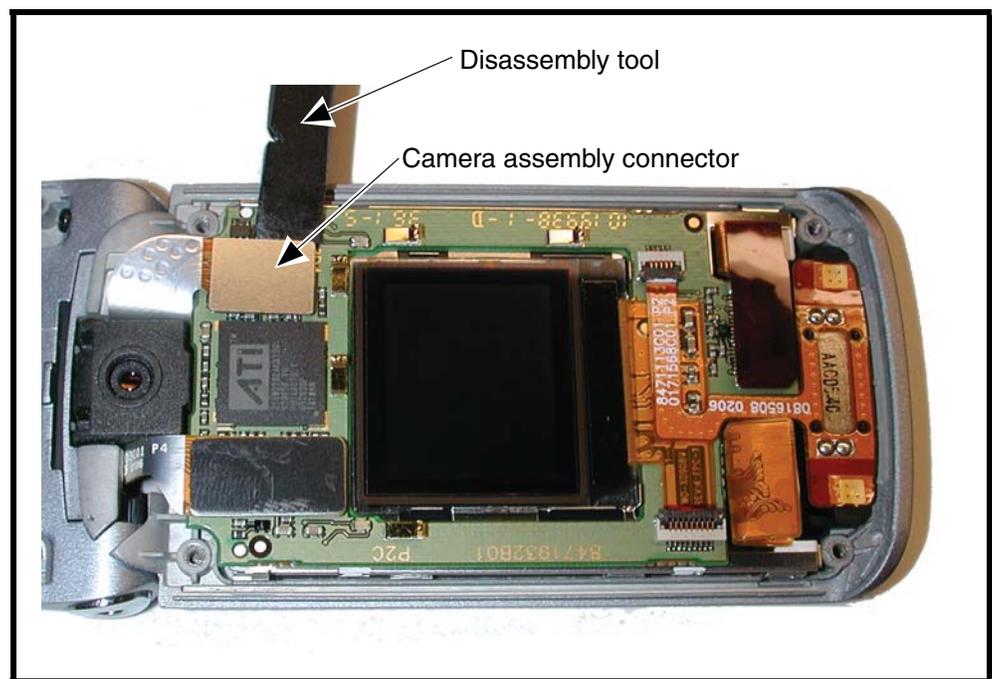
061271o

Figure 24. Camera Assembly Connector Removal

3. Carefully lift the camera assembly and flex out of the flip assembly (see Figure 25).
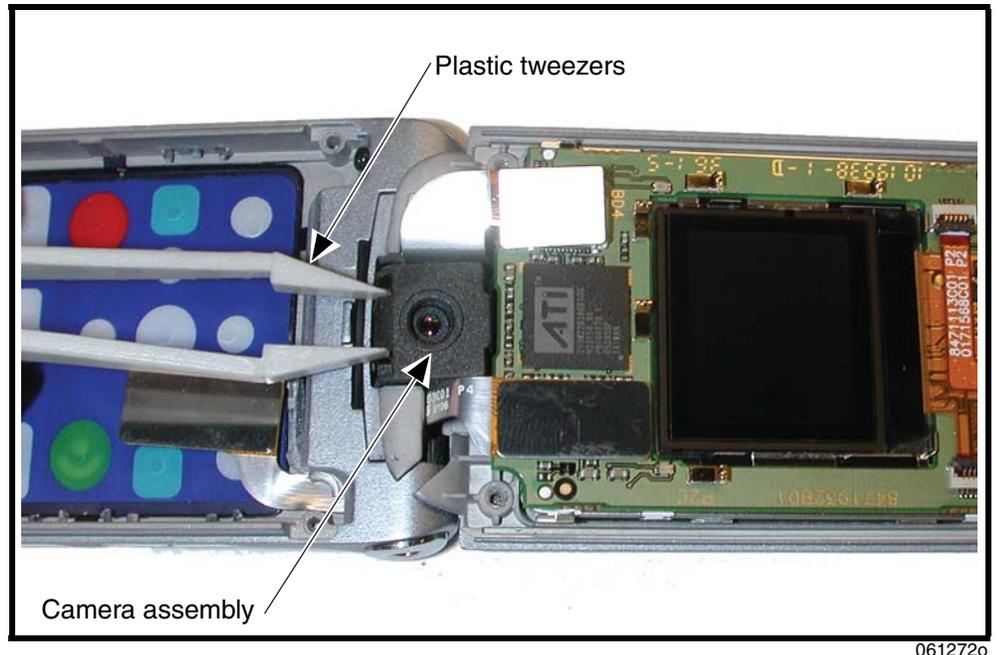
Figure 25. Camera Assembly Removal

4. To replace, carefully press the camera assembly into its slot in the flip assembly.
5. Gently press the end of the camera assembly flex connector into its socket connector on the flip display assembly. Avoid damage to the flex cable.
6. Replace the flip assembly cover, flip cover bezel, transceiver board, rear housing, SIM, battery, and battery cover as described in the procedures.

Removing and Replacing the Display Module Assembly

1. Remove the battery cover, battery, SIM, rear housing, antenna, transceiver board assembly, flip assembly cover, and camera assembly, as described in the procedures.

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

2. Use the disassembly tool to unseat the flip assembly flex connector from its socket (see Figure 26).
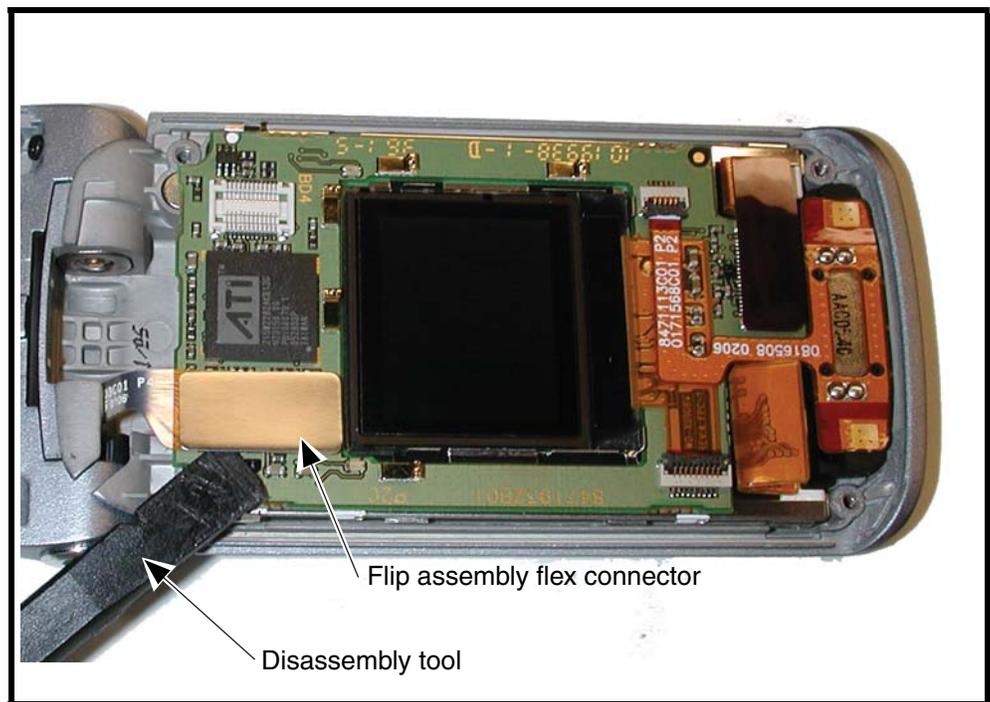

061273o

Figure 26. Display Module Assembly Flex Connector

3. Carefully and gently lift one corner of the display module assembly out of the flip assembly.
4. Avoid damage to the electrical components on the flex while carefully removing the display module assembly from the flip assembly.

5. Use the plastic tweezers to carefully lift the flip display assembly away from the flip assembly (see Figure 27).

Flip display moudle assembly

Plastic tweezers

061274o
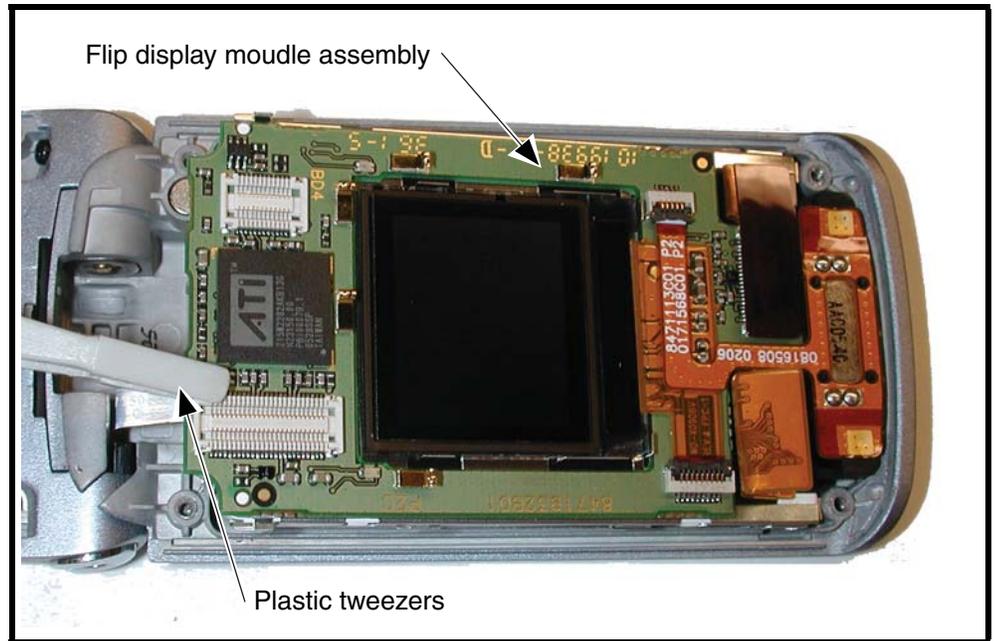
Figure 27. Removing the Display Module Assembly

6. To replace, align the display module assembly to the flip assembly.
7. Carefully lower the display module into the flip assembly. Ensure that all of the display none of the display assembly components are damaged.
8. Align the flip display flex to the flex connector on the flip display assembly and gently press down on the flex connector until properly seated.
9. Replace the camera assembly, flip assembly cover, transceiver board, rear housing, SIM, battery, and battery connector as described in the procedures.

Removing and Replacing the Flip Hinge and Flex Assembly

1. Remove the battery cover, battery, rear housing, antenna, transceiver board assembly, flip assembly cover, and display module assembly, as described in the procedures.
2. Use the T5 driver to remove the hinge cap screw, as shown in Figure 28.

Hinge screw
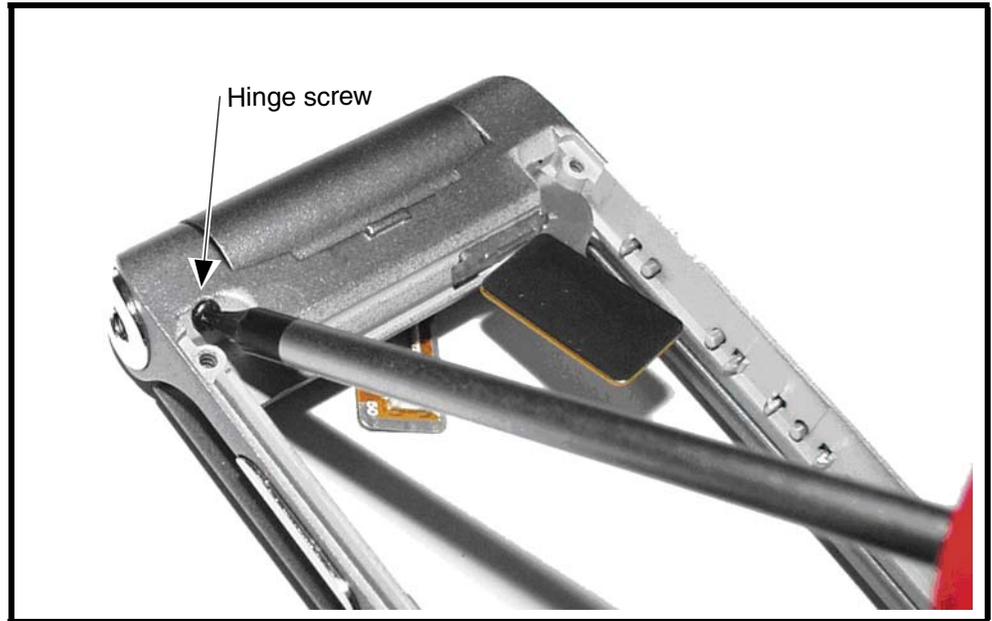
061688o

Figure 28. Removing the Hinge Cap Screws

3. Remove the hinge grommet with the tweezers, as shown in Figure 29.
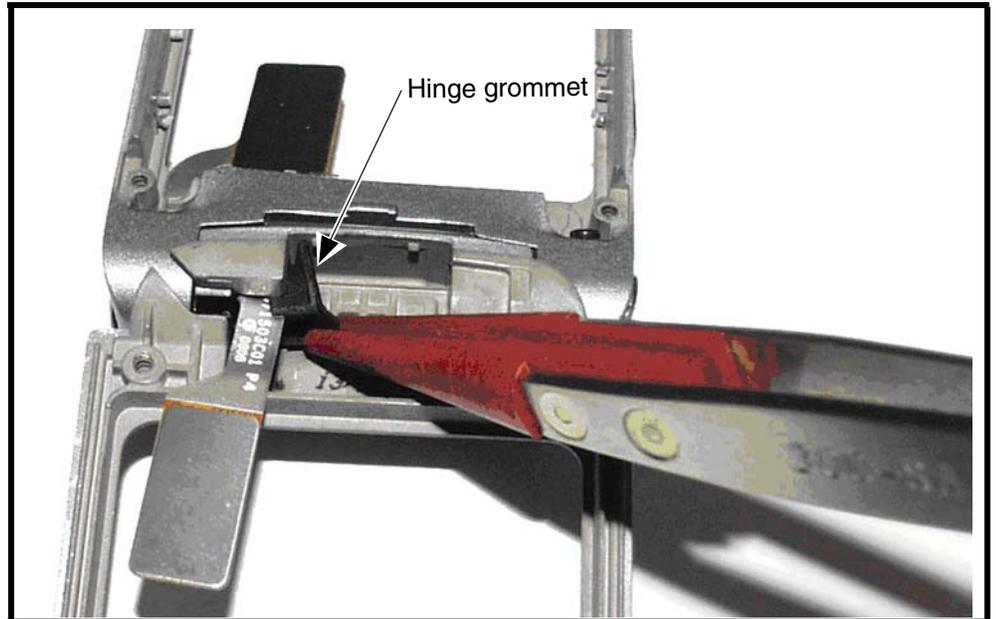

061689o

Figure 29. Removing the Hinge Grommet

4. Remove the left hinge cap and ground clip from the front housing assembly.
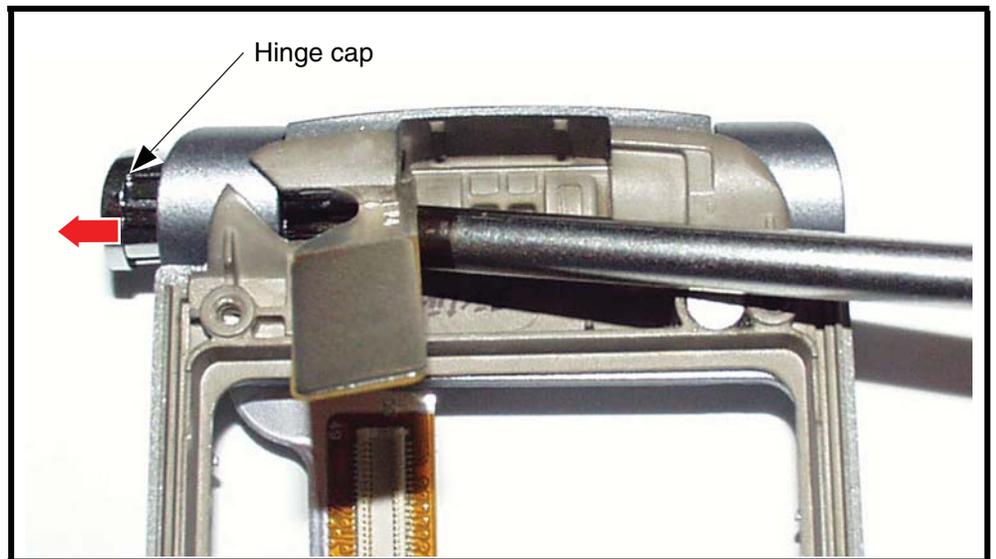
061548o

Figure 30. Removing the Hinge Cap

5. Remove the right hinge cap.

6. Use a small needle nose pliers to press the hinge inward, as shown in Figure 31.
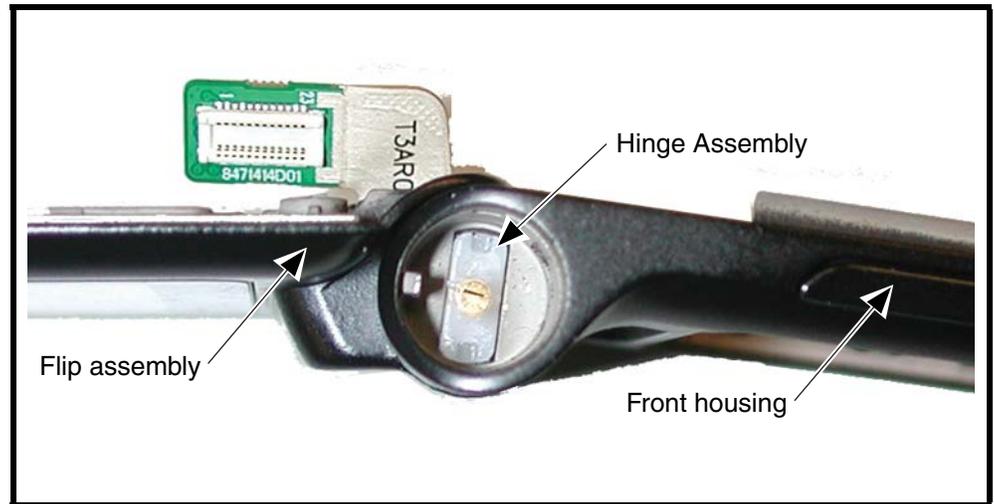
Figure 31. Hinge Compression

7. While hinge spring is compressed, slide the flip assembly out of the front housing (see Figure 32).
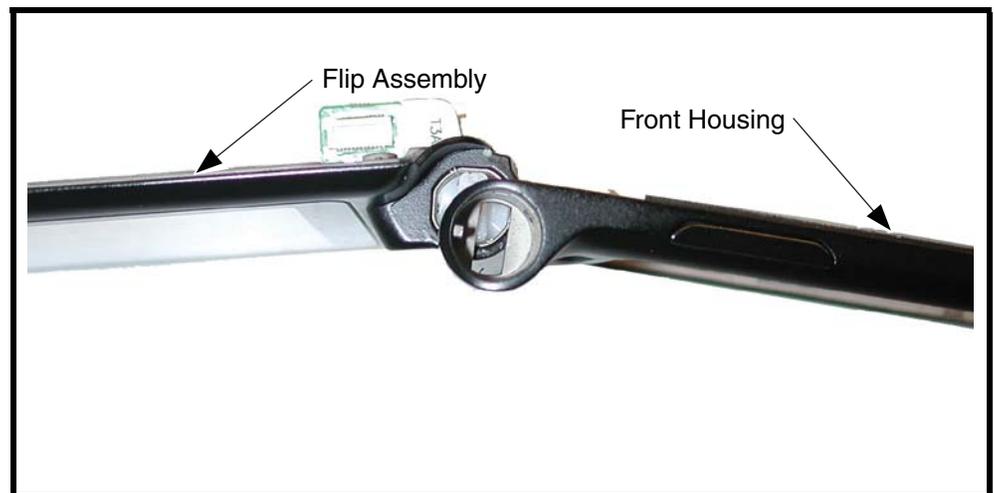

Figure 32. Removing the Flip Hinge Assembly

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

8.   Remove the hinge ring and the flex grommet, then carefully slide the flex out of the flip assembly (see Figure 33).
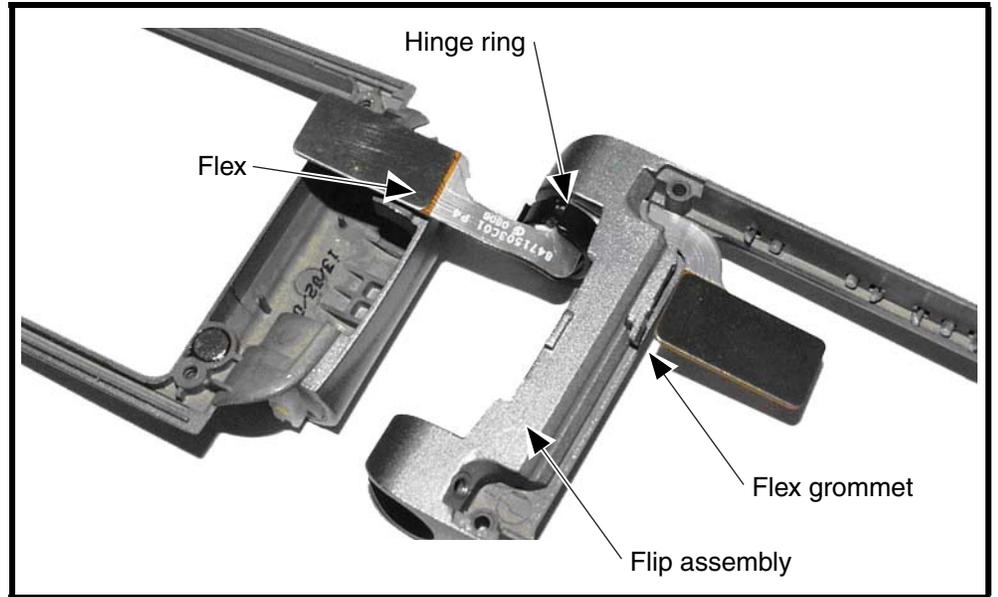
061680o

Figure 33. Removing the Flip Flex

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

9.   To replace, use the alignment ridges to place the hinge ring into the flip housing (see Figure 34).
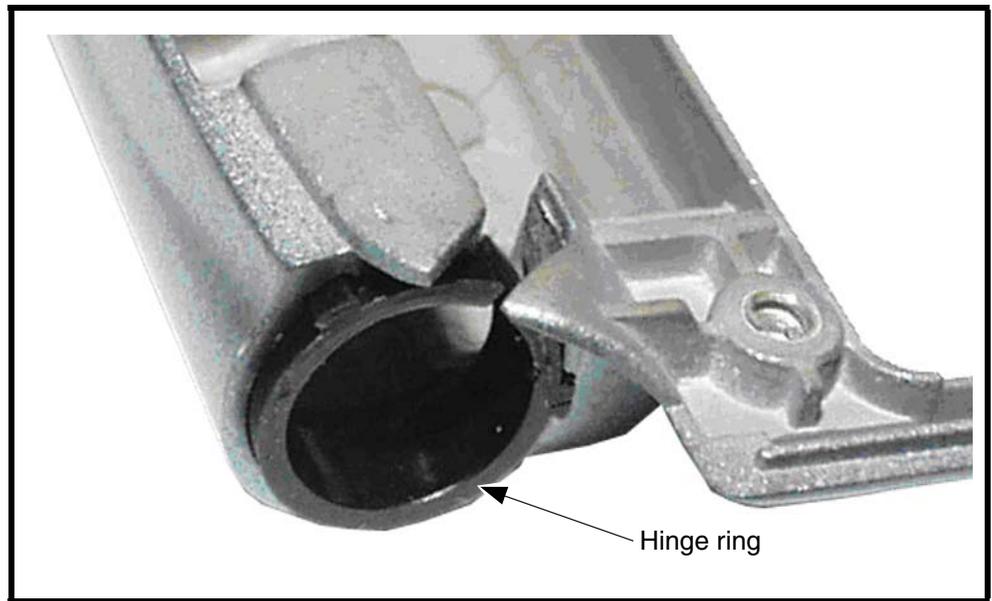
061681o

**Figure 34. Placing the Hinge Ring into the Flip Housing**

10. Place the flip flex into the gap of the flip housing, as shown in Figure 35.
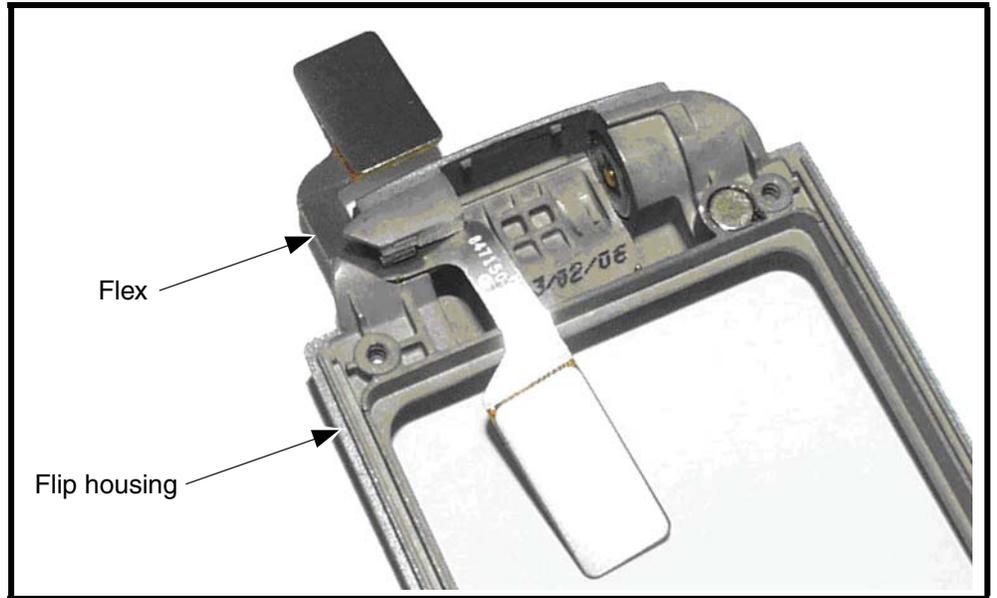
061682o

Figure 35. Placing the Flex into the Flip Housing

11. Align the front housing and the flip housing (see Figure 36). Watch the position of the flex in the hinge.
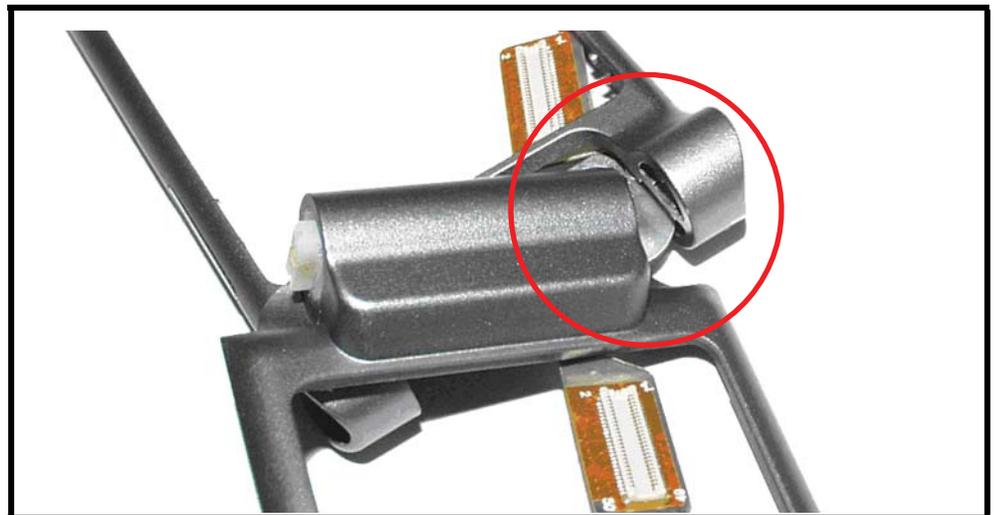
061684o

**Figure 36. Align the Front Housing to the Flip Housing**

12. Compress the hinge spring and slide the hinge into the front housing (see Figure 37).
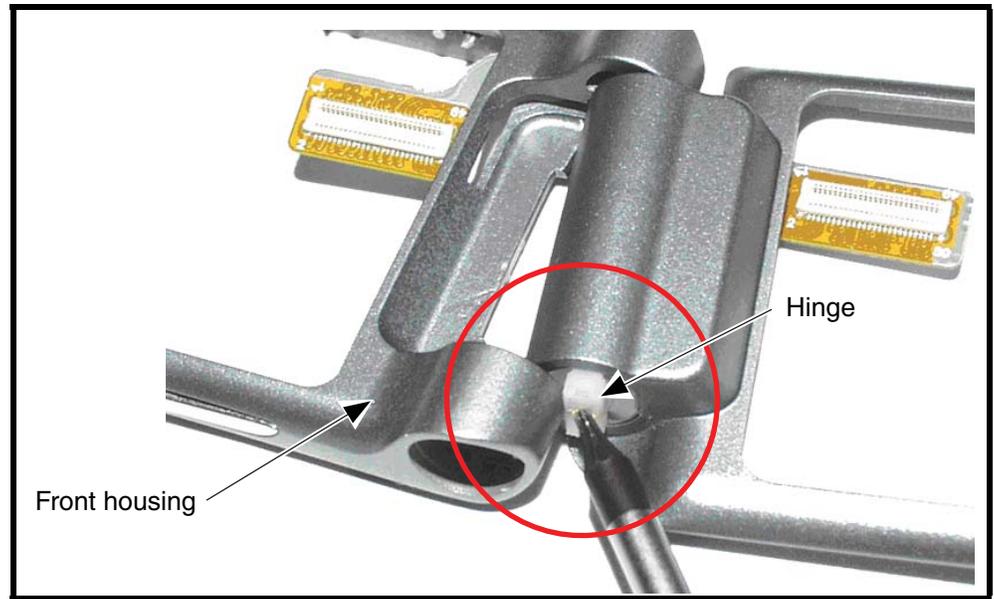
061685o

Figure 37. Compress Flip Hinge and Insert into Front Housing

13. Insert the left and right hinge caps and replace the T5 hinge screw with the Torx driver (see Figure 38).
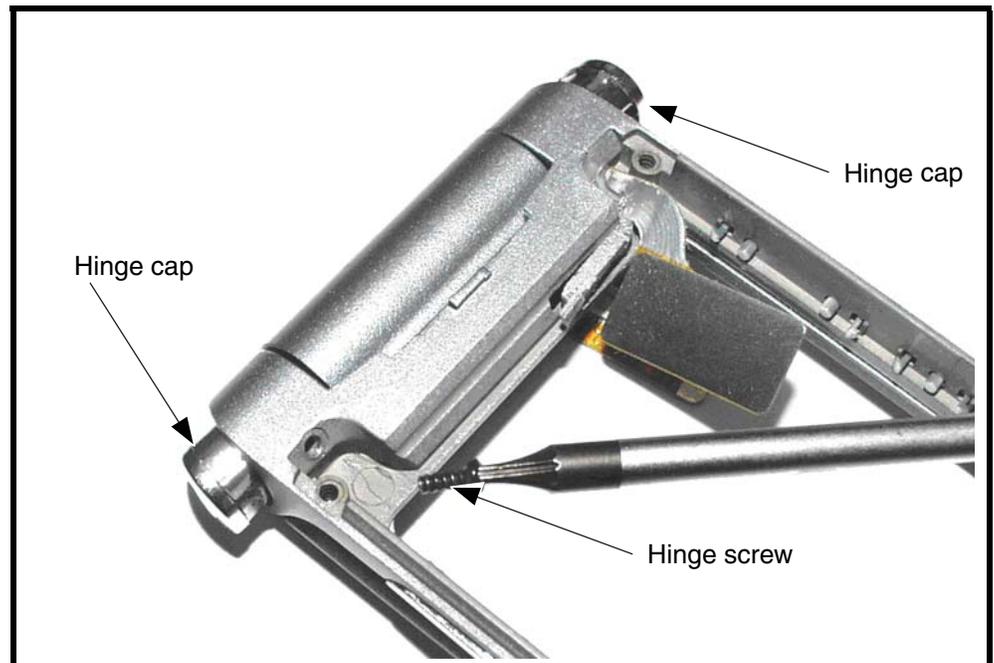
061686o

Figure 38. Replacing the Hinge Caps and Hinge Screw

14. Replace the hinge grommet into the gap between the flex and the flip housing (see Figure 39).
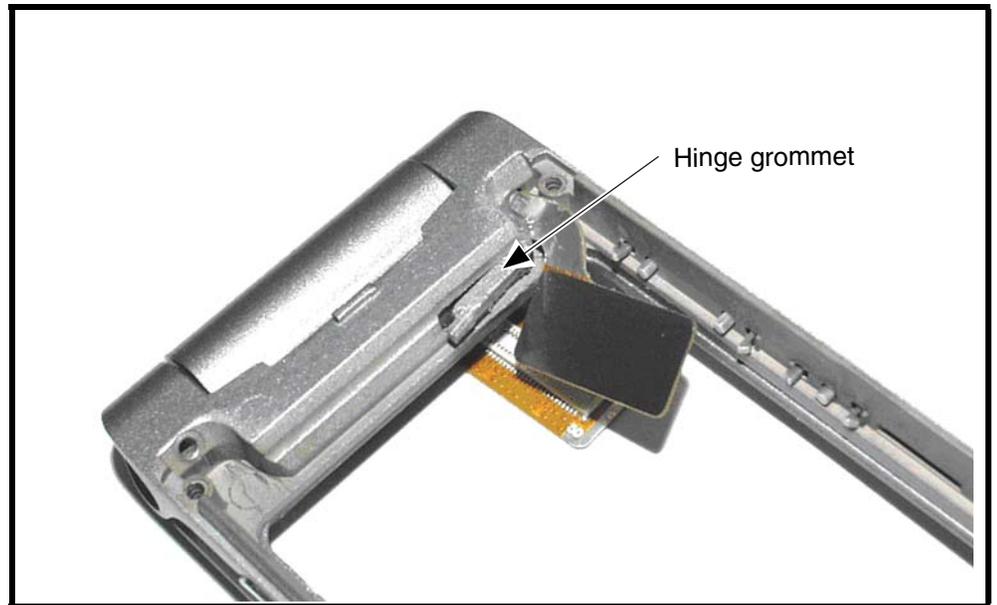
061687o

Figure 39. Replacing the Hinge Grommet

15. Replace the display module assembly, flip assembly cover, transceiver board assembly, antenna, rear housing, SIM, battery, and battery cover as described in the procedures.

Replacing the CLI and Main Display Lens

> *It is mandatory that the following special tools must be used when following this procedure:*

K1 Lens- and Trim Ring Press Tool – part number 0-00-00-40853
Generic Press Fixture – part number 19501980

Available at the AMS Online-shop 62.214.1.200 (for access please contact your local Motorola parts representative)

1. Place and align the main lens, the CLI lens, and the trim ring onto the flip assembly.

2. Place the open phone with the main lens up side down into the K1 lens press fixture.
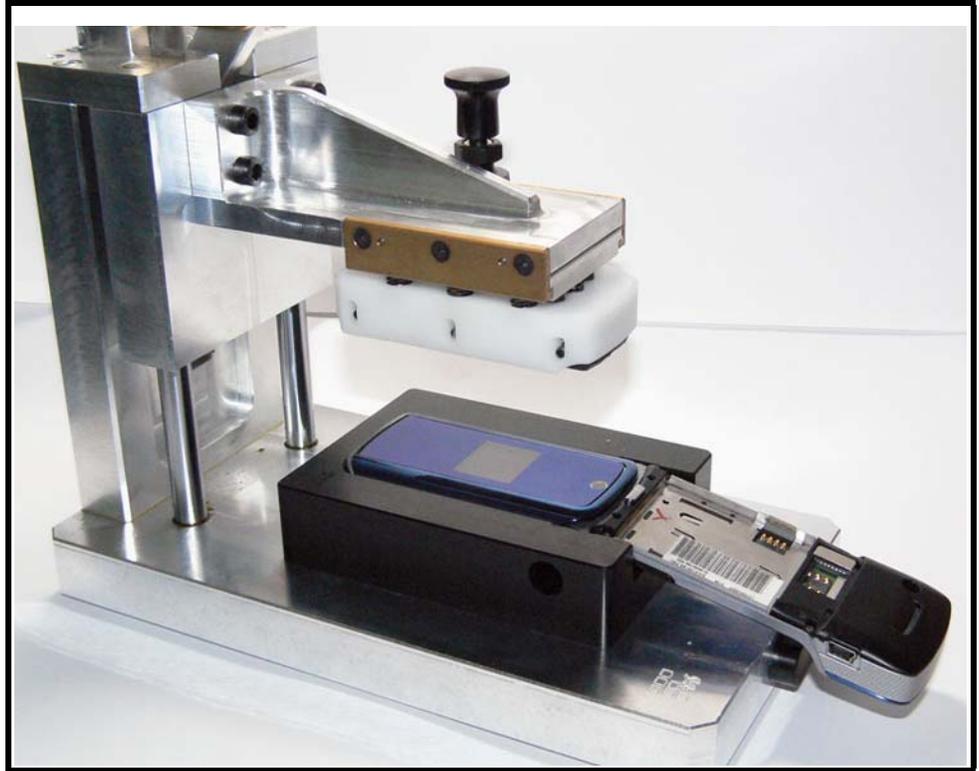
061572o

Figure 40. K1 Lens Press Fixture

3. Start the press process for at least 8 seconds.
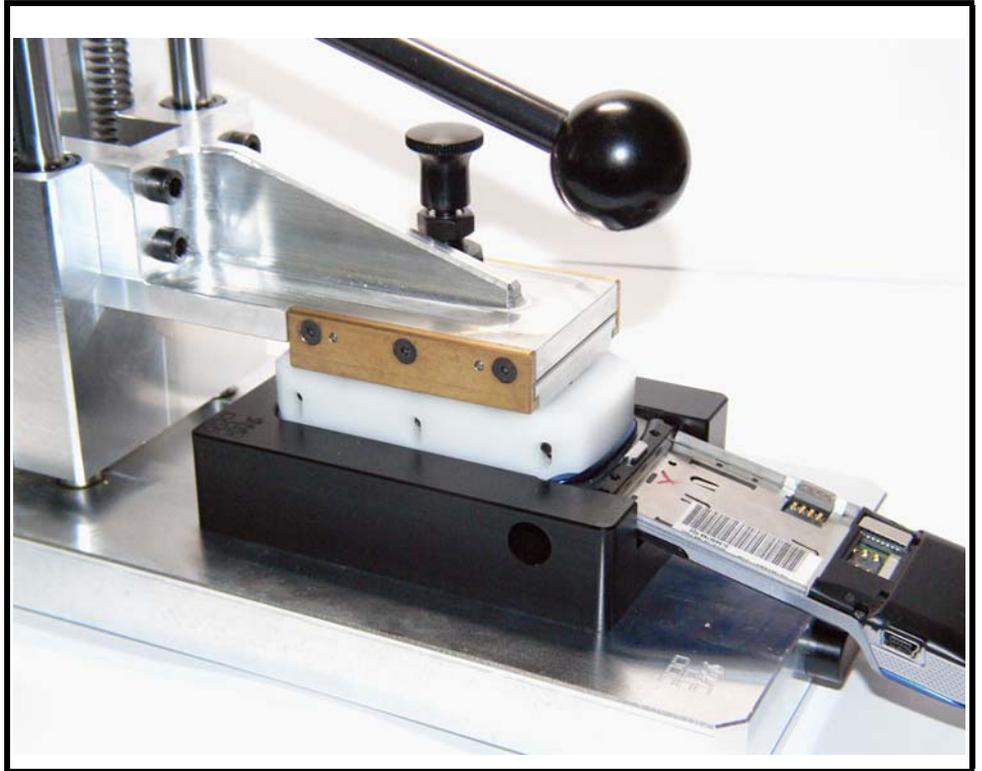
061572o

Figure 41. K1 Lens Press Fixture Closed

4. Open the press fixture and check the flip assembly.
5. Replace the transceiver board, rear housing, SIM, 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. K100 telephones use TrueSync® 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 42.
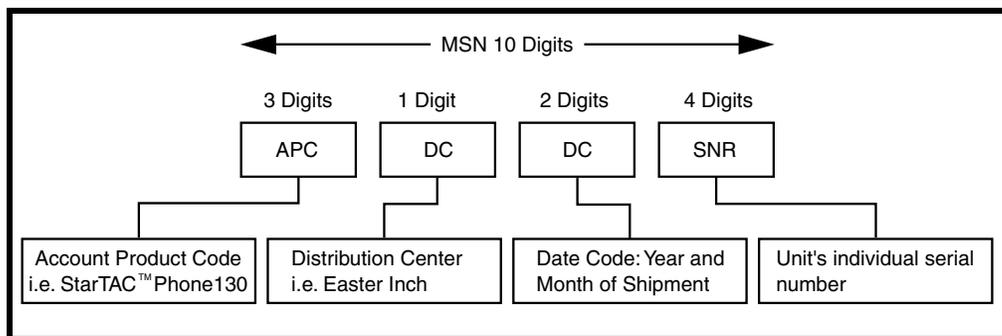
000807a

Figure 42. MSN Label breakdown

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:
- **TRANSCEIVER 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

Manual Test Mode

Motorola K1 telephones are equipped with a manual test mode capability. This allows service personnel to verify functionality and perform fault isolation by entering keypad commands.

To enter the manual test command mode, a GSM / DCS test SIM must be used.

1. Press ◎ to turn the phone OFF.
2. Remove the battery as described in the procedures.
3. Remove the customer's SIM card from the phone as described in the procedures.
4. Insert the test SIM into the SIM slot.
5. Replace the battery as described in the procedures.
6. Press ◎ to turn the phone ON.

Manual Test Mode Commands

Table 3. Manual Test Commands

Key Sequence	Test Function/Name	Remarks
<Menu>048263*	Enter manual test mode	
"End" Key	Exit manual test mode	
54*	Suspend	Required for all Test Mode Operations
0*0*0	Select tone 0	
0*0*1	Select tone 1	
0*0*2	Select tone 2	
0*0*3	Select tone 3	
0*0*4	Select tone 4	
0*0*5	Select tone 5	
0*0*6	Select tone 6	
0*0*7	Select tone 7	
0*0*8	Select tone 8	
0*0*9	Select tone 9	
0*1*X	Disable tone X	
3*0*1	Enable vibrator	
3*0*0	Disable vibrator	
5*0*0	Set audio level 0	
5*0*1	Set audio level 1	
5*0*2	Set audio level 2	
5*0*3	Set audio level 3	
5*0*4	Set audio level 4	
5*0*5	Set audio level 5	
5*0*6	Set audio level 6	
5*0*7	Set audio level 7	
5*0*8	Set audio level 8	
5*0*9	Set audio level 9	
5*0*10	Set audio level 10	
5*0*11	Set audio level 11	
5*0*12	Set audio level 12	
5*0*13	Set audio level 13	
5*0*14	Set audio level 14	
5*0*15	Set audio level 15	
6*2*2*0*0	Set Audio Path. Int Mic, IntSpk, RX unmute, TX unmute	
6*4*6*0*0	Set Audio Path. Boom Mic, Boom Spk, RX unmute, TX unmute	
10*0*3	Set band GSM 900	
10*0*4	Set band DCS 1800	
10*0*5		
10*0*6	Set dual band GSM 900 / 1800	
10*1*0	Read band	3= GSM 4= DCS 5= PCS 6 =GSM/DCS

Table 3. Manual Test Commands (Continued)

Key Sequence	Test Function/Name	Remarks
18*0	Initialize non-volatile memory (Master Reset)	
18*1	Initialize non-volatile memory (Master Clear)	
55*2*001	Test Display. All pixels ON	
55*2*000	Test Display. All pixels OFF	
55*2*002	Test Display. Checkerboard pattern A	
55*2*003	Test Display. Checkerboard pattern B	
55*2*004	Test Display. Border pixels ON	
*#06#	IMEI Check	No Test Mode Required
Phone Set up --> Phone Status --> Other Information	Flex Version / Technology / S-W Version / Readiness Status	No Test Mode Required

Troubleshooting Chart

Table 4. 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.
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.

Table 4. Level 1 and 2 Troubleshooting Chart (Continued)

SYMPTOM	PROBABLE CAUSE	VERIFICATION AND REMEDY
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.
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 K1 telephones.

Exploded View Diagram
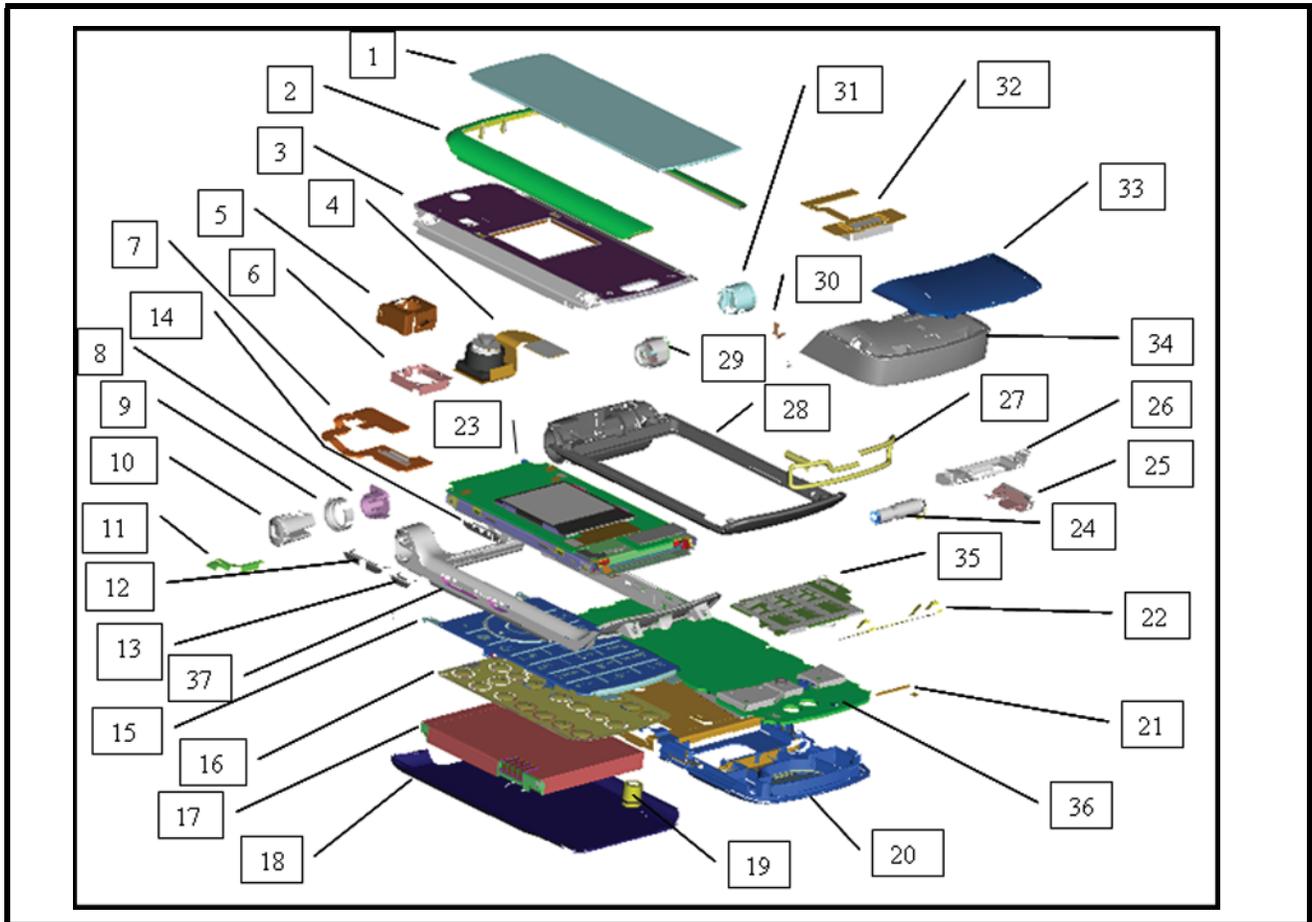
061246o

Figure 43. Exploded View Diagram

Exploded View Parts List

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

Table 5. Exploded View Parts List

Item Number	Motorola Part Number	Description
1	6171499E01	CLI Lens
2	1571508C01	Flip outer trim ring
3	0771067E01	Flip chassis assembly
4	0171569C01	2MP camera assembly
5	0571303C01	Camera grommet
6	0771762C01	Camera Bracket
7	0171564C01	Hinge flex assembly
8	0771404E01	Hinge flex support
9	1571507C01	Flip inner sleeve
10	1571607E02	Shaft end cap
11	0571662E01	Hinge flex grommet
12	3871636E01	Volume button assembly
13	3871634E01	Smart button assembly
14	3871635E01	Carrier button
15	3871424C01	Keypad assembly
16	4071487C01	EL dome assembly
17	SNN5779A	BC 50 Battery pack
18	SHN9374A	Battery door assembly
19	0571664E01	RF Grommet
20	1571383C01	Rear XCVR housing assembly

Item Number	Motorola Part Number	Description
21	8571486C01	Bluetooth antenna
22	4271460C01	Twanger contact
23	7271376D01 7287518Y01 SLG5081AA	Main display assembly CLI Display Display board assembly
24	5971846B02	Vibrator motor
25	0571663E01	USB grommet
26	0571948C01	Earpiece speaker grommet
27	8571485C01	Main antenna
28	1571299C01	Flip inner housing
29	5571414C02	Hinge mechanism
30	4271368C01	Hinge ground clip
31	1571608E02	Hinge end cap
32	0171568C01	Audio flex assembly
33	1571510C01	Antenna upper housing
34	1571511C01	Antenna center housing
35	0109067A82	Daughter board assembly
36	SLG4947AA	Main PCB assembly
37	1571370C01	XCVR front housing
Not Shown	0387473K09	5IP XCVR housing screw (x4)
	0387473K10	5IP Flip housing screw (x4)
	0387473K11	5IP hinge end cap screw (x1)
	0387347Y02	5IP Center housing screw (x2)

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.

For information on ordering parts please contact EMEA at + 49 461 803 1404.

Accessories

Table 6. Accessories

Part Description	Part Number
Power Solutions	
Battery-Only-Charger - Razor K1, South Asia plug	CHPN4613A
Right Angle Dongle (EMU)	SKN6182
Travel Charger EMU Mid-Rate Switcher - Argentina	SPN5192
Travel Charger EMU Mid-Rate Switcher - Australia	SPN5193
Travel Charger EMU Mid-Rate Switcher - BRAZIL	SPN5187
Travel Charger EMU Mid-Rate Switcher - EURO	SPN5189
Travel Charger EMU Mid-Rate Switcher - INDIA	SPN5194
Travel Charger EMU Mid-Rate Switcher - MEXICO	SPN5186
Travel Charger EMU Mid-Rate Switcher - PRC	SPN5188
Travel Charger EMU Mid-Rate Switcher - TWN	SPN5216
Travel Charger EMU Mid-Rate Switcher - UK/HK	SPN5190
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 - HK	SPN5199
Travel Charger EMU Rapid Switcher - MEXICO	SPN5200
Travel Charger EMU Rapid Switcher - PRC	SPN5198
Travel Charger EMU Rapid Switcher - US	SPN5202
Travel Charger EMU Rapid TWN	SPN5270
Charger Adapter - Aust/NZ Plug	SYN8127
Charger Adapter - Euro Plug	SYN7456
Charger Adapter - UK Plug	SYN7455
Charger Adapter EMU/EMU (Y-cable)	skn6222
In Vehicle Solutions	
Self Install Car Kit Universal - Mandarin - Smart Drive+	SYN0888
Self Install Car Kit Universal - Smart Car Kit - Smart Drive	SYN0890
Smart Cable EMU - Motorola	SYN1003
Vehicle Power Adapter EMU - VC700	SYN0847
Audio and Connectivity	
Stereo Headset - EMU	SYN1301
Data Cable Mini USB/USB/Serial	SKN6371
Headset Mono One Touch w/ Send-End (EMU)	SYN0896
Bluetooth Products	
H500 Gloss Black	SYN1375
H500 Nickel Japan	SYN1441
H500 Pink	SYN1436
Bluetooth Class 1 USB Adapter PC850	SYN1244
H500 Bluetooth headset Black Soft touch	SYN1374
H500 Bluetooth Headset Hot Pink	SYN1525

Table 6. Accessories (Continued)

Part Description	Part Number
H500 Bluetooth Headset iPOD Blue	SYN1523
H500 Bluetooth Headset iPOD Gold	SYN1524
H500 Bluetooth Headset Spa Blue	SYN1527
H500 Bluetooth Headset White	SYN1526
Bluetooth Car Kit - Asia/Americas	S9642
Bluetooth Car Kit - Euro	S9643
Bluetooth Car Kit - HF850	SJ0014
Bluetooth Car Kit - IHF1000 - Americas/Asia	98676H
Bluetooth Car Kit - IHF1000 - EMEA	CFLN1232
Bluetooth Headset - Glossy Black - HS820	SYN9951
Bluetooth Headset - Green - HS820	SYN0945
Bluetooth Headset - Grey - HS820	SYN1106
Bluetooth Headset - HS850 (Paladin Refresh - Black)	SYN1107
Bluetooth Headset - HS850 (Paladin Refresh - Blue)	SYN1226
Bluetooth Headset - Oakley RAZRWIRE (Mercury: NA) - H7	98679H
Bluetooth Headset - Oakley RAZRWIRE (Pewter/Black: NA) - H7	98677H
Bluetooth Headset - Oakley RAZRWIRE (Platinum/Rootbeer: NA) - H7	98678H
Bluetooth Headset (Aphrodite) - H700	SYN1311
Bluetooth Headset (Genie Gray) - HS801	CHYN4590AB
Bluetooth Headset (Genie Pink) - HS801	CHYN4590AC
Bluetooth Headset (Genie Refresh - Dk Blue) - HS815	SYN1201
Bluetooth Headset (Genie Silver) - HS801	CHYN4590
Bluetooth Headset (Mage) - HS830	SYN0996
Bluetooth Headset (Medusa - Pearl Dark Gray) - H300	SYN1297
Bluetooth Headset (Medusa - Pink) - H300	SYN1417
Bluetooth Headset (Medusa - Pure White) - H300	SYN1416
Bluetooth Headset (Nexus) - HS805	SYN0986
Bluetooth Headset (Paladin) - HS810	SYN9826
Bluetooth Headset (Persephone) - H605	SYN1303
Bluetooth Helmet Headset - HS830 (Mage)	SYN0997
Bluetooth Mono Headset, Nickel- H500	SYN1290
Bluetooth PC USB Adapter	SYN0717
Bluetooth Speaker (Quadrant Refresh) - HF820	SYN0736C