MOTOROLA

Level 1 and 2 Service Manual

6809497A98-C

V3c
Digital Wireless Telephone

V3c CDMA 1900 MHz, CDMA 800 MHz

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

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 enable customers to meet requirements for reliable, continuous communications.

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

Product Identification

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

Product Names

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

Regulatory Agency Compliance

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

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

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

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

Computer Program Copyrights

About this Service Manual

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

Audience

This service manual aids service personnel in testing and repairing V3c telephones. Service personnel should be familiar with electronic assembly, testing, and troubleshooting methods, and with the operation and use of associated test equipment.

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

Scope

This manual provides basic information relating to V3c Series telephones, and also to provides procedures and processes for repairing the units at Level 1 and 2 service centers including:

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

Conventions

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

Note: Emphasizes additional information pertinent to the subject matter.

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

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

Keys to be pressed are represented graphically. For example, instead of “Press the Menu 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, ALERTS or ALERTS or ALERTS.

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

Product Support

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

Customer Support

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

Parts Replacement

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

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 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
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 740 mAh battery
Average Transmit Current	310 mA at +13dBm)
Average Stand-by Current (slot cycle 1)	4.18 mA
Dimensions (with 740 mAh Li ion battery)	53mm x 98mm x 14.5mm
Size (Volume)	67 cc
Weight	≤115g (3.88 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, 740 mAh Li Ion Battery	Digital Talk Time: 180 Minutes for 740mAh and (IS95/IS2000 Cell/PCS, CDG Suburban Profile with 40% VAF ~ + 110.6dBm) Digital Standby Time: 195 Hours (IS95/IS2000 Cell/PCS Slot Cycle 1)
	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	1M25F9W (1.25 MHz bandwidth) CDMA 40K0F8W, 40K0F1D AMPS
CDMA Transmit Waveform Quality (Rho)	0.94

Receiver Function	Specification
Receive Sensitivity	-116 dBm -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 V3c 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 V3c telephones include a built in camera. The phone provides 32 Embedded ring tones including VibraCall vibrating alert and 32 Downloadable/Customizable iMelody ring tones. The V3c telephones are dual band that allow roaming within the CDMA 800 MHz and PCS 1900 MHz bands.

The V3c CDMA phones consist of a main housing assembly and a flip assembly. The main circuit board, battery, headset jack, and accessory connector are located in the main housing assembly. The camera on the V3c 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 V3c 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, VGA 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 740 mAh Lithium Ion (Li Ion) battery provides up to 180 minutes of talk time in CDMA mode with up to 195 hours of standby time[1].

Features

V3c 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:

- Built in VGA Camera (1.3 Mega-pixel)
- Video capture and playback
- 65K Thin Film Transistor (TFT) Active Color Display
- External color CLI Display
- Enhanced VST - Speaker independent calling
- Speaker Phone
- Stereo Headset support
- Class 2 Bluetooth™
- 40MB User Memory

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

Wireless Access Protocol (WAP) 1.1 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 V3c 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.

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 V3c 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 V3c 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). V3c phones have an audible alert transducer at the bottom and I/O connectors, consisting of a charger/accessory port, located on the side of the phone. See Figure 1.

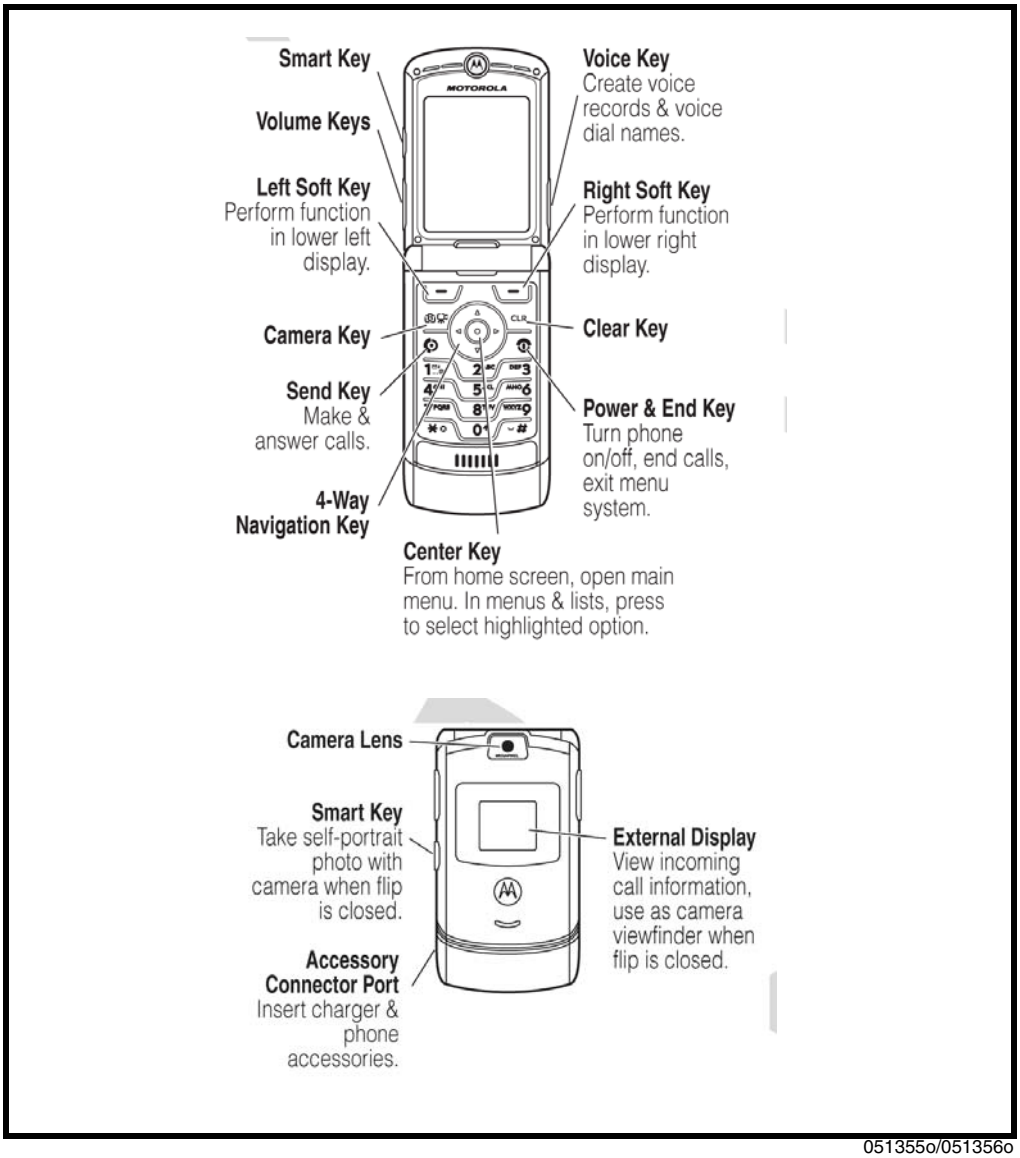

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Figure 1. Controls, indicators, and I/O

"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.

Color Display

The V3c wireless phones feature a 65k color Thin Film Transistor (TFT) 176 x 220 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.

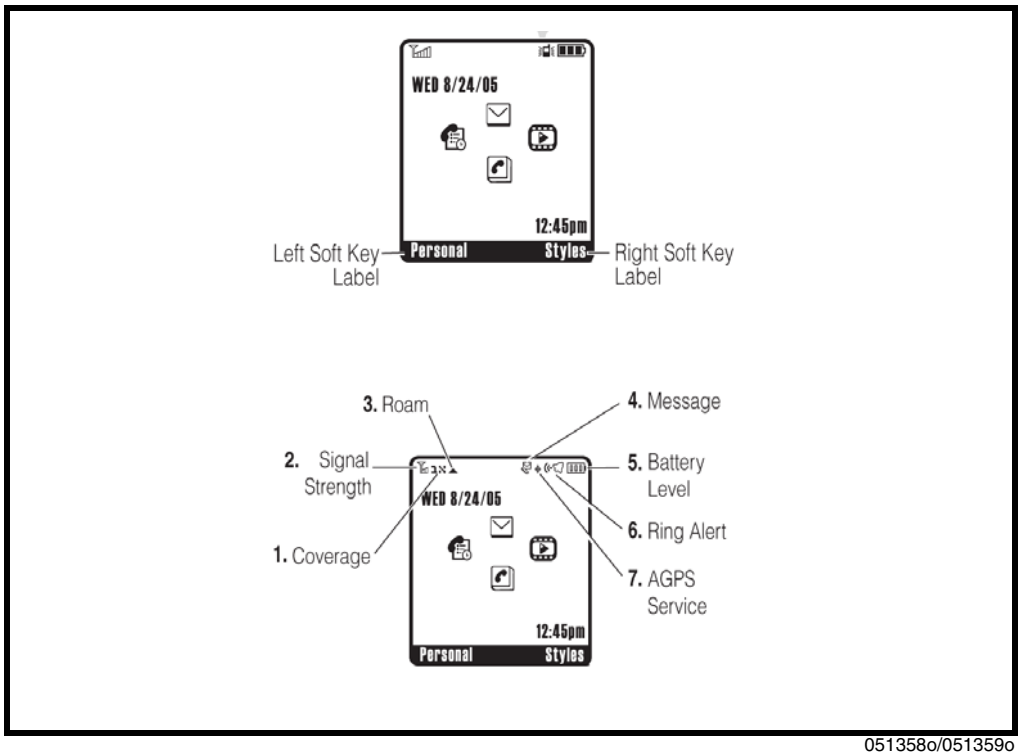

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Figure 2. Icon Indicators

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.

Alert/Indicator	Description
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.
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.

User Interface Menu Structure

Figure 3 shows the telephone menu structure.

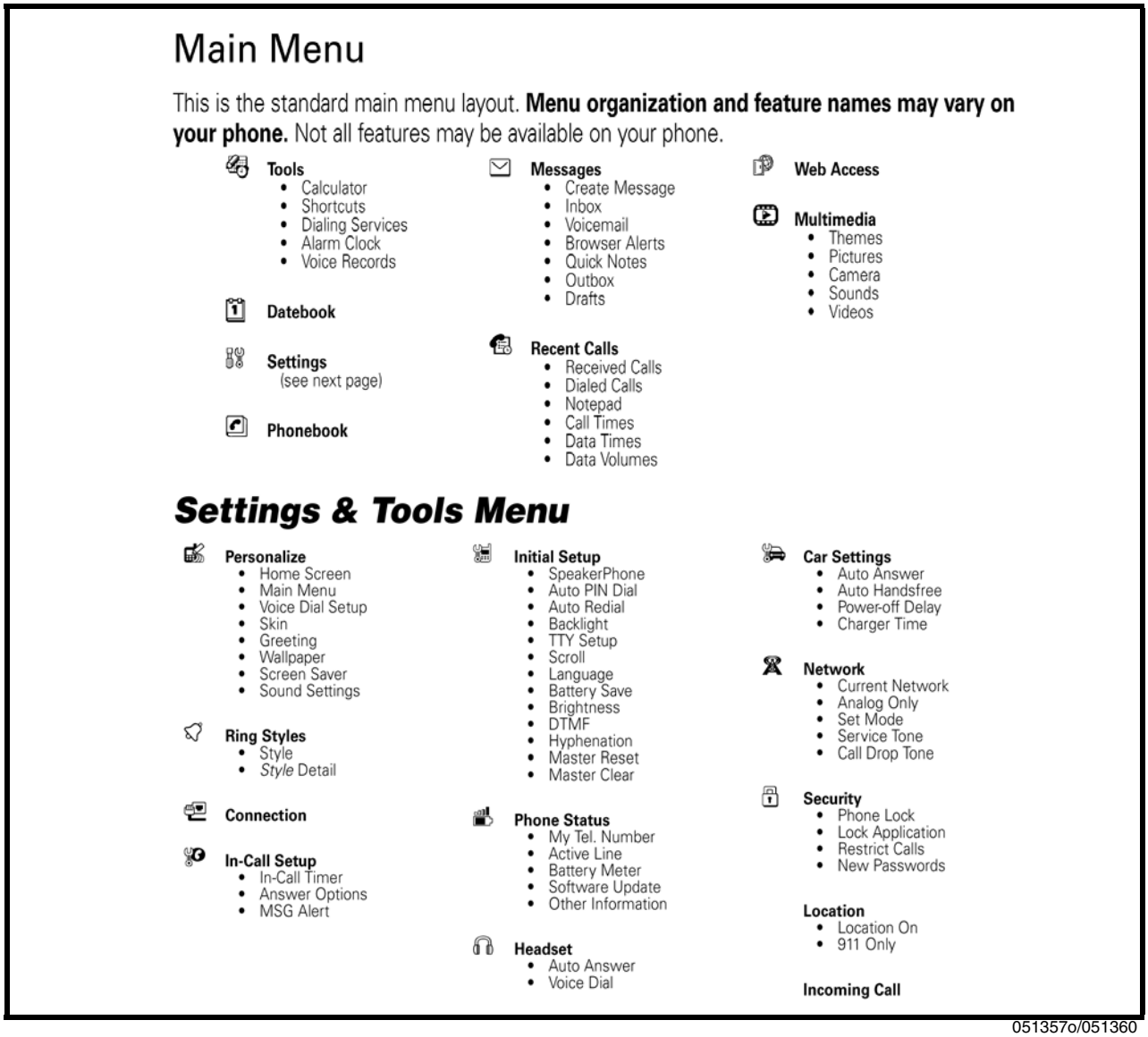

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Figure 3. Menu Structure

Alert Settings

V3c telephones include up to 32 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 four levels: 100%, 66%, 33%, and Low Battery.

Battery Removal

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

To ensure proper memory retention, turn OFF the phone before removing the battery. 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 V3c 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
—	T-3 Torx bit	Used with torque driver
—	T-5 Torx bit	Used with torque driver
—	Torque Driver Bit T-6 Plus, Apex 440-6IP Torx Plus or equivalent	Used with torque driver
See Table 7	Rapid Charger	Used to charge battery and to power device
0180386A82	Antistatic Mat Kit (includes 66-80387A95 antistatic mat, 66-80334B36 ground cord, and 42-80385A59 wrist band)	Provides protection from damage to device caused by electrostatic discharge (ESD)
0-00-00-30005	Disassembly tool, plastic with flat and pointed ends (manual opening tool) from AMS	Used during assembly/disassembly of device
	Tweezers, plastic	Used during assembly/disassembly
—	Digital Multimeter, HP34401A[2]	Used to measure battery voltage

1. To order in North America, contact Motorola Aftermarket and Accessories Division (AAD) at (800) 814-0601 or FAX (800) 622-6210; Internationally, AAD can be reached by calling (847) 538-8023 or faxing (847) 576-3023.
2. Not available from Motorola. To order, contact Hewlett Packard at (800) 452-4844.

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

Disassembly

The procedures in this section provide instructions for the disassembly of V3c 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.

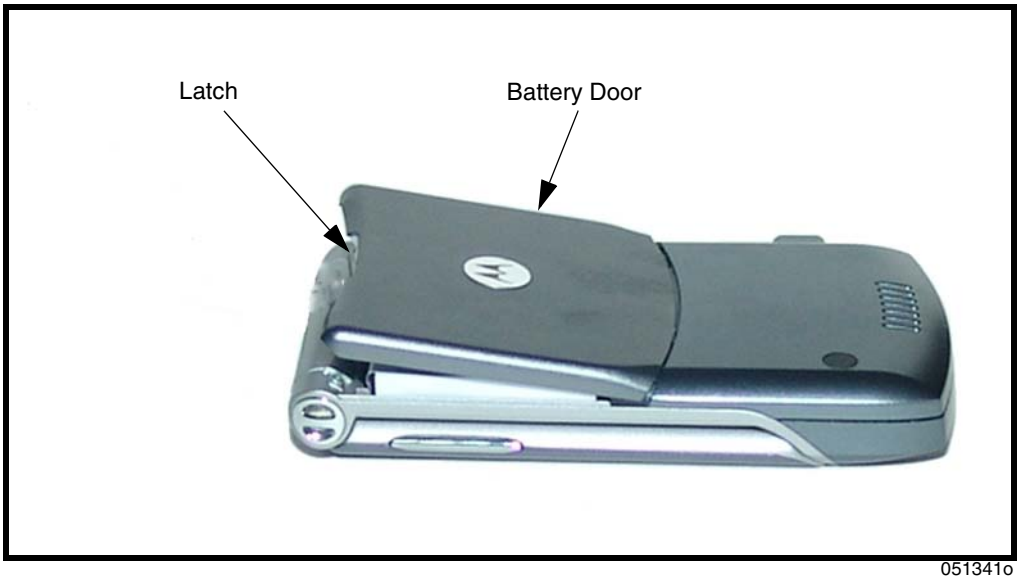

Figure 1. Removing the Battery Cover

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

4. Lift the end of the battery first, then remove it from the phone. See Figure 2.

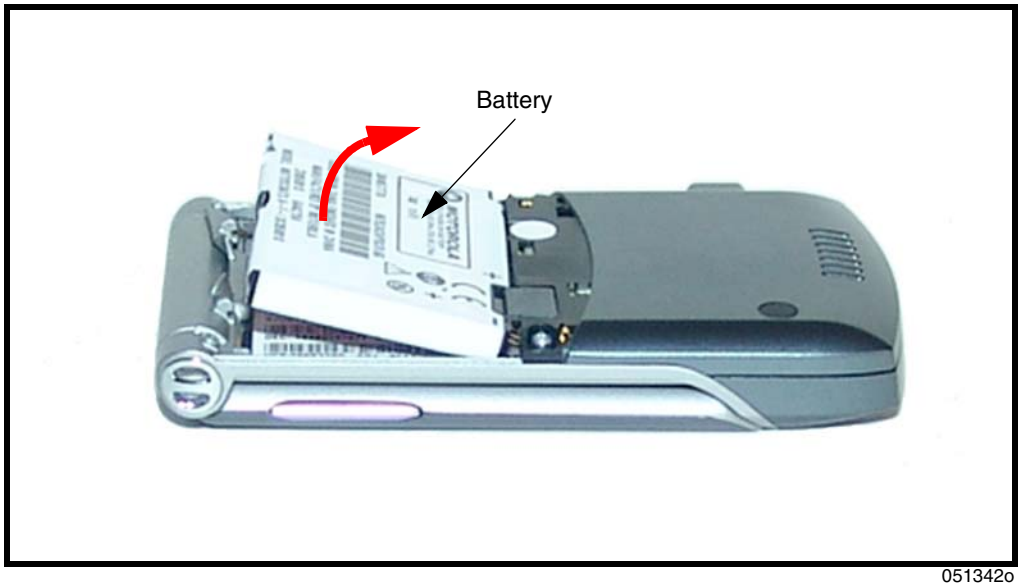

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Figure 2. Removing the battery

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

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

Removing and Replacing the 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.

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-6 bit, remove the screws at each side of the phone. Retain the screws for reassembly. See Figure 3.

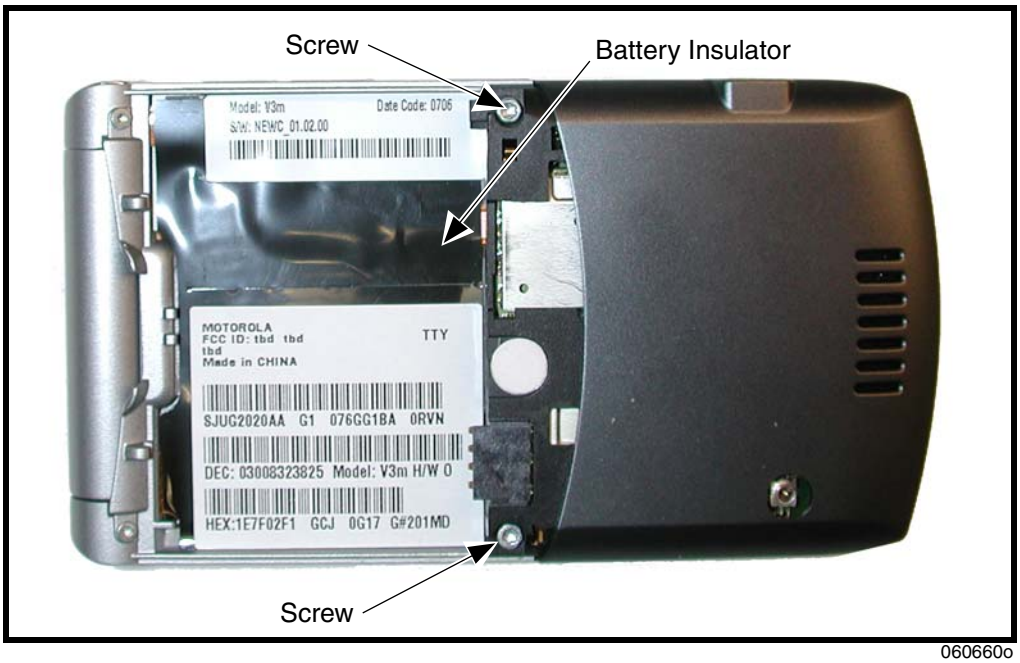

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Figure 3. Removing the rear housing screws

3. Use the plastic tweezers to remove the battery insulating material on the right side of the battery compartment. Do not reuse the battery insulating material for reassembly.

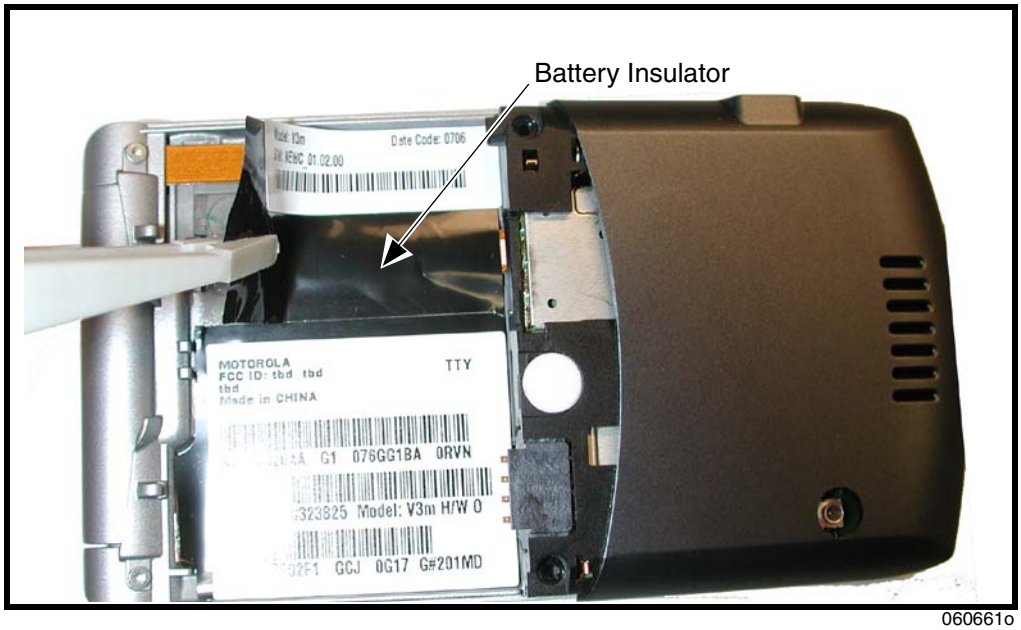

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Figure 4. Removing the rear housing screws

4. Release the 4 housing latches by inserting the pointed end of the plastic disassembly tool into the openings on the rear housing.

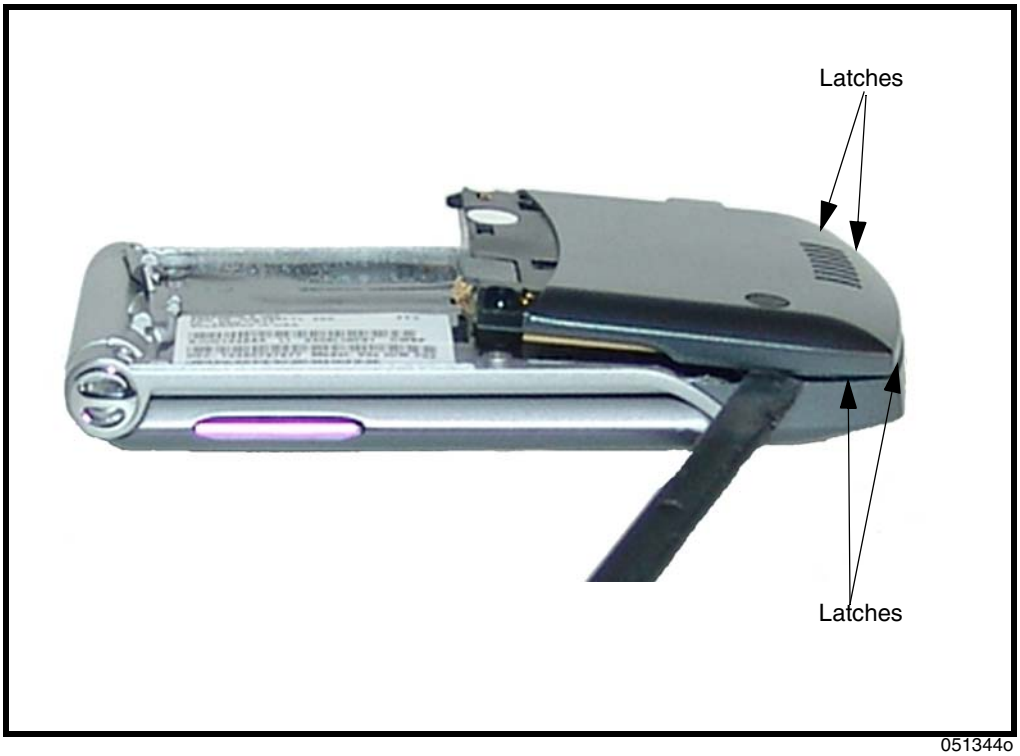

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Figure 5. Removing the Rear Housing Latches

5. Carefully rotate the rear housing away from the front housing and flip assembly.

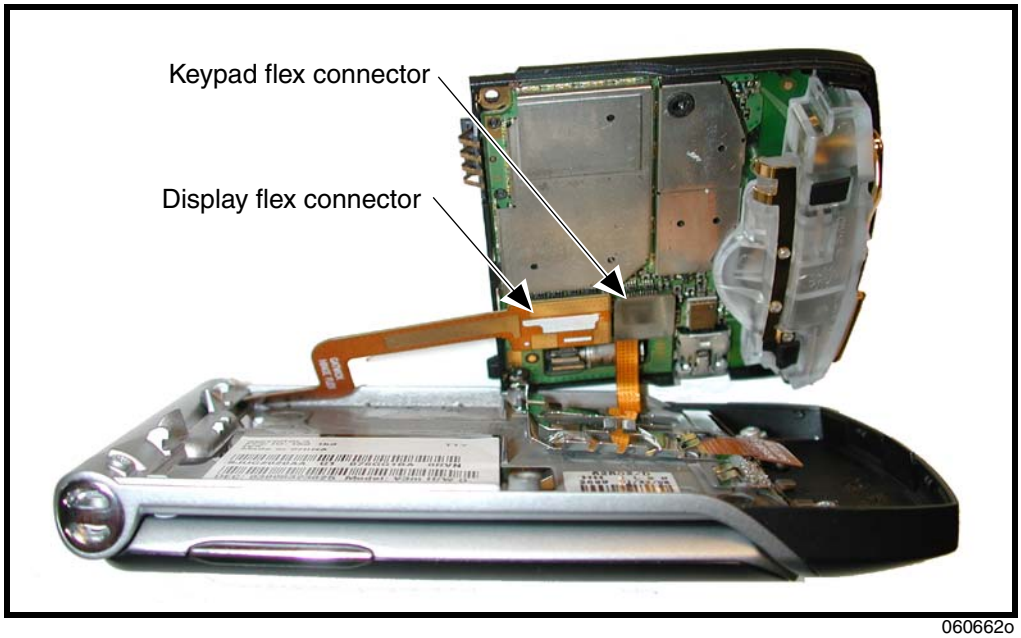

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Figure 6. Removing the Rear Housing Assembly

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

6. Use the disassembly tool to unseat the display flex connector and the keypad flex connector from their sockets.
7. Lift the rear housing assembly away from the phone.
8. To replace, carefully align the display flex connector to it's socket on the rear housing assembly, then gently press down on the flex connector until it is properly seated in it's socket.
9. Carefully align the keypad flex connector to it's socket on the rear housing assembly, then gently press down on the flex connector until it is properly seated in it's socket.
10. Rotate the rear housing assembly so it sits over the phone.
11. Align the housing latches with the corresponding openings on the front housing. Gently press the housings together until the catches snap into place.
12. Cover the display flex with new battery insulator material. Do not reuse the old battery insulating material.
13. Replace the 2 housing screws and tighten to a final torque setting of 24 Ncm (2.2 inch pounds). Do not over tighten.
14. Replace the antenna, 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 metal tweezers to grasp the rubber antenna grommets and carefully remove them from the antenna assembly. See Figure 7. Set the rubber grommets aside for reuse.

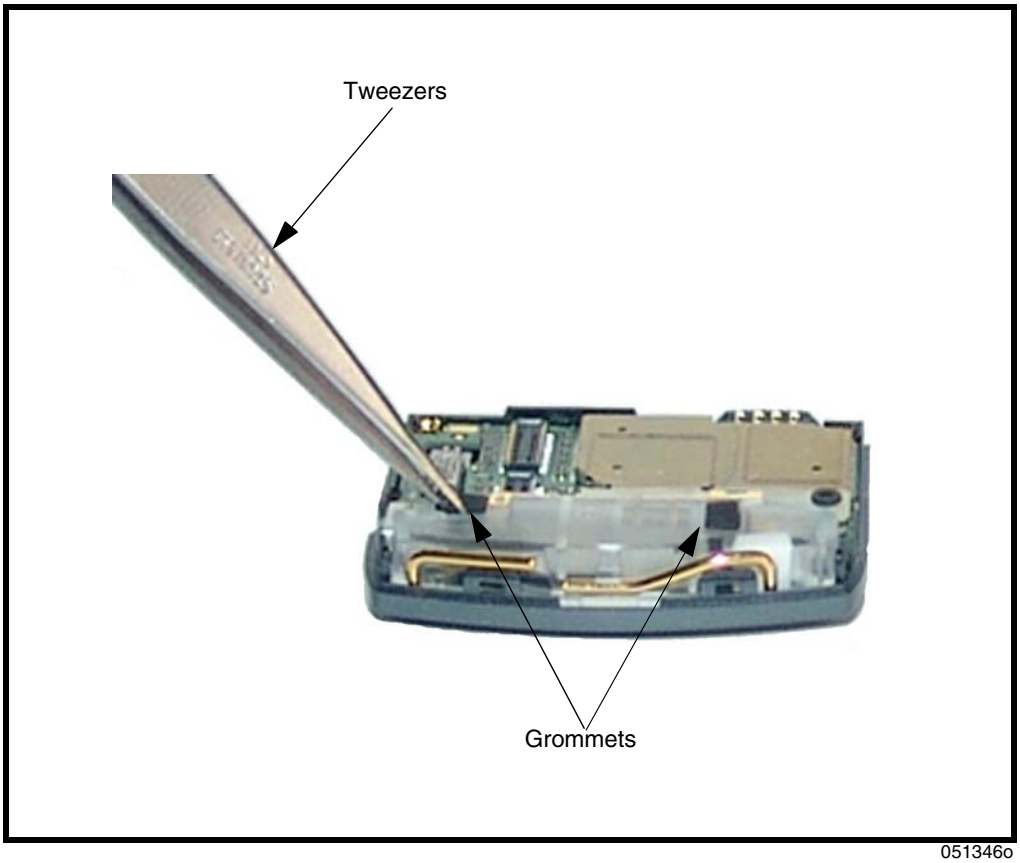

Figure 7. Removing the Antenna Grommets

3. Use the disassembly tool to release the antenna assembly starting from the right side as shown in Figure 7.

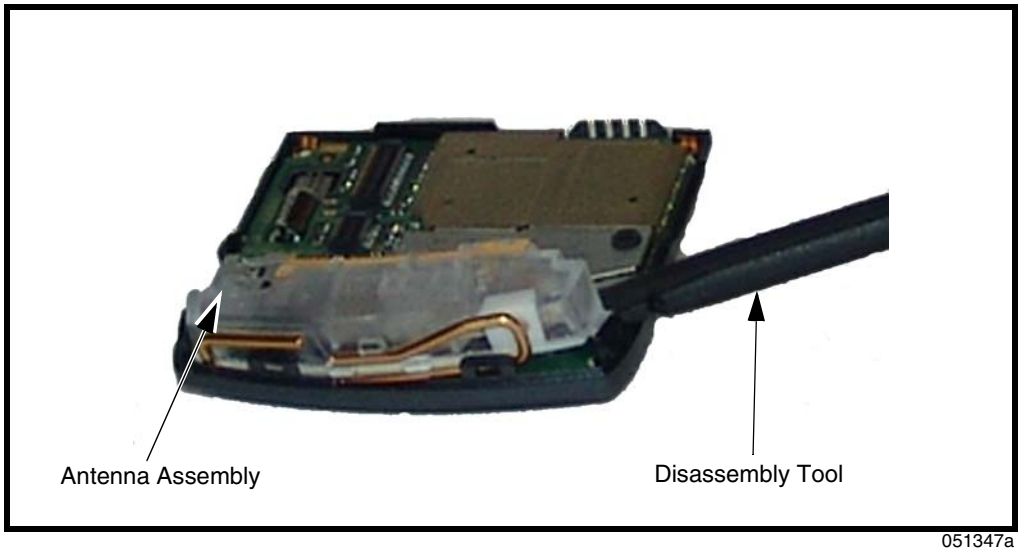

Figure 8. Removing the Antenna Assembly

4. Carefully lift the antenna assembly away from the phone.
5. To replace, align the antenna assembly to the phone.
6. Carefully press the antenna assembly into position starting from the left side until the antenna assembly latches snap into position.
7. Reinstall the rubber antenna assembly grommets into their slots. Each antenna grommet is uniquely shaped to fit into its respective position.
8. Replace the rear housing assembly, 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, antenna, rear housing and battery tray as described in the procedures.
2. Lift the transceiver board assembly out of the front housing with the disassembly tool. See Figure 9.

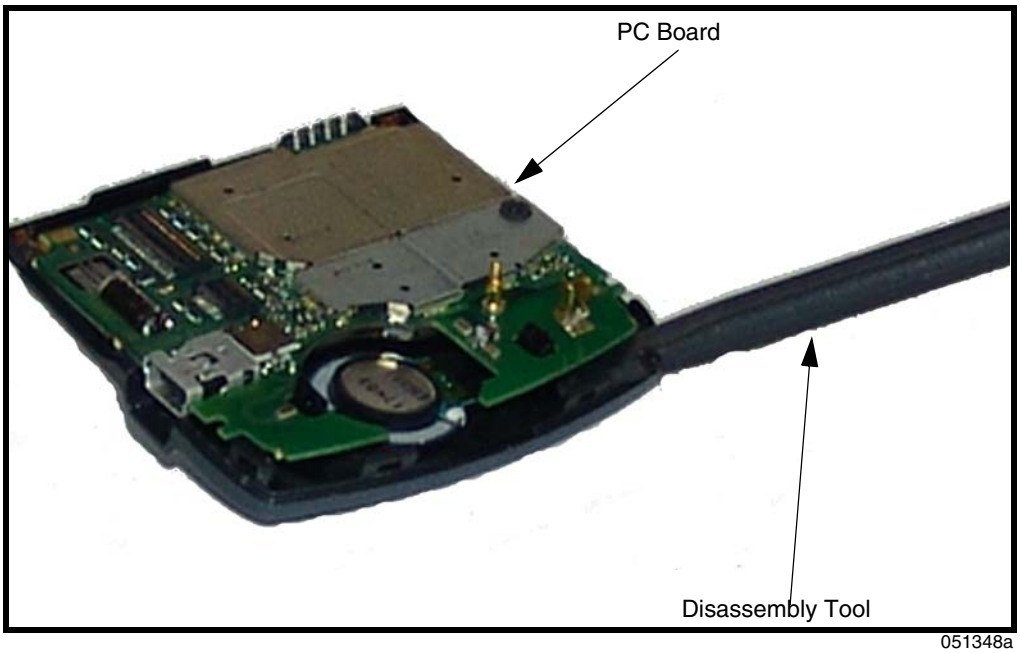

Figure 9. Removing the Transceiver PC board Assembly

3. To replace, insert the transceiver board assembly into the rear housing.
4. Carefully and gently press the transceiver board into position and until it snaps into place.
5. Replace the antenna assembly, rear housing, battery, and battery cover as described in the procedures.

Removing and Replacing the Flip Assembly Cover and CLI Lens

1. Remove the battery cover, battery, antenna, rear housing, and transceiver board assembly as described in the procedures.
2. Remove the 4 flip assembly screw caps.
3. Use the T-5 driver to remove the 4 screws from the flip assembly (see Figure 10). Retain the screws for re-assembly.

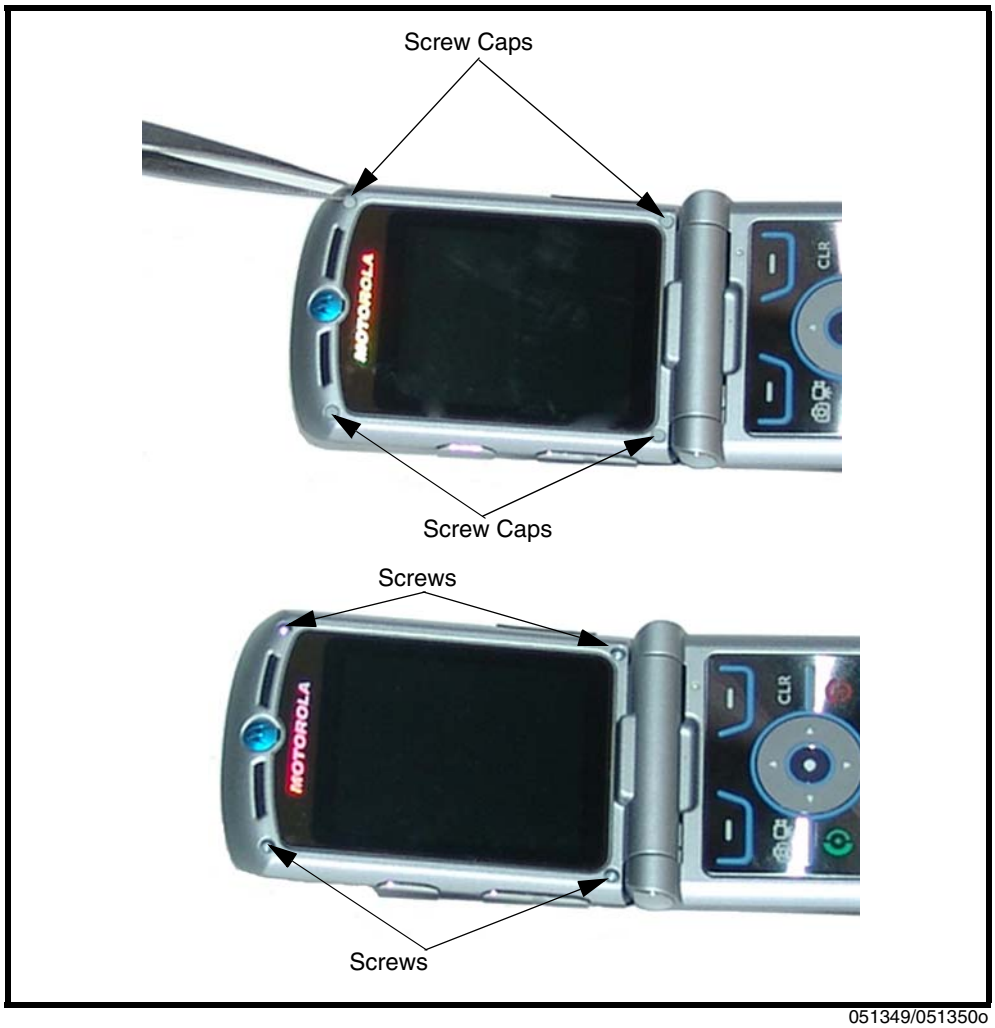

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Figure 10. Removing the Flip Assembly Screws

4. Before removing the flip cover, note the locations of the smart buttons on the sides of the flip assembly.
5. Use the disassembly tool to gently pry off the flip cover (see Figure 11).

6.

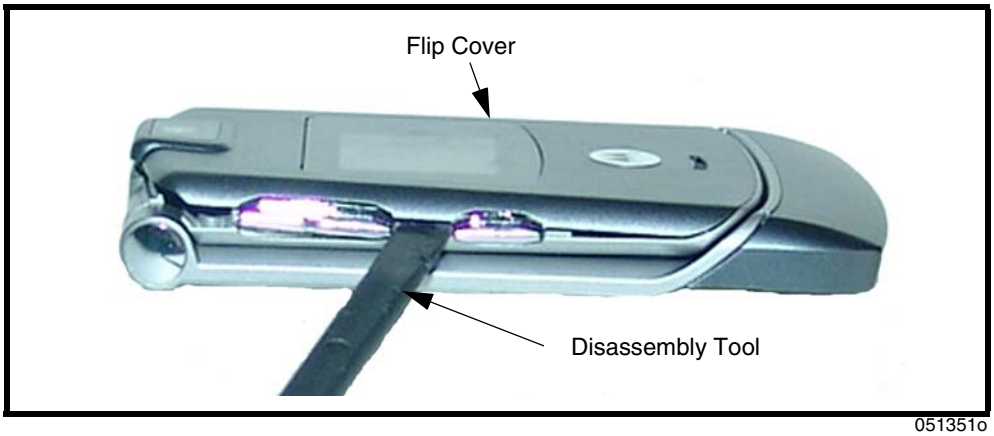

Figure 11. Separating the Flip Assembly Cover

7. Remove the smart buttons on the side of the flip assembly. Set them aside for reassembly.
8. Lift the flip cover away from the flip assembly. Be careful not to damage the display flex cable.
9. Slide the flat end of the plastic disassembly tool, between the lens and the metal frame.

10. Slowly rotate the plastic disassembly tool by 90° (see Figure 12).

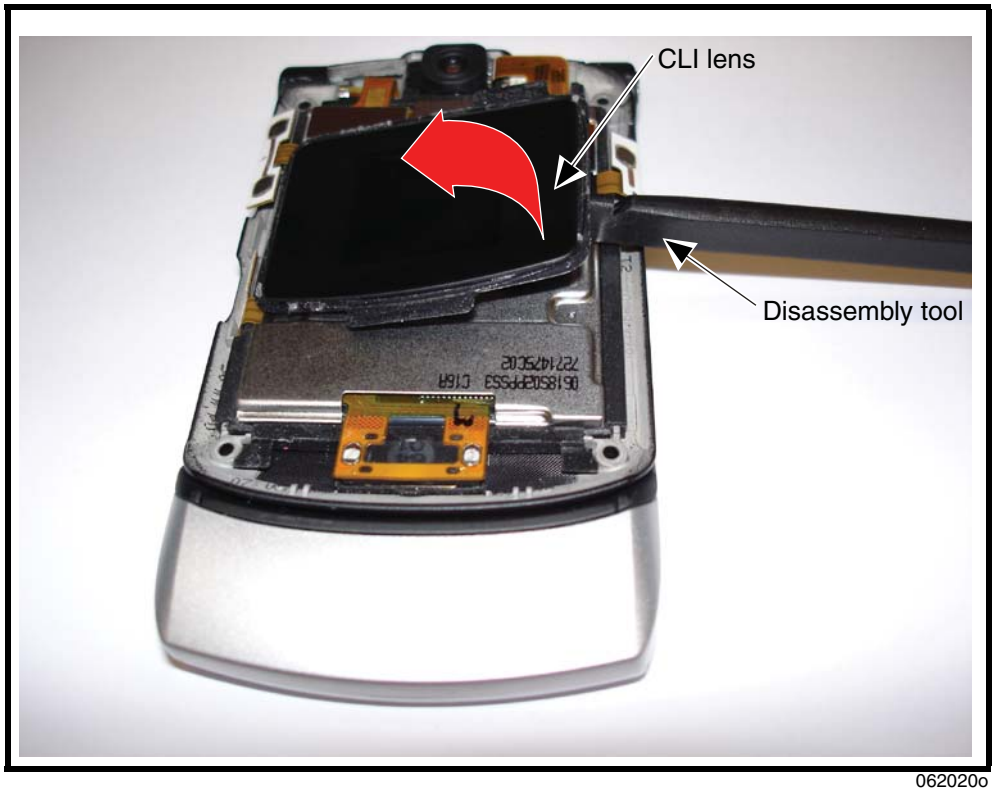

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Figure 12. CLI Lens Removal

11. Carefully lift up the CLI Lens from the display module assembly.
12. Carefully use the plastic tool remove any remaining glue.

Do not use any kind of liquid or spray to remove the remaining glue.

13. To replace, align CLI lens to the Flip Outer Assembly. Move the CLI lens to the opening. Ensure that the liner is overlapping the inside surface. The CLI lens fits in one direction only (see Figure 13).

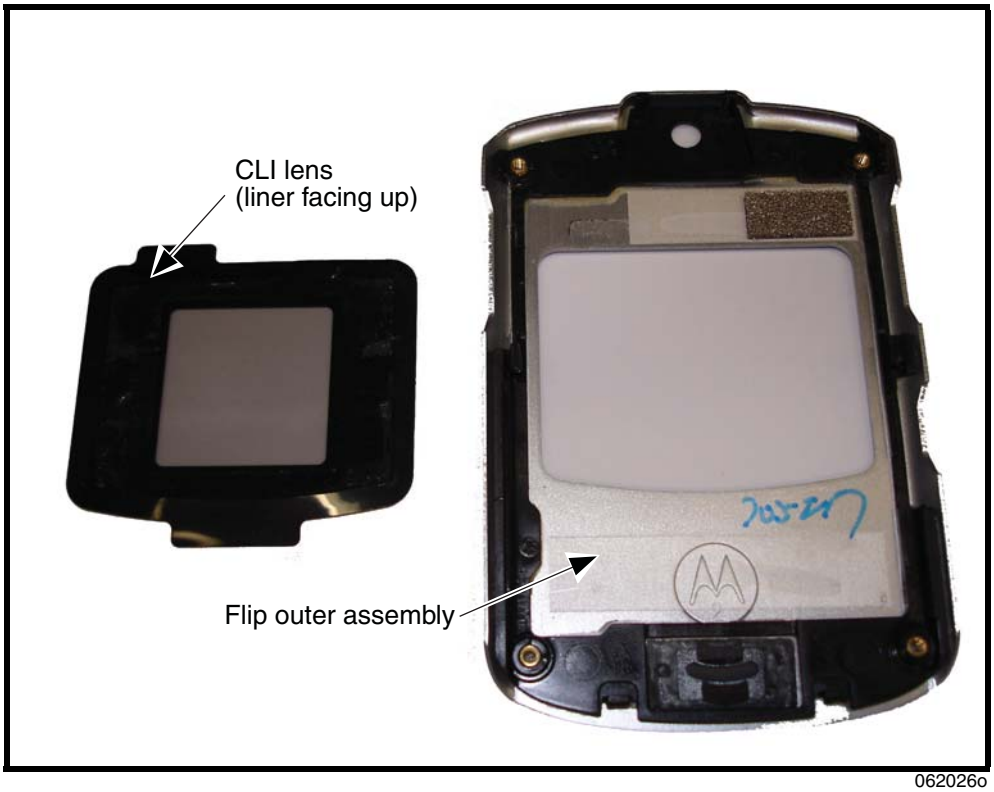


Figure 13. CLI Lens Replacement

14. Expose the adhesive surface of the new CLI lens and attach the replacement CLI lens to the flip outer assembly.

15. Align CLI lens to the flip outer assembly and lightly press the low tech film around the CLI. opening (see Figure 14).

062027o

Figure 14. Flip CLI Lens Placement

16. Align the top, left and right sides of the flip cover and press into position (see Figure 15).

062028o

Figure 15. Flip Cover Replacement, Top, Left and Right Sides

17. Apply pressure at the corners of the CLI Lens for 3 seconds to insure good adhesion (see Figure 16).

062032o

Figure 16. Flip CLI Lens Replacement

18. Insert and tighten the 4 screws to 1.5 in lbs to secure the flip cover to the flip assembly. Avoid damage to the flex cable (see Figure 17).

062040o

Figure 17. Flip Screws Replacement

19. Insert the 4 rubber screw caps over the flip assembly screws (see Figure 18).

Figure 18. Flip Screw Cap Replacement

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

Removing and Replacing the Camera Assembly

1. Remove the battery cover, battery, 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. Unlock the ZIF connector and remove the camera assembly flex connector.
3. Carefully lift the camera assembly and flex out of the flip assembly (see Figure 19).

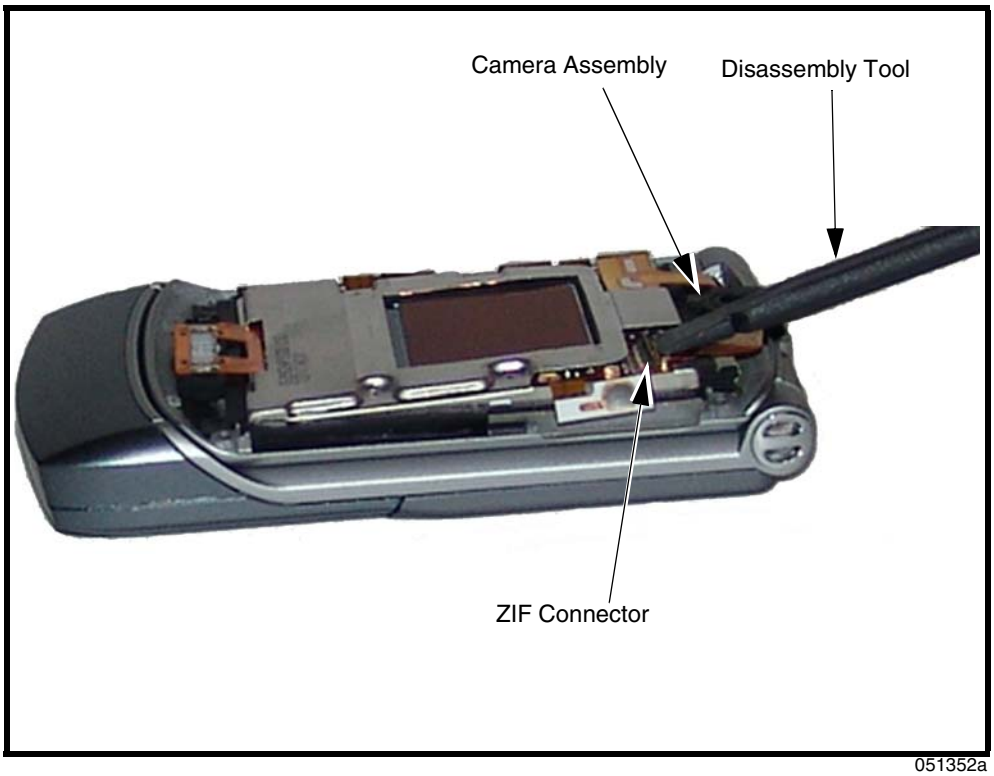


Figure 19. Camera Assembly Removal

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

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 display module assembly flex connector from its socket (see Figure 20)

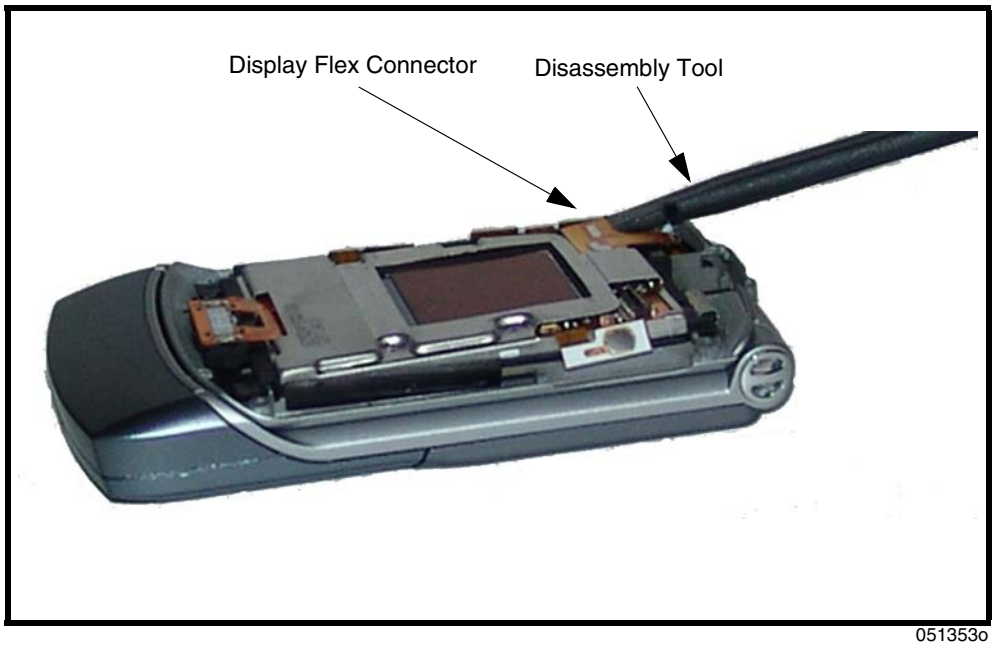


Figure 20. Display Module Assembly Flex Connector

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. Carefully lift the display assembly away from the flip assembly.

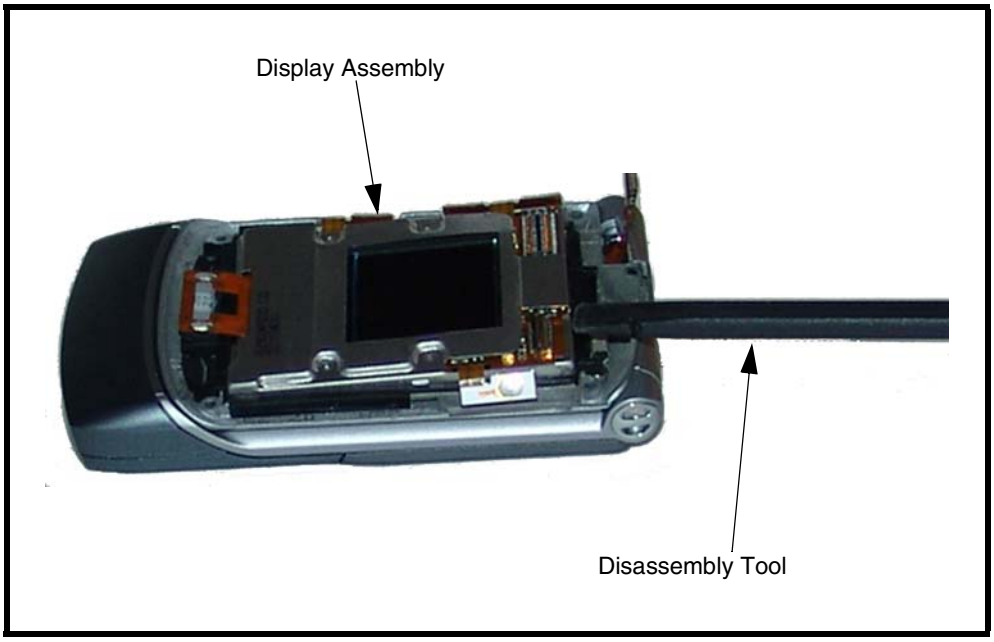


Figure 21. Removing the Display Module Assembly

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, antenna, battery, and battery connector as described in the procedures.

Removing and Replacing the Hinge Assembly

1. Carefully lift up the grounding flip boot strap (see Figure 22).

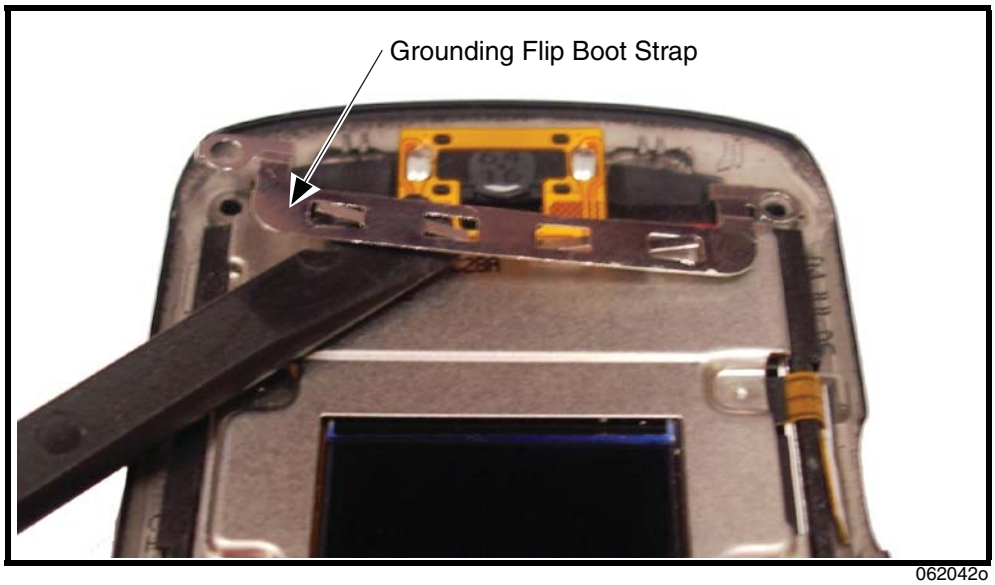


Figure 22. Lifting the Grounding Flip Boot Strap

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

2. Use the disassembly tool to unseat the display module assembly flex connector from its socket (see Figure 23).

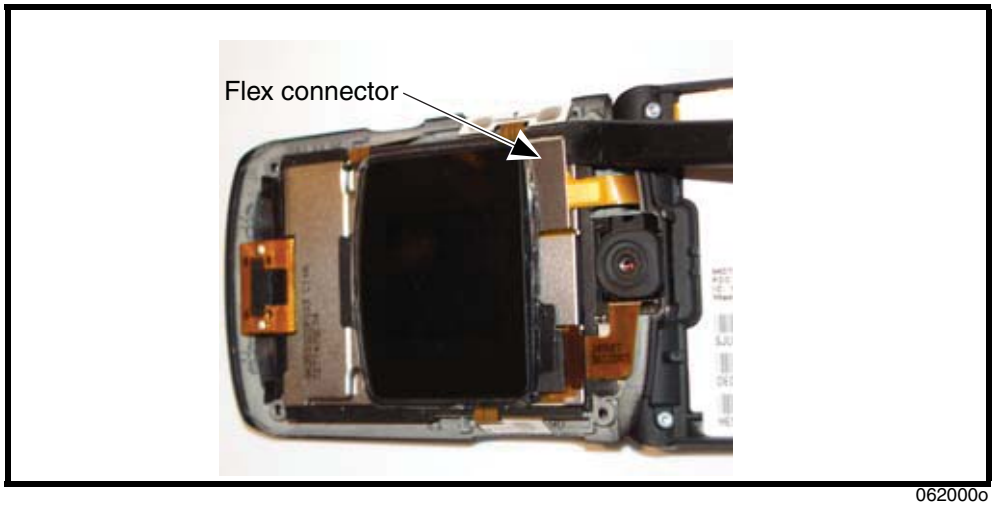
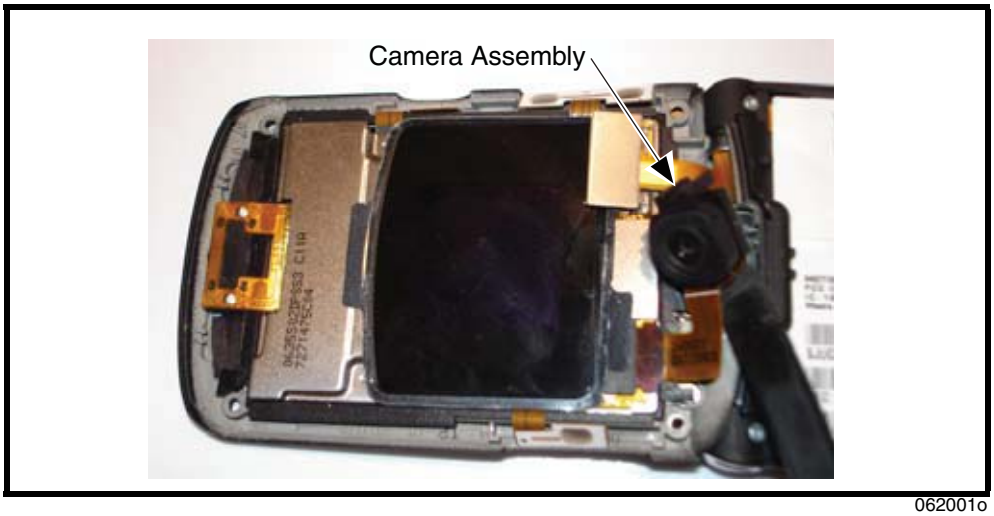


Figure 23. Display Module Assembly Flex Connector

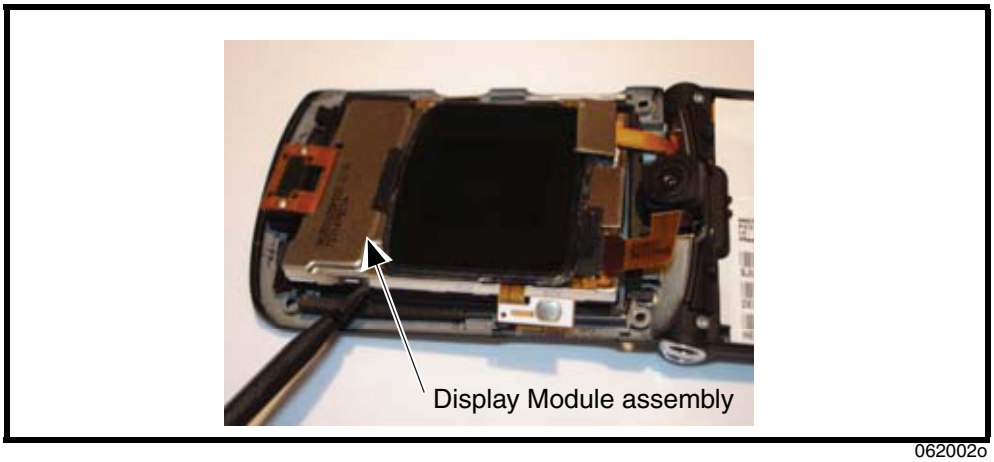
3. Carefully lift the camera assembly and flex out of the flip assembly (see Figure 24).



062001o

Figure 24. Removing the Camera Assembly

4. Carefully and gently lift one corner of the display module assembly out of the flip assembly (see Figure 25).



062002o

Figure 25. Removing the Display Module Assembly

5. Avoid damage to the electrical components on the flex while carefully removing the display module assembly from the flip assembly.

6. Carefully lift the display gasket from the assembly (see Figure 26).

062043o

Figure 26. Removing the Display Gasket

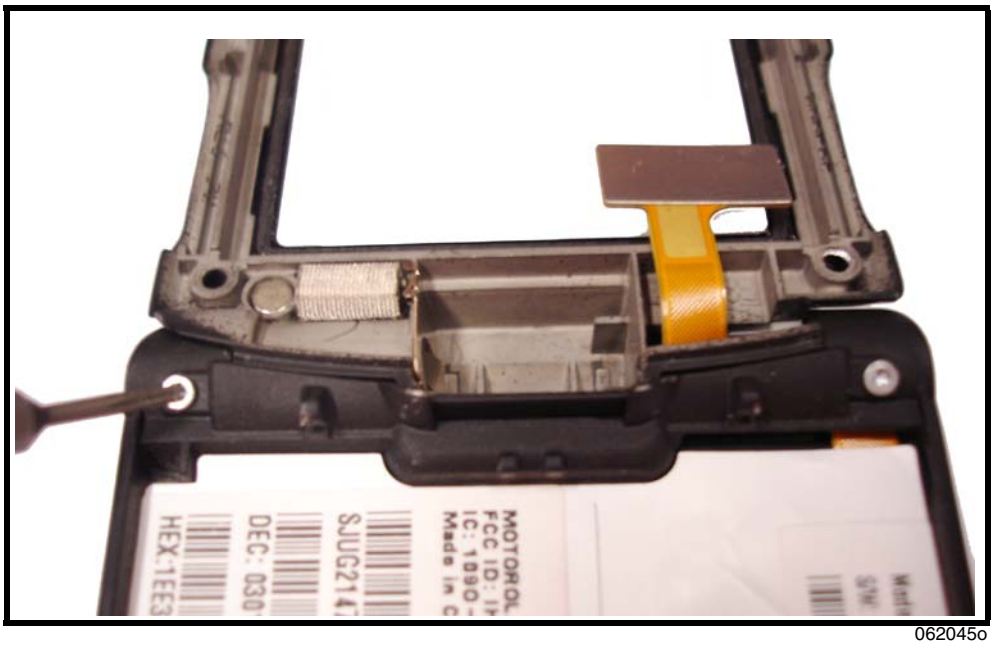
7. Carefully lift the contact grounding hinge from the assembly (see Figure 27).

062044o

Figure 27. Removing the Contact Grounding Hinge

Removing the 2 flip assembly screw caps.

8. Use a T-3 driver to remove the 2 screws from the flip assembly (see Figure 28). Retain the screws for reassembly. Ensure the screws have thread lock.



062045o

Figure 28. Removing the Screw Caps

9. Remove the 2 end caps from the assembly flip. Retain the end caps and grounding clip for reassembly (see Figure 29).

062006o

Figure 29. Screw Caps Removed

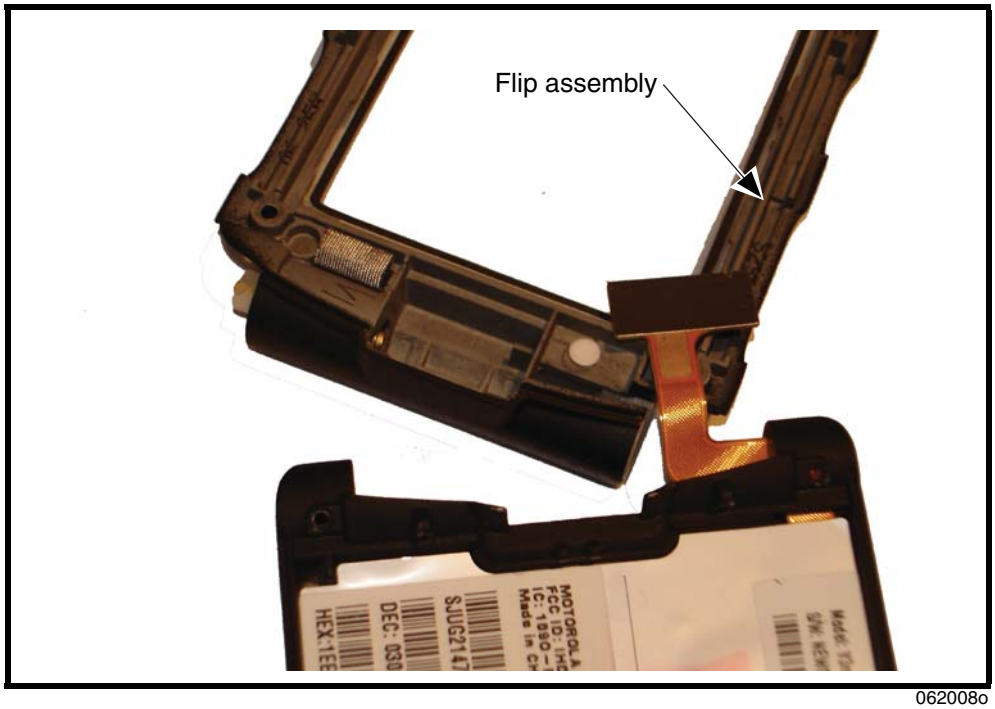
10. Use a small flat tip screwdriver to assist in disassembling the flip from the base housing.

11. Use a small flat tip screwdriver to press in the hinge cam while pushing the hinge cam towards top (see Figure 30).

062007o

Figure 30. Hinge Cam Location

12. Rotate flip assembly away to disengage the hinge cam (see Figure 31).



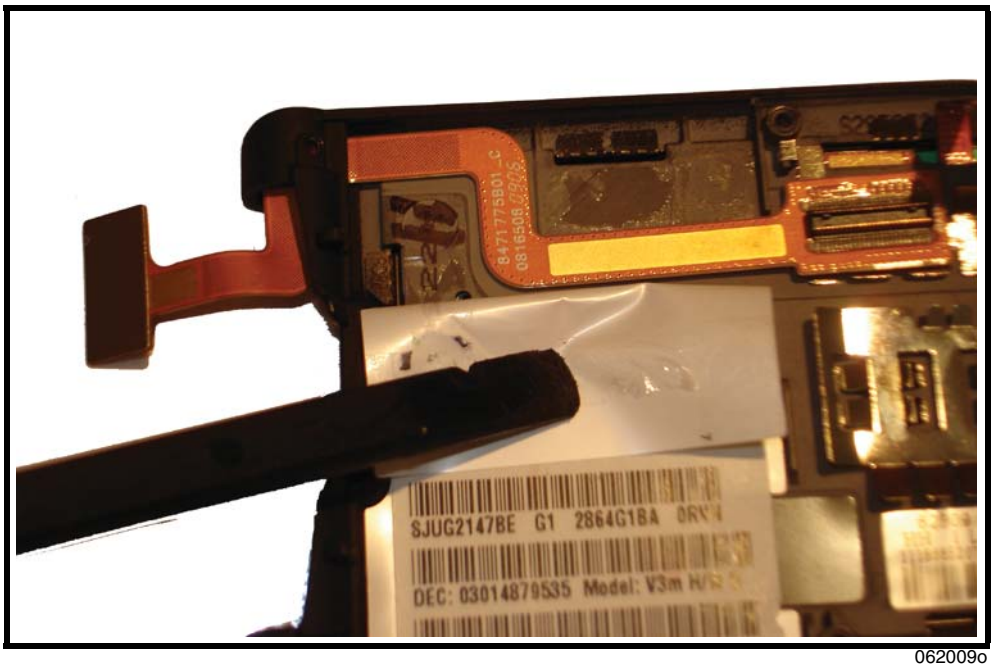
062008o

Figure 31. Flip Assembly Removal

Ensure that display gasket and contact grounding hinge have been removed before continuing. Failure to remove these parts may cause damage to the Hinge Cam and Hinge Grounding Clip.

Removal of the Main Flex.

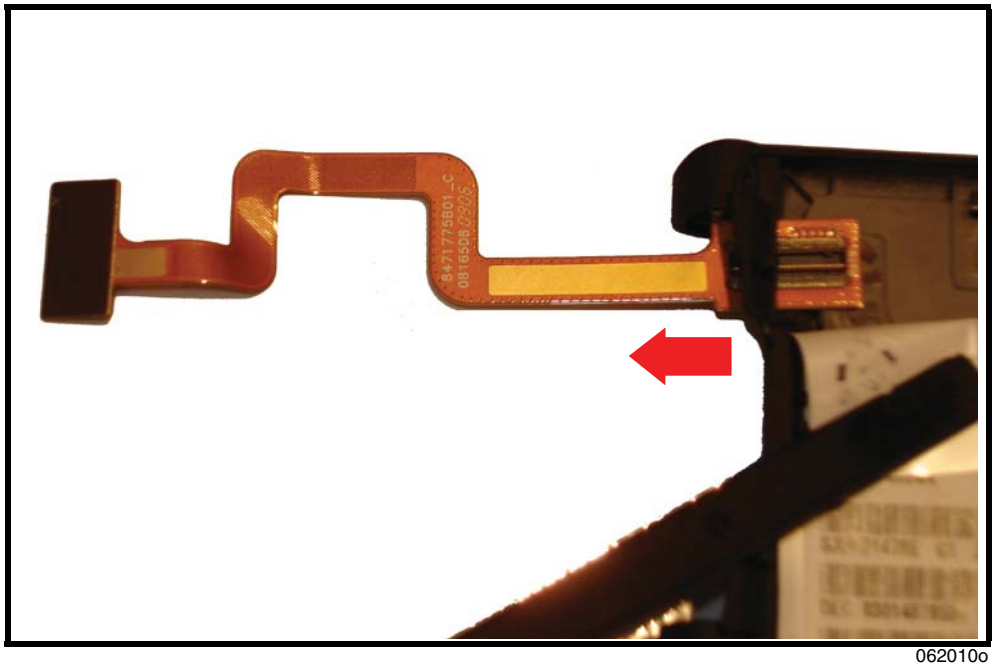
13. Use the plastic tweezers to remove the battery insulating material on the right side of the battery compartment. Do not reuse the battery insulating material for reassembly (see Figure 32).



062009o

Figure 32. Flex Removal Part 1

14. Slide main flex though the opening by the hinge area (see Figure 33).



062010o

Figure 33. Flex Removal Part 2

Replacing the Flip Hinge Assembly

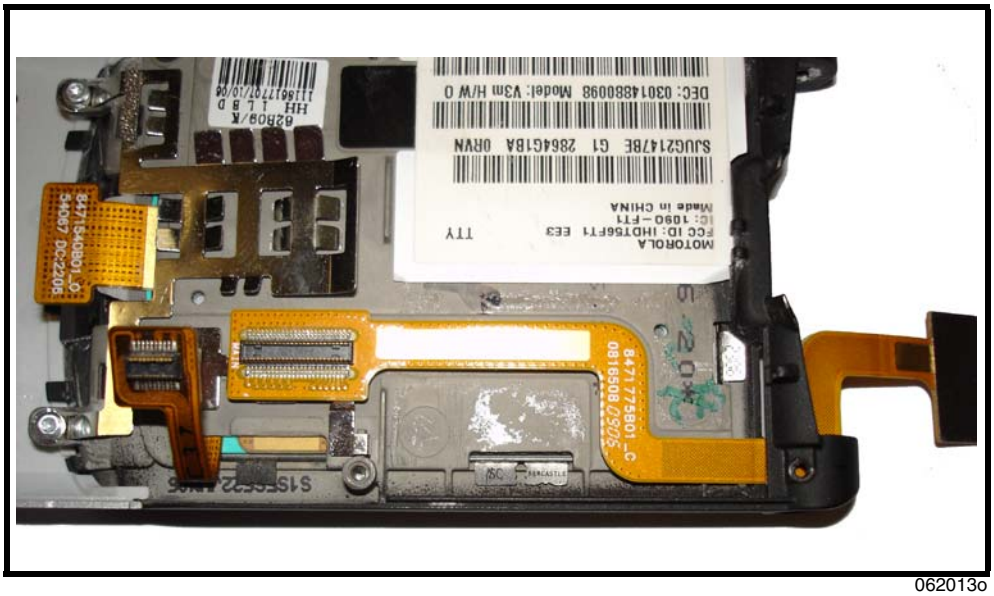
1. Carefully and gently slide the Main Flex though the opening by the hinge area (see Figure 34).

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

062012o

Figure 34. Flex Reinstall Part 1

2. Align main flex to the grove location for the main flex (see Figure 35).



062013o

Figure 35. Flex Install Part 2

3. Insert flip sleeve so that it is flush with flip inner surface (see Figures 36 and 37).

062014o

Figure 36. Flip Sleeve Install Part 1

062014o

Figure 37. Flip Sleeve Install Part 2

4. Align flip housing to the front housing as shown (see Figure 38).

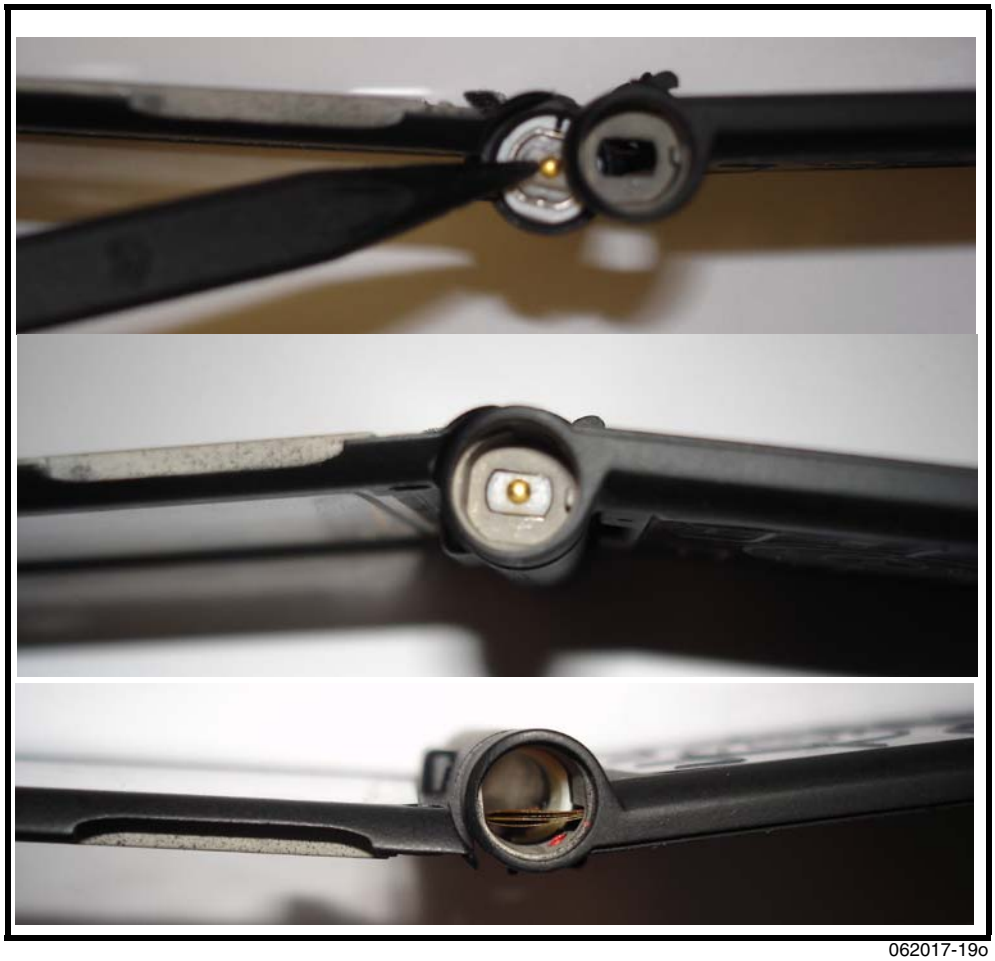
062014o

Figure 38. Flip Hinge Alignment

Note: Ensure that the housing and flip are not binding the main flex.

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

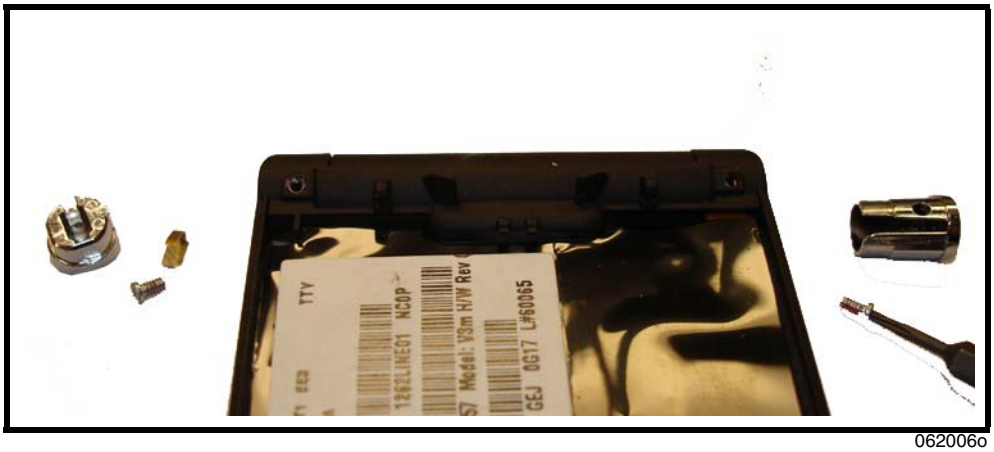
5. Use a small flat tip screwdriver to press in the hinge cam while pushing the hinge cam towards the cam opening (see Figure 39). Ensure that all of the parts are aligned in the hinge area.



062017-19o

Figure 39. Flip Hinge Reassembly

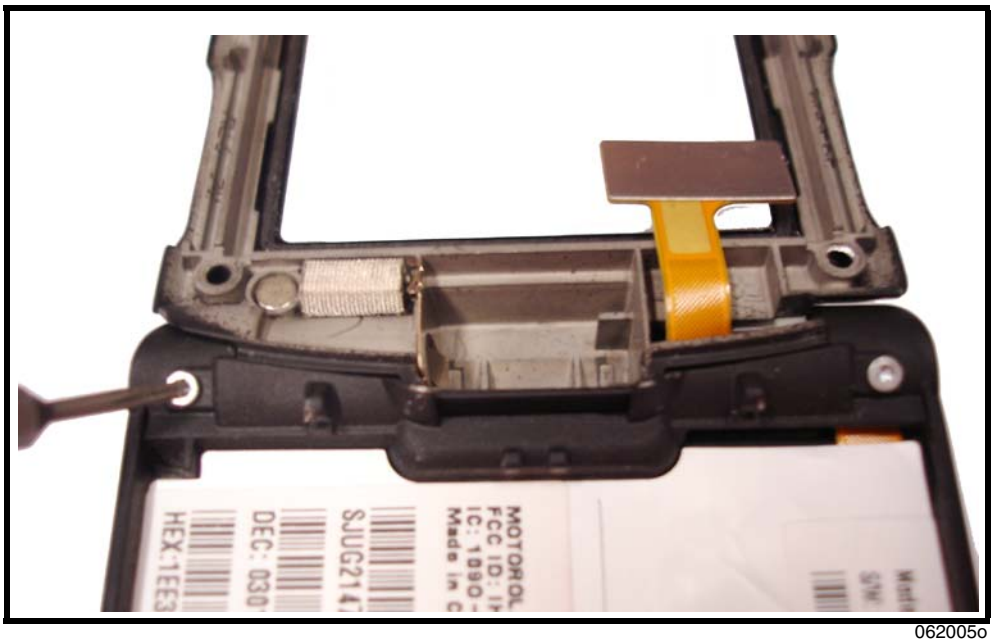
6. Install the 2 end caps for the assembly flip. Ensure that the end caps and grounding clip are assembled (see Figure 40).



062006o

Figure 40. End Cap Reinstall

7. Use the T-3 driver to install and tighten the 2 screws to a final torque setting of 9.6 Ncm (.85 inch pounds). Do not over tighten (see Figure 41).



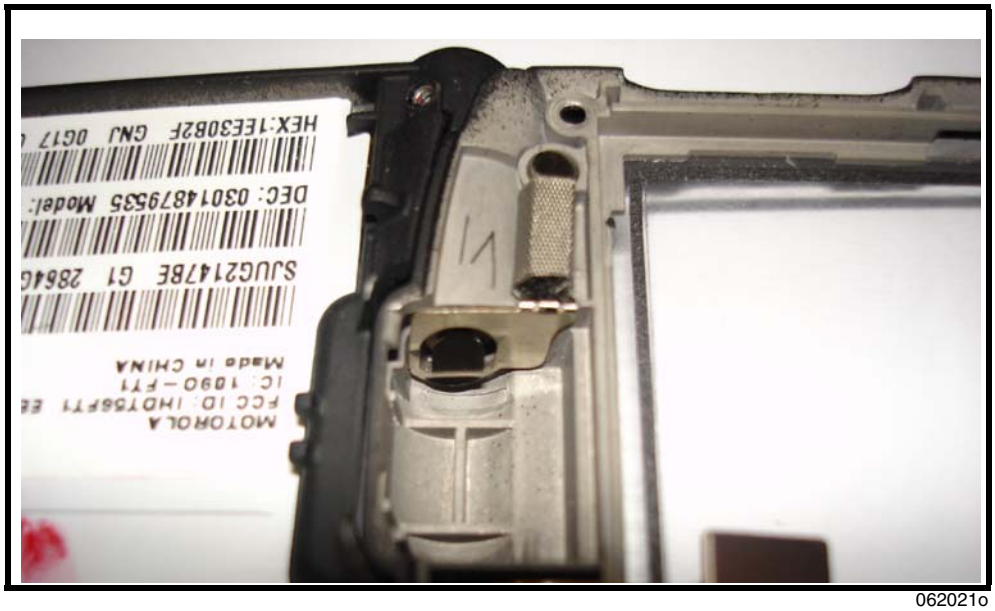
062005o

Figure 41. Reinstalling the Screw Caps

8. Carefully install the contact, grounding hinge to the assembly (see Figures 42 and 43).

062020o

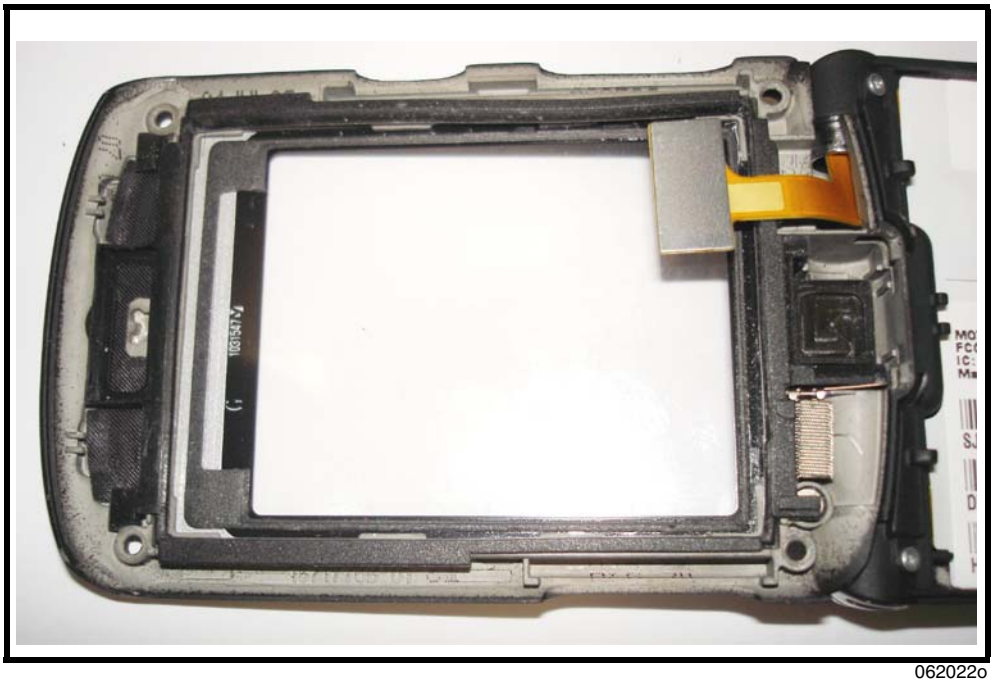
Figure 42. Reinstalling the Contact Grounding Hinge Part 1



062021o

Figure 43. Reinstalling the Contact Grounding Hinge Part 2

9. Carefully place display gasket into assembly (see Figure 44).



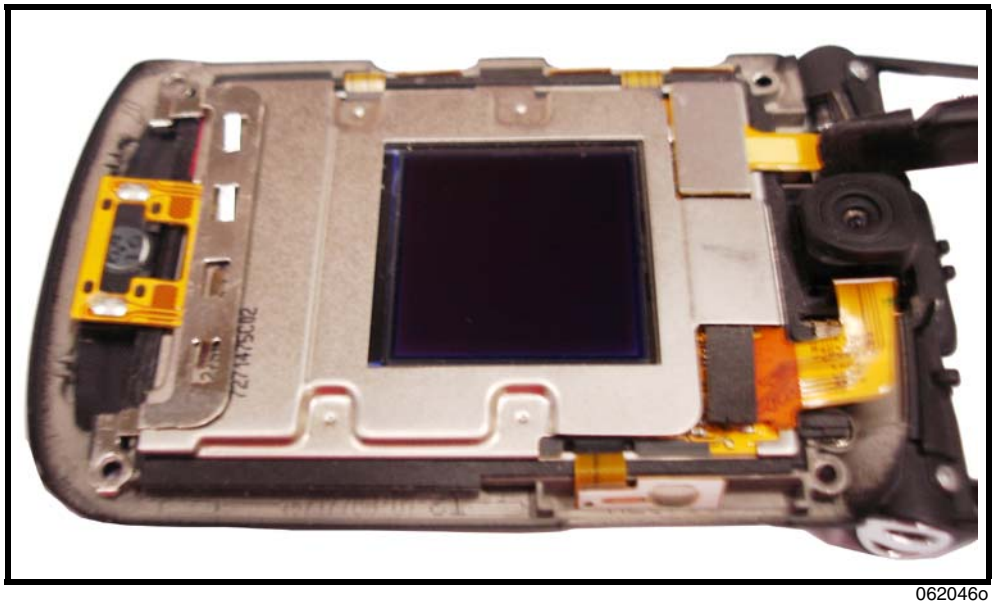
062022o

Figure 44. Reinstalling the Display Gasket

Ensure the display gasket is properly seated in the flip inner before installing the display module.

10. Align the display module assembly to the flip assembly.
11. Carefully lower the display module into the flip assembly. Ensure that none of the display assembly components are damaged.

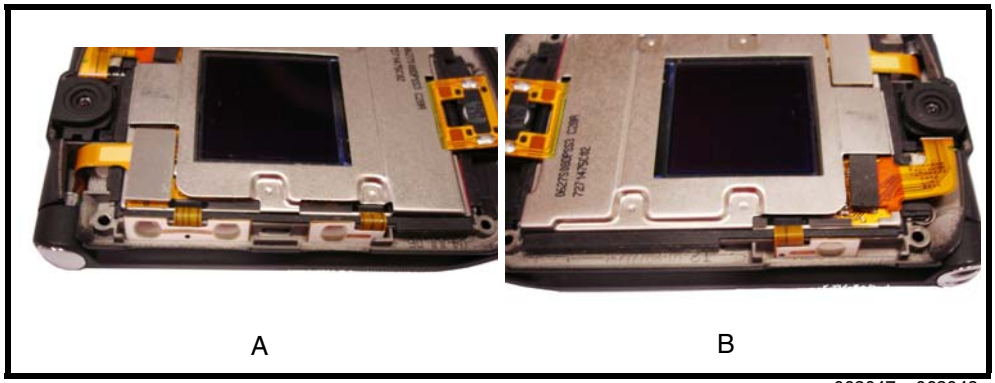
12. Carefully press the camera assembly into its slot in the flip (see Figure 45).



062046o

Figure 45. Reinstalling the Display Assembly

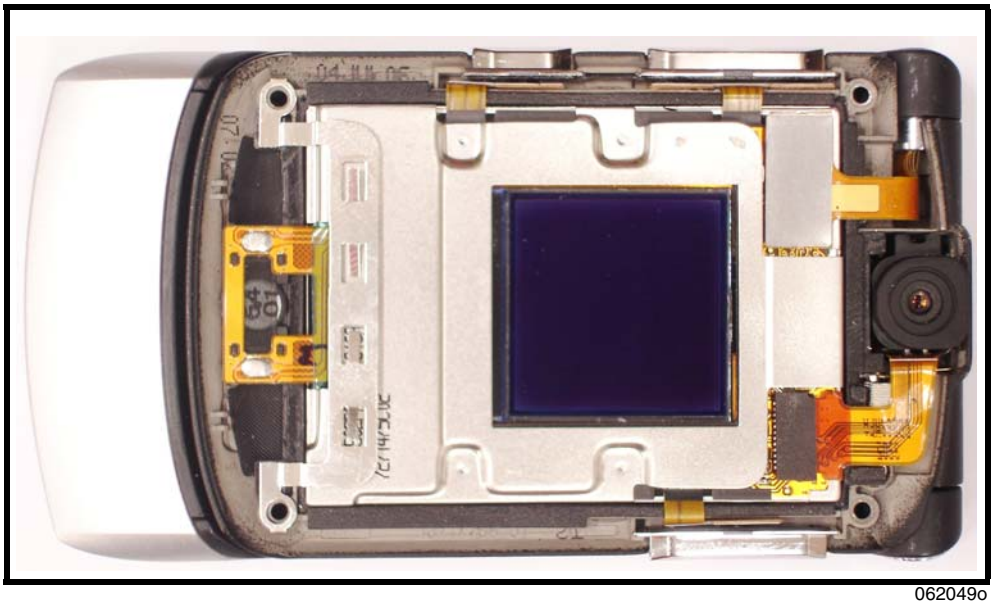
13. Insert the end of the camera assembly flex cable into its slot in the ZIF connector on the flip display assembly. Avoid damage to the flex cable.
14. Carefully insert switches into button cavities (see Figure 46a and 46b).



062047o, 062048o

Figure 46. Replacing Switches in Button Cavities.

15. Clip in the contact, grounding flip boot strap (see Figure 47).



062049o

Figure 47. Replacing the Contact Grounding Flip Boot Strap.

16. Insert Button, Volume Control and Button VR (see Figure 47).
17. Replace the flip assembly cover, transceiver board, rear housing, antenna, 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 48 describes the current identifying labels.

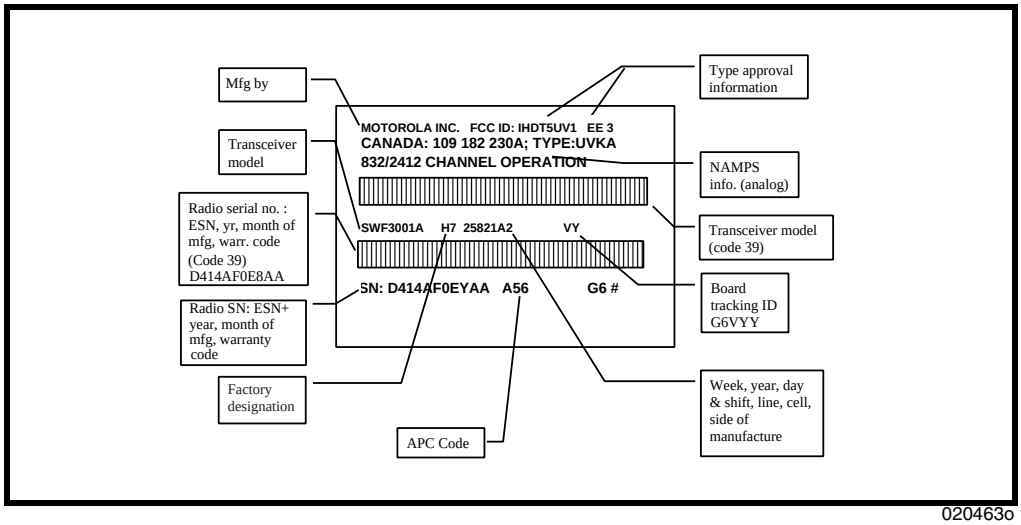


Figure 48. CDMA Telephone Identification Label

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.	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) 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.

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

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

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

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

Programming: Software Upgrade and Flexing

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

The following information is provided as a reference for the parts associated with V3c telephones.

Related Publications

Motorola V3c User's Guide, English	6809496A74-O

Exploded View Diagram

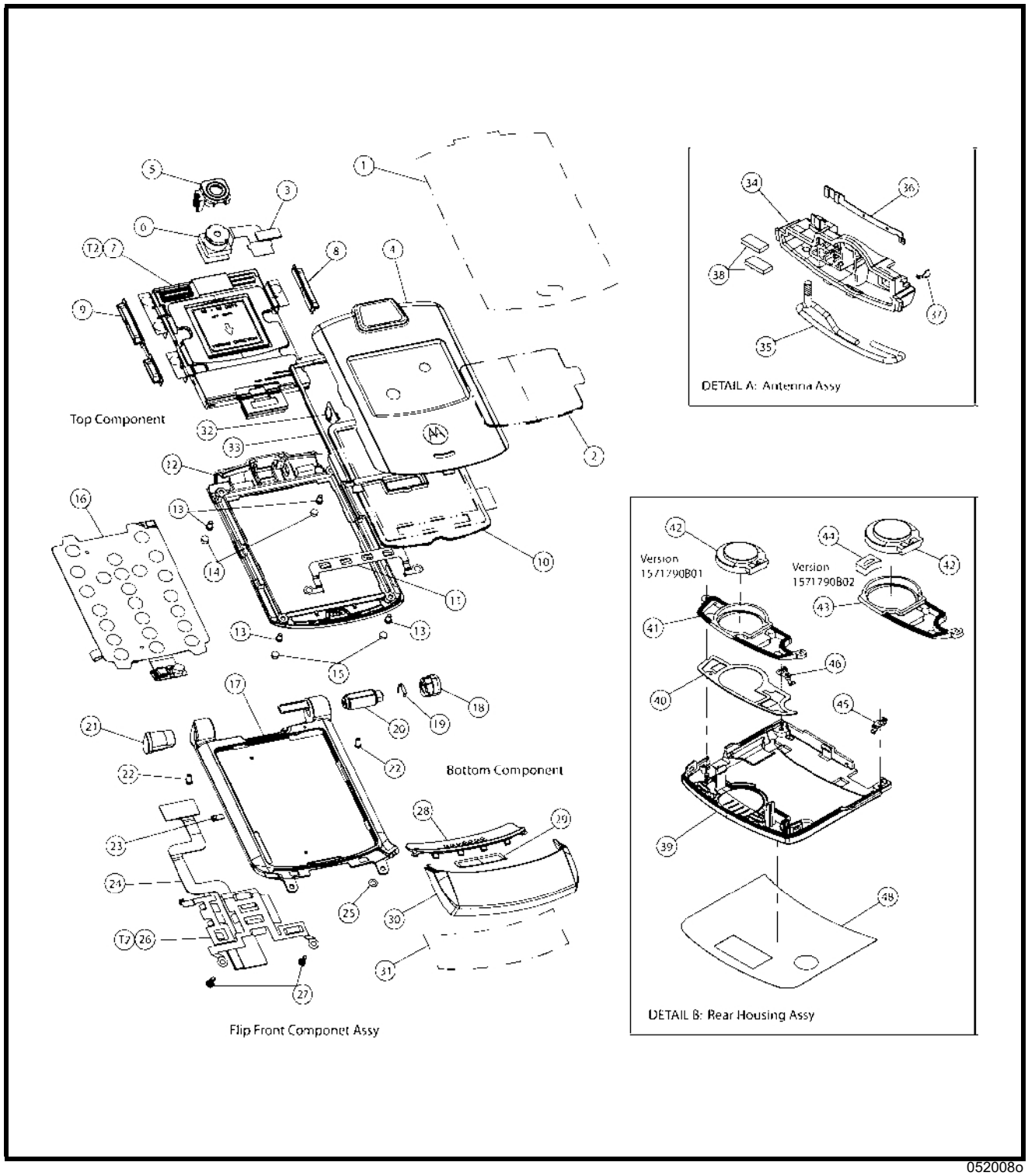


Figure 49. Exploded View Diagram

Exploded View Parts List

Table 3. Exploded View Parts List

Item Number	Part Number	Description
1	1188679Y01	Liner, Protective Cover
2	6171833B01	CLI Lens
3	1471770B01	Camera Insulator Cushion
4	0771765B01	Flip Outer Ass'y
5	0571690B01	Grommet, Upper Camera
6	8471774B01	Camera
7	7271134C01	LCD Module
8	3871811B01	Button VR
9	387180B01	Button, Volume Control
10	6171773B01	Lens, Main Display
11	3971851B01	Contact, Grounding Flip Boot Strap
12	1571777B01	Housing, Flip Inner Ass'y
13	0387726M02	Screw, Pan head
14	3271771B01	Bumper Knuckle
15	3271188C01	Bumper Nose
16	8471141C01	Keypad Flex Ass'y
17	1571781B02	Front Housing
18	1371867B01	Housing End Cap Hinge
19	4271816B01	Grounding Clip
20	5590242N02	Hinge Cam
21	1371866B01	Housing, End Cap Shaft
22	0387726M08	Screw, End Cap Pan Head
23	1587841Y01	Light Guide
24	8471775B01	Hinge Flex

Item Number	Part Number	Description
25	3587505Y01	Mic Screen
26	3971543C01	Contact, Grounding Boot Strap
27	0371764B01	Screw, Gatwick, Pan Head
28	1571787B02	Housing, Front Antenna Cover
29	3587330Y01	Grill Screen
30	1571786B02	Housing, Front Antenna Cover
31	1188679Y02	Liner, Antenna, Outer
32	4271691B01	Contact, Ground, Hinge
33	0571694B02	Gasket, Display
34	1571801B01	Housing, Bladder
35	8571975B01	Antenna, Main
36	8571977B01	Antenna, GPS
37	8587839Y01	Antenna, Bluetooth
38	3987839Y01	Contact, Speaker
39	1571791B02	Housing, Rear
40	3587321Y01	Acoustic Screen
41	0590053N01	Grommet
42	5088017N02	Speaker
43	0590053N03/No4	Grommet
44	3271849C01	Acoustic Gasket
45	3971861B01	Right Ground Clip
46	397419Y01	Left Ground Clip
48	1188432Z04	Protective Liner

Housing Part Numbers

The following part numbers are associated with the V3c pink housing.

Table 4. Pink Housing Part Numbers

Item No.	Part Number	Description
	1571776B02	Housing, Flip inner
	1571947B03	Housing, Flip outer
	1571781B02	Housing, Front
	1571786B04	Housing Front antenna cover
	1571787B02	Housing, Front antenna cosmetic cap
	1571790B03	Housing assembly, Rear

Table 4. Pink Housing Part Numbers (Continued)

Item No.	Part Number	Description
	SHN9448A	Assembly, Battery door, generic
	SHN9449A	Assembly, Battery door, Verizon

The "Parts Replacement" section on page 8 provides information about ordering replacement parts.

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

Accessories

Table 5. Accessories

Part Description	Part Number
Headset, FM stereo radio	SYN8609
Headset, with send/end button	SYN8419
Headset, retractable	SYN8284
Neckloop, hands-free (compatible with T-coil hearing aids)	SYN7875
Holster	SYN8454

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