



MOTOROLA

Level 1 and 2 Service Manual

6809504A60-A

MOTOKRZR[™] K1m

Wireless Telephone



CDMA 1900 MHz, CDMA 800 MHz

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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 of this manual. 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 **MOTOKRZR™** K1m 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 **MOTOKRZR** K1m telephones, and also provides procedures and processes for repairing the phones at Level 1 and 2 service centers including:

- 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.

Specifications

General Function	Specification
Frequency Range 1900 MHz PCS	1931.250 -1988.750 MHz Rx 1851.250 -1908.750 MHz Tx
Frequency Range 800 MHz CDMA	869.70 - 893.31 Rx (CDMA) 824.70 - 848.31 Tx (CDMA)
Channel Spacing	50 kHz PCS 30 kHz CDMA 800
Channels	1150 PCS 788 CDMA 800
Modulation	1M25F9W (1.25 MHz bandwidth) CDMA 3G1XRTT (1.25 MHz bandwidth) CDMA-1X
Duplex Spacing	80 MHz PCS 45 MHz CDMA 800
Frequency Stability	± 150 Hz (CDMA)
Power Supply	3.6V Li Ion 880 mAh battery
Average Transmit Current (Suburban Profile)	208 mA CMDA 800 (Avg), 230 mA PCS (Avg)
Average Stand-by Current (slot cycle 2)	2 mA PCS, 1.9 mA CDMA 800
Dimensions (X, Y, Z) (with 880 mAh Li ion battery)	44mm x 103mm x 17mm
Size (Volume)	67 cc
Weight	≤103g (3.52 oz) with battery
Operating Temperature Range	-30° C to +60° C (-22° F to +140° F)
Humidity	80% Relative Humidity at 50° C (122° F)
Battery Life, 880 mAh Li Ion Battery	Digital talk time: 254 minutes (CDMA 800) 238 minutes (PCS) 880mAh (IS95/IS2000 Cell/PCS, CDG Suburban Profile with 40% VAF ~ + 110.6dBm) Digital Standby Time: 435 hours (CDMA 800) 426 (PCS) hours (IS95/IS2000 Cell/PCS Slot Cycle 2)
	All talk and standby times are approximate and depend on network configuration, signal strength, and features selected.

Transmitter Function	Specification
RF Power Output	0.30 watts +25 dBm into 50 ohms (CDMA/PCS nominal)
Spurious Emissions	- 18.5 dBm (max) from 0.03 to 19 GHz
Input/Output Impedance	50 ohms (nominal)
Transmit Audio Response	6 dBm/octave pre-emphasis
Modulation	40K0F1D (1.25 MHz bandwidth) Amps
CDMA Transmit Waveform Quality (Rho)	0.94

Receiver Function	Specification
Receive Sensitivity	-104 dBm (CDMA/PCS, 0.5% Static FER) 0.5% or less
Audio Distortion	Less than 5% at 1004 Hz, +/- 8 kHz peak frequency deviation (transmit and receive)

Product Overview

Motorola **MOTOKRZR™** K1m mobile telephones feature Code Division Multiple Access (CDMA) technology. The mobile telephone uses a simplified icon and Graphical user interface (GUI) for easier operation, allows Short Message Service (SMS) text messaging, and includes clock, alarm, datebook, calculator, and caller profiling personal management tools. The K1m telephones include a built in camera. The phone provides embedded ring tones including VibraCall vibrating alert and 32 Downloadable/Customizable iMelody ring tones. The K1m telephones are dual band that allow roaming within the CDMA 800 MHz and PCS 1900 MHz bands.

The K1m CDMA phones consist of a main housing assembly and a flip assembly. The main circuit board, battery, EMU connector are located in the main housing assembly. The camera on the K1m phones is located in the hinged flip assembly.

The flip assembly contains the entire hinge mechanism. It is attached to the main housing by four screws. The main display is on the inside of the flip assembly and a one line LED display on the outside of the flip assembly. The main display on the K1m phones is a 176 x 220 pixel 65k TFT LCD. The external CLI display is a 96 x 80 pixel 65K CSTN LCD. The camera module is a 1.3 mega-pixel CMOS camera.

The main housing assembly includes a battery cover, chassis, main circuit board, keypad plastic front housing, and internal antenna.

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

The telephones are made of polycarbonate plastic. The display and speaker, as well as the 18-key keypad, transceiver printed-circuit board (PCB), microphone, charger and headphone connectors, and power button are contained within the flip form-factor housing. The 880 mAh Lithium Ion (Li Ion) battery provides up to 254 minutes of talk time in CDMA mode with up to 435 hours of standby time¹. An optional extended capacity 1700mAh Li Ion battery is also available.

Features

MOTOKRZR K1m telephones use advanced, self-contained, sealed, custom integrated circuits to perform the complex functions required for CDMA 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
- Video Capture & Playback MPEG4 (15 fps QCIF)
- Audio/Video streaming (3GPP)
- Video Progressive Download
- Dedicated Carrier Key
- Integrated Bluetooth Connectivity (Class 2)
- 1.3MP digital camera with 8x digital zoom
- Micro SD slot for upgradeable memory
- Dynamic Idle
- 17-30MB of embedded end user memory

1. All talk and standby times are approximate and depend on network configuration, signal strength, and features selected.

- 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)

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 K1m 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.

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 K1m 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 **MOTOKRZR K1m** telephone's controls are located on the sides of the flip and on the keypad. K1m 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.



0613850

Figure 1. Controls, indicators, and I/O

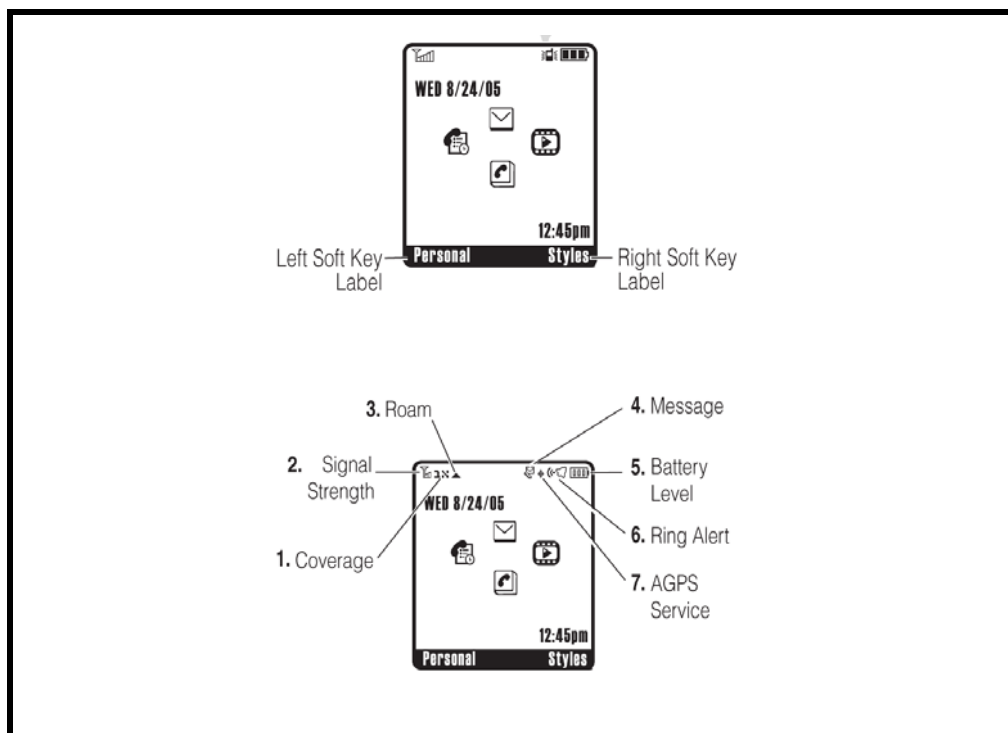
“Soft keys” refer to non-labeled keys that correspond to text options displayed on the screen. The left and right soft keys perform the function shown in the corners of the display. The right key will usually select an option whereas the left key will usually exit a function or return to a previous screen.

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

Color Display

The K1m wireless phones feature a 65k color Thin Film Transistor (TFT) 176 x 220 pixel display.

Indicators, in the form of icons, are displayed on the LCD (see Figure 2).



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












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.

Alert/Indicator	Description
Signal Strength Indicator	Vertical bars show the strength of the network connection.
Roaming Indicator	Indicates phone is in digital coverage area.
1x-EVDO Indicator	Indicates phone is in 1x-EVDO coverage area (necessary for V CAST services).
1X Indicator	Indicates phone is in 1x-RTT coverage area.
SSL Indicator	Indicates application verification is via SSL during a download session.
Data Call, Tethered, or Embedded WAP/BREW Application Indicator	Shows during data call, tethered mode, or WAP/BREW application.
Dormant	Indicates phone is dormant and PPP session is active.
No Service Indicator	Phone is in area with no service coverage.

Alert/Indicator	Description
 TTY Indicator	Phone is in TTY mode.
 Voice Call Indicator	Shows during an active voice call.
 E911 Indicator	Indicates E911 is set to On .
 Location On Indicator	Indicates Location is set to On .
 Keypad Lock Indicator	Indicates keypad lock is set to On .
 Battery Level Indicator	Shows battery strength. The more bars, the greater the charge.
 All Sounds Off	Indicates Master Volume is set to Off .
 Alarm Only	Indicates Master Volume is set to Alarm Only .
 Vibrate On	Indicates Master Volume is set to Vibrate On .
 Speakerphone	Indicates speakerphone is on.
 Missed Call	Indicates a missed call.
 Message Indicator	Shows when you receive a new message.
 Calendar Appointment	Shows number of calendar appointments.
 Voicemail	Shows when you receive a voicemail message.
 Alarm On	Shows when an alarm has been set.
OFF and  Airplane Mode On	Shows when Airplane Mode has been set.

Alert Settings

K1m telephones include preset alert tones and vibrations that can be applied to all alert events at the same time.



Pressing either volume key will mute 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 either 4 or 3 levels as follows:

4 bars = 100% - 75%
3 bars = 75% - 50%
2 bars = 50% - 20%
1 bar = 20% - 5%
0 bars = low battery

or

3 bars = 100% - 50%
2 bars = 50% - 20%
1 bar = 20% - 5%
0 bars = 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. Immediately replace the old battery with a fresh battery.



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 **MOTOKRZR™** K1m 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, Apex 440-5 Torx or equivalent. Torque setting is 1.5 in-lbs and 2.0 in-lbs or 14 Ncm.	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 (AMS) ²	Disassembly tool, plastic with flat and pointed ends (manual opening tool)	Used during assembly/disassembly of phone
SYN1242a	Silver Metal Bezel	Used during assembly/disassembly of phone
19501980 (AMS) ²	Generic press tool	Used to assemble the main lens and CLI lens.
0-00-00-40854	K1m lens press tool	Used to assemble the main lens and outer flip trim ring
--	3m Scotch-Weld Instant Adhesive CA-5	Used during assembly of flip magnet

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

2. Not available from Motorola. To order, contact: AMS Software & Elektronik GmbH, c/o Holger Grube, Lise-Meitner-Straße9 D-24941 Flensburg Tel.: +49-461-90398-0 Fax: +49-461-90398-50.

Disassembly

The procedures in this section provide instructions for the disassembly of K1m 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.

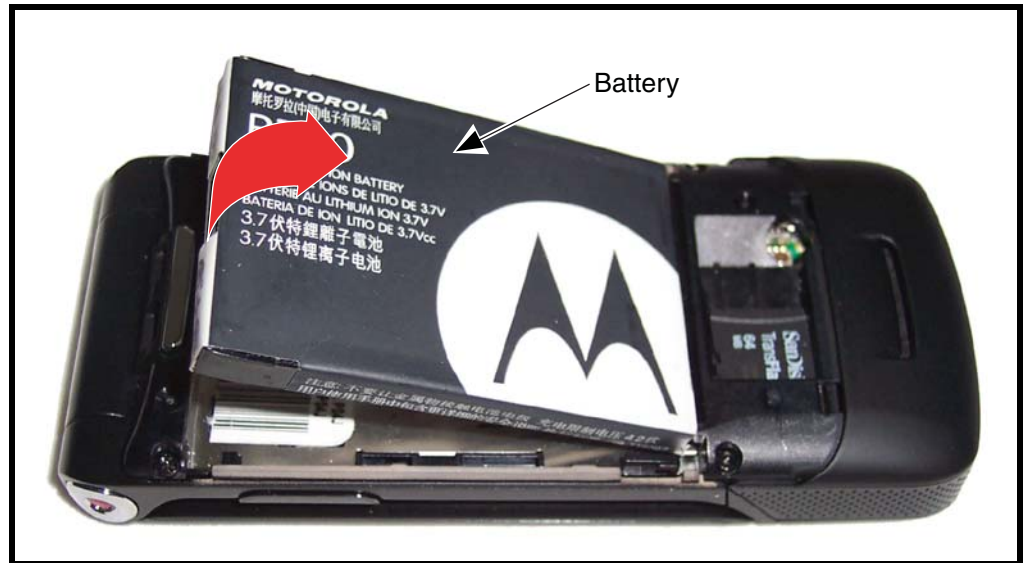


Figure 2. Removing the battery

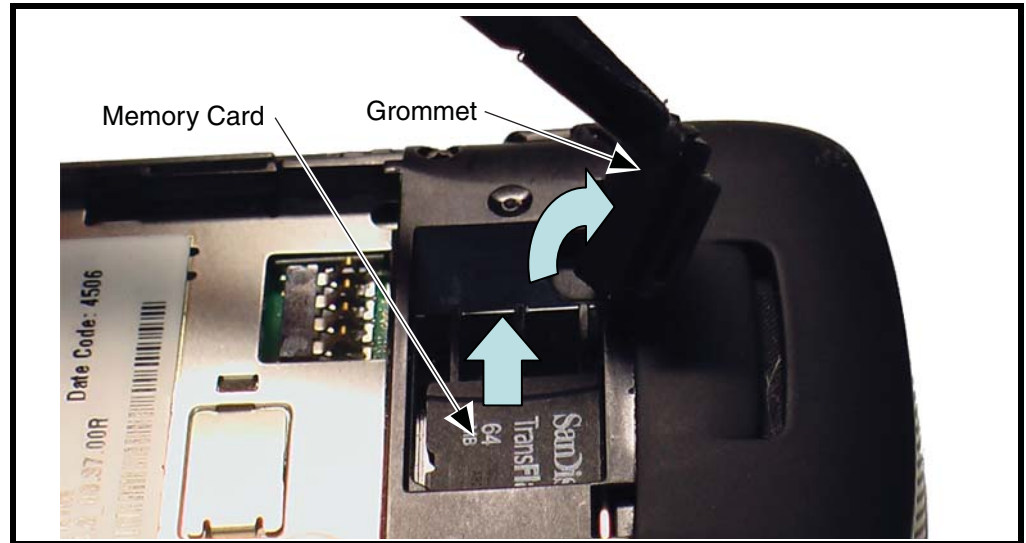


There is a danger of explosion if the Lithium Ion battery is replaced incorrectly. Replace only with the same type of battery or equivalent as recommended by the battery manufacturer. Dispose of used batteries according to the manufacturer's instructions.

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 Trans-Flash Memory Card

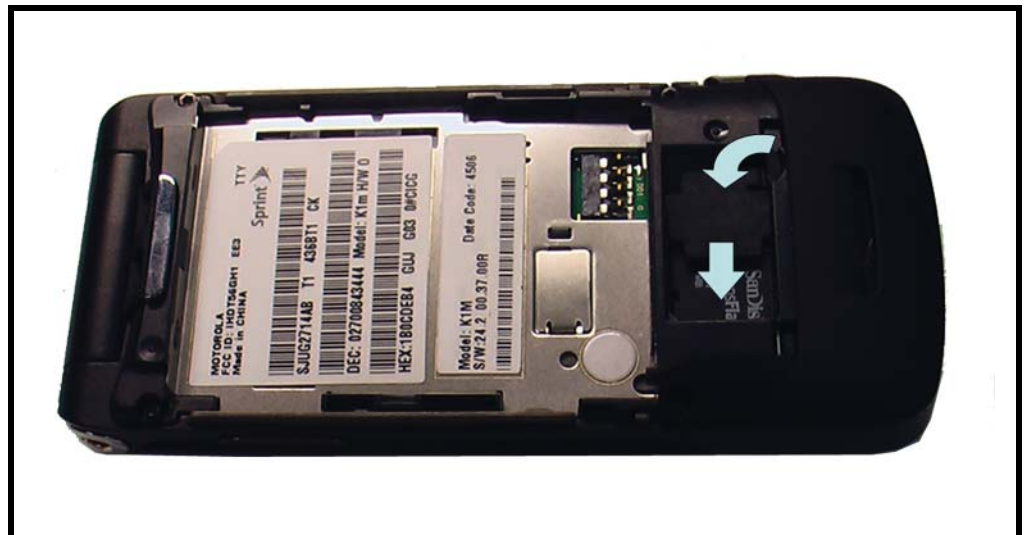
1. Remove the battery cover and battery as described in the procedures.
2. Lift the memory card grommet and slide the memory card out



0703510

Figure 3. Removing the Trans Flash Memory Card

3. Slide the trans flash memory card out of the trans flash compartment as shown in Figure 3.
4. Carefully lift the trans flash memory card out of the phone.
5. To replace, with transflash card grommet still raised, slide the trans flash memory card all the way into its holder, ensuring the metal contacts are facing down (see Figure 4).



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Figure 4. Inserting the Trans Flash Memory Card

6. Lower transflash card grommet and snap in place.



If the Transflash memory card grommet is removed. It must be replaced with a new part.

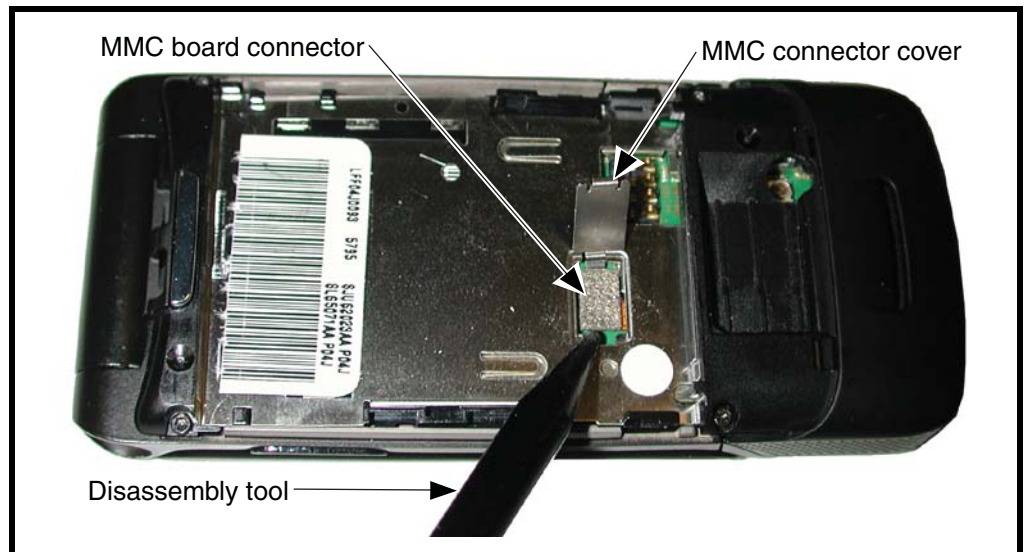
7. Replace the battery and battery cover as described in the procedures.

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.

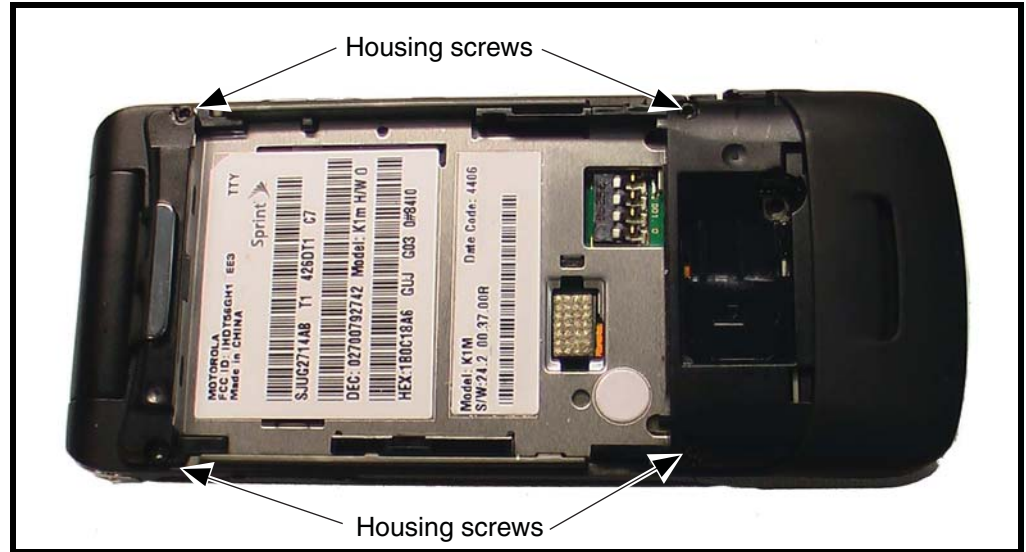
1. Remove the battery cover, and battery as described in the procedures.
2. Remove the Multi Media Card (MMC) cover by pushing with the disassembly tool to the side and removing it from the slot. If cover becomes deformed, replace with a new one when assembling.
3. Use the disassembly tool to unseat the MMC board connector.



0611210

Figure 5. Unseating the MMC Board Connector

- Using a Torx driver with a T-5 bit, remove the 4 screws at the side of the phone. See Figure 6. Retain the screws for reassembly only if reusing the rear housing. Otherwise, use new screws with a new housing.



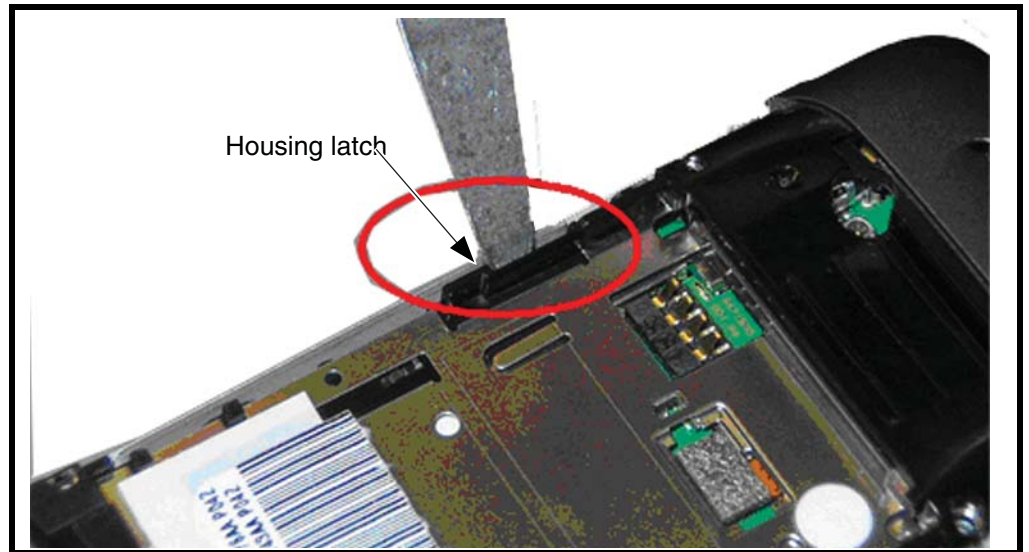
061121a

Figure 6. Removing the Rear Housing Screws



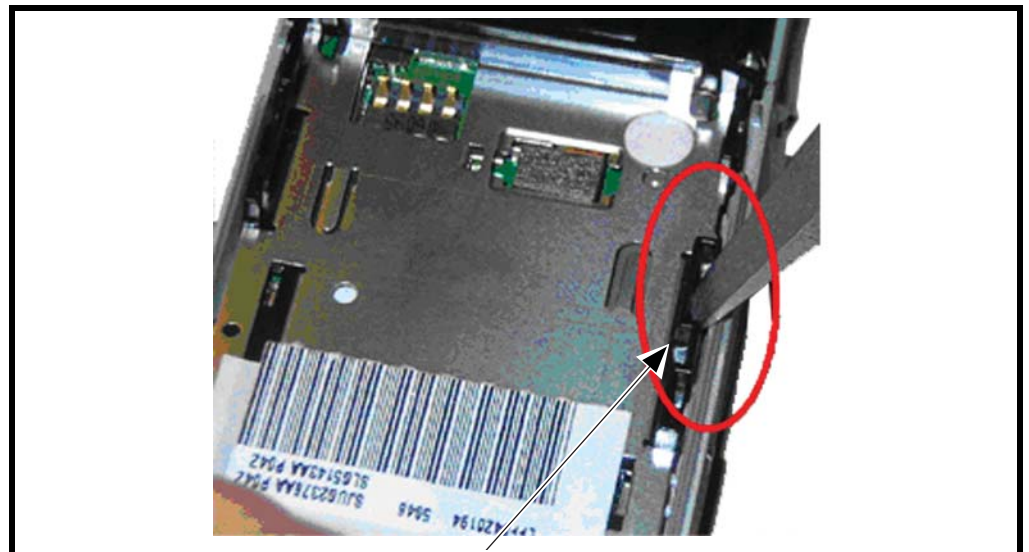
In addition to 4 screws, the rear housing assembly is fastened with plastic snaps. These are fragile and should be released with care.

5. Use the disassembly tool to release the snaps on the sides of the phone (see Figures 7 and 8).



0613350

Figure 7. Releasing the Left Housing Snaps



0613360

Figure 8. Releasing the Right Housing Snaps

6. Carefully slide in the tip of the tool (no more than 2 mm) under the plastic section of the rear housing and with rotating motion release the bottom snaps.

- Carefully lift the rear housing up and away from the phone (see Figure 9).



061122a

Figure 9. Removing the Rear Housing Latches

- Use the disassembly tool to loosen the adhesive and separate the daughter board connector from the main PC board.
- Carefully lift the rear housing assembly away from the phone.
- To replace, align the housing latches with the corresponding openings on the front housing. Gently press the housings together until the latches snap into place.
- Align the MMC daughter board connector to the main PC board socket and carefully press into position.
- Replace the 4 housing screws and tighten to a final torque setting of 20 Ncm (1.8 inch pounds) if using new housing. Torque to 17 Ncm (1.5 inch pounds) if re-using housing. Do not over tighten.
- Replace the 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, trans flash card, and rear housing as described in the procedures.
2. Remove the EMU grommet from the transceiver PC board assembly.
3. Use the disassembly tool to unseat the flip flex connector from its socket on the transceiver board assembly (see Figure 10).

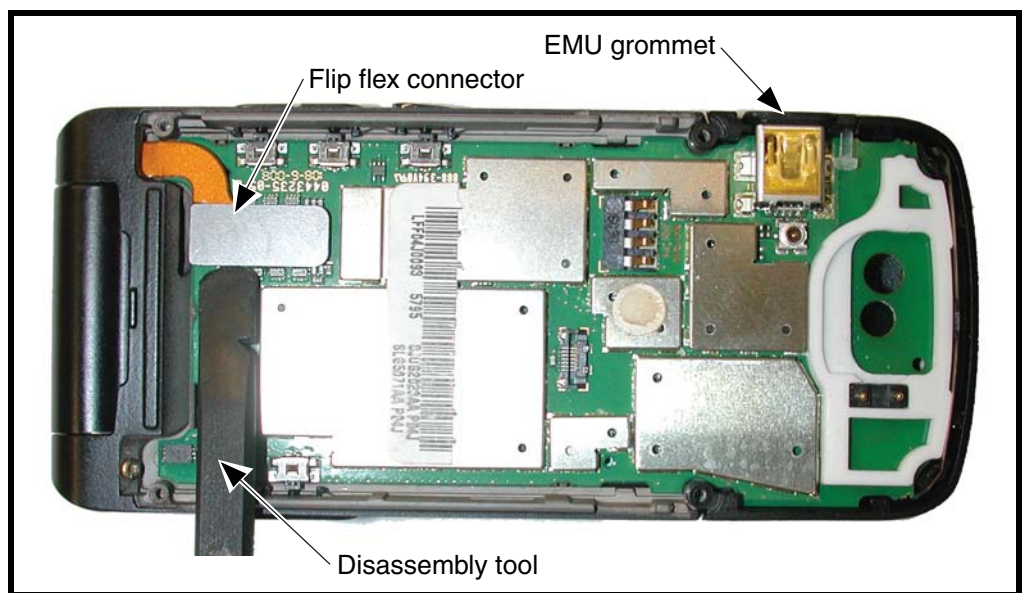
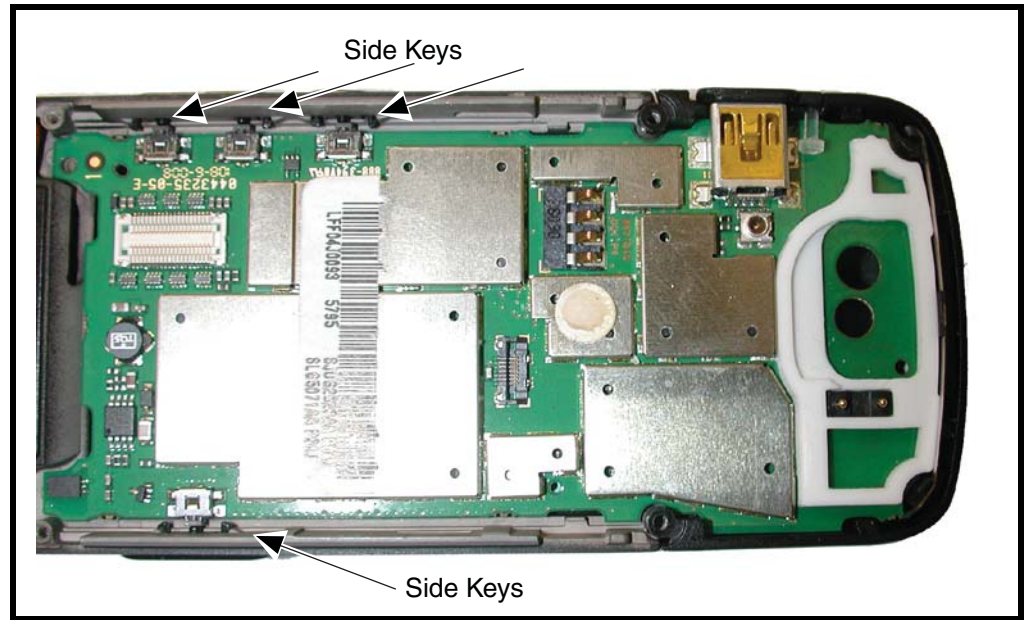


Figure 10. Removing the Flex Connector

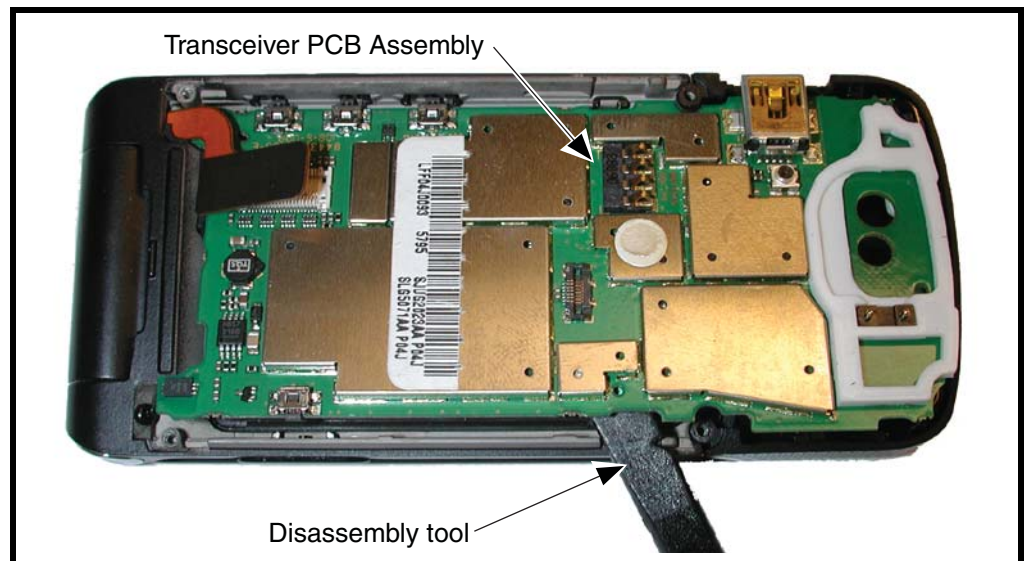
4. Use the pointed end of the disassembly tool to remove the side keys, volume keys, and smart keys. Unless damaged, retain the keys for re-installation.



061381o

Figure 11. Removing the Flex Connector

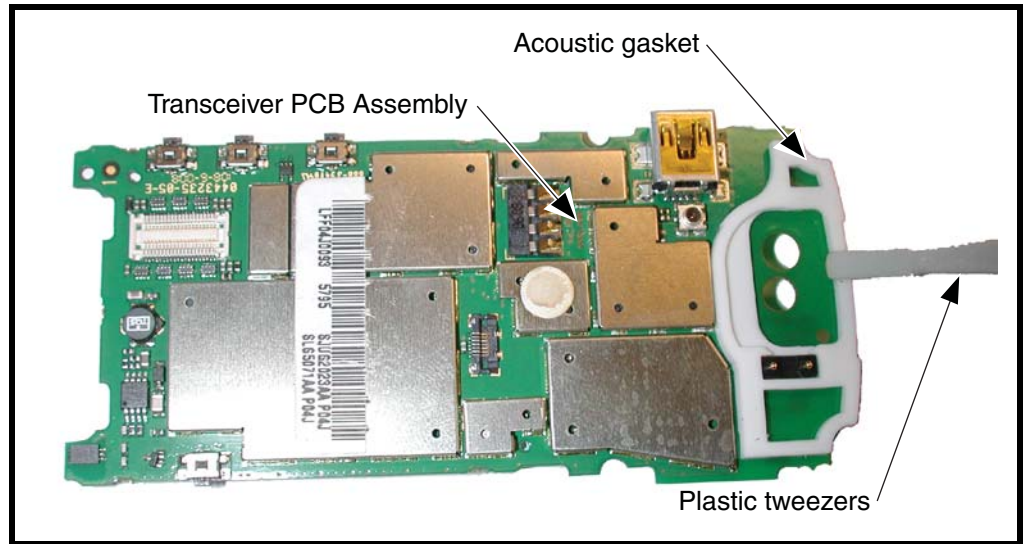
5. Use the disassembly tool to lift the transceiver board assembly out of the front housing.



061128o

Figure 12. Removing the Transceiver PC Board Assembly

6. Use the plastic tweezers to lift the acoustic gasket from the transceiver PCB board assembly (see Figure 13).



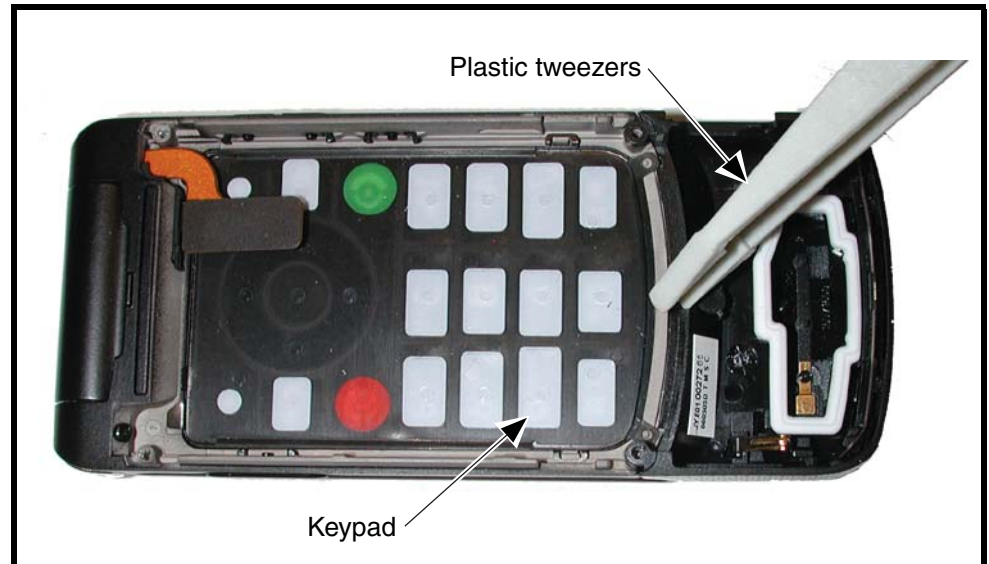
061129c

Figure 13. Removing the Acoustic Gasket

7. To replace, place the transceiver board assembly into the rear housing.
8. Use the plastic tweezers to place the acoustic gasket onto the transceiver PCB assembly.
9. Carefully and gently press the transceiver board into position and until it snaps into place.
10. Reconnect the MMC board connector to the transceiver PC board assembly. Expose the adhesive on the MMC card surface for adhesion to the rear housing assembly.
11. Attach the EMU grommet to the transceiver PC board assembly.
12. Replace the side key, volume keys, and smart key. Ensure the keys move freely and make proper contact with the transceiver board.
13. Replace the rear housing, battery, and battery cover as described in the procedures.

Removing and Replacing the Keypad

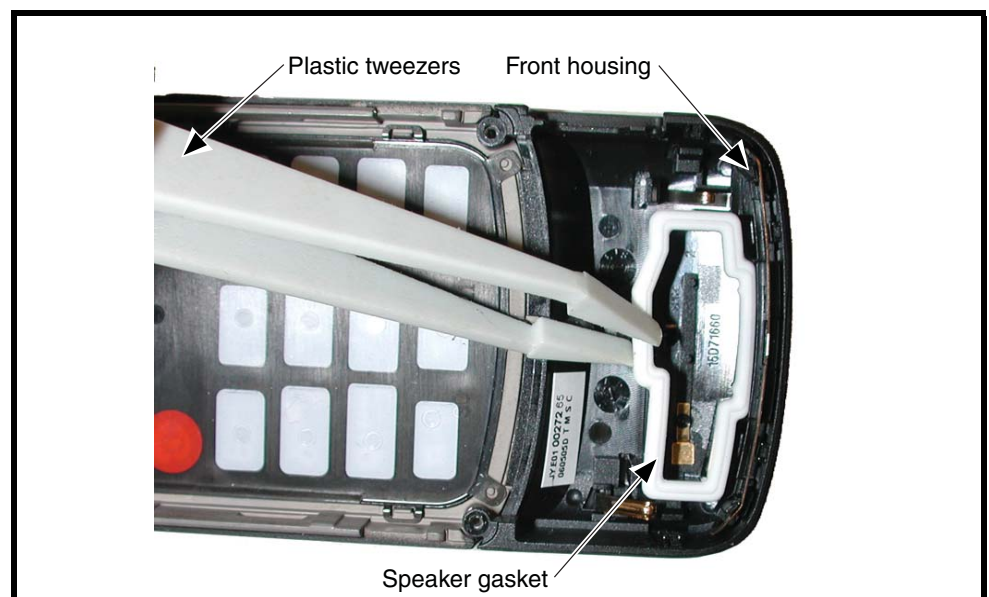
1. Remove the battery cover, battery, memory card, rear housing, and transceiver PC board, as described in the procedures.
2. Using plastic tweezers, gently lift up the keypad and remove it from the front housing as shown in Figure 14.



061155o

Figure 14. Removing and Replacing the Keypad

3. Use the plastic tweezers to remove the speaker gasket from the front housing (see Figure 15).



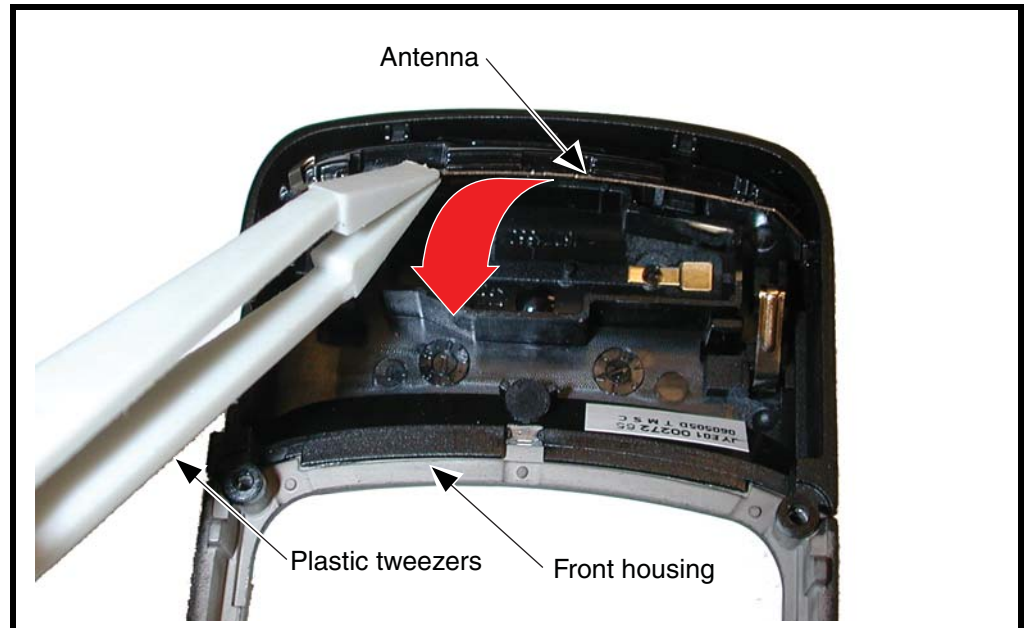
061156o

Figure 15. Removing and Replacing the Speaker Gasket

4. To replace, align the keypad with the front housing and press it into place.
5. Use the plastic tweezers to place the speaker gasket in the front housing.
6. Replace the transceiver PC board, rear housing, battery, and battery cover as described in the procedures.

Removing and Replacing the Antenna

1. Remove the battery cover, battery, and rear housing assembly as described in the procedures.
2. Use the plastic tweezers to remove the antenna assembly from the front housing as shown in Figure 16.



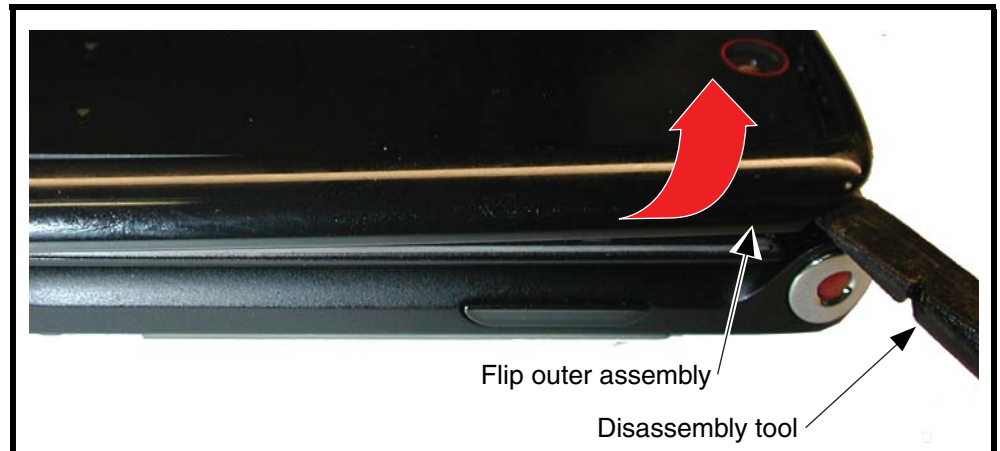
0611570

Figure 16. Removing the Antenna Assembly

3. Carefully press the antenna assembly into position in the front housing.
4. Replace the transceiver PC board assembly, rear housing assembly, memory card, battery and battery cover as described in the procedures.

Removing and Replacing the Flip CLI Lens

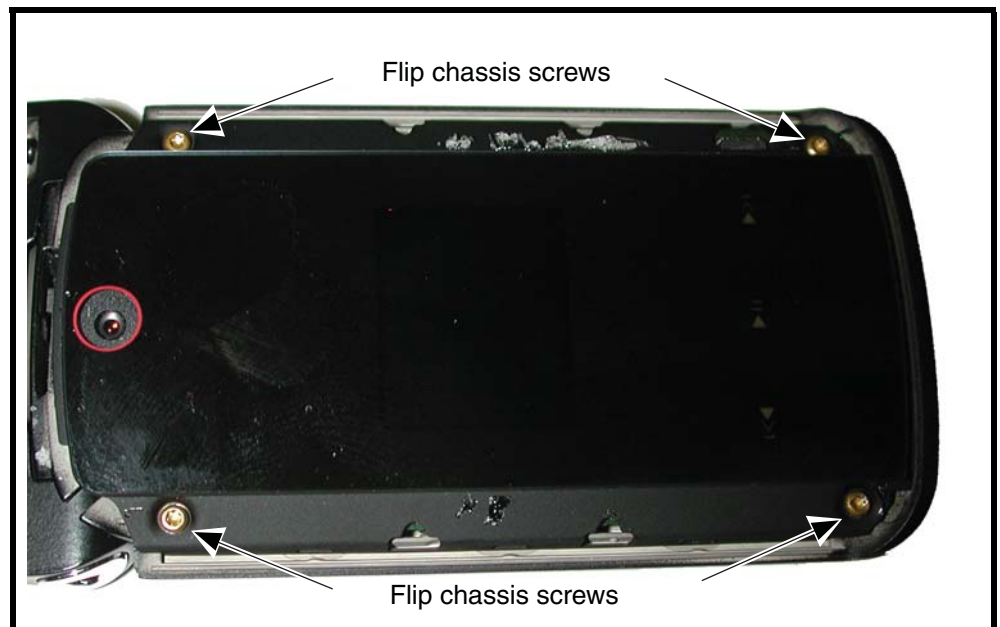
1. Remove the battery cover, battery, rear housing, and transceiver board assembly as described in the procedures.
2. Use the disassembly tool to release the flip outer assembly latches at the top and along the sides of the flip assembly (see Figure 17).



0611810

Figure 17. Removing the Flip Outer Assembly

3. Carefully lift the flip outer assembly from the flip assembly. Remove any remaining adhesive residue. Do not re-use the outer assembly.
4. Use the T-5 driver to remove the 4 screws from the flip chassis (see Figure 18). Avoid stripping the screws. Retain the screws for reassembly.



0611820

Figure 18. Removing the Flip Chassis Screws

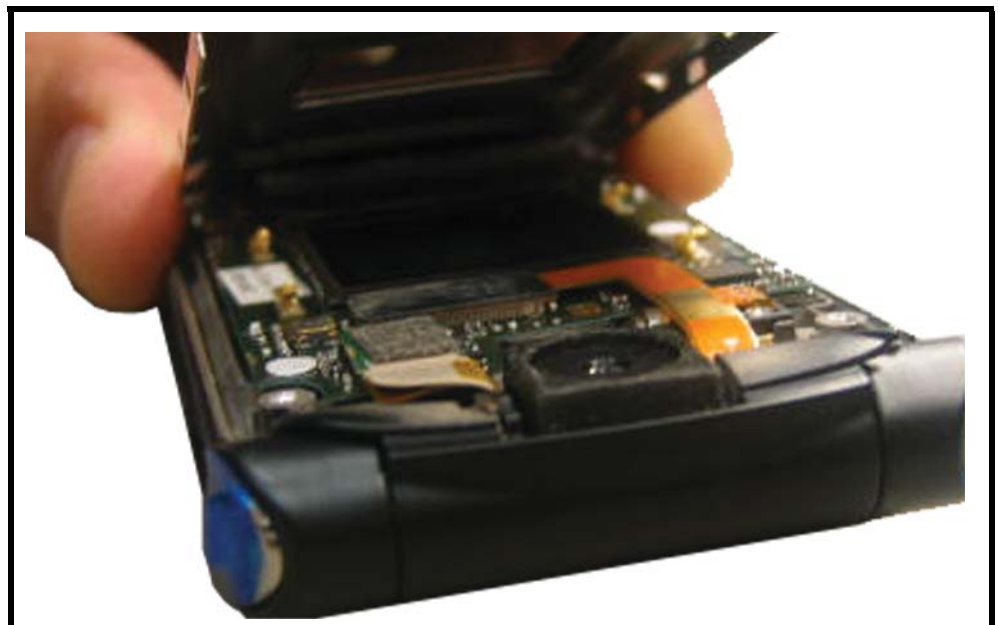
5. Insert a sharp object, such as metal tweezers into the gap between the chassis and inner housing. Avoid damage to the side snaps in the flip inner housing (see Figure 19).



0703860

Figure 19. Separating the Flip Chassis Assembly

6. Remove the flip chassis assembly carefully, as the CLI lens is attached to the touch panel diffuser film away from the flip assembly (see Figure 20).



0703870

Figure 20. Removing the Flip Chassis



The adhesive used is low tack and is easy to detach but care should be taken.



0703880

Figure 21. Flip Chassis Removed

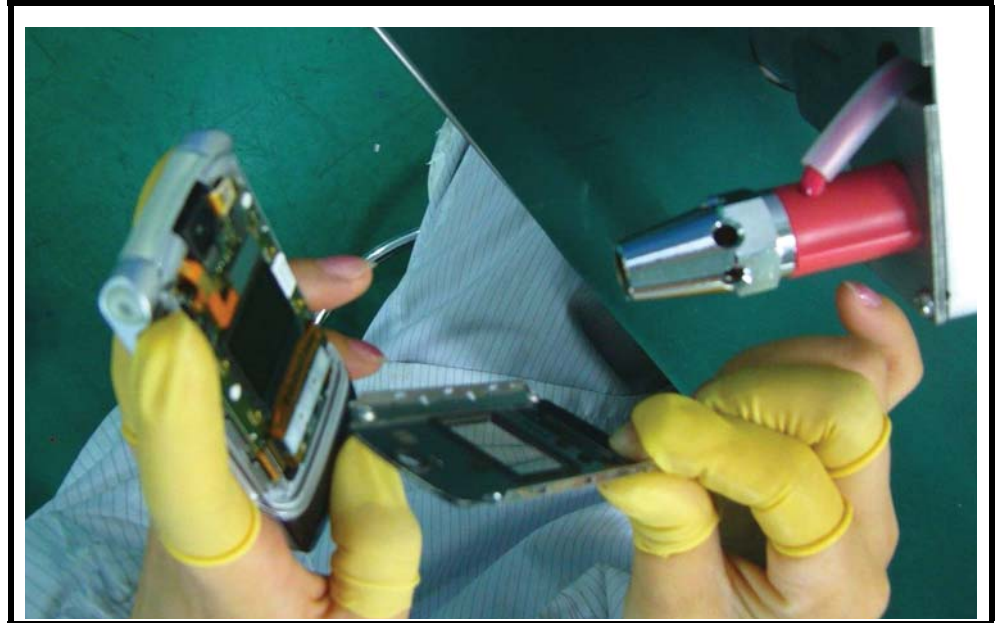
7. To replace, ensure the new flip chassis assembly has the CLI lens pre assembled to the flip chassis assembly (see Figure 22).



0703890

Figure 22. Flip Chassis with CLI Lens Pre assembled

8. Use an air gun to remove any impurities or dust intrusion from the CLI glass on the inside of the flip assembly and also from the chassis assembly (see Figure 23).



0703900

Figure 23. CLI Replacement

9. Align the new flip chassis assembly to the flip inner (magnesium) housing (see Figure 24).

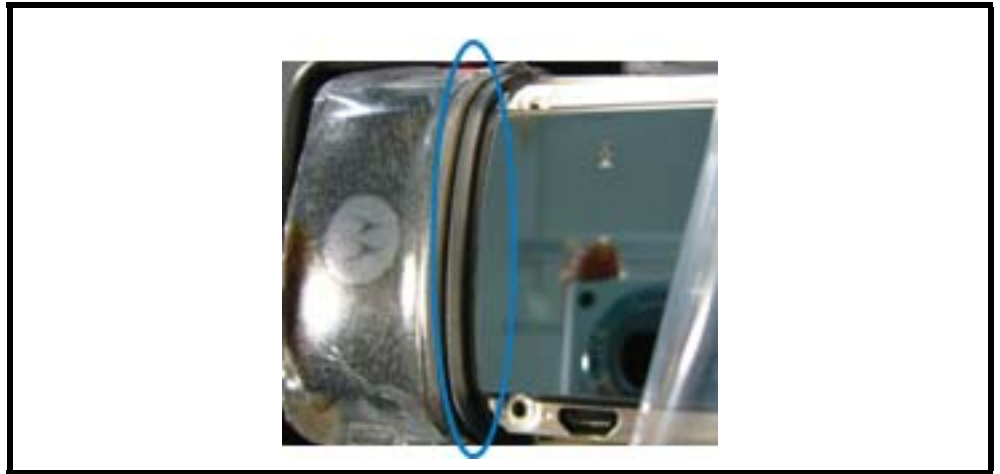


0703910

Figure 24. Preassemble New Flip Chassis Assembly



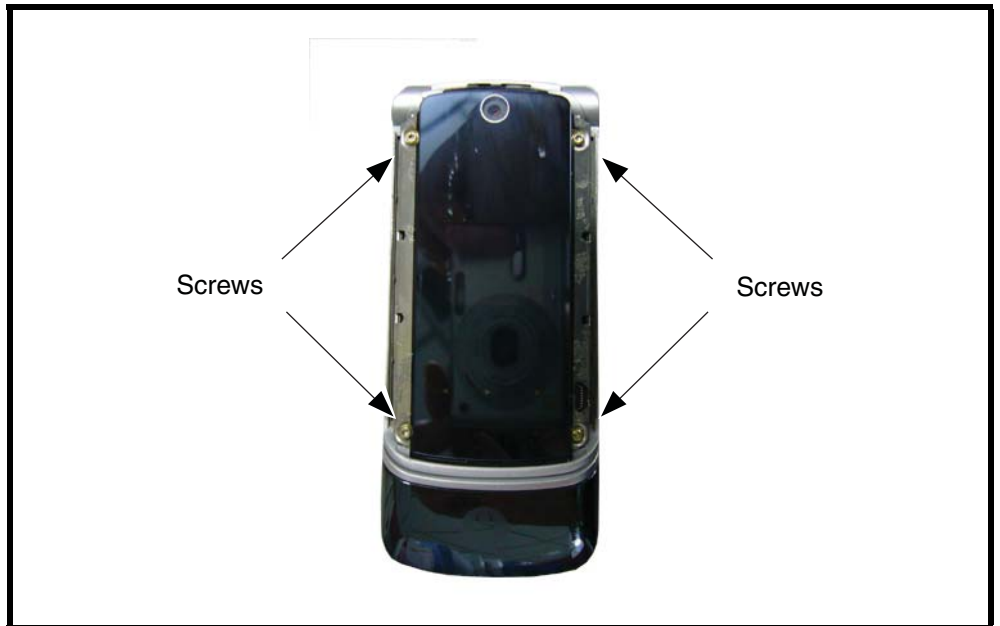
Ensure that the chassis is inserted in the groove of the flip inner housing as shown below.



070393o

Figure 25. Flip Chassis Installation Detail

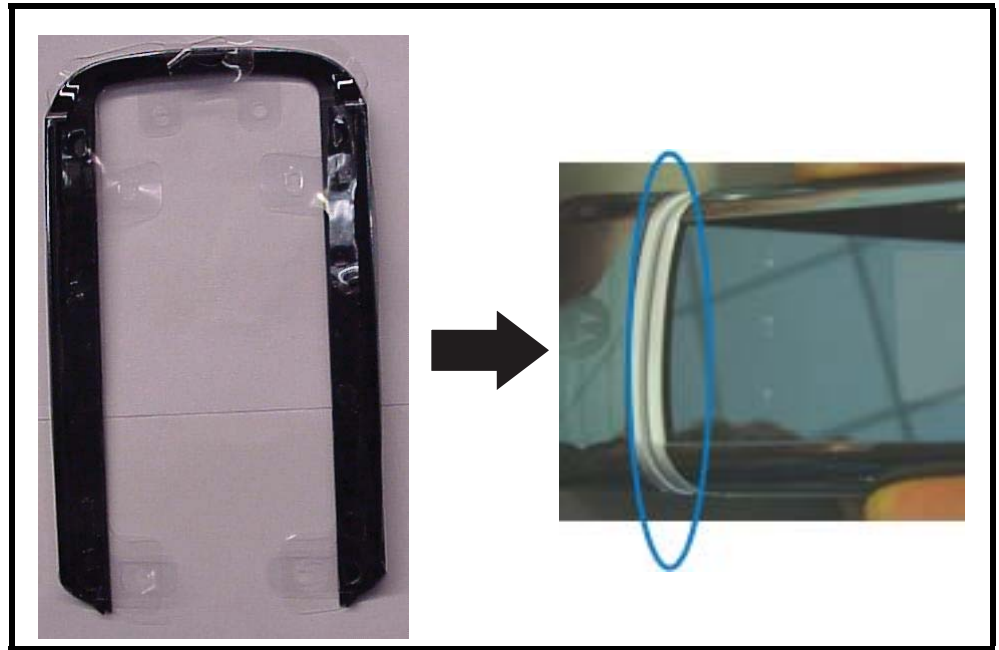
10. Insert and tighten the 4 flip assembly screws with the T-5 driver. Tighten to final torque setting of 14 Ncm (1.3 inch lbs.) (see Figure 26).



070394o

Figure 26. Insert Flip Chassis Screws

11. Align the flip outer assembly to the flip assembly (see Figure 27).



0703950

Figure 27. Preassemble New Flip Outer Assembly

12. Using the generic press fixture, carefully press flip the outer assembly onto the flip cover.



Ensure that the snaps on the outer assembly on the top and the bottom engage properly onto the flip assembly.

13. Visually inspect the flip assembly and verify all the electrical functions of the phone.

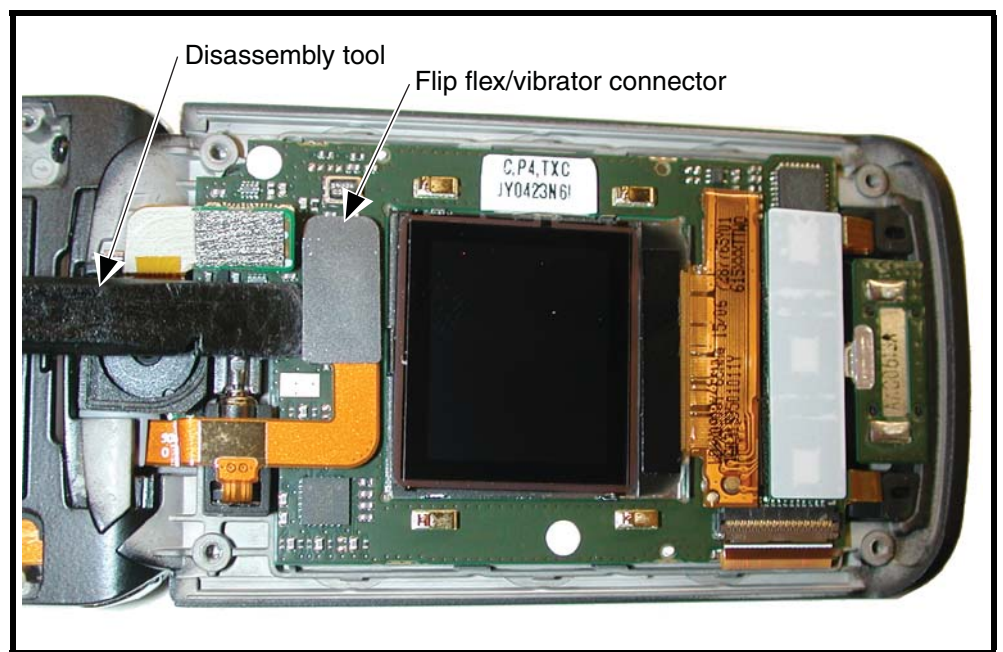
Removing and Replacing the Display Module Assembly

1. Remove the battery cover, battery, 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 and the camera connector from their sockets (see Figure 28).

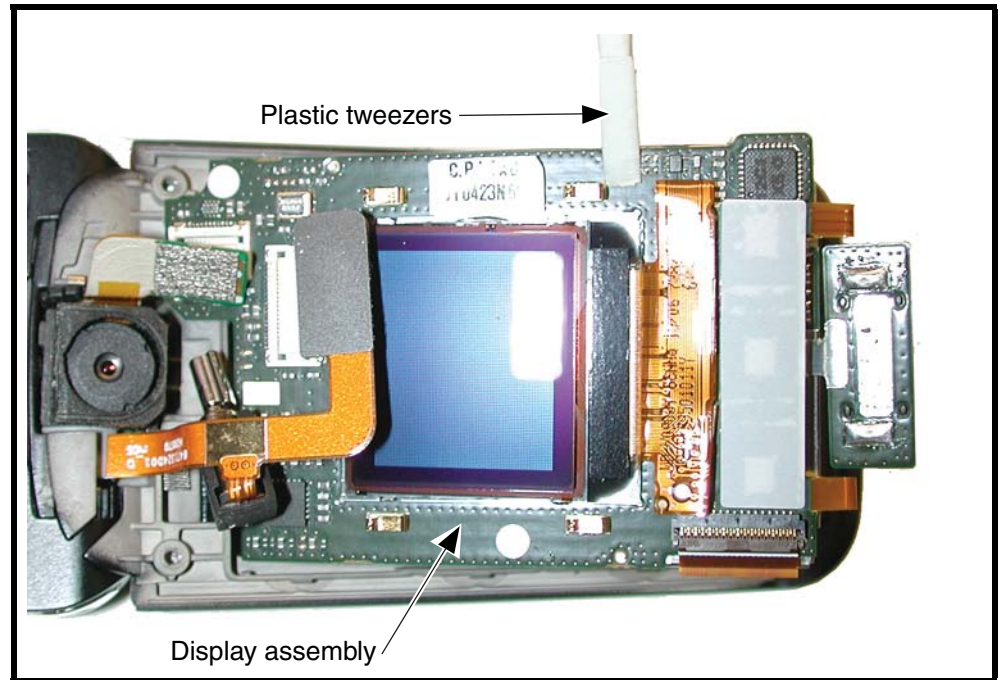


061184o

Figure 28. Display Module Assembly Flex Connector

3. Carefully lift 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 29).



061185o

Figure 29. 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 none of the display assembly components are damaged.



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

8. Seat the motor/vibrator into its slot in the flip assembly.
9. 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.
10. Replace the camera assembly, flip assembly cover, transceiver board, rear housing, battery, and battery connector as described in the procedures.

Removing the Flip Hinge and Vibrator Flex Assembly

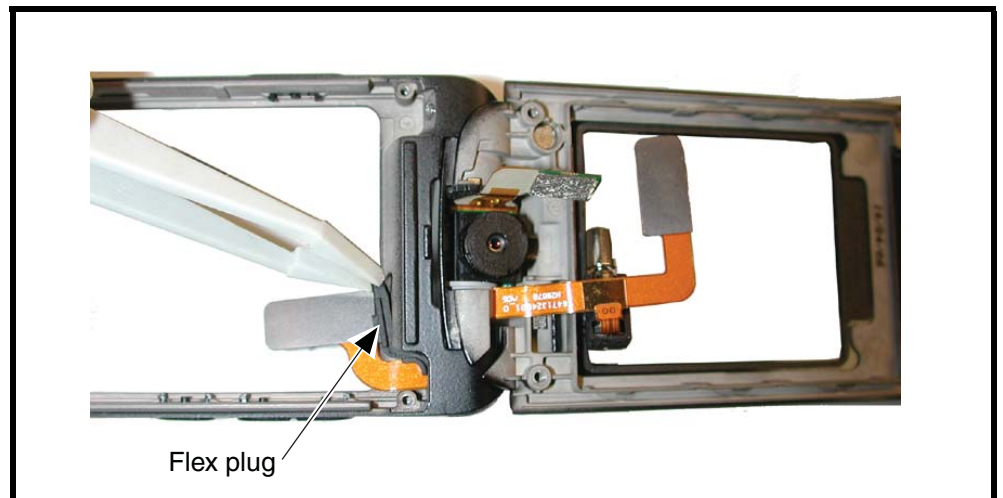
1. Remove the battery cover, battery, rear housing, antenna, transceiver board assembly, flip assembly cover, and camera assembly, as described in the procedures.
2. Use the T5 driver to unscrew the hinge cap screw as shown in Figure 30.



0611790

Figure 30. Removing the Hinge Cap Screws

3. Remove the flex plug from the flex slot on the front housing assembly (see Figure 31).

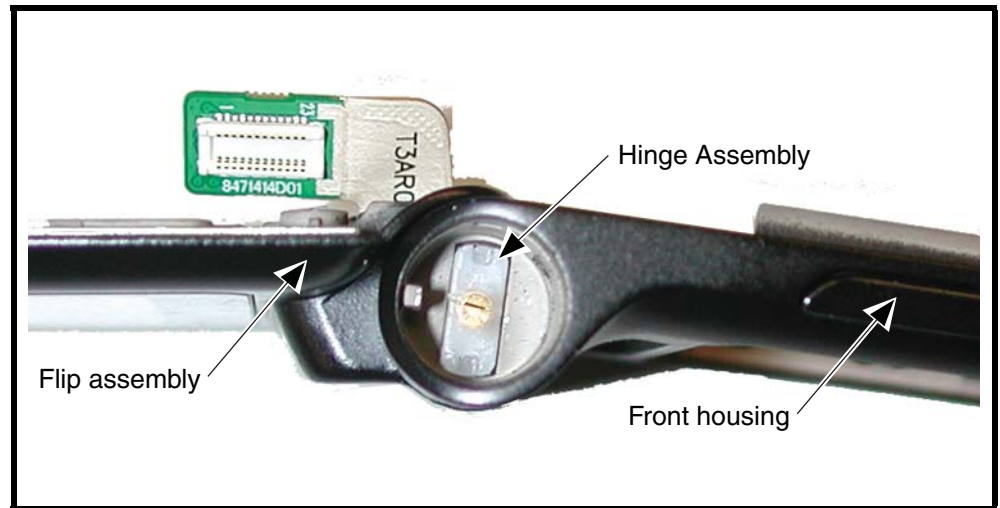


0611900

Figure 31. Removing the Hinge Cap Screws

4. Remove the silver colored hinge cap.

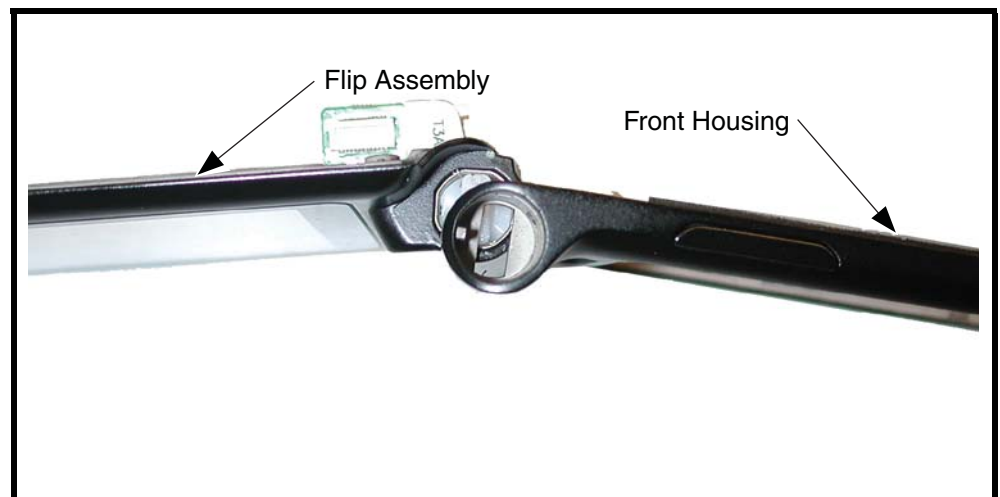
5. Use a small needle nose pliers to press the hinge inward as shown in Figure 32.



0611860

Figure 32. Hinge Compression

6. While hinge spring is compressed, slide the flip assembly out of the front housing (see Figure 33).



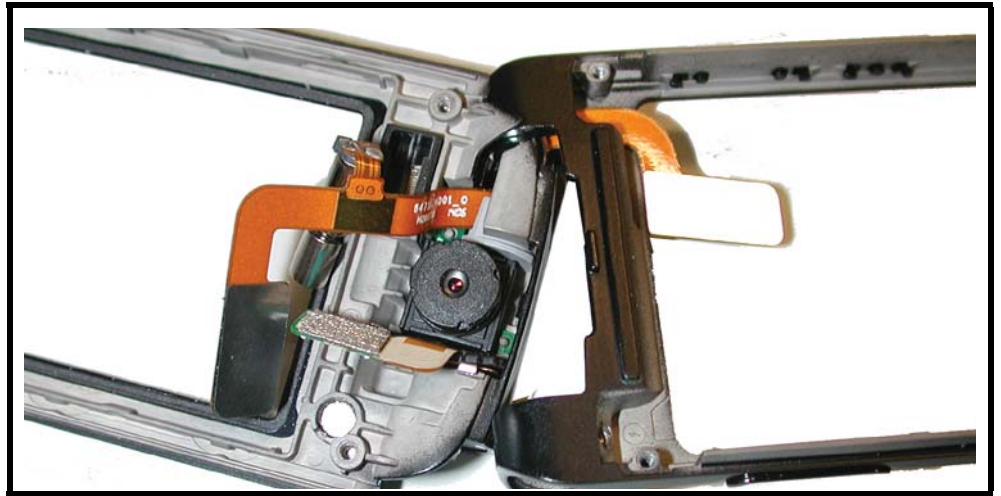
0611890

Figure 33. Removing the Flip Hinge Assembly



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

7. Carefully slide the flip vibrator flex connector out of the flip assembly (see Figure 34).



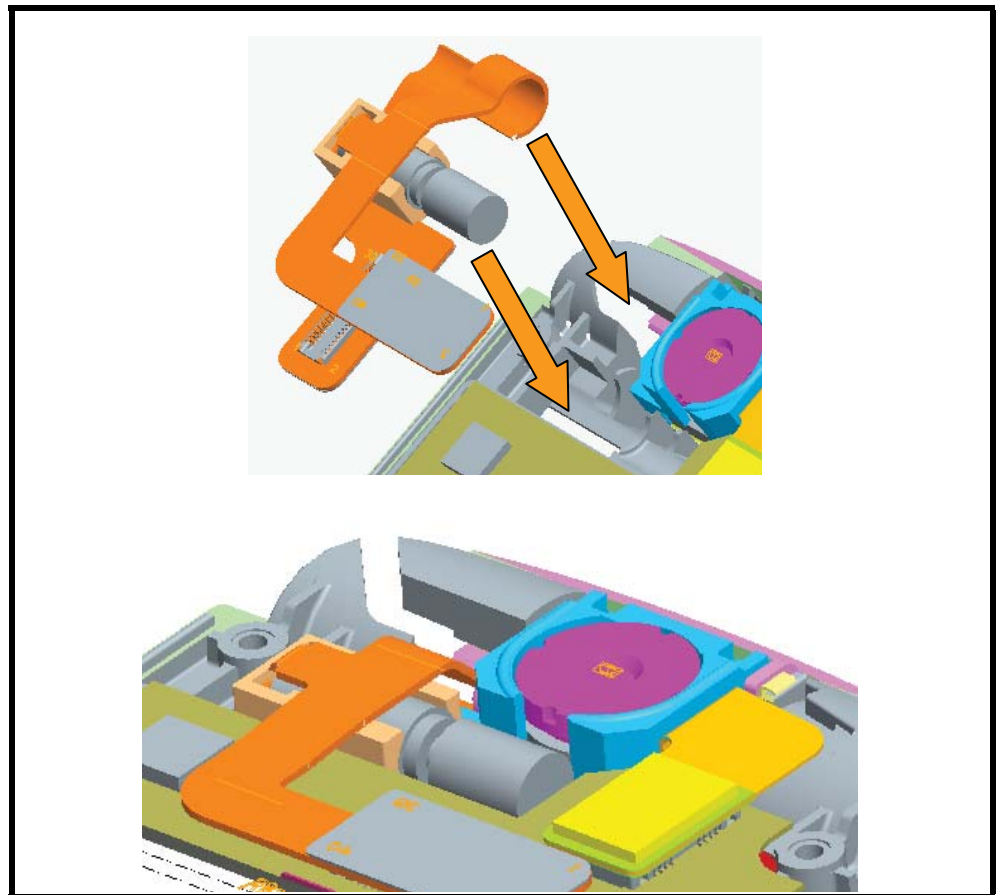
0611910

Figure 34. Removing the Flip Vibrator Flex



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

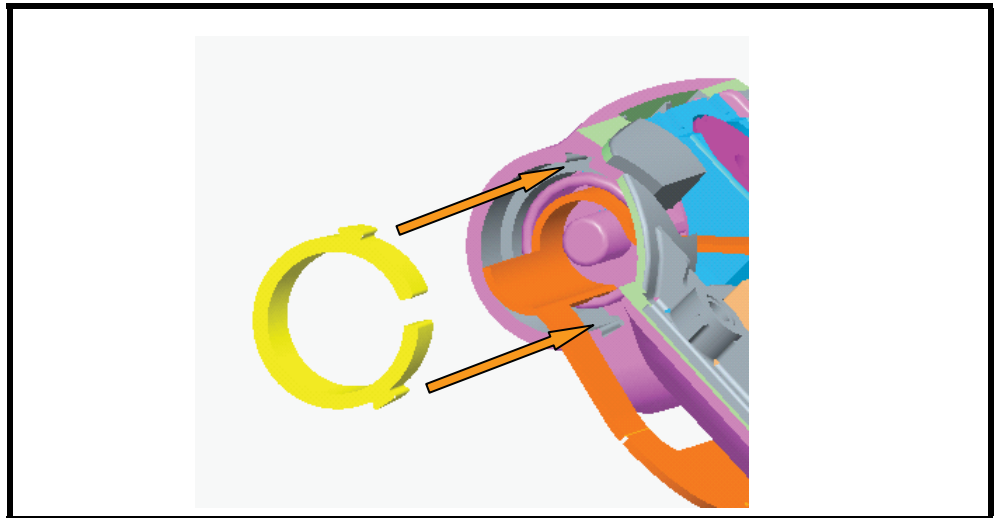
8. To replace, align the flip vibrator flex connector to display module assembly connector socket and press into position (see Figure 35).



0613480

Figure 35. Connecting the Flip Vibrator Flex

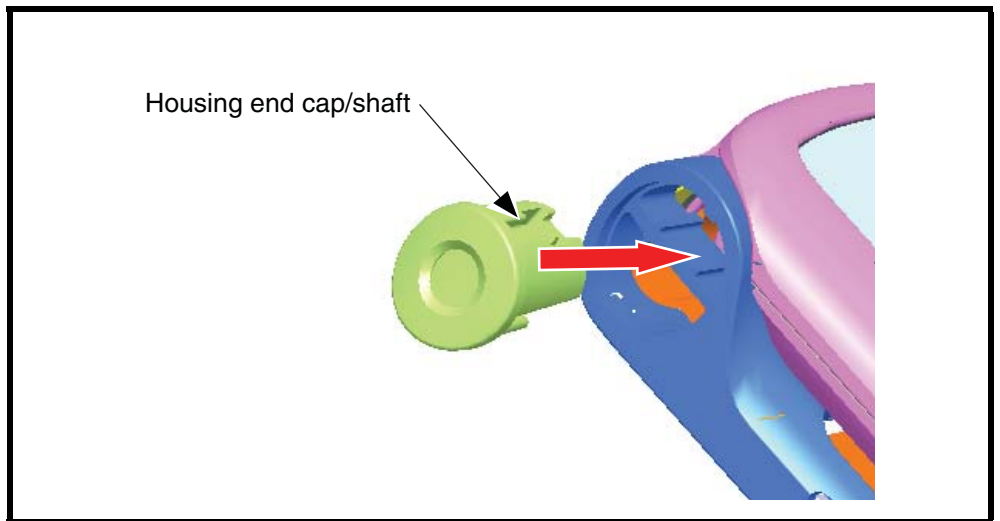
9. Insert the flex plug into the flip inner housing (see Figure 36).



061349o

Figure 36. Connecting the Flip Flex Plug

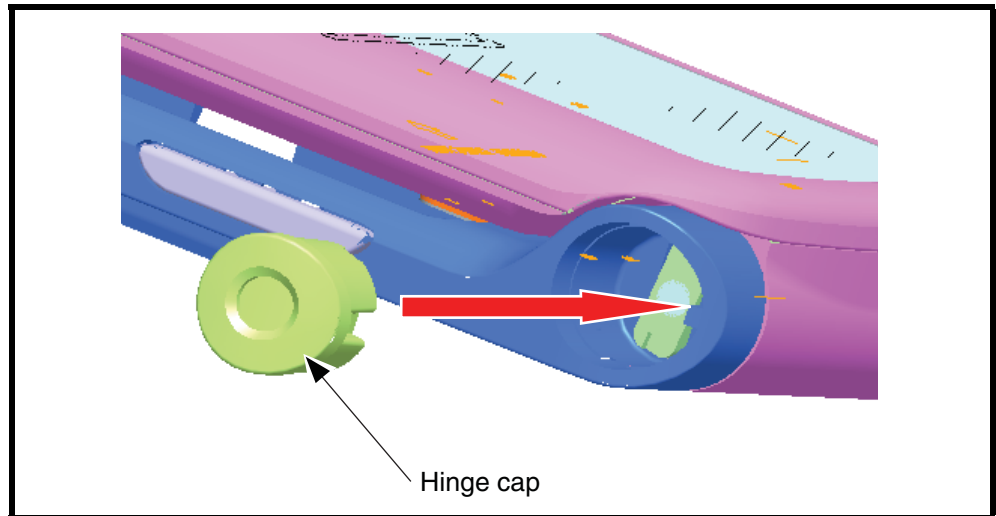
10. Re attach the flip assembly to the base front housing. Compress the hinge cam and attach the flip assembly to the base front housing.
11. Insert end cap/shaft to into the left barrel of the base front housing assembly (see Figure 37).



061350o

Figure 37. Installing the Housing End cap/shaft

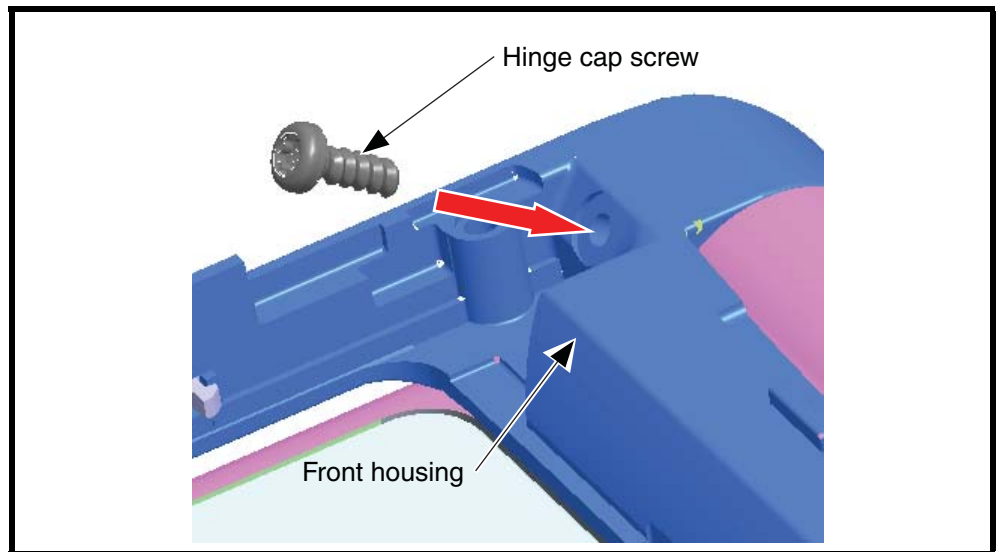
12. Insert the hinge end cap to hinge barrel at the base of the front housing assembly (see Figure 38).



0613450

Figure 38. Installing the Hinge End Cap

13. Insert and tighten the end cap screw (T5) into the hole in base front housing assembly (see Figure 39).



0613460

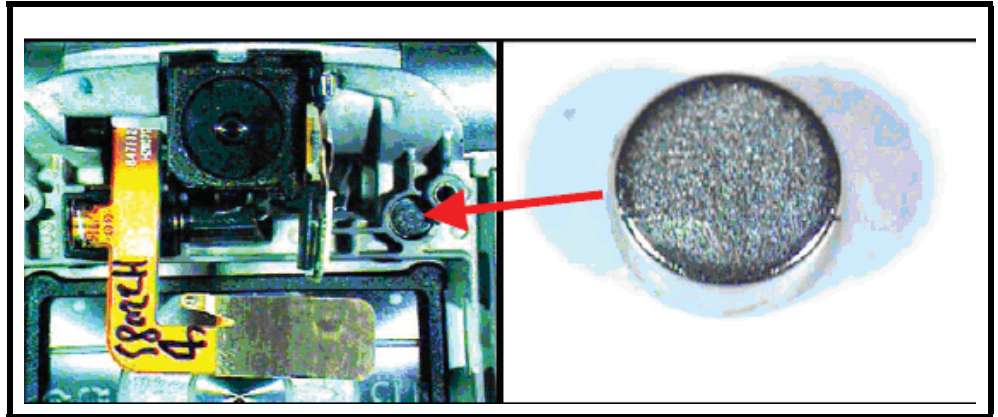
Figure 39. Installing the Hinge End Cap Screw

14. If a new flip inner housing has been installed, a new flip detect magnet must be installed as described in the next section.
15. Replace the transceiver board, keypad, antenna, rear housing, battery, and battery cover as described in the procedures.

Replacing the Flip Detect Magnet

If the flip inner housing assembly needs to be replaced, obtain the new assembly and use the following procedure:

1. On the new flip inner housing assembly, add a small drop of the glue on the bottom of the magnet opening shown in Figure 40 below.
2. Insert the magnet and press firmly until the magnet is even with the top of the slot in the opening.



070374o

Figure 40. Installing the New Flip Detect Magnet

The magnet fits tightly and some glue may squeeze out. It is not necessary to wipe off the excess glue.

3. Reassemble the remainder of the unit.
4. Verify that the flip detect feature is working by closing and opening the flip and observe how main/cli displays respond. The display should revert back to the home screen. The Mototriage flip detect test can also be used.

Removing and Replacing the Camera Assembly

1. Remove the battery cover, battery, memory card, antenna, rear housing, and transceiver board assembly, flip assembly cover, and Flip display PC board as described in the procedures.



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

2. Use the plastic tweezers to remove the display/vibrator/motor flex from the flip front housing assembly (see Figure 41).

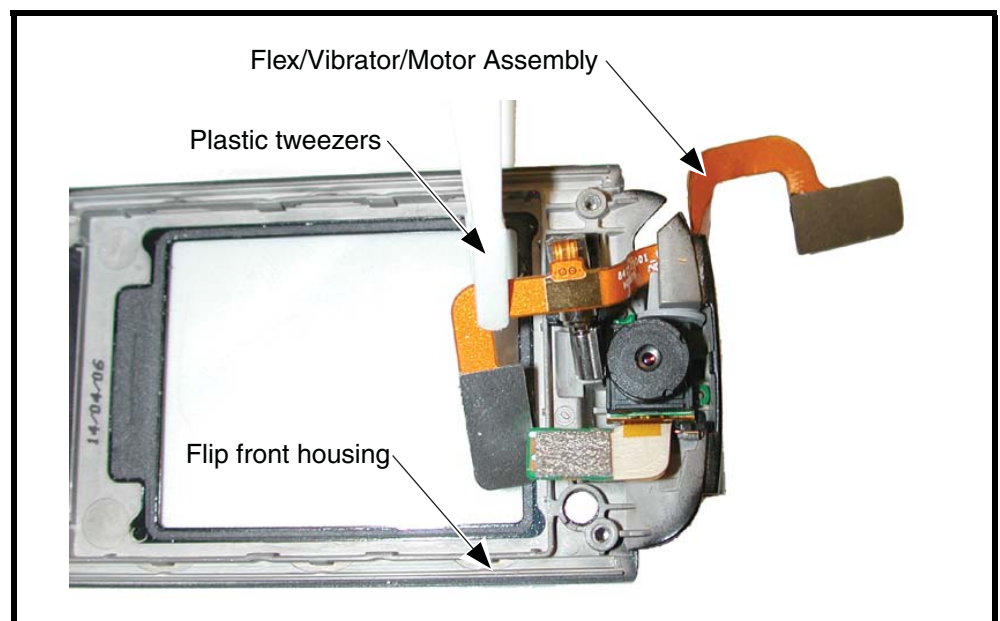
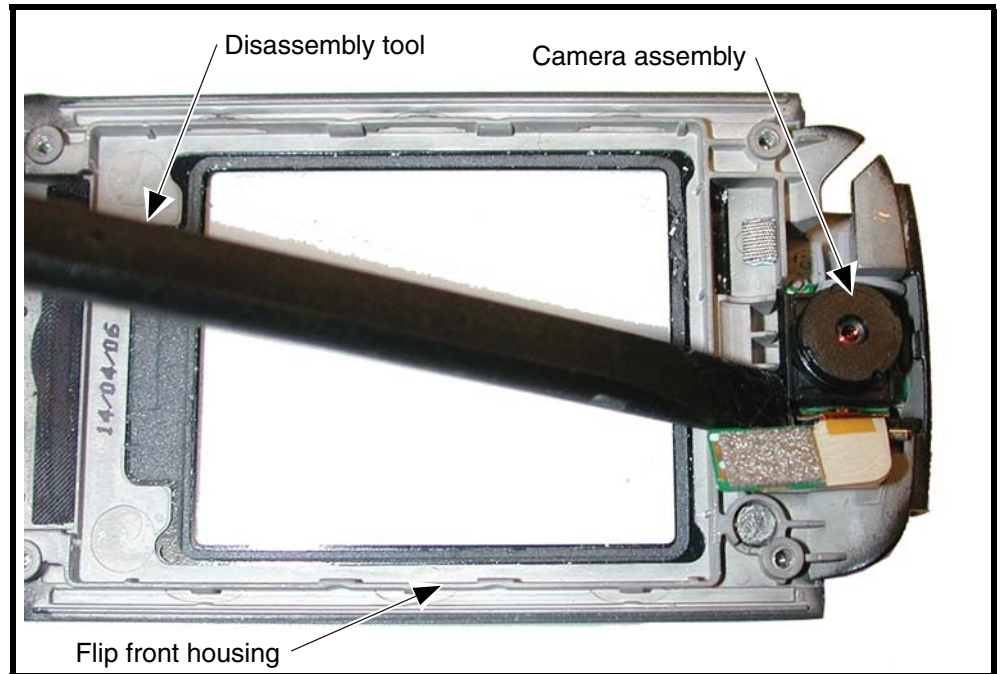


Figure 41. Camera Assembly Connector Removal

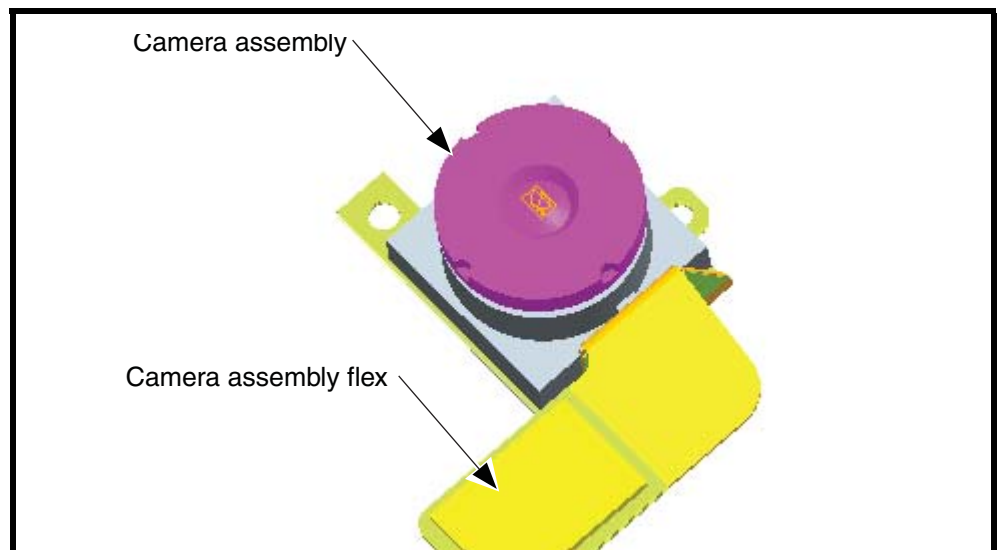
3. Use the disassembly tool to pry the camera assembly out of the flip front housing assembly (see Figure 42).



061340o

Figure 42. Camera Assembly Removal

4. To replace, bend the new camera assembly flex as shown in Figure 43.

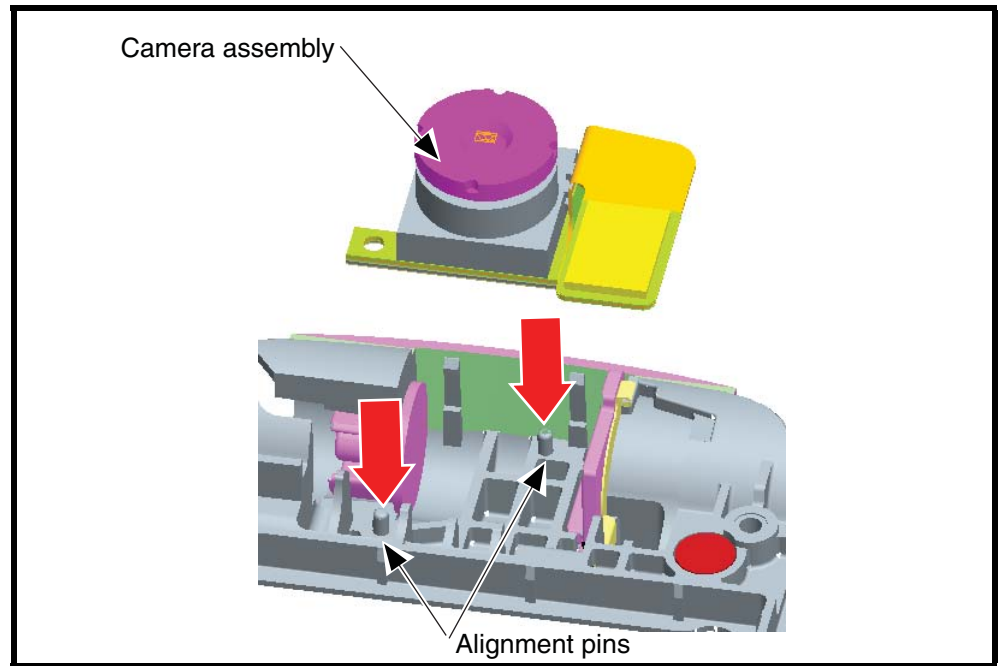


061342o

Figure 43. Camera Assembly Flex

5. Peel off the protective liner on bottom surface of camera module assy.

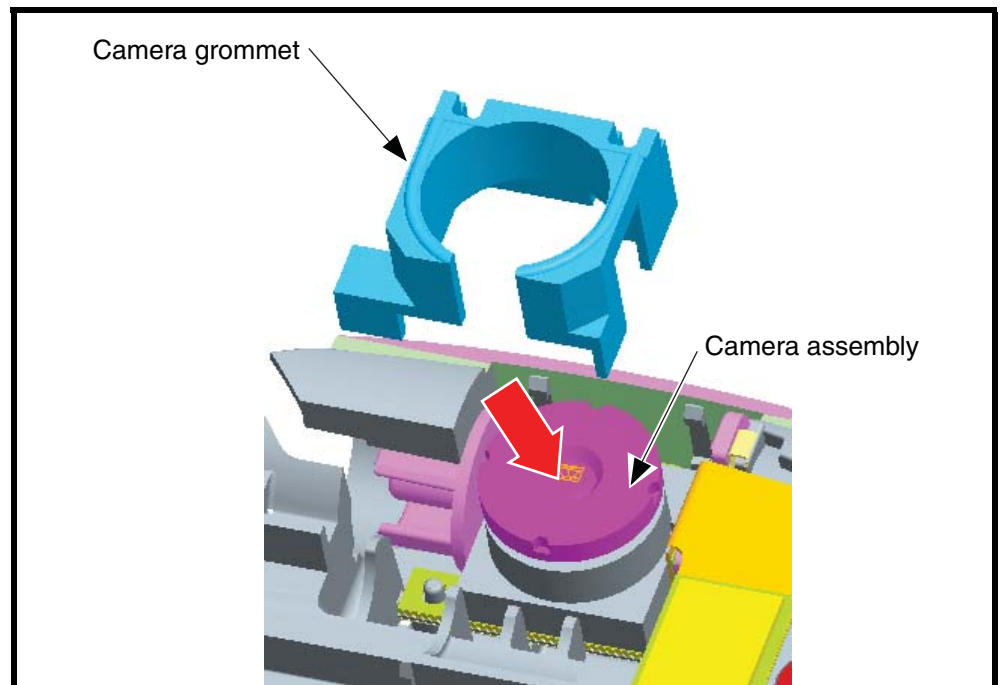
6. Place camera module assembly into the flip inner housing (see Figure 44).



061341o

Figure 44. Camera Module Replacement

7. Place the camera grommet onto the camera assembly (see Figure 45).



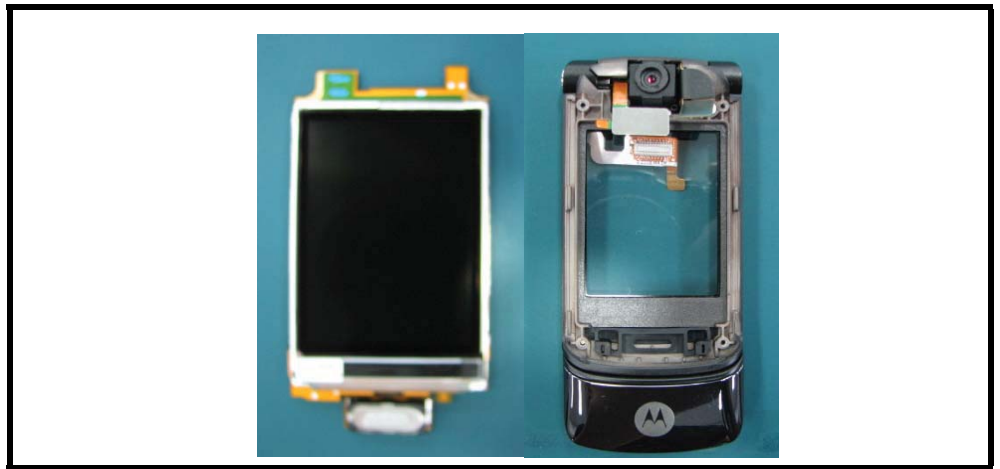
061343o

Figure 45. Camera Grommet Assembly

8. Replace the flip display/vibrator/motor flex, flip display module, flip hinge assembly, flip assembly cover, flip cover bezel, transceiver board, rear housing, battery, and battery cover as described in the procedures.

Removing and Replacing the Main Lens

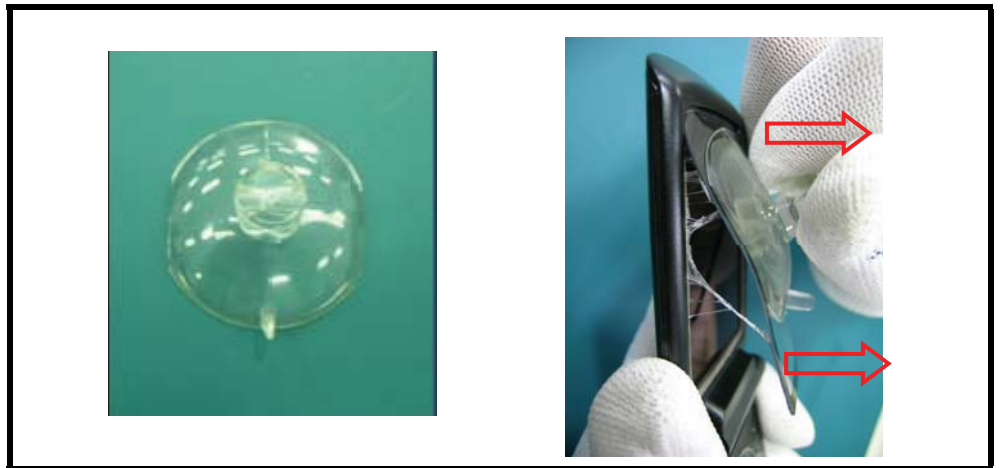
1. Remove the battery cover, battery, rear housing, transceiver board, flip cover bezel, flip assembly cover, and flip display module as described in the procedures.
2. Attach protection tape to the surface of the LCD module and to the underside of the flip front lens (see Figure 46).



061732o

Figure 46. LCD Module and Flip Display Lens

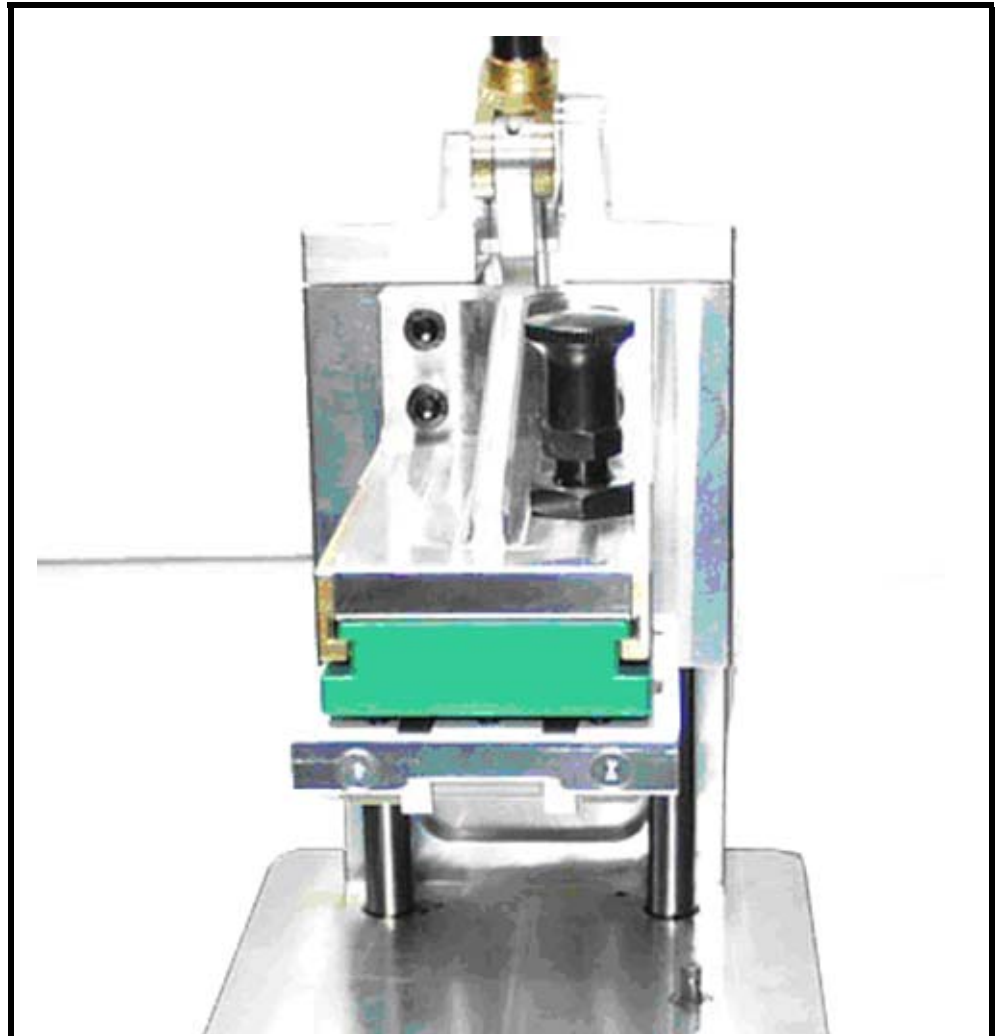
3. Attach a small suction cup to the inside of the flip display lens and carefully pull the lens away from the inside of the flip front housing. Do not reuse the lens (see Figure 47).



061733o

Figure 47. Flip Display Lens Removal

4. To replace, remove the protective tape from the main LCD before assembling the main display lens to the flip main housing.
5. Visually check the main display lens for debris prior to assembly.
6. Be careful of dust & foreign matter in the viewing area when reassembling the lens. If necessary, clean the lens viewing area
7. Attach the flip display lens to the flip main housing using the generic lens press fixture - AMS part number 19501980 (see Figure 48).



061733o

Figure 48. Generic Lens Press Fixture

8. Replace the flip display module, flip assembly cover, flip cover bezel, transceiver board, rear housing, battery, and battery cover as described in the procedures.

Phone Identification

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.

Identification

Each Motorola CDMA phone is labeled with a variety of identifying numbers. Figure 49 describes the current identifying labels.

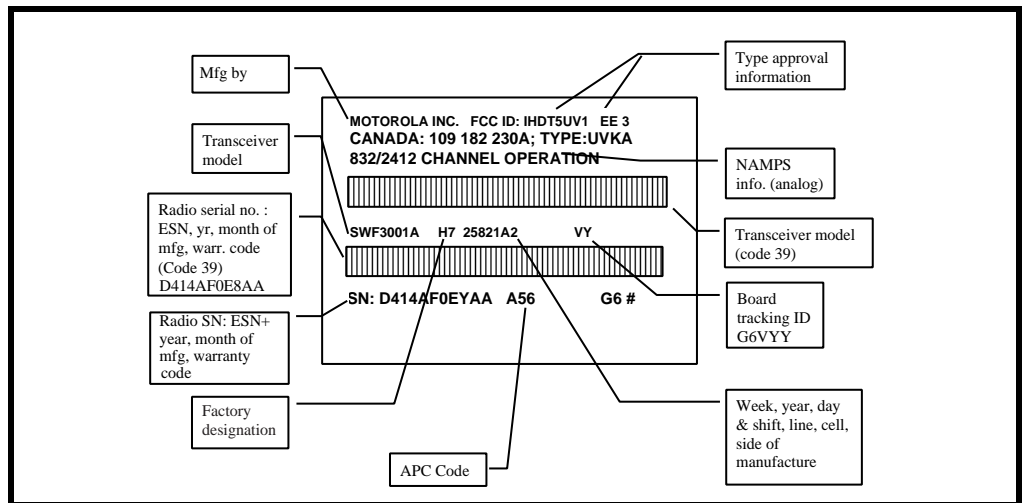


Figure 49. CDMA Telephone Identification Label

020463o

Programming: Software Upgrade and Flexing

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

Troubleshooting Chart

Table 2. 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.	Forward to authorized level 3 service center.
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.	Forward to authorized level 3 service center.
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.	Forward to authorized level 3 service center.
4. Incoming call alert transducer audio distorted or volume is too low.	Faulty transceiver board assembly.	Forward to authorized level 3 service center.
5. Telephone transmit audio is weak. (usually indicated by called parties complaining of difficulty in hearing voice).	a) Microphone obstructed by user while holding the phone.	If the transmit audio quality is still weak and the microphone is not obstructed proceed to b.
	b) Microphone is defective.	Replace the microphone as described in the procedures. If the fault is not cleared, proceed to c.
	c) Transceiver board is defective	Forward to authorized level 3 service center.
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.

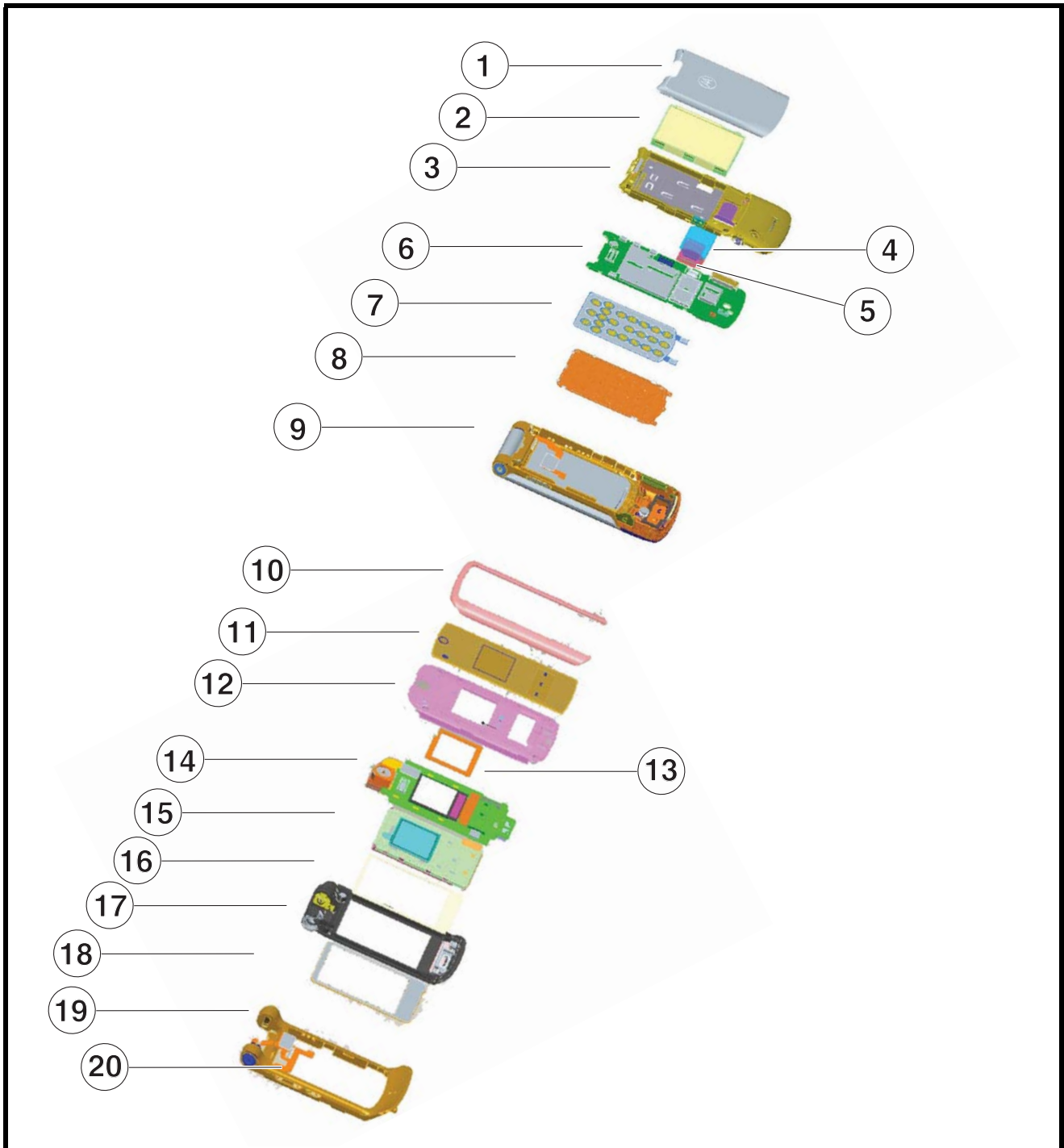
Table 2. Level 1 and 2 Troubleshooting Chart (Continued)

SYMPTOM	PROBABLE CAUSE	VERIFICATION AND REMEDY
	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.	Forward to authorized level 3 service center.
7. 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.	Forward to authorized level 3 service center.
8. Vibrator feature not functioning.	Transceiver board assembly defective.	Forward to authorized level 3 service center.
9. 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.
10. 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.

Part Numbers

The following information is only provided as a reference for the parts associated with K1m telephones. Contact your local Motorola parts organization for current part number information.

Exploded View Diagram



0611920

Figure 50. 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 3. Parts List

Item No.	Part Number	Description
1	1571633D03	FF, SLIM DOOR, BATT, Black
	1571633D06	FF, SLIM DOOR, BATT, Dark Pearl Gray
2	0189054P03	ASSY, BATTERY, PF4
3	0171678D01	Base Rear Housing Assembly, Black
	0171678D02	Base Rear Housing Assembly, Dark Pearl Gray
4	0171289A33	ASSY, SPACER, UIM
5	0171588D01	ASSY, DAUGHTER PCB
6	SLG5210AC	ASSY, MAIN PCB
7	4071043E01	EL DOME ARRAY,KOR
8	3871634D09/ D10 (1st/2nd supplier)	KEYPAD, KOR, BLK
	3871634D02/ D04 (1st/2nd supplier)	KEYPAD, KOR, Dark Pearl Gray
9	0171119E08	ASSY, Flip to Base, BLACK
	0171119E09	ASSY, Flip to Base, Dark Pearl Gray
10	1571665D01/D03	ASSY, FLIP OUTER, BLACK
	1571665D02/D04	ASSY, FLIP OUTER, DARK PEARL GRAY
11,12,13	0171812F01	ASSY CHASSIS-LENS, BLACK SLATE
	0171812F02	ASSY CHASSIS-LENS, DPG
	0171812F03	ASSY CHASSIS-LENS, STAR WHITE
	0171812F04	ASSY CHASSIS-LENS, FIRE RED
14	7287765Y01	ASSY,DISPLAY,CLI MODULE
15	7271993D01/D02	ASSY,DISPLAY,LCD MODULE
16	3271976E01	Main Lens GASKET
17	0171669D01/D02	ASSY,FLIP INNER, BLK
	0171669D03/D04	ASSY,FLIP INNER, DARK PEARL GRAY
18	6171644D01 / D02	LENS,MAIN,ASSY BLACK
	6171644D05/D06	LENS,MAIN,ASSY DARK PEARL GRAY
19	1571638D02	Endcap Shaft/Shaft
	1571639D02	Endcap Shaft/Hinge
20	0171356D04/D03	Personality FPCB Assembly
--	0171460D02/D03	CAMERA MODULE, ASSY
--	4271610D01	FRAME, ANTENNA
--	8571617D01	MAIN ANTENNA,FRANKFURT
--	0371807E02	SCREW,SELF TAPPING, HINGE CAP
--	0387473K10	SCREW,FLIP
--	0371807E01	SCREW,SELF TAPPING, BASE REAR HOUSING
--	1571661D01	MMC Connector cover

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.

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>



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 4. Accessories

Part Description	Part Number
Power Solutions	
Battery-Only-Charger - Razor K1m, 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

Table 4. Accessories (Continued)

Part Description	Part Number
H500 Bluetooth Headset Hot Pink	SYN1525
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

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